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# Evaluation of the Initiative to Reduce Avoidable Hospitalizations among Nursing Facility Residents— Payment Reform

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EVALUATION OF THE INITIATIVE TO REDUCE AVOIDABLE HOSPITALIZATIONS  
AMONG NURSING FACILITY RESIDENTS—PAYMENT REFORM

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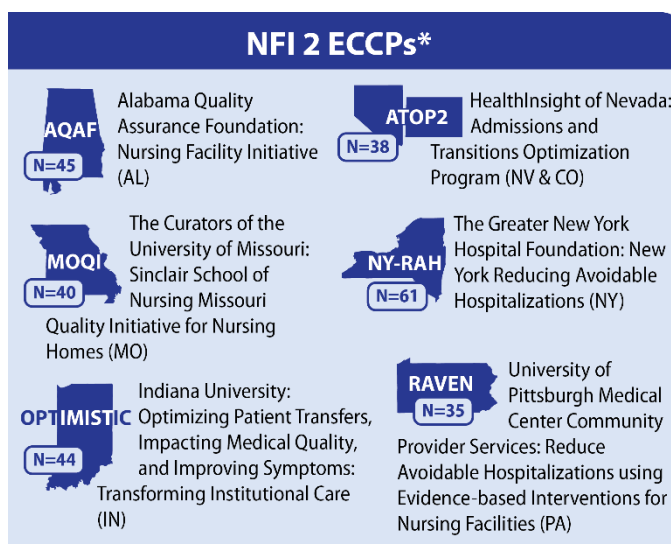
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## EXECUTIVE SUMMARY

The Initiative to Reduce Avoidable Hospitalizations among Nursing Facility Residents—Payment Reform (NFI 2), the second phase of the Initiative to Reduce Avoidable Hospitalizations among Nursing Facility Residents, has yielded modest successes in Year 1. Participating facilities and practitioners implemented the new NFI 2 payment component with some early challenges, such as overcoming an initial learning curve, and with minimal facility attrition. Most facilities reported that they had submitted Initiative claims and received payments, and more than half of participating practitioners also reported successful Initiative claims submissions. Relative to the national comparison group, the facilities that participated in the clinical and educational interventions of NFI 1 and added a payment component in NFI 2, known as the Clinical + Payment facilities, did not experience reductions in utilization and expenditures in Initiative Year 1 beyond what they had previously achieved and what was expected based on the trend established during NFI 1. Payment-Only facilities—newly added to NFI 2—showed promising reductions in utilization and expenditures. Additional years of data will provide more definitive insight about Initiative effects.

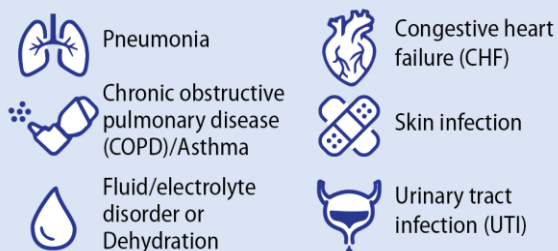
### ES.1 Introduction

In October 2016, the Centers for Medicare & Medicaid Services (CMS) began implementing the Payment Reform phase of the Initiative to Reduce Avoidable Hospitalizations among Nursing Facility Residents—herein referred to as NFI 2, or the Initiative. CMS implemented NFI 1 activities from 2012 to 2016 in seven Enhanced Care and Coordination Provider organizations (ECCPs). Six of these ECCPs and their participating facilities continued to NFI 2, adding the NFI 2 payment component to their existing NFI 1 clinical and educational models plus additional facilities with only the payment model.



\*N=number of participating nursing facilities at the start of NFI 2

### Six qualifying conditions for NFI 2

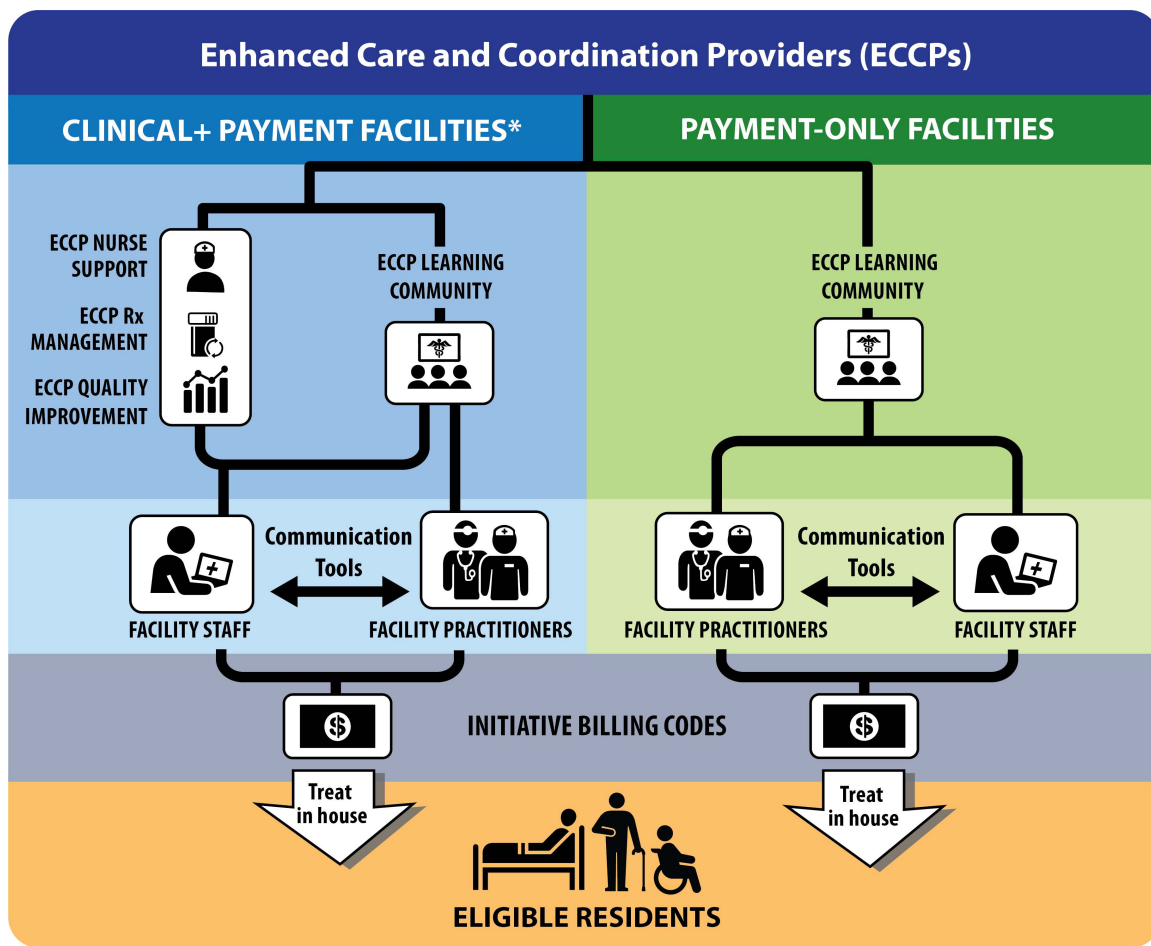


The NFI 2 payment model offers special Medicare billing codes as a financial incentive to participating nursing facilities and practitioners (physicians, advanced practice registered nurses, and physician assistants) for providing care to eligible Medicare fee-for-service (FFS) higher-acuity, long-stay residents in house, rather than transferring them to hospitals for treatment. To receive the financial incentive, facility staff and

practitioners assess, diagnose, and treat residents who may have one of six qualifying conditions that account for a large proportion of potentially avoidable hospitalizations. Facilities receive an extra per-diem payment for a period of in-house treatment and practitioners receive a hospital-level visit payment when evaluating the patient for in-house treatment for the qualifying conditions.

Participating facilities implementing both the clinical and educational interventions from NFI 1 in addition to the new NFI 2 payment model are referred to as the *Clinical + Payment* group; facilities new to NFI 2 are referred to as the *Payment-Only* group. See **Figure ES-1** for a conceptual model of NFI 2.

**Figure ES-1**  
**NFI 2 payment model**



\* Clinical + Payment models vary across ECCPs, including variation in the type of support facilities receive from ECCP nurses. Three ECCPs embedded clinical staff in facilities, two ECCPs embedded education staff, and one ECCP rotates clinical staff across multiple facilities.

PARTICIPANTS IN THE INITIATIVE			
 6 ECCPs	 7 States	 263 NFs	 27,425 eligible residents

## ES.2 Overview of Evaluation Methods

CMS contracts with RTI International to evaluate the Initiative using both primary data and quantitative analyses. In this report, RTI assesses the effectiveness of the NFI 2 payment model as of Initiative Year 1, fiscal year (FY) 2017 (October 1, 2016 through September 30, 2017), addressing the following research questions:

- How was the Initiative implemented, and how do participating ECCP leadership and facility staff perceive Initiative effectiveness?
- What is the Initiative payment incentive effect on Medicare utilization and expenditures, particularly for hospital-related services, for the Clinical + Payment group and the Payment-Only group?
- How does the Initiative effect on Medicare utilization and expenditures vary by ECCP and type of intervention?

RTI uses a wide range of secondary data sources, such as Medicare claims and eligibility files and the Minimum Data Set (MDS) assessments, to evaluate NFI 2 effects on utilization and expenditure measures for eligible residents by comparing them to a nationally derived non-Initiative population of nursing facility residents who would meet the Initiative eligibility criteria. RTI uses difference-in-differences multivariate regression modeling to estimate the Initiative effects. The evaluation is not designed to compare the effect of the Clinical + Payment intervention to the Payment-Only intervention. We are only studying the effect of the incentive payment billing codes superimposed upon the existing clinical and educational interventions (Clinical + Payment) and the incentive payment billing codes as a stand-alone intervention (Payment-Only), both under NFI 2.

In addition, we collect primary data to provide critical context and inform findings from quantitative data analyses. Data collected and analyzed for this report are derived from site visits and telephone interviews with participating ECCPs and nursing facilities, web surveys of participating nursing facility administrators and certified practitioners, telephone interviews of key stakeholders across ECCP states, and reviews of ECCP Learning Collaborative activities. Primary data collection topics included understanding the roll-out and implementation of NFI 2, learning more about the six conditions eligible for payment under NFI 2, discussion of experiences submitting NFI 2 claims and receiving payment, and the overall policy landscape and potential impact on NFI 2 in each ECCP state.

## ES.3 Key Early Implementation Findings

***In Initiative Year 1, most facilities had submitted NFI 2 claims, following initial education and a NFI 2 learning curve; claim volume was driven by facility size, case mix of residents, staff and practitioner buy-in, and leadership or corporate support.***

Interviewees reported that the overall claims submission process is going well in many facilities across ECCPs. Facilities with larger populations of eligible long-stay residents, as well as facilities with higher-acuity residents, may have had more opportunities to assess the six qualifying conditions and bill under NFI 2, compared with facilities that have fewer eligible residents or lower-acuity long-term care residents. Similarly, some facilities expressed concern that claims submissions may decrease over time as facility staff catch changes in condition sooner and address health concerns before residents reach the acuity threshold required for claims submission. Some corporate-owned facilities reported delays in receiving claims

payments, a consequence of corporate-based or centralized claims review and submission that also resulted in corporate receipt of resultant incentive claims payments. A few facilities reported challenges with claims submission early in the Initiative, although these issues seemed to be resolving with time and additional ECCP support.

***In Initiative Year 1, a majority of practitioner survey respondents reported that they had submitted at least one NFI 2 claim. Practitioner employment status, stringent requirements for billing, certification timeframe, and payment considered insufficient disincentivized some practitioners from submitting Initiative claims.***

Practitioners who were submitting claims for NFI 2, described the process as smooth. Across multiple ECCPs, interviewees reported that practitioners who received claims reimbursement directly or as part of a small practice were more likely to bill for the Initiative. In contrast, the additional payment from the billing codes was not an incentive for those practitioners who were part of a group practice where reimbursement went to the group and not to the individual practitioner or those who were salaried by nursing facilities. Across ECCPs, staff reported practitioners' lack of time as their biggest barrier to submitting claims. Practitioners did not have enough time to certify the condition within the required time window and then complete all accompanying documentation. Another component of the Initiative is a special billing code for formal care coordination conferences. A large majority of interviewees reported that care conferences are not occurring for most participating practitioners. Interviewed practitioners reported that the financial incentive for these care conferences was not large enough for them to put in the amount of time and effort to complete and bill for care coordination activities under NFI 2.

***Facility staff perception of the Initiative's effectiveness in reducing avoidable hospitalizations was inconsistent. Many facility staff across ECCPs reported that NFI 2 had not changed how they provide care; rather, the Initiative offered compensation for completing care processes that were already part of existing facility routines.***

Many facility interviewees in Clinical + Payment facilities stated that the Initiative is having a positive effect on reducing avoidable hospitalizations because the Initiative has helped to focus the efforts of both facility staff and practitioners through training, education, and reimbursement on the six qualifying conditions. In contrast, interviewed Payment-Only facility staff were less confident in the Initiative's effectiveness; many believed it is too early to tell if the Initiative has been successful in reducing their hospitalization rates. Across both intervention groups, most interviewees added that, regardless of outcomes on hospitalization rates, the Initiative had not effected change on many existing facility processes; rather, NFI 2 was said to provide financial reimbursement for efforts nursing facility staff already had undertaken, such as identifying early changes in condition and improving communication across facility staff and practitioners.

***Facility staff emphasized the importance of having effective processes for documentation and communication of changes in condition. Staff in many Clinical + Payment facilities rely heavily on ECCP nurses to support their facilities with documentation and communication processes.***

Facility leadership cited several important factors that need to be in place for successful implementation of the Initiative: (1) an effective documentation process to identify initial changes in a resident's condition, (2) a standard way to communicate these changes to practitioners, and (3) a way to inform nursing staff and practitioners about completed assessments or treatments. In many Clinical + Payment facilities, ECCP nurses complete Initiative activities, including determining resident eligibility, certifying changes in condition for

facility billing, coordinating with other practitioners, and completing or auditing NFI 2 documentation. In Payment-Only facilities and Clinical + Payment facilities with limited ECCP nurse involvement, the claims submission process succeeds only when staff understand well how to document the six qualifying conditions and complete required documentation for each claim.

***Two factors that may affect evaluating the Initiative are (1) other efforts to reduce avoidable hospitalizations unrelated to NFI 2 and (2) the increasing presence of managed care plans that use similar approaches to reducing avoidable hospitalizations, including the use of nurse practitioners and incentive payments.***

Both ECCP leadership and individual facilities reported the presence of several other programs and policies in place that aim to reduce hospitalizations, as well as similar efforts that may affect implementing the Initiative. Most notably, managed care is growing in presence across several ECCP states with the potential to have major implications for participating facilities. In particular, the provision of a nurse practitioner through managed care (e.g., Optum—United Healthcare) was described as having a positive effect on reducing avoidable hospitalizations. However, because managed care residents are not eligible for participation in this Initiative, some facility interviewees voiced concern about losing Initiative-eligible residents to managed care programs, thus reducing the overall Initiative population and the resultant potential for facilities to submit Initiative claims.

#### **ES.4 Key Early Outcomes**

***Table ES-1*** presents a summary of estimated FY 2017 Initiative effects on hospital-related utilization and expenditures for eligible residents in Clinical + Payment facilities. A parallel summary of results for eligible residents in Payment-Only facilities is provided in ***Table ES-2***. Key findings are highlighted below.

***Early results indicate that in Initiative Year 1, eligible residents in Clinical + Payment facilities did not experience reductions in hospital-related utilization or Medicare expenditures beyond those already achieved in NFI 1 and what was expected based on the trend established during NFI 1.***

Overall, relative to a comparison group of nationally derived nursing facility residents, the Clinical + Payment group was unable to continue the trends of improvement experienced during NFI 1. Although most changes relative to those trends were not statistically significant, there was a statistically significant worsening in one metric, all-cause emergency department (ED) visits.

***For residents in Clinical + Payment facilities, the estimated Initiative effects on utilization and expenditures varied across ECCPs: residents in three of the six ECCPs experienced unfavorable outcomes, and residents in one ECCP experienced favorable improvements.***

In RAVEN (Pennsylvania), MOQI (Missouri), and NY-RAH (New York), Initiative participating residents experienced some statistically significant, unfavorable outcomes. Specifically, in these three ECCPs there were four, four, and two hospital-related measures, respectively, that were unfavorable and statistically significant (each out of a total of 19 measures analyzed). In AQAF (Alabama), the reverse was true; there were statistically significant reductions in three (out of 19) measures. There were no statistically significant changes in utilization or expenditures for participating residents in ATOP2 (Nevada) or OPTIMISTIC (Indiana). The direction of the effects was mixed in ATOP2; there was a general pattern of improvements in OPTIMISTIC.

**Table ES-1**  
**Clinical + Payment: Relative Initiative effect (percent change) on hospital-related utilization and expenditures, FY 2017**

Measure	All ECCPs (all states)	AQAF (AL)	ATOP2 (NV)	MOQI (MO)	NY-RAH (NY)	OPTIMISTIC (IN)	RAVEN (PA)
<i>Utilization per resident (probability of hospital-related utilization)</i>							
<b>Any hospitalization</b>							
All-cause	-1.3	-14.1**	-10.7	10.3	6.6	-3.2	3.6
Potentially avoidable	3.4	-4.5	13.8	17.7	4.1	-6.8	12.7
Six qualifying conditions	4.3	-2.0	13.3	22.1	-3.6	-11.4	41.1
<b>Any ED visit</b>							
All-cause	8.5**	-1.3	16.4	26.1***	17.5*	-16.5	21.3**
Potentially avoidable	3.6	-13.4	23.0	19.9**	15.3	-15.7	19.9
Six qualifying conditions	-9.1	-43.5**	-18.9	29.1	11.5	0.8	30.5
<b>Any acute care transition</b>							
All-cause	1.9	-8.1*	-1.4	13.2**	10.3*	-10.2	8.2
Potentially avoidable	2.5	-10.2	12.8	16.8	7.7	-8.9	14.4
Six qualifying conditions	-2.1	-18.8	-2.3	28.0	-1.0	-13.8	26.7
<i>Expenditures per resident-year</i>							
<b>Total Medicare expenditures</b>	3.2	-4.6	1.7	7.7*	4.8	-0.7	11.1**
<b>Hospitalization expenditures</b>							
All-cause	1.6	-9.5	-15.1	9.2	3.3	5.3	10.0
Potentially avoidable	4.6	-8.2	-13.2	3.2	11.8	-8.7	31.0
Six qualifying conditions	5.0	5.7	-31.8	-22.9	1.4	24.3	79.6**
<b>ED visit expenditures</b>							
All-cause	2.2	-4.5	25.4	5.1	-3.1	-16.4	30.7
Potentially avoidable	-0.4	-11.9	34.5	6.2	4.2	-25.0	8.4
Six qualifying conditions	-2.2	-29.2	105.9	-25.7	-6.8	5.9	3.5
<i>Expenditures per resident-year</i>							
<b>Acute care transition expenditures</b>							
All-cause	0.9	-11.8	-14.6	9.7	3.0	3.7	10.5
Potentially avoidable	4.7	-8.2	-9.1	7.8	12.8	-11.1	26.4
Six qualifying conditions	4.2	6.4	-32.8	-22.2	0.0	22.8	74.8**

ECCP = Enhanced Care and Coordination Provider; ED = emergency department.

\*/\*\*/\*\* = Significantly different from zero based on a *p*-value cutoff of 0.1/0.05/0.01. Dark green shading indicates a statistically significant decrease. Light orange shading indicates a statistically significant increase.

SOURCE: RTI analysis of Medicare claims data (RTI programs MS 10, MS 11, and MS 13).

NOTES: ATOP2 consists of a Clinical + Payment group in Nevada and Payment-Only group in Colorado.

For *utilization*, the relative Initiative effect is the absolute Initiative effect (percentage points) divided by the mean predicted probability of experiencing the event under the scenario that the intervention did not occur. For *expenditures*, the relative Initiative effect is the absolute Initiative effect (dollars) divided by the mean predicted expenditures, under the scenario that the intervention did not occur. All predictions are based on a difference-in-differences regression model with a national comparison group and adjusted for resident-level and facility-level characteristics. *Acute care transitions* include hospitalizations, ED visits, or observation stays.



**Table ES-2**  
**Payment-Only: Relative Initiative effect (percent change) on hospital-related utilization and expenditures, FY 2017**

Measure	All ECCPs (all states)	AQAF (AL)	ATOP2 (CO)	MOQI (MO)	NY-RAH (NY)	OPTIMISTIC (IN)	RAVEN (PA)
<i>Utilization per resident (probability of hospital-related utilization)</i>							
<b>Any hospitalization</b>							
All-cause	-7.4***	-5.2	-6.9	-3.9	-7.3	-10.3*	-8.8
Potentially avoidable	-7.2*	3.4	-7.6	-5.7	-3.5	-14.0	-18.5*
Six qualifying conditions	-9.3	-7.3	-14.7	-7.0	-6.1	-18.1	-9.6
<b>Any ED visit</b>							
All-cause	-3.8	-11.3	-7.6	4.3	-7.2	2.8	-3.6
Potentially avoidable	-7.5	-18.9	-13.5	8.9	-9.5	-11.0	-1.9
Six qualifying conditions	-10.1	-25.8	-35.4***	31.4**	-7.6	-20.7	-16.4
<b>Any acute care transition</b>							
All-cause	-4.9**	-7.5	-6.6	2.6	-5.3	-5.5	-7.2
Potentially avoidable	-6.7*	-9.6	-12.5	5.5	-3.9	-12.3*	-13.8
Six qualifying conditions	-7.8	-11.3	-24.0*	9.4	-4.3	-12.9	-16.2
<i>Expenditures per resident-year</i>							
<b>Total Medicare expenditures</b>	-1.8	-1.0	7.0	-1.9	-1.2	-3.0	-4.8
<b>Hospitalization expenditures</b>							
All-cause	-5.4	-6.5	-0.7	-5.8	0.7	-9.2	-17.1*
Potentially avoidable	-8.6	-0.6	-6.7	-1.1	-4.9	-14.3	-25.6**
Six qualifying conditions	-11.7	1.4	-12.6	-17.4	0.0	-29.7	-18.0
<b>ED visit expenditures</b>							
All-cause	-3.2	-20.0*	-15.5	3.8	-6.5	10.0	3.7
Potentially avoidable	-7.4	-10.0	-36.3**	1.5	-14.0	6.5	19.1
Six qualifying conditions	-16.9	-42.1	-42.3**	14.0	-7.1	-31.9	13.2
<i>Expenditures per resident-year</i>							
<b>Acute care transition expenditures</b>							
All-cause	-5.9	-6.5	-3.2	-6.4	0.4	-10.2	-16.5*
Potentially avoidable	-10.0*	2.3	-14.9	-3.7	-5.9	-14.1	-26.3*
Six qualifying conditions	-12.8	1.2	-17.9	-19.3	0.1	-30.7	-18.8

ECCP = Enhanced Care and Coordination Provider; ED = emergency department.

\*/\*\*/\*\* = Significantly different from zero based on a *p*-value cutoff of 0.1/0.05/0.01. Dark green shading indicates a statistically significant decrease. Light orange shading indicates a statistically significant increase.

SOURCE: RTI analysis of Medicare claims data (RTI programs MS 10, MS 11, and MS 13).

NOTES: ATOP2 consists of a Clinical + Payment group in Nevada and Payment-Only group in Colorado.

For *utilization*, the relative Initiative effect is the absolute Initiative effect (percentage points) divided by the mean predicted probability of experiencing the event under the scenario that the intervention did not occur. For *expenditures*, the relative Initiative effect is the absolute Initiative effect (dollars) divided by the mean predicted expenditures, under the scenario that the intervention did not occur. All predictions are based on a difference-in-differences regression model with a national comparison group and adjusted for resident-level and facility-level characteristics. *Acute care transitions* include hospitalizations, ED visits, or observation stays.

***Eligible residents in Payment-Only facilities experienced Initiative Year 1 reductions in hospital-related utilization and Medicare expenditures.***

For the eligible residents in Payment-Only facilities, there was a consistent pattern of reductions in hospital-related utilization and expenditures with a meaningful number of statistically significant reductions. For example, there were statistically significant decreases in eligible residents' risk of all-cause and potentially avoidable acute care transitions (including

inpatient admissions, ED visits, and observation stays) by 4.9 percent and 6.7 percent, respectively, and in expenditures for potentially avoidable acute care transitions by 10.0 percent. Reductions were slightly stronger in magnitude in measures for the six qualifying conditions compared to all-cause or potentially avoidable measures, although most of these reductions were not statistically significant.

***As with residents in Clinical + Payment facilities, there were noteworthy differences among ECCPs in the estimated Initiative effects on residents in Payment-Only facilities: residents in four of the six ECCPs showed favorable outcomes and residents in one ECCP showed unfavorable outcomes.***

ATOP2 (Colorado) and RAVEN (Pennsylvania) had a substantial number of statistically significant reductions in utilization and expenditure measures, and AQAF (Alabama) and OPTIMISTIC (Indiana) had a small number of statistically significant reductions. In NY-RAH (New York) there were no statistically significant changes, but there was a general pattern of reductions. In MOQI (Missouri), results were mixed, with a small number of statistically significant increases.

## **ES.5 Discussion**

***Overall, in Initiative Year 1, participating facilities supported the Initiative, implemented it in a timely manner, and billed successfully. Practitioners expressed general support for the Initiative as well but reported substantial barriers to billing.***

Participating facilities implemented the new payment component with challenges that largely resolved over time and with minimal facility attrition. There was a consensus among ECCPs, participating facilities, and practitioners that the choice of six qualifying conditions is appropriate, and most of the clinical definitions are valid. Facilities reported good understanding of the billing requirements; there was substantial interest in benefiting from financial incentives put in place by the Initiative. However, low practitioner billing overall, together with minimal billing for the care conferences, indicated some problem areas. Participants suggested the Initiative could further incentivize activities or relax timeframe requirements to gain a greater degree of engagement.

Competing efforts to reduce avoidable hospitalizations in Initiative and non-Initiative facilities also make it more challenging to detect the Initiative effect. The increasing presence of managed care plans that use similar approaches to reducing avoidable hospitalizations reported by most of the participating facilities also may reduce the number of future residents eligible to participate in the Initiative.

***The Initiative Year 1 evaluation showed that as they transitioned from NFI 1 to NFI 2 with the addition of the payment component, Clinical + Payment facilities were not able to achieve further reductions in utilization or expenditures beyond what they had achieved in NFI 1.<sup>1</sup>***

In NFI 2, Initiative Year 1, there was generally an unfavorable pattern of changes in utilization and expenditure measures in Clinical + Payment facilities, although most changes

---

<sup>1</sup> The Clinical + Payment facilities participating in NFI 2 build on the achievements from NFI 1, which showed marked reductions in utilization and expenditures across the ECCPs during 2014–2016. The important and noteworthy observations from the NFI 1 Clinical-Education-only Model include an estimated 9.5% relative reduction in all-cause hospitalization and a 17.0% relative reduction in potentially avoidable hospitalizations, both statistically significant; there was also an estimated 3.1% relative reduction in total Medicare expenditures, but this was not statistically significant. Because of the differences in resident eligibility criteria and in the comparison groups used in NFI 1 evaluation, these NFI 1 effect estimates cannot be compared directly with any NFI 2 effect estimates based on Initiative Year 1 data presented in this annual report.

were not statistically significant. The most likely explanation is that the Clinical + Payment group had already decreased hospital-related utilization and expenditures during NFI 1. These facilities may be approaching a “floor” and could not achieve further reductions in utilization for their residents. And importantly, our results account for the different baseline trends between the NFI 1 Clinical + Payment group and the nationally derived comparison group. The greater reduction trend in the Clinical + Payment facilities during NFI 1 creates the expectation (built into the analysis) that utilization will continue to be reduced more rapidly compared to the national comparison group. In future reports, we will analyze and present additional years of data to show whether Clinical + Payment facilities are able to further reduce utilization and expenditures in NFI 2, after achieving reduced utilization and expenditures in NFI 1.

***Although the early results for eligible residents in the Payment-Only facilities are promising, they should not be considered conclusive.***

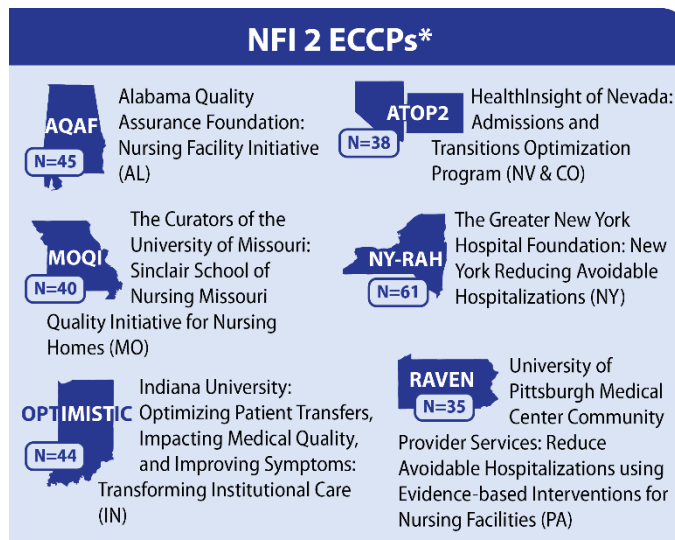
In Payment-Only facilities, the Initiative led to a consistent pattern of reductions overall, including a meaningful number of favorable, statistically significant reductions in utilization and expenditure measures. This is likely driven by a combination of factors. Because the downward trend in utilization and expenditures during the baseline period was not as strong as in the Clinical + Payment group, this made it relatively easier for Payment-Only facilities to make incremental reductions in Initiative Year 1. Also, Payment-Only facilities did not benefit from NFI 1 activities and may have been more engaged and invested in the brand-new effort to reduce avoidable hospitalizations. As a condition of participation, the Payment-Only facilities were expected to implement tools to detect and communicate changes of condition that Clinical + Payment facilities had already implemented during NFI 1. Finally, some ECCP leaders suggested that the Payment-Only facilities, selected based on the higher Nursing Home Compare star ratings, were stronger facilities which perform better in general. Although these early results are promising, they are based on only 1 year of data, and most of the effects are small in magnitude and not statistically significant. Evaluation in subsequent years is necessary to gauge whether these early findings will continue to hold.

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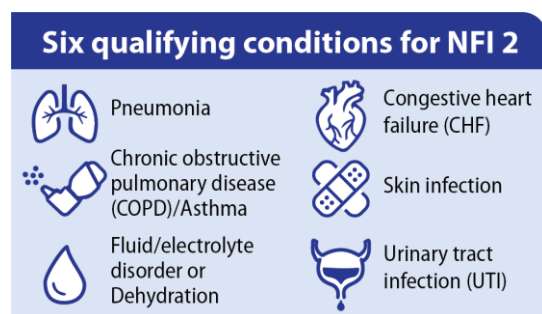
## SECTION 1. OVERVIEW

### 1.1 Introduction

In October 2016, the Centers for Medicare & Medicaid Services (CMS) began implementing the second phase of the Initiative to Reduce Avoidable Hospitalizations among Nursing Facility Residents—herein referred to as NFI 2, or the Initiative. The primary goal of the Initiative is to reduce hospitalization rates among long-stay nursing facility residents. CMS implemented NFI 1 activities from 2012 to 2016, designed to change nursing facility practices by implementing a series of facility-level clinical and educational interventions. These interventions were intended to improve detection, documentation, and communication of changes in residents' conditions; transitions to hospitals; medication review processes; and quality assurance. Seven NFI 1 organizations, called Enhanced Care and Coordination Providers (ECCPs),<sup>2</sup> individually designed and implemented specific state-based models grounded in the overarching clinical and educational intervention components set forth by CMS.



\*N=number of participating nursing facilities at the start of NFI 2



NFI 2 expands upon the NFI 1 interventions with six of the original seven<sup>3</sup> ECCPs, adding a new Initiative-wide payment model and a second cohort of participating nursing facilities. The NFI 2 payment model offers facilities the opportunity to submit claims with Medicare billing codes that provide a financial incentive to nursing facilities and practitioners for providing care to eligible Medicare fee-for-service (FFS) higher-acuity, long-stay

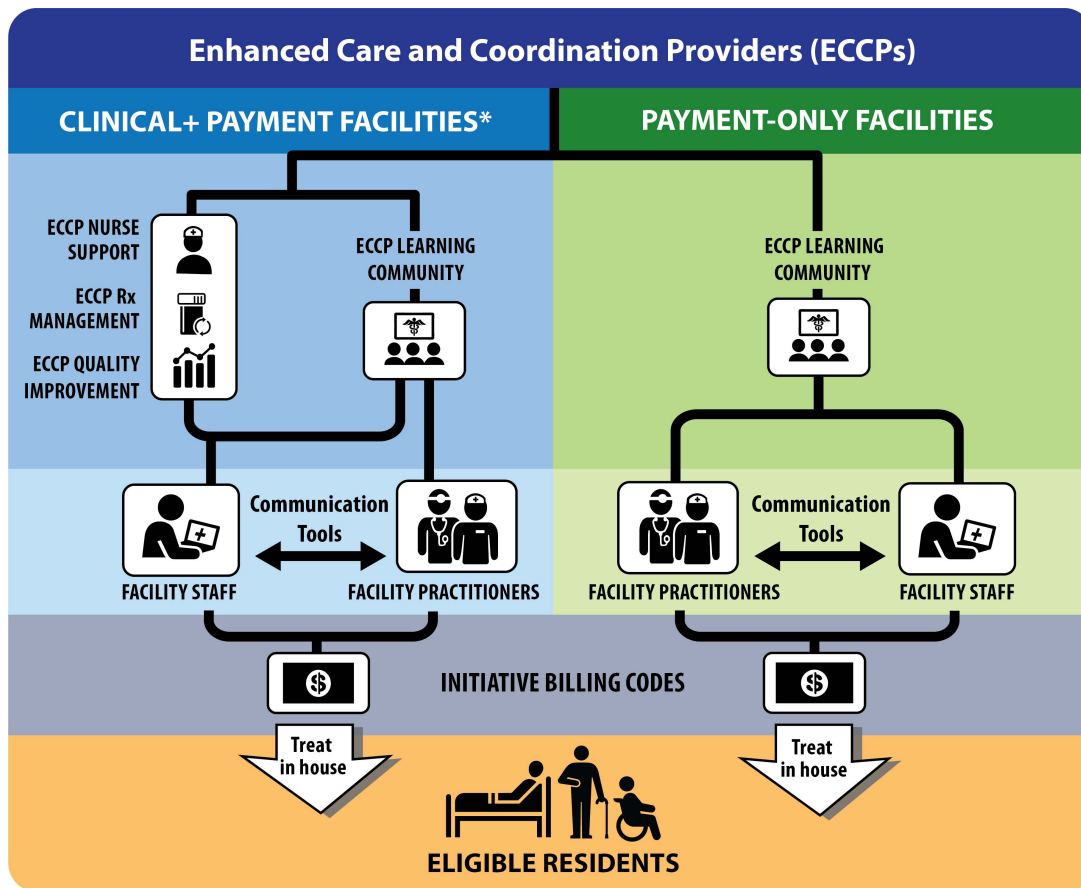
residents in house, rather than transferring these residents to hospitals for treatment. To receive a financial incentive, facility staff and practitioners assess, diagnose, and treat residents who may have one of six qualifying conditions that account for a large proportion of potentially avoidable hospitalizations. Facilities receive extra per-diem payments for a period of in-house treatment

<sup>2</sup> Within the overall parameters set by CMS, the ECCPs have designed their own interventions and worked directly with the participating facilities in their respective states. NFI 1 funded the ECCPs for operations in their partnering nursing facilities but did not provide funding directly to participating facilities.

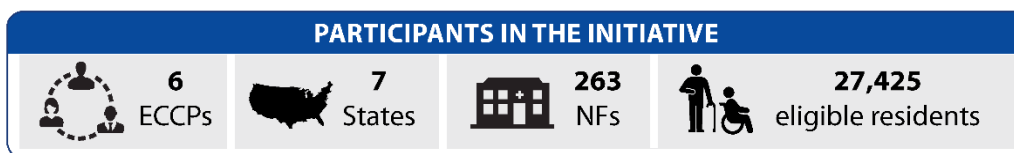
<sup>3</sup> CHI/Alegent Creighton Health in Nebraska participated in NFI 1 but not in NFI 2. Because of the limited number of facilities in Nevada, HealthInsight recruited Payment-Only facilities for NFI 2 from Colorado.

and practitioners receive a hospital-level visit payment when evaluating patients for in-house treatment for the qualifying conditions. See *Figure 1-1* for a conceptual model of NFI 2.

**Figure 1-1**  
**NFI 2 payment model**



\* Clinical + Payment models vary across ECCPs, including variation in the type of support facilities receive from ECCP nurses. Three ECCPs embedded clinical staff in facilities, two ECCPs embedded education staff, and one ECCP rotates clinical staff across multiple facilities.



Participating facilities (*Table 1-1*) that continued from NFI 1, referred to as the *Clinical + Payment* group,<sup>4</sup> are implementing both the clinical and educational interventions from NFI 1, plus the new NFI 2 payment model related to the six qualifying conditions. The cohort of

<sup>4</sup> Clinical + Payment models vary across ECCPs, including variation in the type of support facilities receive from ECCP nurses. Three ECCPs embedded clinical staff in facilities, two ECCPs embedded education staff, and one ECCP rotates clinical staff across multiple facilities.

facilities new to the Initiative in NFI 2, referred to as the *Payment-Only* group, is implementing only the NFI 2 payment model related to the six qualifying conditions.

**Table 1-1**  
**Comparison of participating facilities<sup>5</sup> (as of July 2017)<sup>6</sup>**

Clinical + Payment Group	Payment-Only Group
“Incumbent” nursing facilities from NFI 1 that are adding the NFI 2 payment model	Newly recruited nursing facilities participating in NFI 2 payment model only
Participated in NFI 1	Did not participate in NFI 1
<i>Continuing</i> ECCP clinical and educational NFI 1 interventions	<i>No</i> ECCP clinical or educational NFI 1 interventions
ECCPs provide training to facility staff on the six qualifying conditions, new billing codes, and data collection activities on an ongoing basis	ECCPs support facilities on billing and data collection activities on an as-needed basis

ECCP = Enhanced Care and Coordination Providers; NFI 1 = Nursing Facility Initiative 1; NFI 2 = Nursing Facility Initiative 2.

## 1.2 Overview of Evaluation Methods

CMS contracts with RTI to evaluate the Initiative using both primary and quantitative data analyses. In this report, RTI assesses the effectiveness of the NFI 2 payment model as of Initiative Year 1, FY 2017 (October 1, 2016 through September 30, 2017), addressing the following research questions:

- How was the Initiative implemented, and how do participating ECCP leadership and facility staff perceive Initiative effectiveness?
- What is the Initiative payment incentive effect on Medicare utilization and expenditures, particularly for hospital-related services, for the Clinical + Payment group and the Payment-Only group?
- How does the Initiative effect on Medicare utilization and expenditures vary by ECCP and type of intervention?

### 1.2.1 Primary Data Collection and Analysis

The primary data provide information on Initiative operations and give critical context to the findings from quantitative data analyses. In this report, primary data were collected for Initiative Year 1<sup>7</sup> via the following activities:

<sup>5</sup> At the start of NFI 2 there were 263 participating facilities, 148 Payment-Only and 115 Clinical + Payment. Because of the small amount of facility attrition that is expected with any large demonstration, the total participating facilities included in these analyses for Initiative Year 1 are 148 Payment-Only and 112 Clinical + Payment for the difference-in-differences analyses, and 144 Payment-Only and 109 Clinical + Payment for the site visits and telephone interview data collection. The slight difference between these facility totals is mostly explained by the timing of facility attrition, wherein facilities that dropped after the Initiative began had claims data included in the difference-in-differences analyses, but these facilities would not have been included in primary data collection. In addition, there were a small number of facilities excluded from the difference-in-differences analyses because they focused on specialized population as explained in *Appendix K*.

<sup>6</sup> July 2017 represents the month immediately prior to the first site visit conducted in 2017.

<sup>7</sup> Primary data reported herein were collected between July 1, 2017, and March 1, 2018, though all data collection focused on respondents’ experiences during only Initiative Year 1 (October 1, 2016, through September 30, 2017).

- Site visits to each ECCP headquarters and a selection of participating Clinical + Payment and Payment-Only facilities
- Telephone interviews with participating facilities from both the Clinical + Payment and Payment-Only groups
- Web survey of all participating nursing facility administrators (NFA)
- Web survey of all certified practitioners (physicians, nurse practitioners, and physician assistants)
- Telephone interviews of key stakeholders across ECCP states
- Review of Sharing Collaborative activities

Detailed descriptions of all primary data activities, including methods and findings, can be found in *Appendices A–J*.

### 1.2.2 Quantitative Analyses

In this report, RTI uses a wide range of secondary data sources (see *Section 3*), such as Medicare claims and eligibility files and MDS assessments, to evaluate NFI 2 effects on utilization outcomes and expenditures for eligible long-stay nursing facility residents in Initiative-participating facilities. To determine the Initiative effects, RTI compares residents eligible for the Initiative to a non-Initiative population of nursing facility residents who would meet the Initiative eligibility criteria. RTI uses a difference-in-differences multivariate regression model, with separate analyses by ECCP and by intervention group (i.e., Clinical + Payment or Payment-Only), as well as pooled analyses combining ECCPs for each intervention group. Analyses control for relevant resident-level data (e.g., demographics and health profiles) and facility characteristics. Additional details about the quantitative data analyses can be found in *Section 3* and *Appendices K–Q*.

### 1.3 Report Structure

The remainder of the report is organized as follows. *Section 2* presents findings related to how NFI 2 was implemented and to how the Initiative’s effectiveness was perceived by ECCP leadership and facility staff. We highlight primary data findings through the first Initiative year, as well as FY 2017 billing data for both facilities and practitioners. *Section 3* provides an explanation of the comparison group methodology and statistical modelling approach. *Section 4* highlights quantitative data findings regarding NFI 2 effects on utilization and expenditures. *Section 5* discusses overall findings for Initiative Year 1.



## SECTION 2. IMPLEMENTATION

*Section 2* highlights overarching findings from site visits and surveys and findings specific to facility and practitioner billing under NFI 2. Between July and November 2017, RTI conducted a series of site visits with ECCP leadership and a selection of both Clinical + Payment and Payment-Only partner facilities across each of the six NFI 2 ECCPs. Primary site visit topics included understanding roll-out and implementation of NFI 2, learning more about the six conditions eligible for payment under NFI 2, discussing experiences about submitting NFI 2 claims and receiving payment, and exploring the overall policy landscape and its possible impact on the NFI 2 Initiative. Detailed findings from these site visits can be found in *Appendices B–G*. This section also reflects key findings from the web surveys of participating NFAs and certified practitioners. Please see *Appendix I* for full findings from these two surveys. Facility and practitioner billing data in this section reflect findings from claims submissions during FY 2017. More information about these billing data can be found in *Appendix J*. Findings from these site visits, surveys, and billing data provide context for the quantitative findings (*Section 4*) on changes in hospital-related utilization and expenditures.

### 2.1 Initiative Roll-out and Facility Staff Training



- ECCP support differed between Clinical + Payment and Payment-Only facilities.
- Most Clinical + Payment facilities were connected to the ECCP through ECCP nurses, who delivered NFI 2 education and support.
- In contrast, Payment-Only facilities' nursing staff and practitioners had limited-to-no interaction with the ECCPs.

At the time of RTI's site visits, most facilities had fully implemented NFI 2, including training staff on the six qualifying conditions, assessing and treating NFI 2 residents, and submitting NFI 2 claims. Facility responses to the introduction of NFI 2 were generally favorable, with only **4%** facility attrition in Initiative Year 1. As NFI 2 built upon well-established NFI 1 efforts, ECCPs and participating facilities, particularly Clinical + Payment facilities, seemed to implement the NFI 2 payment component in a shorter span of time compared to implementation of the initial NFI 1 components. Implementation of NFI 2 focused on training existing facility staff to understand the six qualifying conditions and to use the new billing codes, although a few facilities also hired new staff to help implement NFI 2. Of the four visited facilities across ECCPs that had hired new staff, three were Clinical + Payment facilities.

For those Clinical + Payment facilities that did not hire new staff, most leveraged their ECCP nurses to introduce or reinforce the new payment component to facility staff. ECCP nurses in many of these facilities delivered in-person training to facility staff on the six qualifying conditions, NFI 2 documentation, and claims submission. Because the Payment-Only facilities did not have the support of an ECCP nurse, ECCPs introduced Payment-Only facilities to the Initiative through written materials, ECCP leadership site visits, or corporate trainings. Often, ECCP leadership used a train-the-trainer approach, training facility or corporate leadership staff (i.e., NFA, director of nursing [DON], and billing staff) and then asking these

members of leadership to train their own facility staff and practitioners. Some ECCP leaders who were interviewed said they believed that CMS required them to take this “hands off” approach with Payment-Only facilities. Once CMS clarified that ECCPs could be more involved in assuring effective payment reform intervention at those facilities, multiple ECCPs increased their support for Payment-Only facilities by providing more frequent training or, in at least two cases, hiring new administrative staff whose sole purpose was to support Payment-Only facility leadership with Initiative implementation.

Through Initiative Year 1, ECCPs have been providing ongoing support to both Clinical + Payment and Payment-Only facilities through Learning Community activities; however, attendance at the Learning Community conference calls or in-person meetings was variable across all ECCPs. Those facility interviewees who had attended meetings found the content to be helpful and applicable to their facility needs. Many interviewees reported that sharing best practices across facilities was the most useful component of these meetings.

## 2.2 Six Qualifying Conditions and Accompanying Documentation



- Facility interviewees reported that although the six qualifying conditions were appropriate, the clinical criteria for some conditions, such as pneumonia and UTI, were too severe.
- Facility leadership stated that having effective processes for documentation and communication of changes in condition was integral to Initiative success. Most facilities used Interventions to Reduce Acute Care Transfers (INTERACT) tools for documentation.

Most facility interviewees agreed with the choice of conditions included in NFI 2 and with the NFI 2 clinical criteria definitions of those conditions. Although most facility staff interviewees noted that the six qualifying conditions included in NFI 2 were the most common conditions among their resident populations, multiple facility interviewees across at least two ECCPs suggested that if staff waited until a resident reached the acuity level dictated in the NFI 2 clinical criteria, the resident would be too sick to treat in house and would have to be sent to the hospital.

Some facility interviewees saw benefit in adapting the existing list to include additional conditions, such as diabetes and falls. Most ECCPs reported that the dehydration claims code was submitted rarely, in part because a dehydration diagnosis is considered a sentinel (adverse) event, and, historically, state surveyors review any resident known to have a dehydration diagnosis. Facilities have been very reluctant to use a diagnosis code that might attract the attention of state surveyors.

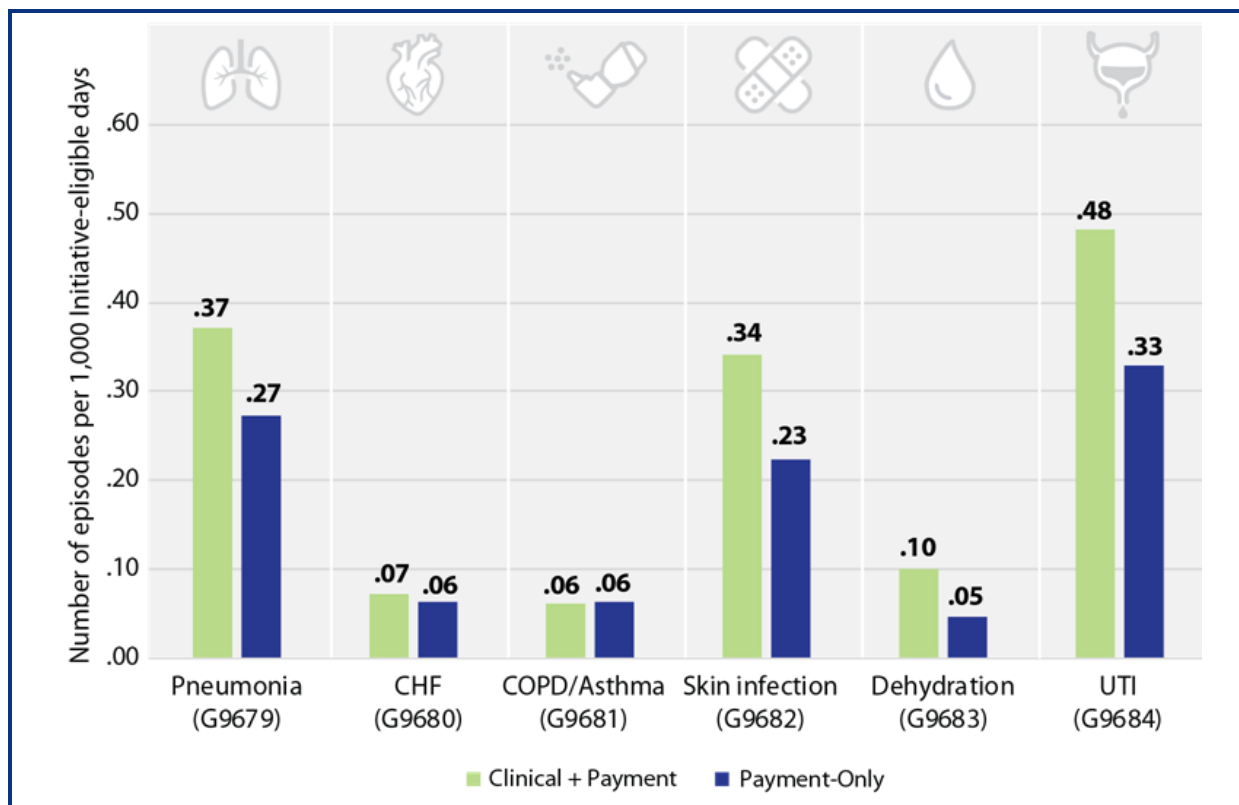
**96.2%**

**of surveyed practitioners strongly agreed or agreed that the clinical criteria are appropriate.**

According to claims data for the six qualifying conditions, treatment for UTI was billed most often by participating facilities, followed by treatment for pneumonia and skin infection. In

comparison, treatments for CHF, COPD/Asthma, and dehydration were billed much less frequently (*Figure 2-1*).

**Figure 2-1**  
**On-site acute treatment, by condition, all ECCCPs/states combined**



CHF = congestive heart failure; COPD/Asthma = chronic obstructive pulmonary disease/asthma; UTI = urinary tract infection.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 08). For more information see *Tables J-2* and *J-3* in *Appendix J*.

NOTE: Each individual resident contributes their count of events to the aggregated numerator and their count of Initiative-eligible days to the aggregated denominator.

A majority (**85.8%**) of surveyed NFAs across facility types (Clinical + Payment and Payment-Only) shared that their facilities had added documentation aids (e.g., INTERACT tools) to facilitate Initiative implementation. Some facility interviewees reported that this added documentation was burdensome for staff.

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*“[The Initiative] creates a lot of paperwork. INTERACT is, in theory, wonderful. But you have to do all of the paperwork on top of orders, nurses’ notes—all the things you already have to do.” – Interviewed DON, AQAF*

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## 2.3 Staff Participation and Buy-in



- Staff in Clinical + Payment facilities relied heavily on ECCP nurses to complete Initiative activities, including determining resident eligibility, certifying changes in condition for facility billing, providing clinical care, and completing or auditing NFI 2 documentation for the six qualifying conditions.
- In the absence of ECCP nurses, facility leadership assumed the responsibility for documentation of the six qualifying conditions; therefore, facility leadership and nursing staff turnover remained key barriers to Initiative implementation and success.
- Consistent practitioner presence in facilities was reported to be important to Initiative implementation and billing.

### 2.3.1 ECCP Nurses

In most Clinical + Payment facilities, regardless of whether their ECCP model is education-only or hands-on clinical care, the ECCP nurses serve a vital role in identifying and documenting changes in condition in Clinical + Payment facilities. In Clinical + Payment facilities with hands-on clinical care models, **75.0%** of surveyed NFAs reported that the ECCP nurse often or always confirmed a qualifying diagnosis for a resident's change in condition.

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*"I think [NFI 2] study is going to show that the [ECCP nurse] is most important. ...That's going to be the difference between successful and not successful programs. If we didn't have [ECCP nurse] for the last 5 years, [the Initiative] wouldn't have been easily bought into...Buildings without [ECCP nurse] are going to have to get a book, teach themselves, attend quarterly meetings, and hope DON/Administrator buy into it." – Interviewed DON, OPTIMISTIC*

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### 2.3.2 Facility Staff

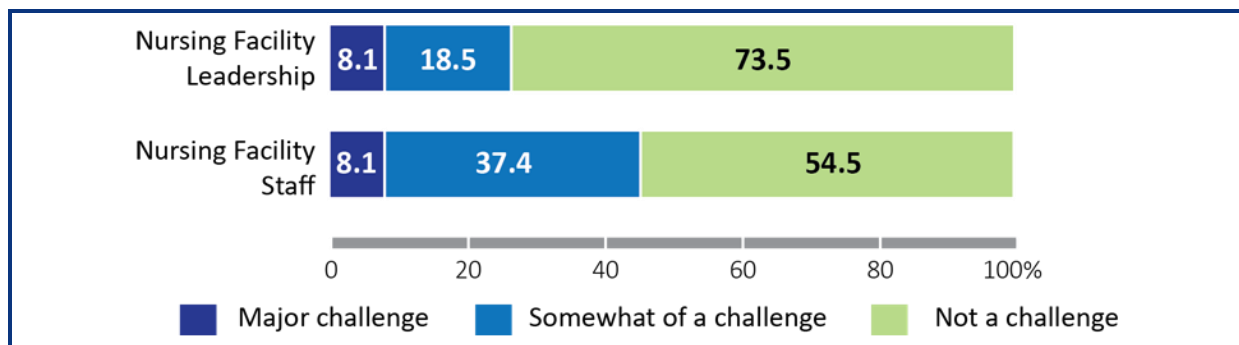
Overall facility staff buy-in varied across facilities. A few of the facility leaders who we interviewed reported that the Initiative's focus on the six qualifying conditions had sharpened staff members' clinical care skills and improved facility-wide documentation practices. However, many other facility interviewees across ECCPs reported that NFI 2 had not changed how they provide care; rather, **81.5%** of surveyed NFAs stated that the Initiative offers a financial incentive for completing care processes that were already part of existing facility routines.

In Payment-Only facilities and Clinical + Payment facilities with limited ECCP nurse involvement, staff buy-in to the Initiative hinged on the presence of an informal Initiative champion. Many facilities found it difficult to find such a champion because all existing staff had facility responsibilities outside the Initiative. Facility interviewees across ECCPs and facility types said that without an Initiative champion, facility staff were less engaged with the Initiative. About one-third of surveyed NFAs (**34.6%**) reported that lack of nursing facility staff buy-in

was a major challenge or somewhat of a challenge to the Initiative. In cases where facility staff had limited Initiative buy-in, the role of champion often fell to facility leadership, with the DON or NFA accepting responsibility for ensuring that changes in condition were identified and documented correctly, contacting practitioners to confirm diagnoses, and completing documentation required for NFI 2 billing.

Across all ECCPs, interviewees reported that turnover of facility leadership and nursing staff also was a pervasive problem, affecting all aspects of Initiative implementation. Interviewees from facilities with high turnover reported difficulties with sustaining Initiative tool use, training staff on the six qualifying conditions, and reinforcing overall nursing skills, all of which were said to have an adverse effect on staff buy-in to the Initiative. Surveyed NFAs also indicated that turnover of nursing staff was a challenge to the Initiative; however, turnover at the leadership level was not reported to be as much of a challenge in survey responses as it was in interviews, which engage a broader range of respondents (*Figure 2-2*).

**Figure 2-2**  
**How much of a challenge is staff turnover to the Initiative?**



SOURCE: RTI analysis of Nursing Facility Administrator Survey (RTI program JW04).

### 2.3.3 Practitioners

Across ECCPs, interviewees shared that initial NFI 2 practitioner recruitment and training on the six qualifying conditions and Initiative billing codes was left to facilities. ECCP staff had limited-to-no interaction with practitioners. Most ECCPs provided minimal initial training to practitioners and provided written materials to facilities to distribute to their practitioners. Accordingly, surveyed practitioners reported concerns about the adequacy of training, with **14.4%** saying the training was insufficient and **22.5%** reporting that they received no training related to confirming a diagnosis for one of the six qualifying Initiative conditions.

For facilities with frequent on-site practitioner presence, interviewees indicated that the process of engaging practitioners was generally smooth. In contrast, interviewees from facilities with inconsistent practitioner presence or a large number of participating practitioners, each with small resident rosters, noted the challenge of trying to engage practitioners. Practitioner buy-in was reported as a challenge to Initiative success for **44.1%** of the surveyed NFAs.

Given that interviewees noted the importance of frequent on-site presence of practitioners, interviewers explored whether the Initiative had any effect on practice patterns. In

some of the facilities we visited, staff reported that practitioners were coming to the facility more often as a result of the Initiative. However, other facilities saw no effect of the Initiative on practitioner presence, adding that the financial incentives were insufficient to motivate a change in practitioner practice patterns.

Notably, even in facilities with lower practitioner presence, facility interviewees felt that the Initiative resulted in increased communication between nursing facility staff and practitioners. Likewise, facility interviewees with more engaged practitioners cited the Initiative as a catalyst for improving facility and practitioner relationships.

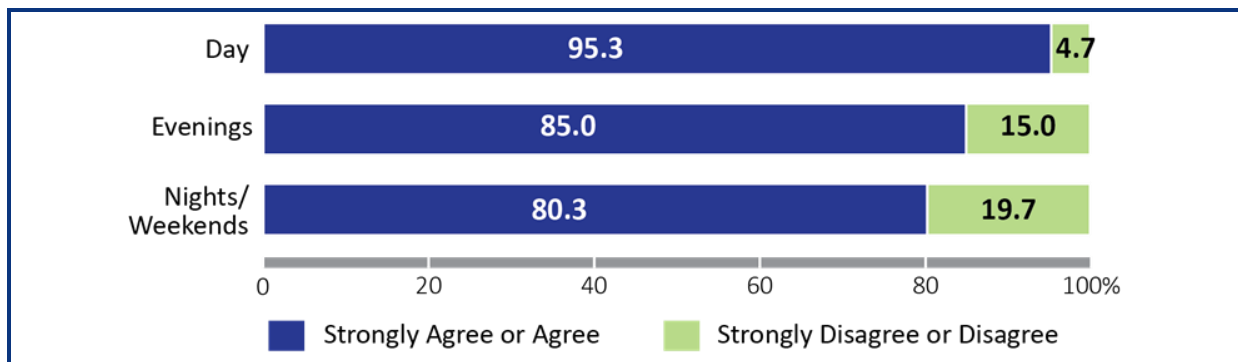
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***“I appreciate the inter-professional collaboration [Initiative] forces the facility to do. I’d like to see that more.” – Interviewed Practitioner, RAVEN***

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Facility and practitioner interviewees described the benefits of improved communication and relationships. One such benefit was increased confidence in the capabilities of facility staff to treat residents, with **92.3%** of surveyed practitioners agreeing or strongly agreeing that facility clinical staff were able to communicate key information that practitioners needed to make important clinical decisions. However, practitioners’ confidence in the skills of facility staff varied by work shift, as indicated in *Figure 2-3*.

**Figure 2-3**  
**Practitioner confidence in nursing facility staff’s ability to assess and treat residents on-site for the six qualifying conditions during different shifts**



SOURCE: RTI analysis of Practitioner Survey (RTI program JW04).

## 2.4 Facility and Practitioner NFI 2 Billing



- Most facilities were able to bill successfully under the Initiative; however, facility resident mix and corporate billing structure had substantial effects on a facility's ability to bill for the six qualifying conditions.
- Facilities expressed concern that claims submissions may decrease over time because staff may become more efficient in catching and treating conditions before they reach the acuity level required for claims submission.

### 2.4.1 Facility Billing

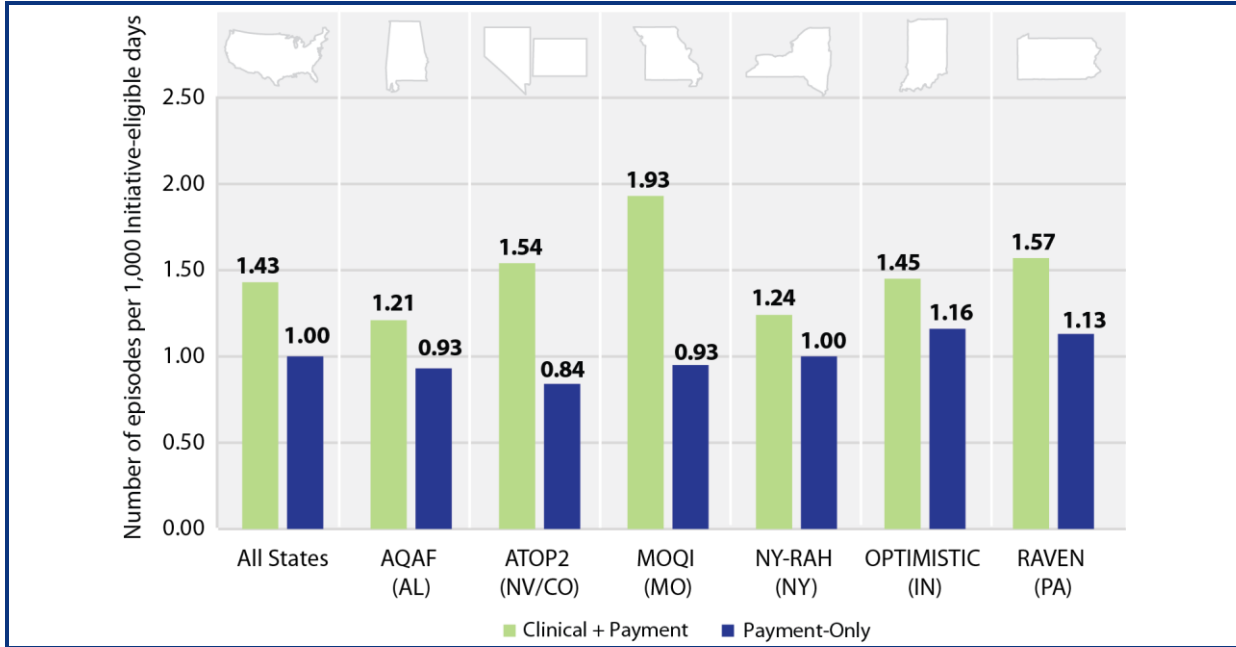
Most surveyed NFAs (**88.8%**) reported that their facilities had billed at least once for a qualifying resident change in condition. According to claims data analysis, there is a consistently higher rate of billing for acute treatment of any of the six qualifying conditions in Clinical + Payment facilities compared to Payment-Only facilities (*Figure 2-4*). The Clinical + Payment facilities in Missouri billed most frequently; Clinical + Payment facilities in New York and Alabama, the two states that relied on an education-only model in NFI 1, had the lowest billing frequency. Taken together, these points may indicate that facilities with the ECCP clinical interventions have more willingness or capacity to provide acute care in the nursing facility compared to facilities without the ECCP clinical interventions.

Interviews also indicated that facilities with larger populations of long-stay residents, as well as facilities with higher-acuity residents (e.g., ventilator or tracheostomy) may have more opportunities to assess the six qualifying conditions and bill under NFI 2, compared to facilities with more stable long-term care residents or with fewer eligible residents. A limited number of eligible residents was a challenge to the Initiative for **22.7%** of the surveyed NFAs.

Among those facilities that were billing, more than half of the surveyed administrators (**57.3%**) said they sometimes, often, or always missed a billing opportunity for the six qualifying conditions. The most commonly cited reasons for missing billing opportunities are: (1) documentation of the change in condition was incomplete (**71.1%**), and (2) practitioner did not confirm the diagnosis in the required time window (**70.1%**).

Billing frequency also varied somewhat by facility ownership type. Most corporate-owned nursing facilities submitted documentation to a corporate billing office, which in turn, submitted the claims to Medicare. Nearly half of surveyed NFAs (**48.4%**) reported that their facility's corporate office submitted Initiative claims on the facility's behalf. Because of this multistep process, leadership and staff in several corporate-owned facilities were generally unaware of (1) whether their claims were being submitted successfully, and (2) if or when payments had been received. Some corporate offices reportedly placed claims reimbursements into a general fund, such that individual facilities did not receive the money directly: **37.6%** of surveyed NFAs reported that their affiliated corporate offices receive payment from Medicare for their facility's use of Initiative billing codes (*Figure 2-5*). Of these facilities, **18.3%** shared that their corporate office does not transfer any of this reimbursement back to the participating facility.

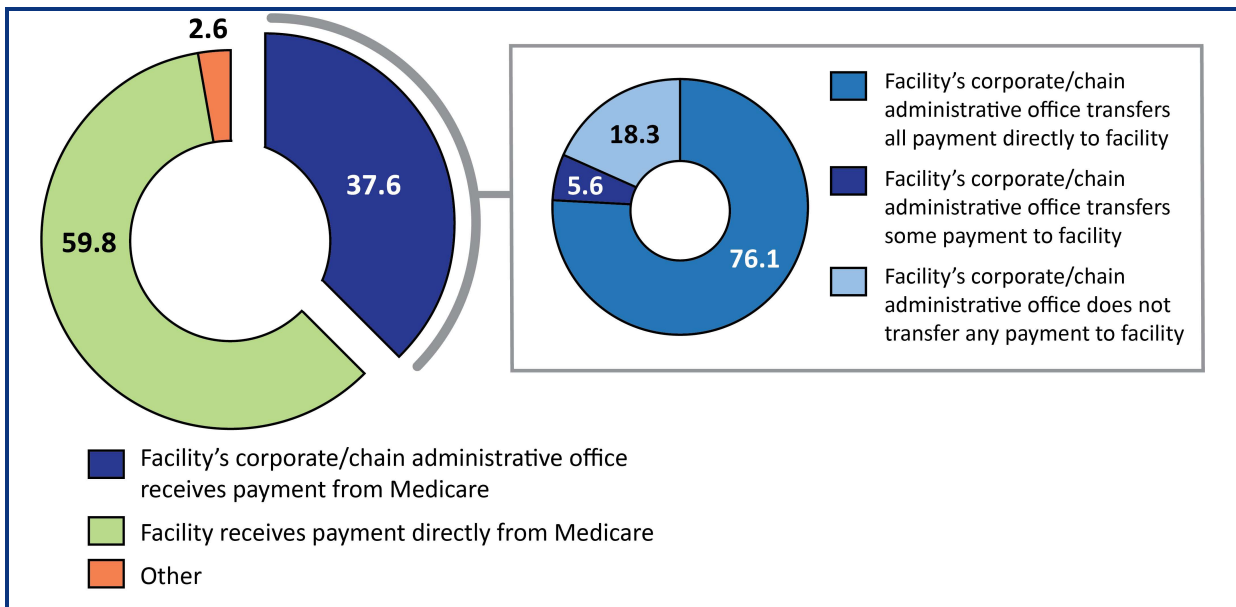
**Figure 2-4**  
**On-site acute treatment for any of the six qualifying conditions**



NOTE: Each individual resident contributes their count of events to the aggregated numerator and their count of Initiative-eligible days to the aggregated denominator.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 08). For more information see *Tables J-2* and *J-3* in *Appendix J*.

**Figure 2-5**  
**How do facilities receive payments for using Initiative billing codes?**



SOURCE: RTI analysis of Nursing Facility Administrator Survey (RTI program JW04).



In the short-term, facility leaders are thinking of ways to use the reimbursement funds. Of those facilities that had both billed and received reimbursement funds, many had yet to spend those funds. When asked what the single most important purchase their facility had made or planned to make, surveyed NFAs reported that they used or planned to use reimbursement funds on items such as:

- Electric beds
- Lifts
- Building renovations
- Bladder scanners
- Daily operations
- Recruitment and retention of staff, including salary raises
- Improvement of facility profitability
- Telemedicine
- Vital sign machines
- Staff training

Thinking long term about claims submissions, some facility staff worried about sustainability of facility billing. A few facility interviewees expressed concern that, as facility staff become more efficient in catching and treating changes in condition faster, health concerns would be addressed before reaching the acuity required for claims submission. Without submitting a reasonable volume of claims and receiving resultant reimbursements, some interviewees worried the Initiative would yield minimal benefit to facilities over time, thus producing a disincentive to continue participating.

#### 2.4.2 Practitioner Billing

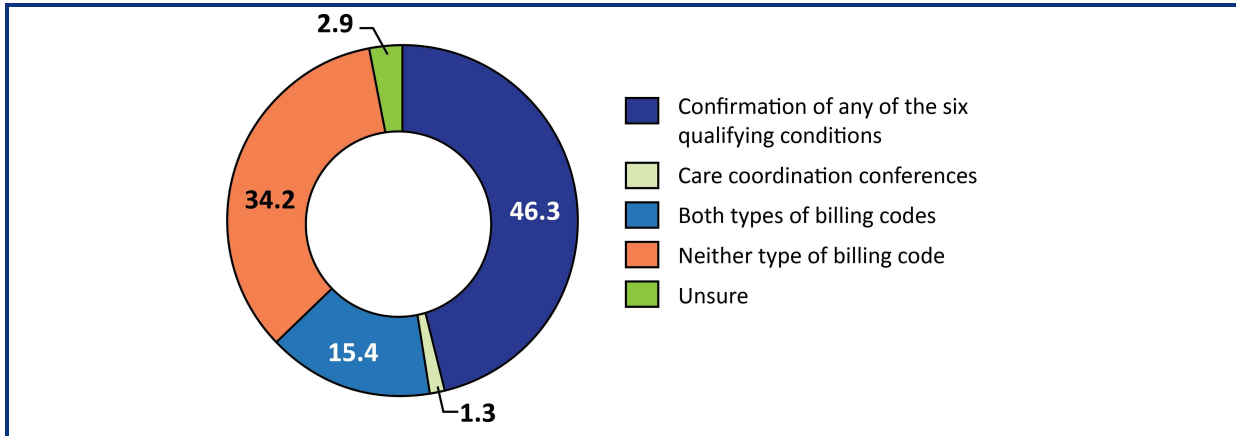


- Practitioner billing was driven by a combination of two factors: amount of time a practitioner spent in the facility and practitioner's employment status.
- The most frequently reported challenges to billing include limited availability for certifying and documenting resident changes in condition, stringent requirements for certifying changes in condition, and insufficiency of payment.

Practitioners could bill for NFI 2 when called to certify one of the six qualifying conditions, regardless of whether the diagnosis was actually found to be one of the conditions. Payment for the NFI 2 billing code was equivalent to that for a hospital visit, higher than for a nursing facility visit.

Approximately two-thirds of practitioner survey respondents (**63.0%**) said they had used an Initiative billing code at least once (**Figure 2-6**), with Payment-Only practitioners being slightly more likely to bill than practitioners in Clinical + Payment facilities. The ECCP staff cannot bill for services, as independent practitioners are able to do under NFI 2. As mentioned, the care coordination codes were billed much less frequently than the six qualifying conditions across all ECCPs and facility types.

**Figure 2-6**  
**Billing codes used by practitioners**

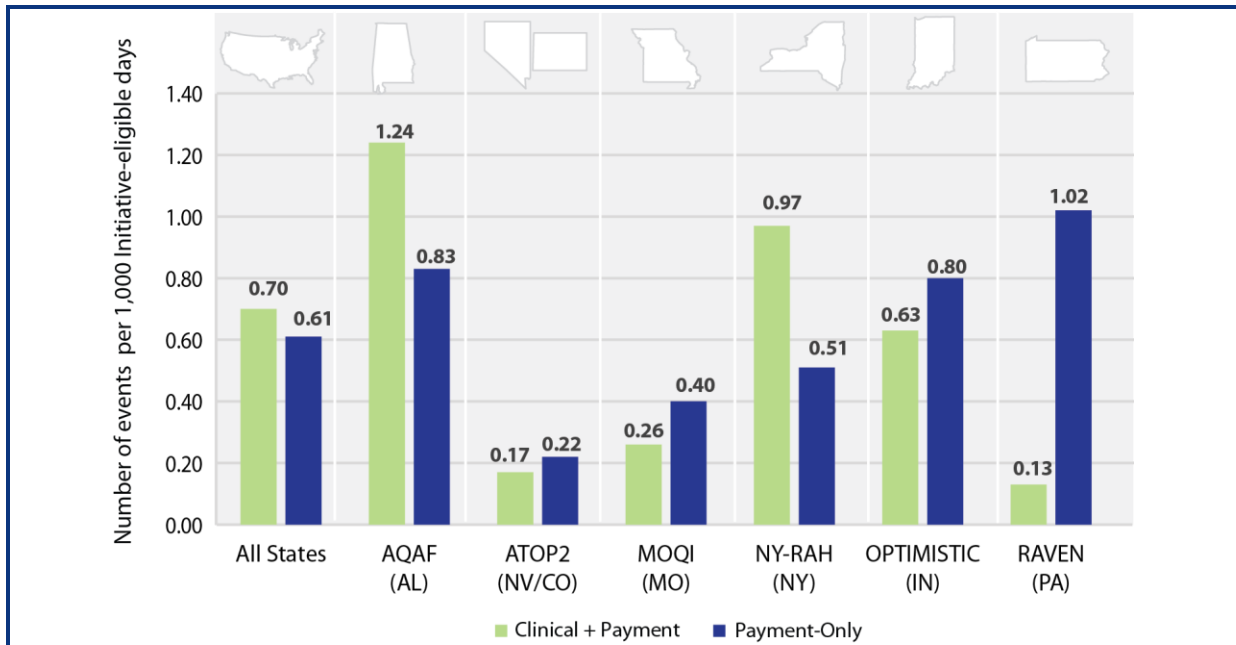


NOTE: To confirm any of the six qualifying conditions, practitioners must use Initiative billing code G9685. To bill for care coordination conferences, practitioners must use Initiative billing code G9686.

SOURCE: RTI analysis of Practitioner Survey (RTI program JW04).

According to claims data, with all states aggregated, practitioner billing frequency for treating the six qualifying conditions was similar at Clinical + Payment and Payment-Only facilities. However, in some states, there were important differences between Clinical + Payment facilities and Payment-Only facilities (*Figure 2-7*).

**Figure 2-7**  
**Use of practitioner billing codes for any of the six qualifying conditions**



NOTE: Each individual resident contributes their count of events to the aggregated numerator and their count of Initiative-eligible days to the aggregated denominator.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 08). For more information see *Table J-4* in *Appendix J*.

In Alabama and New York, the two states with ECCPs that relied on an education-only model in NFI 1, practitioner billing was much higher in their Clinical + Payment facilities. This finding may make sense in the context of the education-only models, which include ECCP nurses who deliver training and support to facility staff without providing hands-on, direct care to residents. For NFI 2, these ECCP nurses can neither certify residents having one of the six qualifying conditions, nor bill for a practitioner visit, thus leaving all practitioner billing opportunities open to non-ECCP practitioners.

In contrast, practitioner billing in Pennsylvania was extremely low in Clinical + Payment facilities and relatively high in Payment-Only facilities. Given that RAVEN nurses certified diagnoses for billing in Clinical + Payment facilities, it is not surprising that non-ECCP practitioners were not billing at a high level compared to Payment-Only facilities that did not have RAVEN nurses.

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***“From my perspective, the RAVEN program is self-sustaining and functions on its own; the nurses know who to call.” — Interviewed Practitioner, RAVEN***

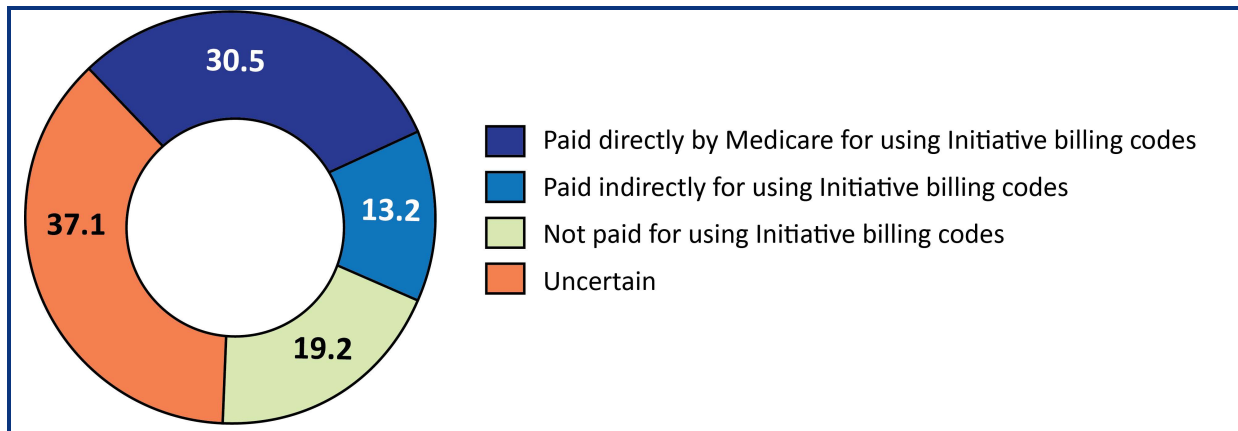
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Like Pennsylvania, practitioners in Indiana Payment-Only facilities were billing at a higher rate than in Clinical + Payment facilities, although the difference in billing rate in Indiana was much smaller than in Pennsylvania. The higher rate of practitioner billing in Indiana Clinical + Payment facilities may be related to the OPTIMISTIC leadership’s directive that their ECCP nurses not be accountable for certifying the six qualifying conditions for facility billing. OPTIMISTIC leadership encouraged ECCP nurses to support facility staff in contacting practitioners to certify the six qualifying conditions.

Practitioner billing was low in Missouri and Nevada/Colorado for both Clinical + Payment and Payment-Only facilities. Infrequent practitioner billing in Clinical + Payment facilities in these states may be attributable to ECCP nurse involvement, as described for Pennsylvania and Indiana. For Payment-Only facilities in these two ECCPs, the low rate of practitioner billing may be associated with geography. Some rural practitioners struggle to reach the facility to certify conditions within the Initiative-required time window, particularly if they reside far from the facility or serve several rural facilities across a large geographic area.

Across multiple ECCPs, interviewees reported that practitioners who received claims reimbursement directly or as part of a small practice were more likely to bill for the Initiative. In contrast, the additional payment from the billing codes was not an incentive for those practitioners who were part of a group practice where reimbursement went to the group and not to the individual practitioner. Similarly, practitioners that are salaried by nursing facilities reported not having an incentive to bill for NFI 2 activities. Of those surveyed practitioners who were billing for Initiative activities, **30.5%** were paid directly by Medicare, **37.1%** were uncertain if they received payments, and **19.2%** did not receive payments (mostly because of their salaried status) (*Figure 2-8*). Of the **13.2%** of surveyed practitioners receiving indirect reimbursements for Initiative claims through bonuses or other incentive structures, **70.0%** received some form of indirect payment because their incentives are tied to billing volume (e.g., practitioner’s total number of claims submitted increased because of the Initiative, and therefore, the practitioner received a larger bonus from his/her practice).

**Figure 2-8  
Practitioner reimbursement for Initiative claims**



SOURCE: RTI analysis of Practitioner Survey (RTI program JW04).

In addition to geography and compensation structure, other factors affected billing. In some ECCPs, practitioners treated only a small number of residents, resulting in lower engagement with and awareness of the Initiative. For practitioners, smaller resident rosters typically mean less frequent visits and less overall time spent in facilities. Moreover, practitioners who see less than seven residents in a given facility cannot submit claims for NFI 2, further reducing the opportunity to bill for facilities where multiple practitioners each treat only a small number of residents.

Yet even with larger resident rosters, practitioners reported time as their biggest barrier to submitting claims. Practitioners did not have enough time to (1) certify the condition within the 48-hour time window, and (2) complete all accompanying documentation. Confirming the diagnosis within the required time window was a challenge for **52.4%** of surveyed practitioners. Completing the amount of clinical documentation required was a challenge for **51.5%** of practitioners.

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***“It is unreasonable to have to complete an entire History & Physical... in order to be able to bill for the G9685. This is especially true as these are [long-term care patients] that I have been seeing in some cases, for years... If a simple acute visit note was acceptable, I would be inclined to use the G9685 code—but the amount of time it takes to collect all the information required...makes it not worthwhile—I can see three [patients] in the time it takes me to fill out the G9685 form for one patient.” – Surveyed Practitioner, OPTIMISTIC***

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Also related to the time practitioners required to submit reimbursement claims, only a few practitioners across all ECCPs had used the care coordination billing code. Interviewed practitioners reported that the financial incentive was not high enough for them to put in the amount of time and effort to participate in care coordination conferences and bill for their participation. Among surveyed practitioners, **41.3%** reported that the insufficient payment received for the care coordination billing code was a barrier to its use. Beyond the incentive, all

interviewed practitioners shared that the 25-minute requirement for care coordination was unrealistic given their schedules. Fulfilling the requirements of the care coordination conferences was a challenge for **58.2%** of surveyed practitioners. Therefore, many practitioners reported using other, non-NFI 2 Medicare billing codes for advance care planning and care coordination that have fewer requirements.

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*“[It is] difficult to complete mandatory care conferences and expend 25 minutes of time involving...staff. Many of these long-term care residents have clearly defined goals of care, POLST, and families did not see the need to rehash what we had previously decided about care for 25 minutes.” – Surveyed Practitioner, RAVEN*

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In addition to practitioner billing challenges related to geography, payment structure, resident census, and timing, one unexpected finding was concern about outside interference, such as a potential CMS audit or medical/legal worries. During on-site interviews, several practitioners reported hesitancy to bill because of a fear of CMS audit or recoupment. Similarly, medical or legal concerns about treating residents on site were a major challenge to the Initiative for **8.0%** of surveyed practitioners and somewhat of a challenge for **21.4%** of practitioners. Yet, despite these concerns, most surveyed practitioners were supportive of the overall goals of the Initiative and were willing to support their facilities with billing: **62.3%** of surveyed practitioners reported that it was extremely important to them that residents be treated on site in the nursing facility whenever possible, and **47.9%** reported confirming a diagnosis for facility billing without submitting the corresponding practitioner billing code for themselves.

## 2.5 Relevant State Policy Landscape



- Facilities reported implementing several other programs and policies that aim to reduce hospitalizations.
- Managed care is growing in presence across several ECCP states with the potential to diminish the number of residents eligible for the Initiative.

Both ECCP leadership and individual facilities reported the presence of several other programs and policies in place that aim to reduce hospitalizations, including corporate-run or state programs. Of the surveyed NFAs, **82.0%** reported that their facility already had other programs or policies in place to reduce avoidable hospitalizations. Often these programs had similar goals to NFI 2, which caused some confusion in facilities regarding components of NFI 2 versus similar efforts required for these other programs.

Some of these programs were instituted by local hospitals, since most facilities across ECCPs reported that hospitals have become more focused on reducing readmissions to avoid the associated financial penalties. Although these hospital efforts focused largely on the short-stay population, ECCPs reported that some local hospitals are aware of partner nursing facilities' involvement in NFI 2 and are supportive of Initiative goals. Some facilities from multiple ECCPs used NFI 2 as a way to market themselves to local hospitals and build relationships.

When examining state-level policies or programs that affect the Initiative, key stakeholders identified three barriers to reducing hospitalization rates in nursing facilities:

- Low Medicaid reimbursement rates
- Limited availability of good staff at all levels in nursing facilities
- Limited practitioner knowledge of nursing facility capabilities

Stakeholders also shared that various coalitions, which included hospitals, nursing facilities, other providers, and community organizations, had been formed in their states or regions that aimed to improve care coordination and transitions and sometimes reducing rehospitalizations. Please see *Appendix H* for more findings from the key stakeholder interviews.

Beyond competing policies and programs, managed care is growing in presence across several ECCP states, with the potential to have major implications for participating facilities. Because managed care residents are not eligible to participate in this Initiative, some facilities among a few ECCPs voiced concern about losing Initiative residents to managed care programs, thus reducing the overall NFI 2 population and resultant potential for facilities to submit Initiative claims. It appears that in some facilities, managed care plans market aggressively to residents with support from facility and corporate staff.

These plans are appealing to facilities since the facilities may receive added support from a managed care advanced practice registered nurse (APRN) and may benefit financially. Interviewees in two ECCPs hypothesized that managed care would take over the Initiative-eligible population in the next 2 to 3 years, effectively eliminating the Initiative in those ECCP states.

**73.9%**

of surveyed NFAs agreed that **Initiative enrollment could decline in the coming months due to increasing resident enrollment in managed care**

## 2.6 Sharing Collaborative



All ECCPs reported moderate involvement in Sharing Collaborative activities. ECCP interviewees felt that the Sharing Collaborative activities were most helpful during Initiative implementation but became less helpful over time.

CMS and its implementation contractors have hosted consistent ECCP Sharing Collaborative meetings since the start of NFI 2 in 2016. These meetings are divided into two main workgroups and one ad-hoc meeting: the Data and Reporting Workgroup, the Learning Workgroup, and Learning Collaboratives. *Table 2-1* presents a summary of each type of

meeting. The operations support contractor, SSS-T,<sup>8</sup> and CMS provide an agenda, facilitate discussion, and provide reminders for upcoming milestones for each meeting.

**Table 2-1  
Summary of Sharing Collaborative meetings**

Meeting Information	Data and Reporting Workgroup	Learning Workgroup	Learning Collaborative
Frequency of meeting	Twice a month during Initiative roll-out, once a month thereafter	Twice a month during Initiative roll-out, once a month thereafter	Ad-hoc <sup>2</sup>
Number of meetings <sup>1</sup>	16	16	2
Attendees	ECCP data collection staff, SSS-T, CMS, RTI	ECCP staff, SSS-T, CMS, RTI	ECCP staff and invited guests (practitioners, facility staff), SSS-T, CMS, RTI
Purpose of meeting	Discuss data reporting requirements; answer ECCP data collection questions	Share challenges, best practices, and lessons learned	Share of information not covered in two regular workgroups
Examples of topics discussed	Share data reporting quality issues or concerns Share strategies for effective data collection	Share level of facility engagement and differences between Clinical + Payment and Payment-Only facilities Share lessons learned during the SSS-T site visits	Share learning community activities Share practitioner documentation

<sup>1</sup> Through February 2018.

<sup>2</sup> On an as-needed basis, CMS determines that a Learning Collaborative should take place outside of the regular Workgroups. These ad-hoc meetings seem most likely to occur when CMS perceived that it would be helpful to discuss or explain a specific topic with a wider audience than just the ECCP leadership. In January of 2018, for example, CMS held a meeting focused on practitioner documentation and engagement that was open to nursing facility staff and practitioners as well as the ECCPs.

## 2.7 Perceptions of Initiative Effectiveness



There were inconsistent reports regarding the perceived effectiveness of the Initiative on reducing avoidable hospitalizations among long-stay residents.

Among surveyed NFAs there was great optimism about the effect of NFI 2 on reducing avoidable hospitalizations: **92.9%** of surveyed NFAs strongly agreed or agreed that the Initiative had reduced the number of potentially avoidable hospitalizations among eligible long-stay residents (**45.0%** strongly agreed and **47.9%** agreed). Most surveyed practitioners (**86.3%**) also believed the Initiative had reduced the number of potentially avoidable hospitalizations (**31.6%**

<sup>8</sup> Social & Scientific Systems, Inc. and Telligen (SSS-T) are the operations support contractor team for NFI 2.

strongly agreed and **54.7%** agreed). For both surveyed NFAs and practitioners, the findings were similar across Clinical + Payment and Payment-Only facilities.

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*“The nurse on site helps make sure things run smoothly, identify problems early on and helps us keep the patient in the facility rather than sending to the hospital. When I do send patients to the hospital, I feel that it is usually justified more so than how I felt a few years ago.” – Surveyed Practitioner, OPTIMISTIC*

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Although **surveyed** NFAs and practitioners agreed that the Initiative was effective in reducing hospitalizations, when **interviewed in person or by phone**, facility leaders and staff, including NFAs and practitioners, were less confident in the Initiative’s success. Only a slight majority of facility interviewees believed the Initiative was effective in reducing hospitalization rates—a very different finding from the overwhelmingly supportive survey results. There was also a marked difference between Clinical + Payment and Payment-Only facilities, where interviewed Clinical + Payment facility staff were generally more optimistic about the Initiative’s effectiveness compared to their Payment-Only counterparts. This difference between Clinical + Payment and Payment-Only facilities could be related to the Clinical + Payment facility staff’s reliance on the ECCP nurse and familiarity with the Initiative carrying over from NFI 1. Most Clinical + Payment facilities attributed the success of the Initiative to their existing ECCP nurses, not the increased reimbursements of NFI 2.

The discrepancy between survey findings and interview findings also may relate to the level of nuance facility staff are able to convey through interviews. Especially since this was the Initiative’s first year, many interviewed facility staff said that they believe this new payment model had the potential to reduce hospitalization rates, but they had not seen a noticeable decrease yet. Future interviews and surveys will help illuminate these findings in upcoming Initiative years.



### SECTION 3. QUANTITATIVE METHODS

*Section 3* describes RTI’s NFI 2 evaluation methodology, developed with approval by CMS, which is intended to facilitate understanding the analysis results reported in *Section 4*. This evaluation methodology also helps describe the reasons for some of our methodological decisions, informed by findings shown in *Section 2*. As part of this overview, we provide a focused discussion of an important methodological change that we made between the NFI 1 and NFI 2 evaluations to our comparison group construction.

As described in *Section 1*, we use a difference-in-differences multivariate regression approach to address two of the three key research questions:

- What is the Initiative payment incentive effect on Medicare utilization and expenditures, particularly for hospital-related services, for the Clinical + Payment group and the Payment-Only group?
- How does the Initiative effect on Medicare utilization and expenditures vary by ECCP and type of intervention?

Difference-in-differences models are often used to measure the impact of an intervention for which a randomized controlled trial is not feasible. This strategy requires (1) using an intervention group and comparison group and (2) observing the outcome before and after the intervention in both groups. With “parallel trends” assumed, the outcome of interest would change by the same amount in the intervention and comparison groups if neither group had participated in the intervention. We would identify the effect of the intervention as the difference between the change in the intervention group relative to its baseline and the change in the comparison group relative to its baseline.

Thus, the estimated intervention effect obtained from a standard difference-in-differences analysis depends heavily on the reasonableness of the parallel-trends assumption. Originally, as described in the NFI 2 first Annual Report and also used in evaluating NFI 1, the plan was to derive a comparison group from within the same state as the ECCP because a within-state comparison group should be more similar to the intervention group than out-of-state facilities. If there were state-level variations—such as policy changes or changes in local market conditions—that could affect the outcome, these would be captured using a within-state comparison group and thus the parallel-trends assumption would be more likely to hold. Specifically, based on propensity score matching, we selected comparison nursing facilities in the same state that were similar to the intervention facilities.

However, as ECCPs began implementing NFI 2, we looked back at information gathered over time during NFI 1. There were NFI 1 evaluation findings that indicated some “spillover effect”—that is, components of the NFI 1 ECCP models that spread from participating facilities to other within-state facilities (Ingber et al., 2018). Some ECCPs intentionally tried to spread good practices beyond the Initiative participants. The result of this spread is the potential to underestimate the Initiative results. Therefore, we concluded that despite the advantages of using a within-state comparison group (more likely to have parallel trends), using the original comparison group methodology for NFI 2 analyses might not fully give credit to the intervention

for reducing hospitalizations if the within-state comparison facilities were implementing similar interventions. To address this limitation, we determined that it would be better to use a comparison group selected from outside the Initiative-participating states.

We created a national comparison group of nursing facility residents in each year (FY 2014–FY 2017), consisting of residents from non-Initiative states.<sup>9</sup> This national comparison group is used as a uniform comparison group for all ECCPs in each year. All nursing facility residents in the non-excluded states that have not been involved with either NFI 1 or NFI 2 are included in the national comparison group, subject to both facility-level and resident-level exclusion criteria. The facility-level exclusion criteria were based on criteria established by CMS for participation in the Initiative plus other criteria designed to exclude facilities with unusual populations, such as State Veterans homes, for which all residents' claims may not be available. The resident-level criteria ensured that comparison group residents would meet the same eligibility criteria as Initiative participants (which includes being long-stay and participating in FFS Medicare). We also used propensity score methods to exclude outliers, residents from the national comparison group whose characteristics were very different than the characteristics of participating residents. Thus, the national comparison group is free of any spillover effect; its large size (with approximately three-quarters of a million would-be eligible residents in each year) ensures stable estimates of regression model parameters. We conducted further analyses to assess the reasonableness of the parallel-trends assumption, as described below.

In addition to the national comparison group, we created a within-state reference group (WSRG) to capture possible state-level policy or other changes for a sensitivity analysis. In *Section 4*, we present the Initiative impact estimates relative to the national comparison group, and in *Appendix P* we present both sets of impact estimates—relative to the national comparison group and relative to the WSRG. We present a more detailed description of our comparison group construction, including the use of resident-level propensity scores to select the national comparison group residents, in *Appendix K*.

After selecting the national comparison group, we empirically assessed the trend in hospitalization related outcomes in the three years prior to the Initiative (2014-2016), which are used as the baseline period for NFI 2 evaluation. This is needed to test the reasonableness of the parallel-trends assumption for the difference-in-differences analysis. Note that it would be appropriate to conduct this assessment even if we used a within-state comparison group because there is never a guarantee that the parallel-trends assumption will hold. We found evidence that in the Clinical + Payment group, the intervention groups had different trends, with greater reductions in outcomes over time than the national comparison group, as described in detail in *Appendix K*. A priori, we may have expected these different trends for the Clinical + Payment group given the impact of the NFI 1 clinical and educational interventions on hospitalization rates. By not accounting for these trends, we risk possibly overstating the impact of the Initiative.

Therefore, we replaced the standard parallel-trends assumption with the assumption that the intervention and comparison groups would continue to change by the amount indicated by their own baseline trends were it not for the Initiative. We then identified the effect of the NFI 2

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<sup>9</sup> Facilities and residents in Alaska, Hawaii, Washington, D.C., Puerto Rico, Guam, and the U.S Virgin Islands were excluded from the national sample because of potential differences from the 48 contiguous states; Nebraska was excluded because it was involved in NFI 1.

intervention as the difference between the change in the intervention group relative to its baseline trend and the change in the national comparison group relative to the national baseline trend. We used 3 years (2014–2016) for the baseline period; this was the period that NFI 1 was in place, although in some cases the intervention was not fully operational at the beginning of FY 2014. This approach was applied to analyses for both the Clinical + Payment group and the Payment-Only group.

Although this approach removes the need for the stringent and potentially problematic (in our situation) parallel-trends assumption, our assumption that the (nonparallel) trends would continue unchanged from the baseline period requires scrutiny. For example, if the impact of the NFI 1 interventions plateaued in 2015 or 2016, or if rates were reduced to the point where they hit a “floor” and further reductions became difficult, then the trends from the baseline period would change and by accounting for the different baseline trends, we risk possibly understating the impact of the Initiative. We consider the results based on assuming a continuation of baseline trends to be primary, because this assumption is plausible and more conservative. In a sensitivity analysis, we also provide results based on a standard parallel-trends assumption with 1 year of baseline data (2016). This is explained in more detail in *Appendix K* and sensitivity analysis results are in *Appendix P*. For the next annual report, we plan to revisit this issue. We do not expect the greater reductions in the Clinical + Payment group to continue indefinitely.

It should be noted that the Clinical + Payment facilities represent a compound intervention in which the clinical component began in 2012 as part of NFI 1, and the payment component began in 2016 as part of NFI 2. The Payment-Only facilities represent a new intervention that began in 2016. In the NFI 2 evaluation analyses to date, we are able to assess the incremental effect of the incentive payments superimposed on the existing clinical interventions (Clinical + Payment), as well as the stand-alone incentive payments (Payment-Only). However, given differences in Initiative implementation and in the analytical approaches used for NFI 1 and NFI 2 evaluations, we are not able to directly compare the effect of the clinical intervention alone (from NFI 1) to the effect of the payment intervention in NFI 2 in this report. We also cannot compare the combined effect of the clinical and the payment components to the payment component alone at this time. Future reports may consider these types of analyses.

In this report, we focus on evaluating the impact of the Initiative on 9 types of hospital-related utilization events and 10 expenditure measures (the expenditures associated with each of the utilization events plus total Medicare expenditures). For each type of utilization event, we consider two measures—both the probability of at least one event occurring and the count of all events, for a total of 28 measures (9 probability, 9 count, and 10 expenditure). All these measures are based on Medicare claims data from each resident’s Initiative-eligible period in each year; the expenditure measures are annualized, in dollars, per resident-year. The probability and count outcomes are usually correlated unless there are many residents with repeated utilization events.

To predict these outcomes, we perform multivariate analyses that control for relevant resident-level data (e.g., resident demographics and health profiles) and facility characteristics. The 9 types of events are

- All-cause hospitalizations
  - Potentially avoidable hospitalizations

- Potentially avoidable hospitalization for the six qualifying conditions
- All- cause ED visits
  - Potentially avoidable ED visits
    - Potentially avoidable ED visits for the six qualifying conditions
- All-cause acute care transitions (capturing any transition to the hospital, including hospitalizations [inpatient stays], ED visits, and observation stays)
  - Potentially avoidable acute care transitions
    - Potentially avoidable acute care transitions for the six qualifying conditions

The data sources and precise definitions of each of these nine events are presented in *Appendix K*. It is important to note that hospitalizations and ED visits, especially “all-cause” metrics, include events that may be clinically appropriate and require acute care in the hospital; the NFI 2 goal is only to reduce the transfers that are safely avoidable when changes of condition are detected and treated in a timely manner.

In addition to these outcomes, we provide descriptive results in *Appendices M–O* for utilization and expenditures for each of the six qualifying conditions individually. We conduct separate analyses for each ECCP intervention group (i.e., Clinical + Payment vs. Payment-Only), as well as pooled analyses combining ECCPs for each intervention group. A full description of our methods, including data sources, definition of Initiative-eligible residents, comparison group selection, definition of outcome measures, selection of covariates, and statistical methods, can be found in *Appendix K*.

## SECTION 4. UTILIZATION AND EXPENDITURES

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Overall, we did not observe improvements in hospital-related utilization and expenditure measures from the addition of the payment incentive to the Clinical + Payment group, relative to the national comparison group, after accounting for the 2014–2016 trend lines established during NFI 1. We did observe some statistically significant reductions in the Payment-Only group for these measures. In both groups, there was variation across the ECCPs.

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### 4.1 Introduction

In this section we expand on this basic finding and report difference-in-differences multivariate regression analyses that estimate the effects of the Initiative on key hospital-related Medicare utilization and expenditure measures. Furthermore, we describe how these effects varied by ECCP for each intervention group (Clinical + Payment and Payment-Only). As a general note, when used to describe the Initiative effects estimated from difference-in-differences multivariate regression models, “reductions” or “increases” in utilization and expenditure measures for the intervention group are always relative to changes in the national comparison group, after accounting for baseline trends in the measures (see Section 3).

We present estimates of the Initiative effect on hospital-related utilization and expenditure measures, as well as on total Medicare expenditures, for each resident’s Initiative-eligible period during Initiative Year 1 (FY 2017). Hospital-related measures include hospitalizations (inpatient stays), ED visits, and acute care transitions. *Acute care transitions* capture any transition from the nursing facility to the hospital, combining observation stays with hospitalizations and ED visits. Utilization measures include both the probability of any hospital-related event and the count of these events. For each hospital-related event, we first examine all-cause events, then subset into events that are potentially avoidable, and further subset into events that are potentially avoidable for any of the NFI 2 six qualifying conditions. All estimates are based on models that control for relevant resident-level data (e.g., demographics and health profiles) and facility characteristics. The models compare each of the two intervention groups to a national comparison group of nursing facility residents. We provide an overview of our methods in **Section 3**, including our rationale for using a comparison group of nationally derived nursing facility residents, and a detailed discussion of our methods in **Appendix K**.

As noted also in **Section 3**, we are only able to evaluate the effect of the incentive payment billing codes superimposed upon the existing clinical and educational interventions from NFI 1 (Clinical + Payment), and separately, the introduction of the incentive payment billing codes as a stand-alone intervention (Payment-Only). Thus, although we are studying the Clinical + Payment and Payment-Only groups individually, we are not comparing them to each other because their starting points are very different. We are also not able to compare the combined impact of the clinical and educational interventions from NFI 1, plus the special Medicare billing codes, to the stand-alone impact of the special Medicare billing codes.

Additional in-depth results can be found in several appendices:

- *Appendix L* presents descriptive statistics for the covariates used in the multivariate models.
- *Appendices M–O* present descriptive results for the utilization and expenditure measures.
- *Appendix P* provides more detailed multivariate results, including confidence intervals and p-values. It also includes results from the sensitivity analysis that we conducted to measure the impact of the Initiative using a WSRG to capture the influence of possible state-level policy changes and the sensitivity analysis using only 1 baseline year (2016) and assuming parallel trends.
- *Appendix Q* provides an example of complete multivariate regression results for one of the models.

We first describe the results from the pooled models that combined the six ECCPs. These models allow us to observe the overall impact of the Initiative on each outcome, separately for the Clinical + Payment intervention group and the Payment-Only intervention group. We then describe the results from the models that analyzed each ECCP separately to study variation in the Initiative effects across ECCPs.

For the difference-in-differences analyses presented in this section, we included 112 facilities in the Clinical + Payment group and 148 facilities in the Payment-Only group, as explained more fully in *Section 1* and *Appendix K*.

## 4.2 Overall Impact of the Initiative



Early results indicate that in Initiative Year 1 (FY 2017) eligible residents in Clinical + Payment Facilities did not experience reductions in hospital-related utilization and related Medicare expenditures further than what was achieved in NFI 1, and what was expected based on the baseline trend. In contrast, we observed some statistically significant favorable reductions in utilization and related expenditures for eligible residents in Payment-Only facilities.

In the Clinical + Payment group, the payment incentive was, broadly speaking, not associated with statistically significant changes in utilization or expenditures, although there were a small number of unfavorable, statistically significant increases and a general pattern of increases overall.<sup>10</sup> In the Payment-Only group, the intervention was associated with a meaningful number of favorable, statistically significant reductions in utilization and expenditures and with a consistent pattern of reductions overall.

**In the Clinical + Payment group, there was a general pattern of increases in utilization, but few were large enough to be statistically significant. Two statistically significant unfavorable increases were for the probability and count of all-cause ED visits (see *Tables 4-1, 4-2, and 4-3*). For eligible residents in this intervention group, the predicted**

<sup>10</sup> Note that this statement is strictly regarding NFI 2. We are not making any comparison between the reductions achieved by Clinical + Payment facilities during NFI 1 and those achieved by facilities during NFI 2.

probability of experiencing an ED visit in FY 2017, absent the Initiative, would be 17.6 percent. The Initiative was associated with a statistically significant increase of 1.5 percentage points. This corresponds to an 8.5 percent relative increase in the average resident’s probability of an all-cause ED visit. The predicted count of ED visits per year would be 0.255 without the Initiative. The estimated effect of the Initiative was a statistically significant increase of 0.023 all-cause visits per resident. This is a relative increase of 8.9 percent.

**Consistent with a broader pattern of reductions in the Payment-Only group, eight measures indicated statistically significant favorable reductions in hospitalizations, acute care transitions and related expenditures** (see *Tables 4-1, 4-2, and 4-3*). Notably, reductions in the Payment-Only group were slightly stronger in magnitude for measures of the six qualifying conditions compared to all-cause or potentially avoidable measures, although only the effect on the count of transitions was statistically significant. Underlying levels of outcomes for the six qualifying conditions are lower than levels for the broader measures, making high-precision measurements more challenging.

The statistically significant reductions were decreases in both the probability and count of all-cause hospitalizations and potentially avoidable acute care transitions; the probability of potentially avoidable hospitalizations and all-cause acute care transitions; the count of acute care transitions for the six qualifying conditions; and for the annualized expenditure for potentially avoidable acute care transitions. In the last case, for example, without the Initiative, we predict that the annualized expenditure for potentially avoidable acute care transitions would be \$2,357 per resident, on average. The Initiative was associated with a reduction of \$235 per resident in FY 2017, representing a relative decrease of 10.0 percent.

These findings of favorable reductions in utilization and expenditures in the Payment-Only group are a promising early indication that the Initiative may be achieving its intended goals. However, considering that most of the effect estimates are small in magnitude and not statistically significant and that they are based on only one year of data, evaluation in subsequent years is necessary to gauge whether these early findings will continue to hold. Some ECCP leadership reported that they felt the Payment-Only facilities might perform better because they were stronger facilities at the outset, based on Nursing Home Compare star ratings. Other ECCPs focused special attention and support on Payment-Only facilities, such as hiring a liaison to work with these facilities in RAVEN (Pennsylvania).

**Table 4-1  
Initiative effect on probability of hospital-related utilization per resident, FY 2017,  
all ECCPs (all states)**

Measure	Clinical + Payment			Payment-Only		
	Predicted probability absent the Initiative (percent)	Absolute Initiative effect (percentage points)	Relative effect (percent)	Predicted probability absent the Initiative (percent)	Absolute Initiative effect (percentage points)	Relative effect (percent)
<b>Any hospitalization</b>						
All-cause	25.4	-0.3	-1.3	25.5	-1.9	-7.4***
Potentially avoidable	10.6	0.4	3.4	11.5	-0.8	-7.2*
Six qualifying conditions	5.6	0.2	4.3	6.7	-0.6	-9.3

(continued)

**Table 4-1**  
**Initiative effect on probability of hospital-related utilization per resident, FY 2017,**  
**all ECCPs (all states)**

Measure	Clinical + Payment			Payment-Only		
	Predicted probability absent the Initiative (percent)	Absolute Initiative effect (percentage points)	Relative effect (percent)	Predicted probability absent the Initiative (percent)	Absolute Initiative effect (percentage points)	Relative effect (percent)
<b>Any ED visit</b>						
All-cause	17.6	1.5	8.5**	23.1	-0.9	-3.8
Potentially avoidable	9.7	0.4	3.6	13.4	-1.0	-7.5
Six qualifying conditions	2.5	-0.2	-9.1	3.8	-0.4	-10.1
<b>Any acute care transition</b>						
All-cause	35.3	0.7	1.9	38.8	-1.9	-4.9**
Potentially avoidable	18.3	0.5	2.5	21.9	-1.5	-6.7*
Six qualifying conditions	7.8	-0.2	-2.1	9.5	-0.7	-7.8

ECCP = Enhanced Care and Coordination Provider; ED = emergency department.

\*\*/\*\*/\*\* = Significantly different from zero based on a *p*-value cutoff of 0.1/0.05/0.01. Dark green shading indicates a statistically significant decrease. Light orange shading indicates a statistically significant increase.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 10).

NOTE: The *predicted probability absent the Initiative* is the mean of the predicted probabilities of experiencing the event during their respective exposure period, for the residents in the intervention group, under the scenario that the intervention did not occur. The *Initiative effect* is calculated based on a difference-in-differences regression model with a national comparison group and adjusted for resident-level and facility-level characteristics. It is the difference between the predicted probabilities of the event with and without the intervention. The *relative effect* = (absolute Initiative effect) / (predicted probability absent the Initiative). *Acute care transitions* include hospitalizations, ED visits, or observation stays.

**Table 4-2**  
**Initiative effect on count of hospital-related utilization events per resident, FY 2017,**  
**all ECCPs (all states)**

Measure	Clinical + Payment			Payment-Only		
	Predicted count absent the Initiative (events per year)	Absolute Initiative effect (events per year)	Relative effect (percent)	Predicted count absent the Initiative (events per year)	Absolute Initiative effect (events per year)	Relative effect (percent)
<b>Hospitalizations</b>						
All-cause	0.405	-0.001	-0.3	0.395	-0.027	-6.9*
Potentially avoidable	0.127	0.005	4.1	0.139	-0.008	-6.0
Six qualifying conditions	0.064	0.003	4.5	0.076	-0.006	-8.3
<b>ED visits</b>						
All-cause	0.255	0.023	8.9*	0.342	-0.010	-3.0
Potentially avoidable	0.113	0.008	7.4	0.167	-0.014	-8.3
Six qualifying conditions	0.027	-0.001	-4.9	0.042	-0.006	-13.2

(continued)



**Table 4-2 (continued)**  
**Initiative effect on count of hospital-related utilization events per resident, FY 2017,**  
**all ECCPs (all states)**

Measure	Clinical + Payment			Payment-Only		
	Predicted count absent the Initiative (events per year)	Absolute Initiative effect (events per year)	Relative effect (percent)	Predicted count absent the Initiative (events per year)	Absolute Initiative effect (events per year)	Relative effect (percent)
<b>Acute care transitions</b>						
All-cause	0.656	0.025	3.8	0.740	-0.038	-5.2
Potentially avoidable	0.241	0.014	5.6	0.306	-0.022	-7.2*
Six qualifying conditions	0.091	0.002	2.2	0.119	-0.012	-10.1*

ECCP = Enhanced Care and Coordination Provider; ED = emergency department.

\*/\*\*/\*\* = Significantly different from zero based on a *p*-value cutoff of 0.1/0.05/0.01. Dark green shading indicates a statistically significant decrease. Light orange shading indicates a statistically significant increase.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 12).

NOTE: The *predicted count absent the Initiative* is the mean of the predicted counts of events, for the residents in the intervention group, under the scenario that the intervention did not occur. The *Initiative effect* is calculated based on a difference-in-differences regression model with a national comparison group and adjusted for resident-level and facility-level characteristics. It is the difference between the predicted counts with and without the intervention. The *relative effect* = (absolute Initiative effect) / (predicted count absent the Initiative). *Acute care transitions* include hospitalizations, ED visits, or observation stays.

**Table 4-3**  
**Initiative effect on Medicare expenditures, per resident-year, FY 2017,**  
**all ECCPs (all states)**

Measures	Clinical + Payment			Payment-Only		
	Predicted expenditure absent the Initiative (dollars)	Absolute Initiative effect (dollars)	Relative effect (percent)	Predicted expenditure absent the Initiative (dollars)	Absolute Initiative effect (dollars)	Relative effect (percent)
<b>Total Medicare expenditures</b>	30,456	974	3.2	27,629	-500	-1.8
<b>Hospitalization expenditures</b>						
All-cause	9,684	151	1.6	7,777	-419	-5.4
Potentially avoidable	2,277	104	4.6	2,171	-187	-8.6
Six qualifying conditions	1,104	55	5.0	1,115	-130	-11.7
<b>ED visit expenditures</b>						
All-cause	232	5	2.2	285	-9	-3.2
Potentially avoidable	93	0	-0.4	123	-9	-7.4
Six qualifying conditions	23	-1	-2.2	40	-7	-16.9

(continued)

**Table 4-3 (continued)**  
**Initiative effect on Medicare expenditures, per resident-year, FY 2017,**  
**all ECCPs (all states)**

Measures	Clinical + Payment			Payment-Only		
	Predicted expenditure absent the Initiative (dollars)	Absolute Initiative effect (dollars)	Relative effect (percent)	Predicted expenditure absent the Initiative (dollars)	Absolute Initiative effect (dollars)	Relative effect (percent)
<b>Acute care transition expenditures</b>						
All-cause	10,260	95	0.9	8,246	-490	-5.9
Potentially avoidable	2,404	113	4.7	2,357	-235	-10.0*
Six qualifying conditions	1,132	48	4.2	1,170	-150	-12.8

ECCP = Enhanced Care and Coordination Provider; ED = emergency department.

\*/\*\*/\*\* = Significantly different from zero based on a *p*-value cutoff of 0.1/0.05/0.01. Dark green shading indicates a statistically significant decrease. Light orange shading indicates a statistically significant increase.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 11 and MS 13).

NOTE: The *predicted expenditure absent the Initiative* is the mean of the predicted expenditures, for the residents in the intervention group, under the scenario that the intervention did not occur. Predicted expenditures are based on a resident being eligible for the Initiative for the entire year (365 days). The *Initiative effect* is calculated based on a difference-in-differences regression model with a national comparison group and adjusted for resident-level and facility-level characteristics. It is the difference between the predicted expenditures with and without the intervention. The *relative effect* = (absolute Initiative effect) / (predicted expenditure absent the Initiative). *Acute care transitions* include hospitalizations, ED visits, or observation stays.

The lack thus far of further Initiative-associated reductions in utilization and expenditures in the Clinical + Payment group should be interpreted considering the fact that facilities in this group have already achieved reductions in hospital-related utilization and expenditures through their participation in NFI 1. Thus, further reductions may have been difficult to achieve (“floor” effect). Clinical + Payment facilities also may have become less involved in NFI 2 and less rigorous in implementing the clinical components previously implemented in NFI 1, leaning more on ECCP staff for implementation, as some facility administrators and DONs suggested during the Initiative Year 1 interviews. Since these facilities participated in NFI 1, some facility leaders indicated that NFI 2 felt like an added component to the many efforts they were already employing throughout NFI 1, without facility incentive payments; accordingly, the payment incentive may not have been as important in Clinical + Payment facilities as it was in Payment-Only facilities.

The Payment-Only facilities did not participate in NFI 1 and thus it may have been easier to achieve reductions since they could newly implement practices already in use in the Clinical + Payment group, such as improved change of condition detection and communications, as well as incentive payment activities. NFI 2 was new to Payment-Only facilities, and they had the benefit of first-pass efforts to reduce avoidable hospitalizations. However, based on only 1 year of data, it is too early to reach conclusions with any degree of confidence.

The relatively less favorable findings for the Clinical + Payment group may be partly driven by model specifications. As already described in **Section 3**, our results are based on accounting for different baseline trends between the intervention and comparison groups. If, relative to the comparison group, the outcome in the intervention group has been decreasing over time because of prior NFI 1 interventions, the model expects that absent the Initiative this trend would continue into the next year. This may be a reasonable assumption, but it has consequences. Namely, the Initiative is only credited with reducing an outcome measure if it is

reduced beyond the prediction based on the trend. A careful examination of the full regression results<sup>11</sup> indicates that in both the Clinical + Payment and the Payment-Only groups the outcome measures in the intervention group were mostly decreasing over the years 2014–2016 relative to the national comparison group, but this downward trend was stronger in the Clinical + Payment group, which also had lower levels (see *Appendix Tables N-1 to N-3*). This is not surprising given that the Clinical + Payment facilities participated in NFI 1 and were able to reduce these outcomes during 2014–2016. Thus, it may have been harder to achieve further reductions in the Clinical + Payment group, particularly for the ECCPs where NFI 1 led to the strongest reductions during 2014–2016. As noted above, if the impact of the NFI 1 interventions plateaued in 2015 or 2016, and further reductions became difficult, then the trends from the baseline period would change and by accounting for the different baseline trends we risk possibly understating the impact of the Initiative.

There is another point to keep in mind when interpreting the results, which is particularly applicable in interpreting the differences between ECCPs. We are measuring *changes* in the outcome measures and not the *absolute level* of the outcome measures themselves. In fact, our results are based on estimated changes from different baseline levels of the outcomes. Thus, our model does not account for the fact that it may be easier to reduce a measure from a high level to a medium level than from a medium level to a low level or from a low level to an even lower level. Based on a review of the descriptive results in *Appendices M–O*,<sup>12</sup> the national comparison group had higher rates of utilization compared to the Initiative states; rates for the Clinical + Payment group and Payment-Only group were reasonably similar. Therefore, if it is indeed easier to reduce a measure from a high level than from a lower level, then our approach may understate the Initiative effect for both groups.

### 4.3 Initiative Impact Across Individual ECCPs

Although the overarching findings described above are important, there were also notable differences in the pattern of Initiative effects across ECCPs in the Clinical + Payment and Payment-Only groups.



Early results for the Clinical + Payment group indicate that after 1 year of implementing the Initiative, only AQAF residents experienced statistically significant reductions in hospital-related utilization. In contrast, for the Payment-Only group, four of the six ECCPs had statistically significant reductions.

<sup>11</sup> Specifically, we examined the interaction term between time and membership in the intervention group in the probability and count models. We found the coefficient for the interaction term was more strongly negative in the Clinical + Payment group than in the Payment-Only group. Thus, the measures for the Clinical + Payment group decreased more sharply over the years 2014 through 2016. More details are presented in *Appendix K*.

<sup>12</sup> For example, in FY 2016, there were 3.53 all-cause acute care transitions per 1,000 resident-days in the national comparison group, 2.94 in the WSRG for all states combined, 2.55 in the Clinical + Payment group, and 2.70 in the Payment-Only group.

In the Clinical + Payment group, the payment reform intervention was associated with unfavorable, statistically significant increases for several hospital-related measures in three ECCPs—RAVEN (Pennsylvania), MOQI (Missouri), and NY-RAH (New York). In contrast, AQAF (Alabama) was an exception to the overall pattern and showed several favorable, statistically significant reductions in the hospital-related measures. Although there were no statistically significant changes in ATOP2 (Nevada) or OPTIMISTIC (Indiana), the direction of the effects was mixed in ATOP2 and there was a general pattern of reductions in OPTIMISTIC.

In interpreting these ECCP-specific results, some of the points we made previously are relevant. Of the six Clinical + Payment groups, the one that trended down the most<sup>13</sup> over the baseline years (FY 2014–FY 2016) relative to the national comparison group was MOQI, followed by RAVEN and NY–RAH. In contrast, AQAF mostly trended up over time relative to the national comparison group. Thus, in a sense, it was difficult for MOQI, RAVEN, and NY-RAH to achieve further reductions in FY 2017 relative to their NFI 1 trends, and relatively easier for AQAF to do so.

In the Payment-Only group, only ATOP2 (Colorado) and RAVEN had a substantial number of statistically significant reductions in utilization and expenditures (seven and eight, respectively) associated with the Initiative. AQAF and OPTIMISTIC had one and two reductions, respectively; NY–RAH had zero, although the overall direction of the effects indicated a favorable reduction. In contrast, the results in MOQI were mixed, with two statistically significant increases in ED utilization, consistent with an overall pattern of increases in ED visit measures but decreases in hospitalization measures.

Based on a review of the rate of all-cause acute care transitions, the broadest of our measures and presented in *Appendix N*, the groups with the lowest rates are the ATOP2 Payment-Only facilities (in Colorado) and the RAVEN Clinical + Payment facilities. This may help to explain our findings for RAVEN—that further reductions in hospital-related utilization from already very low rates may have been difficult to achieve.<sup>14</sup>

#### 4.4 AQAF (Alabama)

**As already noted, AQAF’s Clinical + Payment group was an exception to the overall pattern for Clinical + Payment groups. For eligible residents in FY 2017, the Initiative was associated with several statistically significant favorable reductions in hospital-related utilization and expenditures** (see *Tables 4-4, 4-5, and 4-6*). These changes included reductions in both the probability (43.5 percent) and count (34.8 percent) of ED visits for the six qualifying conditions, as well as reductions in the probability of any all-cause hospitalization or acute care transition.

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<sup>13</sup> This is again based on examining the direction and magnitude of the coefficient for the interaction term between time and membership in the intervention group in the probability and count models. More details are presented in *Appendix K*.

<sup>14</sup> To provide additional context, based on the NFI 1 Final Report Appendix D (Ingber et al., 2017), the rate of all-cause hospitalizations per 1,000 resident-days for eligible residents in RAVEN in 2012 was 2.1. By 2014 this had fallen to 1.4 and by 2016 to 1.3.

**Table 4-4**  
**Initiative effect on probability of hospital-related utilization per resident, FY 2017,**  
**AQAF (Alabama)**

Measure	Clinical + Payment			Payment-Only		
	Predicted probability absent the Initiative (percent)	Absolute Initiative effect (percentage points)	Relative effect (percent)	Predicted probability absent the Initiative (percent)	Absolute Initiative effect (percentage points)	Relative effect (percent)
<b>Any hospitalization</b>						
All-cause	32.6	-4.6	-14.1**	28.6	-1.5	-5.2
Potentially avoidable	14.2	-0.6	-4.5	12.5	0.4	3.4
Six qualifying conditions	6.9	-0.1	-2.0	7.7	-0.6	-7.3
<b>Any ED visit</b>						
All-cause	22.4	-0.3	-1.3	27.1	-3.1	-11.3
Potentially avoidable	14.0	-1.9	-13.4	16.1	-3.0	-18.9
Six qualifying conditions	4.7	-2.0	-43.5**	4.8	-1.2	-25.8
<b>Any acute care transition</b>						
All-cause	43.1	-3.5	-8.1*	44.2	-3.3	-7.5
Potentially avoidable	24.8	-2.5	-10.2	25.2	-2.4	-9.6
Six qualifying conditions	10.9	-2.0	-18.8	11.5	-1.3	-11.3

ECCP = Enhanced Care and Coordination Provider; ED = emergency department.

\*/\*\*/\*\* = Significantly different from zero based on a *p*-value cutoff of 0.1/0.05/0.01. Dark green shading indicates a statistically significant decrease. Light orange shading indicates a statistically significant increase.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 10).

NOTE: The *predicted probability absent the Initiative* is the mean of the predicted probabilities of experiencing the event during their respective exposure period for the residents in the intervention group, under the scenario that the intervention did not occur. The *Initiative effect* is calculated based on a difference-in-differences regression model with a national comparison group and adjusted for resident-level and facility-level characteristics. It is the difference between the predicted probabilities of the event with and without the intervention. The *relative effect* = (absolute Initiative effect) / (predicted probability absent the Initiative). *Acute care transitions* include hospitalizations, ED visits, or observation stays.

**Table 4-5**  
**Initiative effect on count of hospital-related utilization events per resident, FY 2017,**  
**AQAF (Alabama)**

Measure	Clinical + Payment			Payment-Only		
	Predicted count absent the Initiative (events per year)	Absolute Initiative effect (events per year)	Relative effect (percent)	Predicted count absent the Initiative (events per year)	Absolute Initiative effect (events per year)	Relative effect (percent)
<b>Hospitalizations</b>						
All-cause	0.509	-0.051	-10.0	0.430	0.004	0.9
Potentially avoidable	0.180	-0.008	-4.6	0.145	0.020	13.7
Six qualifying conditions	0.078	0.005	6.5	0.085	-0.002	-2.3
<b>ED visits</b>						
All-cause	0.338	-0.029	-8.4	0.381	-0.029	-7.5
Potentially avoidable	0.163	-0.022	-13.4	0.192	-0.030	-15.4
Six qualifying conditions	0.048	-0.017	-34.8*	0.055	-0.018	-32.0

(continued)

**Table 4-5 (continued)**  
**Initiative effect on count of hospital-related utilization events per resident, FY 2017,**  
**AQAF (Alabama)**

Measure	Clinical + Payment			Payment-Only		
	Predicted count absent the Initiative (events per year)	Absolute Initiative effect (events per year)	Relative effect (percent)	Predicted count absent the Initiative (events per year)	Absolute Initiative effect (events per year)	Relative effect (percent)
<b>Acute care transitions</b>						
All-cause	0.847	-0.081	-9.6	0.823	-0.031	-3.7
Potentially avoidable	0.349	-0.036	-10.3	0.336	-0.006	-1.7
Six qualifying conditions	0.126	-0.011	-8.9	0.140	-0.017	-12.1

ECCP = Enhanced Care and Coordination Provider; ED = emergency department.

\*/\*\*/\*\* = Significantly different from zero based on a *p*-value cutoff of 0.1/0.05/0.01. Dark green shading indicates a statistically significant decrease. Light orange shading indicates a statistically significant increase.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 12).

NOTE: The *predicted count absent the Initiative* is the mean of the predicted counts of events for the residents in the intervention group, under the scenario that the intervention did not occur. The *Initiative effect* is calculated based on a difference-in-differences regression model with a national comparison group and adjusted for resident-level and facility-level characteristics. It is the difference between the predicted counts with and without the intervention. The *relative effect* = (absolute Initiative effect) / (predicted count absent the Initiative). *Acute care transitions* include hospitalizations, ED visits, or observation stays.

**Table 4-6**  
**Initiative effect on Medicare expenditures, per resident-year, FY 2017,**  
**AQAF (Alabama)**

Measure	Clinical + Payment			Payment-Only		
	Predicted expenditure absent the Initiative (dollars)	Absolute Initiative effect (dollars)	Relative effect (percent)	Predicted expenditure absent the Initiative (dollars)	Absolute Initiative effect (dollars)	Relative effect (percent)
<b>Total Medicare expenditures</b>	27,801	-1,269	-4.6	26,112	-273	-1.0
<b>Hospitalization expenditures</b>						
All-cause	7,790	-738	-9.5	6,404	-413	-6.5
Potentially avoidable	2,111	-174	-8.2	1,690	-10	-0.6
Six qualifying conditions	827	47	5.7	803	11	1.4
<b>ED visit expenditures</b>						
All-cause	229	-10	-4.5	253	-51	-20.0*
Potentially avoidable	94	-11	-11.9	106	-11	-10.0
Six qualifying conditions	30	-9	-29.2	44	-18	-42.1

(continued)

**Table 4-6 (continued)**  
**Initiative effect on Medicare expenditures, per resident-year, FY 2017,**  
**AQAF (Alabama)**

Measure	Clinical + Payment			Payment-Only		
	Predicted expenditure absent the Initiative (dollars)	Absolute Initiative effect (dollars)	Relative effect (percent)	Predicted expenditure absent the Initiative (dollars)	Absolute Initiative effect (dollars)	Relative effect (percent)
<b>Acute care transition expenditures</b>						
All-cause	8,528	-1,007	-11.8	6,803	-440	-6.5
Potentially avoidable	2,265	-186	-8.2	1,808	41	2.3
Six qualifying conditions	842	54	6.4	832	10	1.2

ECCP = Enhanced Care and Coordination Provider; ED = emergency department.

\*/\*\*/\*\* = Significantly different from zero based on a *p*-value cutoff of 0.1/0.05/0.01. Dark green shading indicates a statistically significant decrease. Light orange shading indicates a statistically significant increase.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 11 and MS 13).

NOTE: The *predicted expenditure absent the Initiative* is the mean of the predicted expenditures for the residents in the intervention group, under the scenario that the intervention did not occur. Predicted expenditures are based on a resident being eligible for the Initiative for the entire year (365 days). The *Initiative effect* is calculated based on a difference-in-differences regression model with a national comparison group and adjusted for resident-level and facility-level characteristics. It is the difference between the predicted expenditures with and without the intervention. The *relative effect* = (absolute Initiative effect) / (predicted expenditure absent the Initiative). *Acute care transitions* include hospitalizations, ED visits, or observation stays.

Throughout NFI 1 and NFI 2, AQAF leadership and participating facility interviewees indicated that this education-only model would need more time to show significant results, compared to ECCP models that provide direct, hands-on care to residents. It is thus possible that the favorable effects observed in Clinical + Payment facilities in NFI 2 are partly due to the maturing of the NFI 1 intervention.

**For residents in the Payment-Only group, there was an overall pattern of reductions in utilization and expenditures, including a statistically significant 20.0 percent reduction in expenditures for all-cause ED visits.** Notably, AQAF Payment-Only facilities are very diverse in terms of facility geography, resident acuity, and availability of needed services (e.g., access to physicians and diagnostic services); these vast differences between facilities make uniform application of the Initiative challenging to administer and may have a varying effect on utilization and expenditure results over time.

For more information about the Initiative in AQAF facilities, see *Appendix B* for a full summary of site visit and survey findings; *Tables M-4, M-5, N-4, N-5, O-4, and O-5* for descriptive results; and *Tables P-7 through P-12* for detailed multivariate results.

#### 4.5 ATOP2 (Nevada/Colorado)

**In Nevada’s ATOP2’s Clinical + Payment group, the Initiative was not associated with any statistically significant changes in utilization or expenditures for eligible residents in FY 2017 (see *Tables 4-7, 4-8, and 4-9*).** Although there was no consistency in the direction of the Initiative effect on utilization by measure type, related expenditures indicated reductions in

expenditures for hospitalizations and acute care transitions and increases in expenditures for ED visits and total Medicare expenditures.

**Table 4-7**  
**Initiative effect on probability of hospital-related utilization per resident, FY 2017,**  
**ATOP2 (Nevada/Colorado)**

Measure	Clinical + Payment (NV)			Payment-Only (CO)		
	Predicted probability absent the Initiative (percent)	Absolute Initiative effect (percentage points)	Relative effect (percent)	Predicted probability absent the Initiative (percent)	Absolute Initiative effect (percentage points)	Relative effect (percent)
<b>Any hospitalization</b>						
All-cause	28.5	-3.0	-10.7	18.6	-1.3	-6.9
Potentially avoidable	9.1	1.3	13.8	8.2	-0.6	-7.6
Six qualifying conditions	4.9	0.7	13.3	4.8	-0.7	-14.7
<b>Any ED visit</b>						
All-cause	18.7	3.1	16.4	23.9	-1.8	-7.6
Potentially avoidable	9.3	2.1	23.0	13.6	-1.8	-13.5
Six qualifying conditions	3.4	-0.7	-18.9	6.4	-2.3	-35.4***
<b>Any acute care transition</b>						
All-cause	39.4	-0.6	-1.4	34.2	-2.3	-6.6
Potentially avoidable	17.3	2.2	12.8	19.5	-2.4	-12.5
Six qualifying conditions	7.7	-0.2	-2.3	9.8	-2.4	-24.0*

ECCP = Enhanced Care and Coordination Provider; ED = emergency department.

\*/\*\*/\*\* = Significantly different from zero based on a *p*-value cutoff of 0.1/0.05/0.01. Dark green shading indicates a statistically significant decrease. Light orange shading indicates a statistically significant increase.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 10).

NOTE: The *predicted probability absent the Initiative* is the mean of the predicted probabilities of experiencing the event during their respective exposure period for the residents in the intervention group, under the scenario that the intervention did not occur. The *Initiative effect* is calculated based on a difference-in-differences regression model with a national comparison group and adjusted for resident-level and facility-level characteristics. It is the difference between the predicted probabilities of the event with and without the intervention. The *relative effect* = (absolute Initiative effect) / (predicted probability absent the Initiative). *Acute care transitions* include hospitalizations, ED visits, or observation stays.



**Table 4-8**  
**Initiative effect on count of hospital-related utilization events per resident, FY 2017,**  
**ATOP2 (Nevada/Colorado)**

Measure	Clinical + Payment (NV)			Payment-Only (CO)		
	Predicted count absent the Initiative (events per year)	Absolute Initiative effect (events per year)	Relative effect (percent)	Predicted count absent the Initiative (events per year)	Absolute Initiative effect (events per year)	Relative effect (percent)
<b>Hospitalizations</b>						
All-cause	0.500	-0.062	-12.5	0.266	-0.003	-1.3
Potentially avoidable	0.107	0.021	19.4	0.098	-0.009	-9.1
Six qualifying conditions	0.057	0.006	10.6	0.054	-0.006	-11.0
<b>ED visits</b>						
All-cause	0.312	0.014	4.6	0.361	-0.026	-7.2
Potentially avoidable	0.119	0.019	16.2	0.179	-0.035	-19.6*
Six qualifying conditions	0.037	-0.006	-17.4	0.074	-0.030	-40.1**
<b>Acute care transitions</b>						
All-cause	0.825	-0.050	-6.1	0.637	-0.038	-5.9
Potentially avoidable	0.233	0.036	15.6	0.278	-0.045	-16.2
Six qualifying conditions	0.092	0.002	2.1	0.128	-0.037	-29.0*

ECCP = Enhanced Care and Coordination Provider; ED = emergency department.

\*/\*\*/\*\* = Significantly different from zero based on a *p*-value cutoff of 0.1/0.05/0.01. Dark green shading indicates a statistically significant decrease. Light orange shading indicates a statistically significant increase.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 12).

NOTE: The *predicted count absent the Initiative* is the mean of the predicted counts of events for the residents in the intervention group, under the scenario that the intervention did not occur. The *Initiative effect* is calculated based on a difference-in-differences regression model with a national comparison group and adjusted for resident-level and facility-level characteristics. It is the difference between the predicted counts with and without the intervention. The *relative effect* = (absolute Initiative effect) / (predicted count absent the Initiative). *Acute care transitions* include hospitalizations, ED visits, or observation stays.

**Table 4-9**  
**Initiative effect on Medicare expenditures, per resident-year, FY 2017,**  
**ATOP2 (Nevada/Colorado)**

Measure	Clinical + Payment (NV)			Payment-Only (CO)		
	Predicted expenditure absent the Initiative (dollars)	Absolute Initiative effect (dollars)	Relative effect (percent)	Predicted expenditure absent the Initiative (dollars)	Absolute Initiative effect (dollars)	Relative effect (percent)
<b>Total Medicare expenditures</b>	33,868	560	1.7	19,373	1,354	7.0
<b>Hospitalization expenditures</b>						
All-cause	15,543	-2,342	-15.1	5,065	-34	-0.7
Potentially avoidable	2,618	-345	-13.2	1,602	-107	-6.7
Six qualifying conditions	1,384	-439	-31.8	776	-98	-12.6

(continued)

**Table 4-9 (continued)**  
**Initiative effect on Medicare expenditures, per resident-year, FY 2017,**  
**ATOP2 (Nevada/Colorado)**

Measure	Clinical + Payment (NV)			Payment-Only (CO)		
	Predicted expenditure absent the Initiative (dollars)	Absolute Initiative effect (dollars)	Relative effect (percent)	Predicted expenditure absent the Initiative (dollars)	Absolute Initiative effect (dollars)	Relative effect (percent)
<b>ED visit expenditures</b>						
All-cause	308	78	25.4	411	-64	-15.5
Potentially avoidable	102	35	34.5	224	-81	-36.3**
Six qualifying conditions	20	21	105.9	92	-39	-42.3**
<b>Acute care transition expenditures</b>						
All-cause	16,178	-2,363	-14.6	5,585	-180	-3.2
Potentially avoidable	2,806	-256	-9.1	1,910	-285	-14.9
Six qualifying conditions	1,508	-495	-32.8	889	-159	-17.9

ECCP = Enhanced Care and Coordination Provider; ED = emergency department.

\*/\*\*/\*\* = Significantly different from zero based on a *p*-value cutoff of 0.1/0.05/0.01. Dark green shading indicates a statistically significant decrease. Light orange shading indicates a statistically significant increase.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 11 and MS 13).

NOTE: The *predicted expenditure absent the Initiative* is the mean of the predicted expenditures for the residents in the intervention group, under the scenario that the intervention did not occur. Predicted expenditures are based on a resident being eligible for the Initiative for the entire year (365 days). The *Initiative effect* is calculated based on a difference-in-differences regression model with a national comparison group and adjusted for resident-level and facility-level characteristics. It is the difference between the predicted expenditures with and without the intervention. The *relative effect* = (absolute Initiative effect) / (predicted expenditure absent the Initiative). *Acute care transitions* include hospitalizations, ED visits, or observation stays.

ATOP2 retained the same number of RNs and APRNs as in NFI 1 but reduced the number of Clinical + Payment facilities they supported from 24 to 13, thereby providing substantially more support to those facilities. Consequently, Clinical + Payment interviewees reported more satisfaction and engagement with NFI 2 than they had in NFI 1. Since this change was new for NFI 2 Initiative Year 1, it may be too soon to see any significant, favorable effects of their existing model.

**In the Payment-Only group (in Colorado), the Initiative was associated with an overall pattern of reductions in utilization and expenditures. Furthermore, the reductions were statistically significant for seven outcomes, especially for measures of ED visits for the six qualifying conditions.** The Initiative was associated with a 35.4 percent relative reduction in the probability of an ED visit for the six qualifying conditions, and over a 40 percent reduction in both the count of visits and associated expenditures.

The Payment-Only facilities reported that initiatives to reduce avoidable hospitalizations were not new, but rather ingrained in their standard of care, which may have given these facilities an advantage in implementing NFI 2 compared to other ECCP groups.

For more information about the Initiative in ATOP2 facilities, see *Appendix C* for a full summary of site visit and survey findings, *Tables M-6, M-7, N-6, N-7, O-6, and O-7* for descriptive results, and *Tables P-13 through P-18* for detailed multivariate results.

## 4.6 MOQI (Missouri)

In the Clinical + Payment group, the Initiative was associated with unfavorable increases in utilization, including statistically significant increases in both the probability and count of all-cause ED visits, potentially avoidable ED visits, and all-cause acute care transitions (see Tables 4-10, 4-11, and 4-12). The relative effect of these six increases ranged from a 13.2 percent to a 26.1 percent increase. There were no statistically significant changes in related expenditures for any of these services nor for any other hospital-related expenditures. However, the Initiative was associated with a statistically significant increase in total Medicare spending of 7.7 percent for eligible residents in FY 2017, when compared to the national comparison group.

**Table 4-10**  
**Initiative effect on probability of hospital-related utilization per resident, FY 2017,**  
**MOQI (Missouri)**

Measure	Clinical + Payment			Payment-Only		
	Predicted probability absent the Initiative (percent)	Absolute Initiative effect (percentage points)	Relative effect (percent)	Predicted probability absent the Initiative (percent)	Absolute Initiative effect (percentage points)	Relative effect (percent)
<b>Any hospitalization</b>						
All-cause	22.1	2.3	10.3	29.2	-1.1	-3.9
Potentially avoidable	9.2	1.6	17.7	15.4	-0.9	-5.7
Six qualifying conditions	5.3	1.2	22.1	9.5	-0.7	-7.0
<b>Any ED visit</b>						
All-cause	14.6	3.8	26.1***	27.6	1.2	4.3
Potentially avoidable	7.9	1.6	19.9**	16.9	1.5	8.9
Six qualifying conditions	1.5	0.4	29.1	5.0	1.6	31.4**
<b>Any acute care transition</b>						
All-cause	31.0	4.1	13.2**	43.7	1.1	2.6
Potentially avoidable	15.5	2.6	16.8	26.9	1.5	5.5
Six qualifying conditions	6.2	1.7	28.0	12.7	1.2	9.4

ECCP = Enhanced Care and Coordination Provider; ED = emergency department.

\*\*\* = Significantly different from zero based on a  $p$ -value cutoff of 0.1/0.05/0.01. Dark green shading indicates a statistically significant decrease. Light orange shading indicates a statistically significant increase.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 10).

NOTE: The *predicted probability absent the Initiative* is the mean of the predicted probabilities of experiencing the event during their respective exposure period for the residents in the intervention group, under the scenario that the intervention did not occur. The *Initiative effect* is calculated based on a difference-in-differences regression model with a national comparison group and adjusted for resident-level and facility-level characteristics. It is the difference between the predicted probabilities of the event with and without the intervention. The *relative effect* = (absolute Initiative effect) / (predicted probability absent the Initiative). *Acute care transitions* include hospitalizations, ED visits, or observation stays.

**Table 4-11**  
**Initiative effect on count of hospital-related utilization events per resident, FY 2017,**  
**MOQI (Missouri)**

Measure	Clinical + Payment			Payment-Only		
	Predicted count absent the Initiative (events per year)	Absolute Initiative effect (events per year)	Relative effect (percent)	Predicted count absent the Initiative (events per year)	Absolute Initiative effect (events per year)	Relative effect (percent)
<b>Hospitalizations</b>						
All-cause	0.332	0.032	9.7	0.464	-0.019	-4.0
Potentially avoidable	0.110	0.015	13.5	0.184	-0.003	-1.4
Six qualifying conditions	0.063	0.006	9.7	0.116	-0.014	-11.7
<b>ED visits</b>						
All-cause	0.207	0.048	23.0**	0.424	0.058	13.6
Potentially avoidable	0.087	0.023	25.8*	0.228	0.017	7.3
Six qualifying conditions	0.015	0.006	40.0	0.062	0.014	22.7**
<b>Acute care transitions</b>						
All-cause	0.533	0.094	17.6*	0.888	0.041	4.6
Potentially avoidable	0.197	0.039	19.9	0.415	0.011	2.7
Six qualifying conditions	0.078	0.013	16.2	0.179	0.001	0.4

ECCP = Enhanced Care and Coordination Provider; ED = emergency department.

\*/\*\*/\*\* = Significantly different from zero based on a *p*-value cutoff of 0.1/0.05/0.01. Dark green shading indicates a statistically significant decrease. Light orange shading indicates a statistically significant increase.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 12).

NOTE: The *predicted count absent the Initiative* is the mean of the predicted counts of events for the residents in the intervention group, under the scenario that the intervention did not occur. The *Initiative effect* is calculated based on a difference-in-differences regression model with a national comparison group and adjusted for resident-level and facility-level characteristics. It is the difference between the predicted counts with and without the intervention. The *relative effect* = (absolute Initiative effect) / (predicted count absent the Initiative). *Acute care transitions* include hospitalizations, ED visits, or observation stays.

**Table 4-12**  
**Initiative effect on Medicare expenditures, per resident-year, FY 2017,**  
**MOQI (Missouri)**

Measure	Clinical + Payment			Payment-Only		
	Predicted expenditure absent the Initiative (dollars)	Absolute Initiative effect (dollars)	Relative effect (percent)	Predicted expenditure absent the Initiative (dollars)	Absolute Initiative effect (dollars)	Relative effect (percent)
<b>Total Medicare expenditures</b>	25,283	1,946	7.7*	24,834	-474	-1.9
<b>Hospitalization expenditures</b>						
All-cause	5,646	521	9.2	6,636	-382	-5.8
Potentially avoidable	1,601	51	3.2	2,141	-23	-1.1
Six qualifying conditions	998	-228	-22.9	1,302	-226	-17.4

(continued)

**Table 4-12 (continued)**  
**Initiative effect on Medicare expenditures, per resident-year, FY 2017,**  
**MOQI (Missouri)**

Measure	Clinical + Payment			Payment-Only		
	Predicted expenditure absent the Initiative (dollars)	Absolute Initiative effect (dollars)	Relative effect (percent)	Predicted expenditure absent the Initiative (dollars)	Absolute Initiative effect (dollars)	Relative effect (percent)
<b>ED visit expenditures</b>						
All-cause	201	10	5.1	339	13	3.8
Potentially avoidable	77	5	6.2	153	2	1.5
Six qualifying conditions	20	-5	-25.7	51	7	14.0
<b>Acute care transition expenditures</b>						
All-cause	6,051	585	9.7	7,170	-459	-6.4
Potentially avoidable	1,642	129	7.8	2,341	-86	-3.7
Six qualifying conditions	1,003	-223	-22.2	1,379	-267	-19.3

ECCP = Enhanced Care and Coordination Provider; ED = emergency department.

\*/\*\*/\*\* = Significantly different from zero based on a *p*-value cutoff of 0.1/0.05/0.01. Dark green shading indicates a statistically significant decrease. Light orange shading indicates a statistically significant increase.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 11 and MS 13).

NOTE: The *predicted expenditure absent the Initiative* is the mean of the predicted expenditures for the residents in the intervention group, under the scenario that the intervention did not occur. Predicted expenditures are based on a resident being eligible for the Initiative for the entire year (365 days). The *Initiative effect* is calculated based on a difference-in-differences regression model with a national comparison group and adjusted for resident-level and facility-level characteristics. It is the difference between the predicted expenditures with and without the intervention. The *relative effect* = (absolute Initiative effect) / (predicted expenditure absent the Initiative). *Acute care transitions* include hospitalizations, ED visits, or observation stays.

As noted above, these findings may be partially explained by a relatively strong downward trend in hospital-related utilization during 2014–2016 compared to the national comparison group, making it harder to reduce utilization further. Additionally, staff in facilities reported that the main impact of NFI 2 on their clinical processes has been improvements to their documentation of changes in condition, suggesting that facility staff are focusing more on effecting long-term facility process change than short-term changes in hospitalization rates. Facility interviewees were enthusiastic about NFI 2 and committed to the Initiative goals, even despite the lackluster results from the technical analysis.

**In the Payment-Only group, the Initiative was associated with two statistically significant increases—in both the probability (31.4 percent) and count (22.7 percent)—of potentially avoidable ED visits for the six qualifying conditions.** The overall utilization pattern was more mixed, with a pattern of increases in ED visits and acute care transitions but decreases in hospitalizations. There were no statistically significant changes in expenditures, although the pattern indicated a reduction in all non-ED expenditures.

Generally, staff in facilities reported that the Initiative was going well and was perceived to have a favorable effect on reducing avoidable hospitalizations. Interviewees said that the main impact of NFI 2 on their clinical processes has been improvements to their documentation of changes in condition, which, based on these claims, findings may or may not yield significant changes in utilization or expenditures, but likely does improve quality of resident care.

For more information about the Initiative in MOQI facilities, see *Appendix D* for a full summary of site visit and survey findings, *Tables M-8, M-9, N-8, N-9, O-8, and O-9* for descriptive results, and *Tables P-19* through *P-24* for detailed multivariate results.

#### 4.7 NY-RAH (New York)

In the Clinical + Payment group, eligible residents’ participation in the Initiative was associated with mostly unfavorable increases in utilization and expenditure measures. Of these, five were statistically significant, including a 12.1 percent increase in the count of all-cause acute care transitions (see *Tables 4-13, 4-14, and 4-15*). As noted above, these findings may be partially explained by a downward trend in hospital-related utilization during 2014–2016 compared to the national comparison group, making it harder to show improvements. Interestingly, the Initiative was associated with a reduction in both the probability and count of hospitalizations for the six qualifying conditions, neither of which were statistically significant.

**Table 4-13**  
Initiative effect on probability of hospital-related utilization per resident, FY 2017, NY-RAH (New York)

Measure	Clinical + Payment			Payment-Only		
	Predicted probability absent the Initiative (percent)	Absolute Initiative effect (percentage points)	Relative effect (percent)	Predicted probability absent the Initiative (percent)	Absolute Initiative effect (percentage points)	Relative effect (percent)
<b>Any hospitalization</b>						
All-cause	24.7	1.6	6.6	24.3	-1.8	-7.3
Potentially avoidable	10.2	0.4	4.1	9.2	-0.3	-3.5
Six qualifying conditions	6.2	-0.2	-3.6	5.3	-0.3	-6.1
<b>Any ED visit</b>						
All-cause	15.0	2.6	17.5*	19.8	-1.4	-7.2
Potentially avoidable	7.6	1.2	15.3	11.3	-1.1	-9.5
Six qualifying conditions	1.4	0.2	11.5	2.2	-0.2	-7.6
<b>Any acute care transition</b>						
All-cause	32.8	3.4	10.3*	35.8	-1.9	-5.3
Potentially avoidable	16.3	1.3	7.7	18.3	-0.7	-3.9
Six qualifying conditions	7.3	-0.1	-1.0	7.0	-0.3	-4.3

ECCP = Enhanced Care and Coordination Provider; ED = emergency department.

\*/\*\*/\*\* = Significantly different from zero based on a *p*-value cutoff of 0.1/0.05/0.01. Dark green shading indicates a statistically significant decrease. Light orange shading indicates a statistically significant increase.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 10).

NOTE: The *predicted probability absent the Initiative* is the mean of the predicted probabilities of experiencing the event during their respective exposure period for the residents in the intervention group, under the scenario that the intervention did not occur. The *Initiative effect* is calculated based on a difference-in-differences regression model with a national comparison group and adjusted for resident-level and facility-level characteristics. It is the difference between the predicted probabilities of the event with and without the intervention. The *relative effect* = (absolute Initiative effect) / (predicted probability absent the Initiative). *Acute care transitions* include hospitalizations, ED visits, or observation stays.

**Table 4-14**  
**Initiative effect on count of hospital-related utilization events per resident, FY 2017,**  
**NY-RAH (New York)**

Measure	Clinical + Payment			Payment-Only		
	Predicted count absent the Initiative (events per year)	Absolute Initiative effect (events per year)	Relative effect (percent)	Predicted count absent the Initiative (events per year)	Absolute Initiative effect (events per year)	Relative effect (percent)
<b>Hospitalizations</b>						
All-cause	0.424	0.013	3.1	0.370	-0.024	-6.3
Potentially avoidable	0.124	0.004	3.0	0.113	-0.006	-5.6
Six qualifying conditions	0.074	-0.007	-8.9	0.058	-0.001	-2.1
<b>ED visits</b>						
All-cause	0.212	0.055	25.7**	0.297	-0.034	-11.5
Potentially avoidable	0.088	0.024	27.0**	0.137	-0.015	-11.2
Six qualifying conditions	0.015	0.002	13.8	0.023	-0.001	-5.7
<b>Acute care transitions</b>						
All-cause	0.624	0.076	12.1*	0.663	-0.052	-7.8
Potentially avoidable	0.209	0.032	15.1	0.249	-0.020	-7.8
Six qualifying conditions	0.089	-0.004	-4.4	0.080	-0.002	-2.1

ECCP = Enhanced Care and Coordination Provider; ED = emergency department.

\*\*/\*\*/\* = Significantly different from zero based on a *p*-value cutoff of 0.1/0.05/0.01. Dark green shading indicates a statistically significant decrease. Light orange shading indicates a statistically significant increase.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 12).

NOTE: The *predicted count absent the Initiative* is the mean of the predicted counts of events for the residents in the intervention group, under the scenario that the intervention did not occur. The *Initiative effect* is calculated based on a difference-in-differences regression model with a national comparison group and adjusted for resident-level and facility-level characteristics. It is the difference between the predicted counts with and without the intervention. The *relative effect* = (absolute Initiative effect) / (predicted count absent the Initiative). *Acute care transitions* include hospitalizations, ED visits, or observation stays.

**Table 4-15**  
**Initiative effect on Medicare expenditures, per resident-year, FY 2017,**  
**NY-RAH (New York)**

Measure	Clinical + Payment			Payment-Only		
	Predicted expenditure absent the Initiative (dollars)	Absolute Initiative effect (dollars)	Relative effect (percent)	Predicted expenditure absent the Initiative (dollars)	Absolute Initiative effect (dollars)	Relative effect (percent)
<b>Total Medicare expenditures</b>	36,776	1,751	4.8	31,101	-382	-1.2
<b>Hospitalization expenditures</b>						
All-cause	15,046	490	3.3	10,244	72	0.7
Potentially avoidable	3,147	371	11.8	2,276	-111	-4.9
Six qualifying conditions	1,845	26	1.4	1,140	0	0.0

(continued)

**Table 4-15 (continued)**  
**Initiative effect on Medicare expenditures, per resident-year, FY 2017,**  
**NY-RAH (New York)**

Measure	Clinical + Payment			Payment-Only		
	Predicted expenditure absent the Initiative (dollars)	Absolute Initiative effect (dollars)	Relative effect (percent)	Predicted expenditure absent the Initiative (dollars)	Absolute Initiative effect (dollars)	Relative effect (percent)
<b>ED visit expenditures</b>						
All-cause	239	-7	-3.1	247	-16	-6.5
Potentially avoidable	92	4	4.2	106	-15	-14.0
Six qualifying conditions	18	-1	-6.8	22	-2	-7.1
<b>Acute care transition expenditures</b>						
All-cause	16,034	482	3.0	10,675	48	0.4
Potentially avoidable	3,285	421	12.8	2,436	-144	-5.9
Six qualifying conditions	1,908	-1	0.0	1,175	1	0.1

ECCP = Enhanced Care and Coordination Provider; ED = emergency department.

\*/\*\*/\*\* = Significantly different from zero based on a *p*-value cutoff of 0.1/0.05/0.01. Dark green shading indicates a statistically significant decrease. Light orange shading indicates a statistically significant increase.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 11 and MS 13).

NOTE: The *predicted expenditure absent the Initiative* is the mean of the predicted expenditures for the residents in the intervention group, under the scenario that the intervention did not occur. Predicted expenditures are based on a resident being eligible for the Initiative for the entire year (365 days). The *Initiative effect* is calculated based on a difference-in-differences regression model with a national comparison group and adjusted for resident-level and facility-level characteristics. It is the difference between the predicted expenditures with and without the intervention. The *relative effect* = (absolute Initiative effect) / (predicted expenditure absent the Initiative). *Acute care transitions* include hospitalizations, ED visits, or observation stays.

**For residents in the Payment-Only group, we found an overall pattern of favorable reductions in utilization and expenditure measures, none of which were statistically significant.** The magnitude of reductions in ED visits was slightly stronger than reductions in hospitalizations. For example, the Initiative was associated with an 11.2 percent reduction in the count of potentially avoidable ED visits compared to a 5.6 percent reduction in the count of potentially avoidable hospitalizations. The lack of statistically significant findings in the Payment-Only group may be partially because of a somewhat strong decline in hospital-related utilization in this group during 2014–2016 compared to the national comparison group, making it harder to demonstrate statistically significant reductions in FY 2017.

Because NY-RAH employs an education-only model, challenges may arise in some facilities with certifying conditions since the ECCP does not provide hands-on nursing staff who can certify for the Initiative; non-ECCP practitioners must certify the conditions, unlike in interventions with direct-care ECCP models. Nevertheless, interviewed nursing facility staff and practitioners, across Clinical + Payment and Payment Only facilities, shared their opinions that the Initiative is having a favorable effect on reducing avoidable hospitalizations and readmissions, citing the benefits of the NFI 2 focus on facility staff and practitioner training, education, and reimbursement for treating the six qualifying conditions.



For more information about the Initiative in NY-RAH facilities, see *Appendix E* for a full summary of site visit and survey findings, *Tables N-10, N-11, M-10, M-11, O-10, and O-11* for descriptive results, and *Tables P-25 through P-30* for detailed multivariate results.

#### 4.8 OPTIMISTIC (Indiana)

In OPTIMISTIC’s Clinical + Payment group, the Initiative was not associated with any statistically significant changes in utilization or expenditures for eligible residents in FY 2017 (see *Tables 4-16, 4-17, and 4-18*). However, there was an overall pattern of reductions in hospital-related utilization measures and mixed results with expenditure measures.

**Table 4-16**  
**Initiative effect on probability of hospital-related utilization per resident, FY 2017,**  
**OPTIMISTIC (Indiana)**

Measure	Clinical + Payment			Payment-Only		
	Predicted probability absent the Initiative (percent)	Absolute Initiative effect (percentage points)	Relative effect (percent)	Predicted probability absent the Initiative (percent)	Absolute Initiative effect (percentage points)	Relative effect (percent)
<b>Any hospitalization</b>						
All-cause	24.0	-0.8	-3.2	24.8	-2.6	-10.3*
Potentially avoidable	11.2	-0.8	-6.8	12.2	-1.7	-14.0
Six qualifying conditions	5.5	-0.6	-11.4	6.9	-1.3	-18.1
<b>Any ED visit</b>						
All-cause	20.7	-3.4	-16.5	23.3	0.7	2.8
Potentially avoidable	11.3	-1.8	-15.7	14.9	-1.6	-11.0
Six qualifying conditions	2.4	0.0	0.8	3.7	-0.8	-20.7
<b>Any acute care transition</b>						
All-cause	37.3	-3.8	-10.2	38.5	-2.1	-5.5
Potentially avoidable	20.4	-1.8	-8.9	23.2	-2.9	-12.3*
Six qualifying conditions	8.0	-1.1	-13.8	9.2	-1.2	-12.9

ECCP = Enhanced Care and Coordination Provider; ED = emergency department.

\*/\*\*/\*\* = Significantly different from zero based on a *p*-value cutoff of 0.1/0.05/0.01. Dark green shading indicates a statistically significant decrease. Light orange shading indicates a statistically significant increase.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 10).

NOTE: The *predicted probability absent the Initiative* is the mean of the predicted probabilities of experiencing the event during their respective exposure period for the residents in the intervention group, under the scenario that the intervention did not occur. The *Initiative effect* is calculated based on a difference-in-differences regression model with a national comparison group and adjusted for resident-level and facility-level characteristics. It is the difference between the predicted probabilities of the event with and without the intervention. The *relative effect* = (absolute Initiative effect) / (predicted probability absent the Initiative). *Acute care transitions* include hospitalizations, ED visits, or observation stays.

**Table 4-17**  
**Initiative effect on count of hospital-related utilization events per resident, FY 2017,**  
**OPTIMISTIC (Indiana)**

Measure	Clinical + Payment			Payment-Only		
	Predicted count absent the Initiative (events per year)	Absolute Initiative effect (events per year)	Relative effect (percent)	Predicted count absent the Initiative (events per year)	Absolute Initiative effect (events per year)	Relative effect (percent)
<b>Hospitalizations</b>						
All-cause	0.344	0.003	0.9	0.368	-0.039	-10.5
Potentially avoidable	0.119	0.001	1.0	0.149	-0.016	-10.9
Six qualifying conditions	0.058	-0.004	-6.0	0.082	-0.012	-14.4
<b>ED visits</b>						
All-cause	0.280	-0.021	-7.4	0.342	-0.002	-0.5
Potentially avoidable	0.129	-0.011	-8.7	0.188	-0.031	-16.4
Six qualifying conditions	0.025	0.002	5.9	0.042	-0.011	-27.2
<b>Acute care transitions</b>						
All-cause	0.624	-0.017	-2.7	0.715	-0.042	-5.9
Potentially avoidable	0.250	-0.010	-4.0	0.336	-0.047	-14.0
Six qualifying conditions	0.083	-0.002	-2.8	0.123	-0.023	-18.3

ECCP = Enhanced Care and Coordination Provider; ED = emergency department.

\*/\*\*/\*\* = Significantly different from zero based on a *p*-value cutoff of 0.1/0.05/0.01. Dark green shading indicates a statistically significant decrease. Light orange shading indicates a statistically significant increase.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 12).

NOTE: The *predicted count absent the Initiative* is the mean of the predicted counts of events for the residents in the intervention group, under the scenario that the intervention did not occur. The *Initiative effect* is calculated based on a difference-in-differences regression model with a national comparison group and adjusted for resident-level and facility-level characteristics. It is the difference between the predicted counts with and without the intervention. The *relative effect* = (absolute Initiative effect) / (predicted count absent the Initiative). *Acute care transitions* include hospitalizations, ED visits, or observation stays.

**Table 4-18**  
**Initiative effect on Medicare expenditures, per resident-year, FY 2017,**  
**OPTIMISTIC (Indiana)**

Measure	Clinical + Payment			Payment-Only		
	Predicted expenditure absent the Initiative (dollars)	Absolute Initiative effect (dollars)	Relative effect (percent)	Predicted expenditure absent the Initiative (dollars)	Absolute Initiative effect (dollars)	Relative effect (percent)
<b>Total Medicare expenditures</b>	30,860	-202	-0.7	28,397	-840	-3.0
<b>Hospitalization expenditures</b>						
All-cause	7,423	393	5.3	6,923	-635	-9.2
Potentially avoidable	2,434	-211	-8.7	2,424	-345	-14.3
Six qualifying conditions	791	192	24.3	1,316	-390	-29.7
<b>ED visit expenditures</b>						
All-cause	273	-45	-16.4	273	27	10.0
Potentially avoidable	117	-29	-25.0	126	8	6.5
Six qualifying conditions	24	1	5.9	42	-13	-31.9

(continued)

**Table 4-18 (continued)**  
**Initiative effect on Medicare expenditures, per resident-year, FY 2017,**  
**OPTIMISTIC (Indiana)**

Measure	Clinical + Payment			Payment-Only		
	Predicted expenditure absent the Initiative (dollars)	Absolute Initiative effect (dollars)	Relative effect (percent)	Predicted expenditure absent the Initiative (dollars)	Absolute Initiative effect (dollars)	Relative effect (percent)
<b>Acute care transition expenditures</b>						
All-cause	7,969	293	3.7	7,504	-768	-10.2
Potentially avoidable	2,642	-292	-11.1	2,604	-367	-14.1
Six qualifying conditions	810	185	22.8	1,391	-427	-30.7

ECCP = Enhanced Care and Coordination Provider; ED = emergency department.

\*/\*\*/\*\* = Significantly different from zero based on a *p*-value cutoff of 0.1/0.05/0.01. Dark green shading indicates a statistically significant decrease. Light orange shading indicates a statistically significant increase.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 11 and MS 13).

NOTE: The *predicted expenditure absent the Initiative* is the mean of the predicted expenditures for the residents in the intervention group, under the scenario that the intervention did not occur. Predicted expenditures are based on a resident being eligible for the Initiative for the entire year (365 days). The *Initiative effect* is calculated based on a difference-in-differences regression model with a national comparison group and adjusted for resident-level and facility-level characteristics. It is the difference between the predicted expenditures with and without the intervention. The *relative effect* = (absolute Initiative effect) / (predicted expenditure absent the Initiative). *Acute care transitions* include hospitalizations, ED visits, or observation stays.

Notably, OPTIMISTIC shifted its focus away from some of the NFI 1 clinical interventions to facilitating implementation of the payment model. For example, OPTIMISTIC provided trainings for their clinical staff relating to the six qualifying conditions, shifting some of attention away from their earlier efforts, such as Collaborative Care Review. These efforts to target implementation activities through the first year may delay some potential effects of NFI 2 until future Initiative years.

**In the Payment-Only group, the Initiative was associated with an overall pattern of reductions in utilization and expenditures.** Two of these reductions were statistically significant: a 12.3 percent reduction in the probability of potentially avoidable acute care transitions and a 10.3 percent reduction in the probability of all-cause hospitalizations.

Despite these findings, Payment-Only facilities reported fewer systems in place to implement NFI 2 compared with Clinical + Payment facilities, resulting in interviewee-reported lower engagement, less billing, and lower perception that NFI 2 results in a reduction of avoidable hospitalizations. The reason behind this discrepancy between interview findings and utilization and expenditure impacts is unclear; RTI will continue monitoring these data in the coming years.

For more information about the Initiative in OPTIMISTIC facilities, see *Appendix F* for a full summary of site visit and survey findings, *Tables M-12, M-13, N-12, N-13, O-12, and O-13* for descriptive results, and *Tables P-31 through P-36* for detailed multivariate results.

#### 4.9 RAVEN (Pennsylvania)

**In the Clinical + Payment group, participation in the Initiative was associated with unfavorable increases in a few utilization and expenditures** (see *Tables 4-19, 4-20, and 4-21*).

Some of the increases were statistically significant, including a 43.9 percent increase in the count of acute care transitions for the six qualifying conditions, and an 11.1 percent increase in total Medicare expenditures. RAVEN was one of three ECCPs with statistically significant increases (MOQI and NY-RAH were the others). However, as noted earlier, given the particularly low baseline rate of all-cause acute care transitions in RAVEN’s Clinical + Payment facilities (among the lowest of all ECCPs), as well as a strong pre-existing downward trend in 2014–2016, these facilities may have faced more challenges in continuing reductions in FY 2017.

**Table 4-19**  
**Initiative effect on probability of hospital-related utilization per resident, FY 2017,**  
**RAVEN (Pennsylvania)**

Measure	Clinical + Payment			Payment-Only		
	Predicted probability absent the Initiative (percent)	Absolute Initiative effect (percentage points)	Relative effect (percent)	Predicted probability absent the Initiative (percent)	Absolute Initiative effect (percentage points)	Relative effect (percent)
<b>Any hospitalization</b>						
All-cause	20.0	0.7	3.6	26.6	-2.3	-8.8
Potentially avoidable	8.2	1.0	12.7	13.2	-2.4	-18.5*
Six qualifying conditions	3.4	1.4	41.1	6.9	-0.7	-9.6
<b>Any ED visit</b>						
All-cause	15.6	3.3	21.3**	20.9	-0.8	-3.6
Potentially avoidable	8.4	1.7	19.9	9.9	-0.2	-1.9
Six qualifying conditions	2.5	0.8	30.5	3.0	-0.5	-16.4
<b>Any acute care transition</b>						
All-cause	29.2	2.4	8.2	38.3	-2.8	-7.2
Potentially avoidable	14.7	2.1	14.4	21.0	-2.9	-13.8
Six qualifying conditions	5.6	1.5	26.7	9.7	-1.6	-16.2

ECCP = Enhanced Care and Coordination Provider; ED = emergency department.

\*/\*\*/\*\* = Significantly different from zero based on a *p*-value cutoff of 0.1/0.05/0.01. Dark green shading indicates a statistically significant decrease. Light orange shading indicates a statistically significant increase.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 10).

NOTE: The *predicted probability absent the Initiative* is the mean of the predicted probabilities of experiencing the event during their respective exposure period for the residents in the intervention group, under the scenario that the intervention did not occur. The *Initiative effect* is calculated based on a difference-in-differences regression model with a national comparison group and adjusted for resident-level and facility-level characteristics. It is the difference between the predicted probabilities of the event with and without the intervention. The *relative effect* = (absolute Initiative effect) / (predicted probability absent the Initiative). *Acute care transitions* include hospitalizations, ED visits, or observation stays.

**Table 4-20**  
**Initiative effect on count of hospital-related utilization events per resident, FY 2017,**  
**RAVEN (Pennsylvania)**

Measure	Clinical + Payment			Payment-Only		
	Predicted count absent the Initiative (events per year)	Absolute Initiative effect (events per year)	Relative effect (percent)	Predicted count absent the Initiative (events per year)	Absolute Initiative effect (events per year)	Relative effect (percent)
<b>Hospitalizations</b>						
All-cause	0.295	0.026	8.8	0.465	-0.079	-16.9**
Potentially avoidable	0.095	0.015	15.8	0.170	-0.042	-24.8**
Six qualifying conditions	0.037	0.021	55.6**	0.082	-0.013	-15.5
<b>ED visits</b>						
All-cause	0.216	0.048	22.0	0.299	-0.014	-4.5
Potentially avoidable	0.098	0.017	17.6	0.106	0.006	6.0
Six qualifying conditions	0.028	0.006	21.0	0.032	-0.004	-12.5
<b>Acute care transitions</b>						
All-cause	0.508	0.075	14.8	0.762	-0.094	-12.4*
Potentially avoidable	0.194	0.032	16.4	0.274	-0.034	-12.3
Six qualifying conditions	0.063	0.028	43.9*	0.114	-0.017	-15.1

ECCP = Enhanced Care and Coordination Provider; ED = emergency department.

\*/\*\*/\*\* = Significantly different from zero based on a *p*-value cutoff of 0.1/0.05/0.01. Dark green shading indicates a statistically significant decrease. Light orange shading indicates a statistically significant increase.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 12).

NOTE: The *predicted count absent the Initiative* is the mean of the predicted counts of events for the residents in the intervention group, under the scenario that the intervention did not occur. The *Initiative effect* is calculated based on a difference-in-differences regression model with a national comparison group and adjusted for resident-level and facility-level characteristics. It is the difference between the predicted counts with and without the intervention. The *relative effect* = (absolute Initiative effect) / (predicted count absent the Initiative). *Acute care transitions* include hospitalizations, ED visits, or observation stays.

**Table 4-21**  
**Initiative effect on Medicare expenditures, per resident-year, FY 2017,**  
**RAVEN (Pennsylvania)**

Measure	Clinical + Payment			Payment-Only		
	Predicted expenditure absent the Initiative (dollars)	Absolute Initiative effect (dollars)	Relative effect (percent)	Predicted expenditure absent the Initiative (dollars)	Absolute Initiative effect (dollars)	Relative effect (percent)
<b>Total Medicare expenditures</b>	23,866	2,654	11.1**	29,721	-1,437	-4.8
<b>Hospitalization expenditures</b>						
All-cause	5,401	538	10.0	8,078	-1,380	-17.1*
Potentially avoidable	1,222	379	31.0	2,614	-668	-25.6**
Six qualifying conditions	437	348	79.6**	1,228	-222	-18.0

(continued)

**Table 4-21 (continued)**  
**Initiative effect on Medicare expenditures, per resident-year, FY 2017,**  
**all ECCPs (Pennsylvania)**

Measure	Clinical + Payment			Payment-Only		
	Predicted expenditure absent the Initiative (dollars)	Absolute Initiative effect (dollars)	Relative effect (percent)	Predicted expenditure absent the Initiative (dollars)	Absolute Initiative effect (dollars)	Relative effect (percent)
<b>ED visit expenditures</b>						
All-cause	165	51	30.7	270	10	3.7
Potentially avoidable	79	7	8.4	79	15	19.1
Six qualifying conditions	29	1	3.5	25	3	13.2
<b>Acute care transition expenditures</b>						
All-cause	5,594	586	10.5	8,596	-1,420	-16.5*
Potentially avoidable	1,331	352	26.4	2,811	-739	-26.3*
Six qualifying conditions	466	349	74.8**	1,290	-242	-18.8

ECCP = Enhanced Care and Coordination Provider; ED = emergency department.

\*/\*\*/\*\* = Significantly different from zero based on a *p*-value cutoff of 0.1/0.05/0.01. Dark green shading indicates a statistically significant decrease. Light orange shading indicates a statistically significant increase.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 11 and MS 13).

NOTE: The *predicted expenditure absent the Initiative* is the mean of the predicted expenditures for the residents in the intervention group, under the scenario that the intervention did not occur. Predicted expenditures are based on a resident being eligible for the Initiative for the entire year (365 days). The *Initiative effect* is calculated based on a difference-in-differences regression model with a national comparison group and adjusted for resident-level and facility-level characteristics. It is the difference between the predicted expenditures with and without the intervention. The *relative effect* = (absolute Initiative effect) / (predicted expenditure absent the Initiative). *Acute care transitions* include hospitalizations, ED visits, or observation stays.

During site visits, RAVEN leadership reported that Payment-Only facilities were generally more engaged with NFI 2 than Clinical + Payment facilities were, which may help to explain some of the utilization and expenditure rates for Clinical + Payment facilities.

**Among residents in the Payment-Only group, participation in the Initiative was associated with an overall pattern of favorable reductions in utilization and expenditures.** A number of these reductions were statistically significant, including a 24.8 percent reduction in the count of potentially avoidable hospitalizations, and a 16.5 percent reduction in expenditures for acute care transitions.

Given that Payment-Only facilities seemed to be more engaged in NFI 2 compared to the Clinical + Payment facilities, this finding is not surprising. RAVEN also is the only ECCP that hired an RN liaison specifically to conduct monthly visits to Payment-Only facilities and to be available by phone as needed to provide billing advice and general assistance with NFI 2 implementation. In addition, the Payment-Only group’s upward baseline trend did not present an existing pattern of reductions to be further improved.

For more information about the Initiative in RAVEN facilities, see *Appendix G* for a full summary of site visit and survey findings, *Tables M-14, M-15, N-14, N-15, O-14, and O-15* for descriptive results, and *Tables P-37 through P-42* for detailed multivariate results.

## **SECTION 5. DISCUSSION**

In this report, we present early evaluation results on the implementation of NFI 2 and its impact on key hospital-related utilization and expenditure measures, based on data from the first year of the Initiative (FY 2017). Two key findings have emerged at this early stage. First, most ECCPs and facilities reported that the roll-out of NFI 2 went relatively smoothly in both Clinical + Payment and Payment-Only facilities, although participating practitioners faced some implementation challenges. Most facilities took advantage of the new billing codes; billing by practitioners was relatively infrequent, especially for care coordination conferences. Overall, in Initiative Year 1, there was stated support for and timely implementation of the Initiative. Payment-Only facilities did not have the benefit of an in-house ECCP nurse to support Initiative implementation, but this difference was not noted as having a major effect on the implementation process. Most facility interviewees reported that they had been able to submit claims, following a start-up period and early learning curve to become familiar with NFI 2.

Second, we found that despite similar implementation experiences, the magnitude and direction of the early FY 2017 Initiative effects differed by intervention group. For facilities in the Payment-Only group, the Initiative led to a consistent pattern of reductions overall, including a meaningful number of favorable, statistically significant reductions in utilization and expenditure measures. In contrast, facilities in the Clinical + Payment group, which had already participated in NFI 1, were not able to continue their steep NFI 1 trend and further reduce utilization or expenditures with the addition of the payment component.

This finding for Initiative Year 1 should be interpreted considering the fact that Clinical + Payment facilities already had reduced utilization and expenditures during the 3-year baseline period, FY 2014–FY 2016, through their participation in NFI 1. Relative to the national comparison group, hospital-related utilization and expenditures in the Clinical + Payment group decreased more precipitously during the baseline period, owing to prior NFI 1 interventions. This has two consequences. First, it may be difficult to achieve further reductions from an already low starting point. Second, our statistical models assumed that absent the Initiative, the downward trend would continue. This assumption is plausible but makes it more difficult for Clinical + Payment facilities to achieve incremental new reductions under NFI 2.

Some facility leaders interviewed suggested that Clinical + Payment facility staff may have become less diligent with clinical intervention efforts. Furthermore, across all ECCPs NFI 2 activities were largely completed by ECCP nurses or facility leadership, leaving facility nursing staff less involved. Several facility interviewees described NFI 2 as a continuation of efforts they had in place already; the Initiative was said to provide a financial incentive to maintain the types of work facility staff had been doing throughout NFI 1, but interviewees indicated the work itself is largely unchanged. As a practitioner in Pennsylvania stated, “From my perspective, the RAVEN program is self-sustaining and functions on its own.” Many Clinical + Payment facility interviewees across ECCPs shared similar sentiments that the majority of the work, introducing new processes and effecting facility changes, was done during NFI 1. A combination of these factors may have contributed to the lack of Initiative effect on reducing utilization and expenditures.

The early favorable Initiative effects in the Payment-Only group and less so favorable effects in the Clinical + Payment group are based on only 1 year of data. Most of the effects are relatively small in magnitude and not statistically significant. Thus, it is too early to reach conclusions with any degree of confidence about the effectiveness of the payment incentive in either group. Nonetheless, to the degree that the early findings in the Payment-Only group are meaningful, they are the likely result of three factors. First, the downward trend in utilization and expenditures during the baseline period was not as strong as in the Clinical + Payment group. It could be easier to make reductions from a base not influenced by prior interventions. Second, as Payment-Only facilities did not benefit from NFI 1 activities, they were more engaged and invested in the brand-new effort to reduce avoidable hospitalizations. In addition to receiving payment incentives as conditions of participation, the Payment-Only facilities were expected to implement tools to detect and communicate changes of condition that had been already implemented in the Clinical + Payment facilities. Third, some ECCP leaders suggested that the Payment-Only facilities, selected based on the higher Nursing Home Compare star ratings, were stronger facilities which perform better in general.

Some ECCPs sought to encourage Initiative engagement through various means. For example, one ECCP (RAVEN, in Pennsylvania) focused special attention and support on Payment-Only facilities by hiring a liaison to address their implementation challenges. Other ECCPs made special efforts to reach out to practitioners, who were described by interviewees as being harder to engage in NFI 2 in general. Even practitioners who supported the concept and goals of the Initiative may not have submitted their own claims for a variety of reasons, including being salaried and not receiving fee-for-service payments, adhering to the stringent requirements for billing, and seeing the payment amounts as “insufficient” incentives for submitting Initiative claims. Most facilities tried to promote Initiative participation by encouraging the use of tools to simplify communication across facility staff, leadership, and practitioners, while also supporting documentation efforts to meet NFI 2 claims submission requirements. Whether these early efforts to reach Payment-Only facilities, engage practitioners, or effect change in facility communication and documentation practices will have an impact on hospital utilization and expenditures remains to be seen.

As of Initiative Year 1, interviewees across ECCPs and facilities provided mixed feedback regarding their perceptions of the Initiative; some firmly believe the Initiative is reducing avoidable hospitalizations in their facilities, while others feel the Initiative is having little effect beyond rewarding the facility for existing (pre-NFI 2) efforts to keep residents in house.

Similarly, ECCP-specific analysis reveals substantial variability in the pattern of estimated Initiative effects across ECCPs. Early results for the Clinical + Payment group indicate that as of Initiative Year 1, only AQAF residents (in Alabama) experienced some statistically significant reductions in hospital-related utilization relative to the national comparison group. In contrast, for the Payment-Only group, four of the six ECCPs demonstrated statistically significant reductions in some utilization or expenditure measures. These differences were driven by variations in baseline outcome trends as well as implementation efforts across the ECCPs during Initiative Year 1.



So far, the Initiative was implemented smoothly and timely. There was a consensus among ECCPs and participating facilities and practitioners that the choice of six qualifying conditions is appropriate and most of the clinical definitions are valid. Facilities reported good understanding of the billing requirements; there was substantial interest to benefit from financial incentives put in place by the Initiative. However, low practitioner billing for certifying conditions, together with minimal of billing for the care coordination conferences, indicated that there may be a need to review the billing and certification timeframe requirements as well as those for care coordination conferences to stimulate practitioner engagement.

It is important to note that some facilities expressed concern that claims submissions may decrease over time as facility staff assessment skills improve and they catch changes in condition sooner and address health concerns before residents reach the acuity threshold required for claims submission.

Competing efforts to reduce avoidable hospitalizations in Initiative and non-Initiative facilities have the potential to dilute the future evaluation results. Increasing presence of managed care plans that use similar approaches to reducing avoidable hospitalizations reported by most of the participating facilities may also reduce the number of Initiative-eligible residents in upcoming years.

In future reports, we will gather and analyze additional years of data to determine whether these encouraging early findings will continue to hold or intensify in Payment-Only facilities and whether Clinical + Payment facilities will be able to reduce utilization and expenditures further as NFI 2 unfolds in subsequent years. Similarly, we will pay attention to trends in the participating ECCP states that may mirror the goals of NFI 2 or that may have an effect on NFI 2 participation, such as the prevalence of managed care plan enrollment among Initiative-eligible residents.

In summary, the Initiative overall has yielded modest successes in the first year. Participating facilities and practitioners implemented the new payment component with early challenges that largely resolved over time and with minimal facility attrition through the first year. Most facilities reported that they had submitted Initiative claims and received payment for treating eligible residents on site, and many practitioners also reported successful Initiative claims submissions in the first year. Clinical + Payment facilities that participated in NFI 1 with continued clinical and educational interventions, and now with the added payment component, did not reduce hospital utilization and expenditures further in Initiative Year 1, beyond the reductions already achieved during NFI 1. Payment-Only facilities that were newly added to NFI 2 and are implementing only the payment component, showed some promising results in reducing hospital utilization and expenditures.

As these are very early findings, additional years of data will help provide more definitive insight about Initiative effects. In future annual reports, we will include additional outcomes in the impact analysis, such as clinical quality measures for participating residents, besides updating the analysis of key utilization and expenditure outcomes included in this report. As the Initiative matures and is implemented more fully in coming years, it is reasonable to expect stronger and more consistent favorable results across ECCPs and intervention groups.

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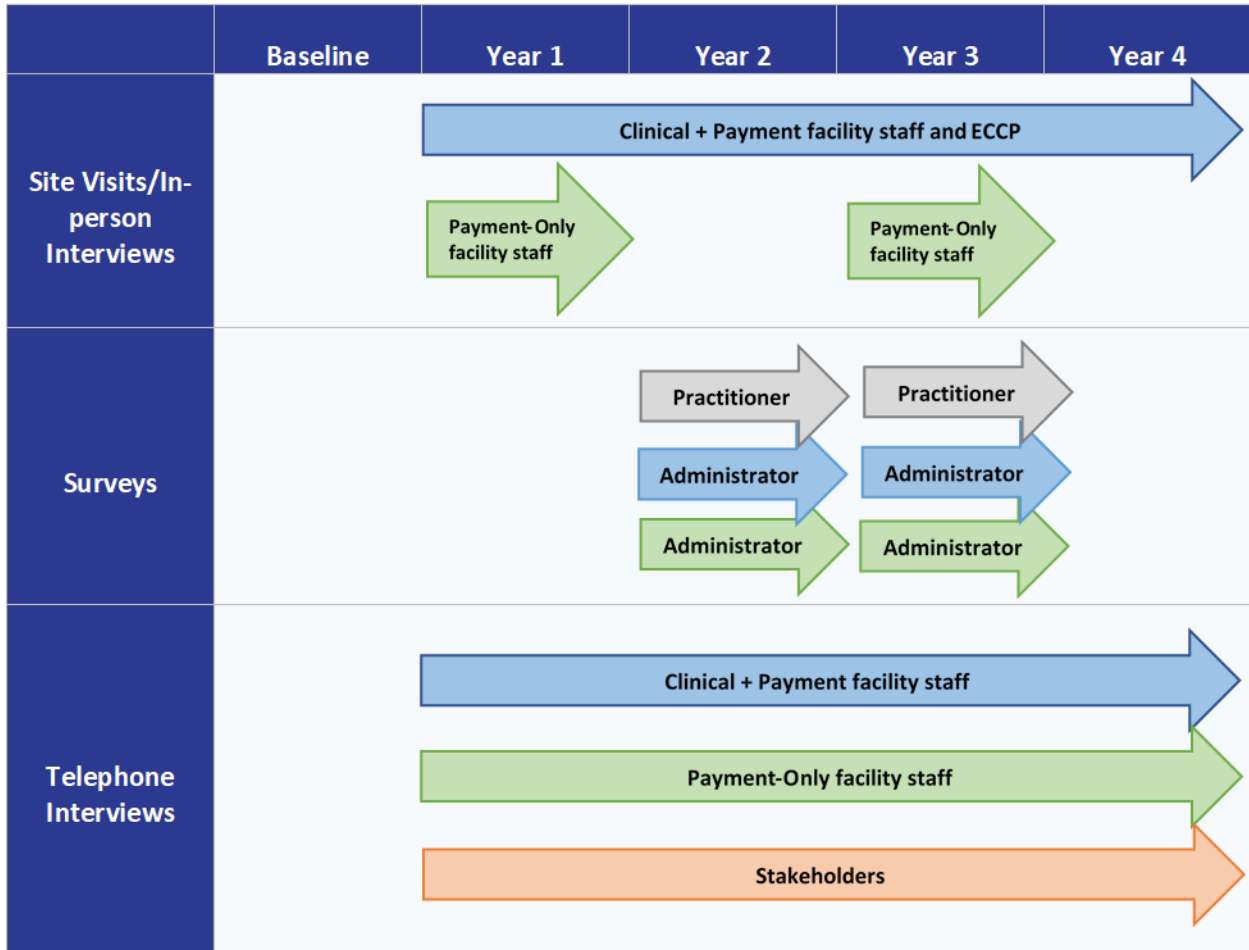
## APPENDIX A PRIMARY DATA COLLECTION METHODS AND ANALYSES

### A.1 Introduction

*Appendix A* describes primary data collection methods and activities undertaken by RTI during NFI 2. RTI conducts a series of site visits to each Enhanced Care and Coordination Provider (ECCP) and a selection of their partnering facilities, both those facilities in the Clinical + Payment group and facilities in the Payment-Only group. When appropriate, findings from NFI 1 inform aspects of NFI 2 primary data collection, particularly with regard to Clinical + Payment facilities. We also conduct annual telephone interviews with all participating facilities; a biennial survey of nursing facility administrators in all participating facilities; a biennial survey of all participating practitioners (physicians, advanced practice registered nurses [APRNs], and physician assistants [PAs]); and a series of interviews with key stakeholders from each of the participating ECCP states.

All primary data collection efforts—site visits, telephone interviews, and surveys—complement each other. Analyses of the data collected during ECCP and participating facility site visits and telephone interviews provide a better understanding of how the new payment model is implemented, how it works in practice, and how NFI 1 clinical and educational interventions in participating facilities are evolving when combined with the NFI 2 payment model. Survey data provide standardized information about participating practitioners' buy-in and operational issues related to the payment model implementation, neither of which could be gleaned from the quantitative data analyses. The survey also provides quantifiable information on the payment model implementation in participating nursing facilities. Further supplementing quantitative data analysis findings, we conduct key stakeholder interviews to understand recent NFI 2-related activities under way in the states involved in NFI 2. Stakeholder and state policymaker interviews provide a greater understanding of the effect on potentially avoidable hospitalizations resulting from other state activities, state and federal reforms, and changes to usual care practices. These interviews also serve to expand our understanding of the context within which NFI 2 is taking place. They provide guidance toward mitigating potential problems when considering scaling up the model in the real-world context. Together, these critical analyses describe the environment in which this new payment model is being implemented and help explain how and why it may be implemented differently across ECCPs and in Clinical + Payment and Payment-Only facilities. *Figure A-1* is a flowchart of our NFI 2 primary data collection activities.

**Figure A-1  
Primary data collection flowchart**



NOTES: Clinical + Payment (BLUE) = clinical and educational intervention and payment model facilities; Payment-Only (GREEN) = payment model facilities only; Practitioners (GRAY) = physicians, advanced practice registered nurses (e.g., nurse practitioners), and physician assistants participating in both Clinical + Payment and Payment-Only facilities. Stakeholders (PEACH) = state administrators and policymakers interviewed about state policy and environmental changes.

**A.2 Facility Site Visit and Telephone Interview Task Overview**

Site visits and telephone interviews serve as a means of collecting qualitative data to monitor and evaluate NFI 2 implementation and outcomes for Clinical + Payment and Payment-Only facilities. RTI seeks to understand the context in which each ECCP delivers new NFI 2 efforts toward improving resident health outcomes and reducing overall health care spending. In addition, NFI 2 site visits and telephone interviews explore the billing processes and financial components for the new payment model for facilities and practitioners, while also exploring how the financial components and focus on the specific six qualifying conditions may affect care management and related practices in the participating facilities.

To understand the variation in NFI 2 implementation experiences across facilities, RTI conducts a series of staggered site visits to a selection of both Clinical + Payment and Payment-Only facilities, supplemented by telephone interviews to the facilities that are not visited in

person. Because implementation of the payment model alone does not involve all staff levels and is not as all-encompassing as the clinical/educational interventions in NFI 2, we conduct only two rounds of site visits to Payment-Only facilities. This reduces burden on both ECCPs and facilities by limiting the number of in-person visits RTI conducts in NFI 2.

For NFI 2, RTI tries to visit some Clinical + Payment facilities that exhibited best practices or experienced particular challenges in NFI 1, as well as facilities that were not visited during NFI 1, and not interviewed by phone in the first months of NFI 2, or that have particular features of interest (e.g., ownership type, location, bed size, or five-star rating). We provide Centers for Medicare & Medicaid Services (CMS) with a list of facilities selected for site visits and we also try to align our site visit timing and facility selection with the efforts by the implementation contractor to minimize burden on ECCPs and participating facilities.

As shown in *Figure A-1*, in Initiative Years 1 and 3 of implementation, RTI will conduct site visits to the Payment-Only facilities. The first set of Payment-Only site visits focused on implementation, and the second site visits will concentrate on financial outcomes, operational issues, leadership buy-in, successes, and challenges of the payment model. For each ECCP, we anticipate visiting three to five Payment-Only facilities each in Initiative Years 1 and 3; we are conducting telephone interviews with Payment-Only facilities in all four data collection years. During Initiative Years 2 and 4 when we will not visit Payment-Only facilities in person, we will aim to complete telephone interviews with key staff in at least half of the Payment-Only facilities.

A team of three RTI staff, consisting of a senior state evaluation team lead with NFI 1 site visit leadership experience and two supporting staff members, conduct each site visit. This team structure allows RTI to capture detailed notes to inform later analyses, while generating assessments of engagement and other key domains. Site visits typically last between 4 and 5 days and include two components: (1) *ECCP component*—a visit to the ECCP headquarters and interviews with key ECCP leadership and other staff, and (2) *facility component*—a visit to participating facilities to interview facility staff and, if in a Clinical + Payment facility, the ECCP nurse.

### **A.2.1 ECCP Component**

RTI conducts interviews with all key staff in each ECCP, including facility-based ECCP staff in each facility we visit. The interview length is dependent on the staff type and the availability of the interviewees; some interviews take 1 hour, while others only require 5 or 10 minutes. Data collection includes information on model design changes related to payment component introduction, implementation timetable and experience, provider training and support, ECCP staffing changes, data collection, and detailed descriptions of the clinical interventions and how they were adapted for NFI 2. We interview ECCP leadership regarding any new supports or barriers that have emerged; changes in leadership structure or program model; communication pathways that have developed between ECCP staff and/or facility staff; internal and external data exchanges; and infrastructure modifications for data collection and project implementation. We are also interested to learn about efforts in improving communication with providers through NFI 2, particularly in the context of the six qualifying conditions that are the focus of NFI 2.

During the ECCP interviews we also gather information regarding perceived barriers to implementation arising from policies or regulations of state, local, commercial, corporate leadership, and other entities, including hospitals, and any new challenges to accepting new practices (e.g., liability or family concerns). Other topics include data collection processes, billing and claims-related concerns, unintended consequences of the project and related spillover effects (positive and negative), lessons learned, and, if applicable, reasons for facilities withdrawing from the Initiative. When possible, we also interview ECCP partners, subcontractors, or on-site stakeholders.

### **A.2.2 Nursing Facility Clinical + Payment and Payment-Only Components**

As described, for each ECCP, RTI will visit three to five Clinical + Payment facilities annually, and we will visit three to five Payment-Only facilities in each ECCP biennially. Across all years, RTI completes telephone interviews with Clinical + Payment and Payment-Only facilities not visited in person until saturation is reached. For Year 1, saturation was defined as approximately 40 percent of participating facilities. Selecting facilities will depend on several factors, including successes or challenges during NFI 1 (Clinical + Payment only), facility size, profit status, rural or urban location, five-star ratings, location, and other factors that may arise through other aspects of data collection (e.g., stakeholder interviews or survey results).

At each Clinical + Payment facility, the site visit team conducts multiple interviews, ranging in length by role from 5 to 60 minutes long, depending on interviewee type. The types of data collected include information on identification and treatment of the six qualifying conditions, billing process and related documentation, adjustments to model design, any changes to the clinical interventions that may have taken place, data on care transition activities, changes in policies/procedures required at the facility level, training, relationship with ECCP staff, as well as overall project successes, challenges, and lessons learned.

For Payment-Only facilities, the team conducts multiple interviews of similar length, but the focus is more on identification and treatment of the six qualifying conditions and the new billing processes in NFI 2. We are also interested in learning what kinds of processes and capabilities Payment-Only facilities had implemented to prepare for NFI 2 and how well these are working since the readiness reviews were completed.

Interviewees at both Clinical + Payment and Payment-Only facilities include nursing facility administrators (NFAs), directors of nursing (DONs), medical directors, primary care providers (PCPs) of record, nurse practitioners (NPs), as well as business office staff, MDS (Minimum Data Set) coordinators, and other relevant staff members involved with billing processes. RTI teams also talk to residents and families when possible. Special care is given to reaching practitioners, because they provide integral feedback regarding the payment processes and treatment of residents who have the six qualifying conditions. *Table A-1* presents types of staff interviewed by RTI in Initiative Year 1.



**Table A-1**  
**Types of staff interviewed across all facilities for Initiative Year 1**

<b>Facilities and Staff</b>	<b>Total</b>	<b>Clinical + Payment</b>	<b>Payment-Only</b>
Number of facilities participating	253	109	144
Number of participating facilities interviewed	49	24	25
Total staff interviewed	316	176	140
Staff types interviewed	NFAs: 47	NFAs: 23	NFAs: 24
	DONs: 40	DONs: 19	DONs: 21
	ADONs: 16	ADONs: 9	ADONs: 7
	Medical Directors: 25	Medical Directors: 12	Medical Directors: 13
	ECCP APRNs/RNs: 28	ECCP APRNs/ RNs: 28	0
	Non-ECCP APRNs: 13	Non-ECCP APRNs: 4	Non-ECCP APRNs: 9
	Facility Nurses: 44	Facility Nurses: 28	Facility Nurses: 16
	MDS Nurses/RNACs: 19	MDS Nurses/RNACs: 9	MDS Nurses/RNACs: 10
	Billing/Finance Coordinators: 45	Billing/Finance Coordinators: 21	Billing/Finance Coordinators: 24
	Staff Educators: 5	Staff Educators: 3	Staff Educators: 2
	Other: 34	Other: 20	Other: 14

NOTES: Interviews and site visits were conducted between March and November 2017. NFA = nursing facility administrator. DON = director of nursing; ADON = assistant director of nursing. ECCP = Enhanced Care and Coordination Provider; APRN = advanced practice registered nurse; RN = registered nurse; MDS = Minimum Data Set; RNAC = registered nurse assessment coordinator. “Other” staff include individuals said by facility lead to be integral to the success of NFI 2; examples include building social workers, practitioners who are not medical directors, or representatives from corporate offices.

RTI works with ECCPs and facilities to determine the best time to reach practitioners, as we know from experience that medical directors, attending physicians, and other practitioners have varied schedules. We coordinate timing that works best for these interviewees to minimize burden for facilities. This means that we might conduct interviews at unusual times of day (e.g., early morning), whenever the timing works best for facilities and practitioners. These interviews are important to understand practitioners’ perspectives, and likewise, it is important for RTI to be flexible in obtaining the interviews to achieve high response rates.

For facilities not visited in person, we attempt to conduct interviews by telephone. We interview one or more staff members concurrently who are the most knowledgeable about the Initiative, such as a DON, NFA, or business office manager. At their discretion, ECCP evaluation leads may decide to conduct a second interview with additional staff, such as ECCP facility-based staff in Clinical + Payment facilities.

Through NFI 1, facility attrition was minimal. Understanding the reason for withdrawal remains very important for our evaluation, because leaving may point to potential challenges or barriers to implementation or sustainability. For NFI 1, we developed a protocol for open-ended telephone interviews with facilities that withdrew from the initiative. This protocol has been modified for any facilities that withdraw during NFI 2. All exit interviews are limited to 15 minutes in length and are conducted as close to the time of facility withdrawal as possible.

All interviews conducted for NFI 2 are tracked in our existing Access database, which already contains contact information for all ECCPs and facilities that participated in NFI 1. This database also documents the response status on all NFI 1 primary data collection activities for all

participating facilities (Clinical + Payment); we implemented a similar system to track NFI 2 survey and interview response status throughout all years of the NFI 2 primary data collection.

### **A.2.3 Sharing Collaborative**

CMS and its operations support contractor, SSS-T, lead activities in the Sharing Collaborative with all the ECCPs to share progress toward the Initiative's goals. During the Sharing Collaborative telephone meetings, ECCP staff discuss issues of common concern, including their successes, lessons learned, barriers encountered, and other findings that may be of interest to other ECCPs. RTI participates in these calls as a component of our evaluation.

RTI bases the evaluation of the Sharing Collaborative on observing and monitoring these activities in addition to analyzing the results of data collected during site visits and telephone interviews, which include questions about the Sharing Collaborative's impact and value. Specifically, our interview protocols include a series of questions to assess the impact of the Sharing Collaborative activities on ECCP's NFI 2 implementation efforts. For example, we aim to learn whether ECCPs report a change in practice, based on information obtained via Sharing Collaborative activities and the level of support the ECCPs receive in participating in these activities.

### **A.2.4 Protocol Development**

RTI built on our existing NFI 1 interview protocol to develop three separate protocols (ECCP leadership, Payment-Only, and Clinical + Payment) for the NFI 2 activities, developing new process- and payment-related questions. We work closely with CMS to finalize protocols and related materials prior to conducting site visits and telephone interviews (e.g., recruitment materials or consent letters), as protocols are reviewed and tweaked slightly for each new Initiative year to reflect new developments or changes. Per CMS guidance to pilot-test our interview protocols, we conduct nursing facility telephone interviews in every ECCP prior to conducting site visits.

Our interview protocols in NFI 2 focus on exploring the role of the new payment component. Previous questions were concerned with implementation of the Initiative, relationship with the ECCP, processes for reducing avoidable hospitalizations, staff response to the Initiative, successes and challenges faced, and sustainability. Many of these issues are still present and tracked. New questions focus on the following:

- Payment-Only facility screening and recruitment;
- Readiness assessments for NFI 2;
- Types of support provided by ECCPs to assist in implementation;
- Establishment of new participation agreements between Payment-Only facilities and ECCPs;
- Prior efforts to reduce avoidable hospitalizations;
- Variation in work plans;

- Screening and selection of practitioners;
- Training of facility staff and practitioners;
- Changes in facility practices related to the six qualifying conditions;
- Billing and documentation processes; and
- Technical assistance on payment processes throughout the project.

Other questions cover ongoing participation in Learning Community events and processes for reporting key data to CMS and its contractors. Per CMS request, RTI also asks about any resident disenrollment from Medicare Advantage plans to participate in NFI 2 and any shifting of fee-for-service (FFS) residents to institutional special needs plans (I-SNPs) or other managed care. We ask about managed care attrition rates and for interviewees' opinions as to the motives toward switching between NFI 2 and managed care.

RTI submits protocol drafts to CMS 2 months prior to the first telephone interview. We revise the protocols and interview guides according to the feedback we receive and submit the final version to CMS at least 2 weeks prior to the telephone interviews. We anticipate minor revisions to the protocols over time, based on any changes observed in the field; any revisions are discussed with CMS prior to conducting further interviews or site visits.

#### **A.2.5 Analyzing Site Visit and Telephone Interview Data**

RTI uses several strategies to organize and synthesize the large volume of qualitative data that are generated by this effort. RTI implemented rigorous procedures for standardized note-taking and analyses during NFI 1, and we revised our current NFI 1 high-level codebook to capture key study domains in NFI 2. RTI used NVivo software to analyze primary data in NFI 1, and the coding process has remained the same across years to facilitate longitudinal comparisons. For NFI 2, we built upon this existing codebook so that we can look back at how the initiative has developed across years and across ECCPs. RTI also added new codes to target billing and documentation, implementation costs, effects of the six qualifying conditions on facility practice, and practitioner participation. It is important to note that we use only high-level NVivo codes to maximize efficiency. A modified content analysis approach is used to analyze the interview data, with codes or labels attached to portions of the interview notes. Although some labels emerge directly from the content of the interviews, others represent a priori categories reflecting the project aims. In this way, both unanticipated findings and anticipated areas of interest are captured during the coding process. For detailed reports by ECCP, please see *Appendices B–G*.

### **A.3 Key Stakeholder Telephone Interviews**

A new component of NFI 2 primary data collection, based on our experiences in NFI 1, is a series of interviews with key state administrators and other stakeholders to examine overlaps in potentially competing or complementary initiatives in the NFI 2 ECCP states (i.e., in addition to information from the CMS Master Data Management system [MDM]), as well as policy environment context for NFI 2. Multiple federal and state initiatives for reforming health care delivery and financing include the Partnership for Patients, Accountable Care Organizations (ACOs), State Innovation Models (SIM), the Financial Alignment Initiative, and Round Two of

Health Care Innovation Awards. For example, our NFI 1 site visit findings from New York indicate that several competing initiatives, such as the Delivery System Reform Incentive Payment program and the state's demonstration under the Financial Alignment Initiative, focus on reducing hospitalizations.

Key stakeholder interviews explore similar issues across states and build upon our NFI 1 and NFI 2 site visit findings to understand the policy environment and the types of programs that affect avoidable hospitalization reduction apart from, or in conjunction with, this Initiative. Stakeholder interviews may provide data on Medicare rulemaking updates, changes in the Medicare Advantage program, association-sponsored initiatives, health provider or insurance plan efforts that are widespread, other initiatives sponsored by the Center for Medicare & Medicaid Innovation (CMMI), and/or changes in individual Medicaid State Plans and programs. These findings help us understand other factors that may affect project implementation and outcomes.

We aim to conduct between 5 and 10 key stakeholder telephone interviews per state in which the ECCP is operating, for a total of 35 to 70 interviews. Most interviews have already been conducted, but RTI also will conduct additional interviews as needed through Initiative Years 3 and 4. Stakeholders include officials from state departments of health, officials from state Medicaid offices, and state leads from nursing facility associations (e.g., the American Health Care Association [AHCA], Leading Age). Some states may have existing stakeholder groups or organizations that are partnering with the ECCPs. We draw stakeholders from a variety of other settings, and ask large healthcare chains, advocacy groups, state aging committees, and ACOs about their own organization's efforts to reduce hospitalizations among nursing facility residents. We also ask if they are aware of any similar efforts by other organizations. Because stakeholders come from a wide variety of organizations, questions are broad and seek to understand the state context from the perspective of the stakeholder. Seeking input from a range of stakeholders and allowing their perspectives to be the focus of the interviews allows us to paint a complete picture of the context within each state under which the Initiative is being implemented.

RTI relied on existing ECCP contacts and stakeholder networks for preliminary recruitment, and we used a snowball approach to recruit additional responses (i.e., asking interviewees to recommend other potential interviewees). We developed one general interview guide in conjunction with our consultants, which is adapted to the needs of each state. We worked closely with CMS to finalize protocols and any related materials prior to conducting the stakeholder interviews. For a summary of stakeholder interviews, please see *Appendix G*.

#### **A.4 Survey Task Overview**

RTI conducts two web-based surveys as part of NFI 2 primary data collection activities: the NFA Survey and the Practitioner Survey. RTI plans to administer both surveys in Initiative Years 2 and 3. Surveys provide standardized information from respondents in both Clinical + Payment and Payment-Only facilities. The core items in both surveys focus on the financial aspect of NFI 2, including how facilities and practitioners are paid, challenges related to billing, as well as attitudes toward the billing codes. The NFA Survey includes more specific items on facility-related barriers to implementation and facility policies/procedures. The Practitioner

Survey also includes items on practitioner-specific barriers to billing as well as more clinically focused items, such as confidence in clinical staff.

Overall, the goal of these web-based surveys is to obtain consistent information from participating facilities' administrators and practitioners about the impact of the Initiative. The survey instrument is carefully designed to complement information captured from other primary data collection activities, all of which will inform the quantitative data analysis. Based on the successes of the NFI 1 survey, RTI continues web-based data collection to ensure easy access of the survey by respondents and a high response rate. RTI works closely with CMS to finalize the survey instrument and is responsible for all data collection and analysis. RTI also identifies and communicates any issues affecting sample frame design or data collection with the CMS, or through meetings as needed.

#### **A.4.1 Instrument Development**

RTI designed all survey instruments for the specific needs of this evaluation. Instrument development primarily focused on evaluating engagement with the NFI 2 billing process and factors that could affect this engagement from the perspective of NFAs and practitioners. Although the instrument development process is similar for both surveys, we solicited additional feedback from clinical experts when designing the Practitioner Survey, given the general challenges of obtaining responses from practitioners. For both surveys, we also prioritized designing a concise instrument as possible to minimize respondent burden. We purposefully limited the overall length of the instrument and the number of questions, incorporating gate questions in the survey design to allow respondents to skip over inapplicable follow-up questions

Survey instrument design began with a review of relevant surveys, including prior NFI 1 NFA Surveys, and existing surveys of providers for the Practitioner Survey. We then narrowed the focus to domains most relevant for NFI 2, in consultation with input from the primary data collection teams who had gone on site visits and conducted phone interviews. We obtained substantial internal review of the survey instruments among our team members and RTI researchers with expertise in long-term care settings, health policy, and survey methods.

For the Practitioner Survey, RTI solicited additional feedback from consultants who had a similar background to potential respondents (i.e., a physician and APRN). RTI also consulted with CMS to obtain feedback on the survey domains. Furthermore, we conducted cognitive testing of the Practitioner Survey by interviewing medical directors and participating practitioners from the majority of ECCPs. These practitioners provided information on the survey design, user testing, as well as guidance regarding item content and framing. This feedback helped reduce measurement error by ensuring the specific wording used in survey items matched the question intent. Testing also ensured that the format of the web survey was familiar and easy to use for practitioners, helping to improve response rate.

A major priority in developing the survey instruments was to minimize respondent burden. For instance, both surveys consisted primarily of close-ended questions with a very limited number of open-ended responses. The minimal use of open-ended items reduces response time and facilitates analysis across practitioners and facilities. Based on feedback from cognitive testing, we also emphasized having extremely concise surveys. Both surveys had an estimated

completion time of less than 10 minutes. Furthermore, we tested the surveys on both mobile devices and tablets to ensure they were accessible and well-designed, an especially important consideration for practitioners. Finally, to facilitate the recall of respondents who were initially invited to complete the survey in January of 2018, the time frame used for the survey referred to the prior calendar year, 2017. Since there are two waves of this survey, the survey instruments may be revised to address issues and newly relevant domains between waves. The majority of items and domains will remain constant between the two waves to track changes over time.

In addition to the survey content and domain, draft versions of both survey instruments are submitted to CMS 2 months prior to the deployment of the survey. Final materials are submitted to the COR at least 2 weeks prior to data collection and incorporate any feedback received. Web versions of the survey are also shared with the COR prior to deployment.

#### **A.4.2 Survey Frame Development**

As in NFI 1, RTI received a complete sampling frame of NFAs from the ECCPs for the Clinical + Payment and Payment-Only facilities, consisting of, at a minimum, the names, e-mail addresses, and facility affiliations of potential respondents.

The sampling frame development process for the Practitioner Survey is more complex and included several steps outlined below. Because participating practitioners could be affiliated with multiple facilities, RTI's sample design for Initiative Year 2 allowed practitioners to complete separate surveys related to different facilities. RTI used two main files from CMS to design the initial practitioner sample frame: (a) list of participating practitioners from a monthly roster file from CMS, and (b) file of approved practitioners, including their contact information at the time of initial approval, which also had facility affiliation information. We were then able to link contact e-mails/phone numbers with the current list of practitioners at the practitioner-facility level.

We then excluded practitioners whose approval period did not overlap with the period of the survey, 2017, as well as those affiliated with facilities that were not participating in NFI 2. We followed up with CMS to obtain further clarification as needed regarding the file contents and accurate linking information for practitioners. Although most reminder e-mails were able to be automated, reaching out to practitioners affiliated with three or more facilities necessitated a more manual follow-up. To minimize the number of affiliated facilities for a given practitioner, we reviewed the case loads of practitioners affiliated with at least three facilities and removed the affiliations that represented less than 10 percent of a practitioner's total case load. Finally, we obtained contact information for practitioners directly from the ECCPs as a final update to our data files.

During data collection, RTI followed up by phone and e-mail to obtain updated contact information for any NFA and practitioner e-mail address that bounced back. This information was used to correct the sampling frame. In addition, RTI received communication via phone and e-mail during survey follow-up from practitioners and their affiliated facilities and medical groups regarding updates to the practitioners' participation status or current affiliation. Thus, aside from removing e-mail addresses that were designated as non-contact (e.g., bouncing back

or other server errors), our sample frame also decreased after removing ineligible practitioners who were no longer participating or affiliated with a specific facility.

### **A.4.3 Survey Administration**

RTI is responsible for the full survey life cycle, including working with CMS to develop the instruments, programming the instruments into web applications, running the data collection effort, and performing all data processing and editing of survey data.

Prior to the start of data collection, to increase awareness among potential respondents, RTI communicated with ECCPs regarding the timing of the NFA and Practitioner Surveys. Data collection largely occurred from January–February of 2018 for both surveys, continuing into early March. Potential respondents received hyperlinked e-mail invitations to complete the web-based surveys, removing the need for them to log in and use passwords.

Surveys are administered in conjunction with RTI partners in the Survey Research Division and the Research Computing Division using a web-based application called Voxco, which provides the necessary flexibility for data collection but also offers data encryption to ensure data security. Respondents were also provided with a toll-free telephone number and e-mail contact information for any technical or content-related questions. For our case management, we used RTI’s Nirvana/Symphony system to keep track of the response status of NFAs and practitioner, and to send initial and follow-up e-mail reminders. As previously mentioned, we followed up with practitioners affiliated with three or more facilities with a partially manualized system.

RTI closely tracked response status during data collection for Initiative Year 2. We conducted targeted follow-up with respondents who had started to complete the survey but did not finish it, or among respondent groups with lower interim response rates (e.g., specific ECCPs or intervention groups). We used a combination of reminder e-mails and telephone calls to follow up with NFAs and practitioners. Reminder e-mails were initially sent on a biweekly basis, increasing the frequency closer to survey due dates.

*Table A-2* presents the overall response rates for the NFA and Practitioner Surveys, using American Association for Public Opinion Research (AAPOR) response rate definition #6 which includes partial responses in the numerator and excludes undelivered e-mails from the denominator (AAPOR, various dates). We counted a survey as a partial response if the first substantive question about employment or billing status was answered. Although the Practitioner Survey was initially designed to allow practitioners to respond for multiple facilities to gather facility-specific information, there was wide variation in survey completion among practitioners affiliated with multiple facilities. Thus, we decided to provide standardized survey results at the practitioner level (see *Appendix I*), by converting our sample frame to unique practitioners only. We reviewed duplicate surveys and kept the surveys with a higher percentage of completed questions or completed first.

Given the complex design of the sample frame for the Practitioner Survey, we also used another metric to evaluate the representativeness of the practitioner responses, beyond the practitioner-level response rate. The 680 unique practitioners were affiliated with a total of 235 unique

facilities. The percentage of facilities with at least one eligible practitioner, where at least one practitioner responded, was 64.7 percent. This means that while just over one-third of contacted practitioners responded to the survey, these surveys represent the practitioners’ experiences across nearly two-thirds of participating facilities.

**Table A-2**  
**Survey response rates for Initiative Year 1**

Respondent group	NFA		Practitioner	
	N	Response Rate (%)	N	Response Rate (%)
All ECCPs combined	249	81.9	680	35.4
By ECCP				
AQAF	42	66.7	116	35.3
ATOP2	34	73.5	70	34.3
MOQI	40	85.0	97	29.9
NY-RAH	58	94.8	213	35.2
OPTIMISTIC	40	85.0	83	32.5
RAVEN	35	80.0	101	44.6
By intervention group				
Clinical + Payment	108	83.3	349	35.0
Payment-Only	141	80.9	331	36.0

SOURCE: RTI analysis of Nursing Facility Administrator and Practitioner Surveys (RTI program JW04).

#### **A.4.4 Analysis of Survey Data**

RTI presents the full survey responses for all close-ended questions in *Appendix I* and has incorporated the survey findings into *Section 2* of this year’s annual report. We will continue to analyze the survey data and incorporate findings into the project’s mid-year and annual reports for Initiative Year 3, along with the Final Report.

This year’s report includes full survey responses in aggregate for the NFA and Practitioner Surveys, as well as stratified responses by ECCP and by Clinical + Payment and Payment-Only intervention groups. *Section 2* reports the aggregated findings, highlighting notable differences where a particular respondent group’s findings may depart from the overall results. In the future, RTI plans to investigate whether different factors such as a facility billing status or operational structure, or a practitioner’s employment and payment structure, are related to engagement in NFI 2. In Initiative Year 3, we will analyze results longitudinally to examine changes over time and to evaluate the progress and impact of the Initiative. RTI may be able to further integrate various sources of primary data to provide a cohesive context for informing quantitative data analyses.



## A.5 Primary Data Collection Schedule in Initiative Year 1

Site visits to all six ECCPs were completed in the summer and early fall of Initiative Year 1. *Table A-3* provides the data collection timeline of site visits in Initiative Year 1.

**Table A-3**  
**RTI site visit schedule for Initiative Year 1**

ECCP	State	Facility	Site Visit Dates
AQAF	Alabama	Clinical + Payment and Payment-Only	July 31–August 4, 2017, and August 7–10, 2017
ATOP2	Colorado	Payment-Only	August 21–25, 2017
ATOP2	Nevada	Clinical + Payment	November 12–17, 2017
MOQI	Missouri	Clinical + Payment and Payment-Only	August 7–11, 2017, and August 14–17, 2017
NY-RAH	New York	Clinical + Payment and Payment-Only	September 25–29, 2017, and October 2–5, 2017
OPTIMISTIC	Indiana	Payment-Only	November 5–10, 2017
OPTIMISTIC	Indiana	Clinical + Payment	August 27–31, 2017
RAVEN	Pennsylvania	Payment-Only	November 6–10, 2017
RAVEN	Pennsylvania	Clinical + Payment	September 24–29, 2017

In addition, we administered the web-based NFA Survey to all facilities and the web-based Practitioner Survey to all participating practitioners. Both surveys were deployed on January 25, 2018, and data collection ended on March 2, 2018. RTI also conducted a series of interviews with key state administrators and other stakeholders between August 1, 2017, and March 1, 2018.

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**APPENDIX B**  
**ALABAMA QUALITY ASSURANCE FOUNDATION (AQAF)**

**B.1 Overview**

*Alabama Initiative Year 1 Site Visit Findings; July 31, 2017 – August 1, 2017*

**Key Findings:**

- Almost all visited facilities had submitted claims for the Initiative. However, facility leadership stated that Initiative claims submissions may decrease over time; as facility staff catch changes in condition faster, health concerns are treated before reaching the acuity required to meet Initiative criteria for claims submission.
- Interviewed practitioners reported billing inconsistently for the Initiative. Practitioner reimbursement payments were said to be insufficient to encourage Initiative participation, especially in Initiative care coordination.
- AQAF facilities are diverse in geography, resident acuity, and availability of needed services (e.g., access to practitioners and diagnostic services); these vast differences between facilities make uniform implementation of the Initiative challenging to administer.
- Interviewees said that success of the model depended on having an Initiative champion who is either a facility staff member or an AQAF Coach who has been accepted into the facility culture. Accordingly, Payment-Only facilities indicated that the Initiative would have been more successful if they had access to AQAF Coaches.
- Many Payment-Only and Clinical + Payment facility interviewees reported minimal effects of the Initiative, adding that NFI 2 simply provides financial compensation for work they were already doing.
- Managed care is growing in presence across the state with the potential to have major implications for participating facilities.

The goal of the original NFI 1 AQAF model was to effect facility culture change through staff education with a focus on enhancing facility leadership, improving quality, and encouraging use of INTERACT [**I**nterventions to **R**educe **A**cute **C**are **T**ransfers] tools to identify and respond to changes in resident conditions. As of August 2017, NFI 2 has 21 Clinical + Payment facilities each with an AQAF Coach providing education to facility staff, but no clinical care, and 22 Payment-Only facilities (**Table B-1**). AQAF has maintained a relationship with Scott Wozniak for Clinical + Payment facility leadership training and mentoring, but AQAF has dissolved all other partnerships from NFI 1.

During the 9-day site visit, the evaluation team spoke with eight members of the ECCP leadership staff and 52 facility interviewees, including AQAF Coaches, NFAs, DONs, assistant directors of nursing (ADONs), registered nurses (RNs), licensed practical nurses (LPNs), certified nursing assistants (CNAs), medical directors, and other practitioners (e.g., NPs affiliated with facility physicians), education directors/coordinators, MDS nurses, and billing coordinators.

Although interview findings suggested variability in Initiative participation, most facilities reported that they had submitted one or more claims as of August 2017 (**Table B-2**). Furthermore, about half of interviewed facilities appeared to have strong Initiative buy-in, with

interviewees reporting that the Initiative has been effective in changing facility culture and has been or soon will be effective in reducing hospitalization rates.

**Table B-1**  
**AQAF summary for Initiative Year 1**

Organization Type	Private, nonprofit, community-based quality improvement organization (QIO)
ECCP nurse role	Staff education and in-services, new-hire training, NFI 2 data collection
ECCP Facility-based staff (full-time equivalent [FTE])	19 Full-time registered nurses (RNs) (2 RN vacancies as of August 2017)
Number of facilities participating	42; 20 Clinical + Payment, 22 Payment-Only
Ownership changes since NFI 1	5
Facilities withdrawn to date	3 Clinical + Payment

**Table B-2**  
**Site visit interview summary findings for Initiative Year 1:**  
**Facility staff buy-in and implementation (as of August 2017)**

Site visit interview summary findings for Initiative Year 1	Total	Clinical + Payment	Payment-Only
Facilities visited	8	4	4
Buy-in to NFI 2			
High	4	3	1
Medium	2	0	2
Low	2	1	1
No buy-in/Still in start-up phase	0	0	0
Number of facilities that hired new staff because of NFI 2	0	0	0
Number of facilities with resident opt-outs	0	0	0
Number of facilities submitting claims	7	3	4
Number of facilities with paid claims	7	3	4
Number of facilities where certified practitioners have formally withdrawn from NFI 2	0	0	0
Number of facilities with programs to reduce potentially avoidable hospitalizations that are unrelated to NFI 2	3	2	1
Number of facilities reporting that NFI 2 has been effective in reducing potentially avoidable hospitalizations	5	3	2

NOTE: Buy-in is based on interviewer perceptions using the following definitions: *High buy-in*: Facilities that are billing regularly, with staff that are aware and engaged; overall, the facility interviewees speak highly of the Initiative and its impact on reducing avoidable hospitalizations. *Moderate buy-in*: Facilities that have begun to bill but are not doing so regularly; staff may recognize the Initiative and key components but may not be fully engaged. *Low buy-in*: Facilities that have not started billing and/or have not trained staff on the six conditions; generally limited engagement and limited participation in NFI 2.

Below is a summary of RTI's findings based on interviews with ECCP leadership and facility staff.

- Between NFI 1 and NFI 2, AQAF experienced substantial changes in leadership structure, including turnover of both the Project Manager and Project Director in 2017. Although a member of AQAF's QIO leadership has stepped into the Project Director role, the Project Manager position remained vacant as of August 2017. Under the prior Project Director and Manager, the Initiative structure was reinvented repeatedly in response to specific facility challenges and current industry trends. Current leadership is attempting to realign NFI 2 with original NFI 1 goals, citing that NFI 1 reinvented itself so many times that it had lost the focus on the original goal of reducing avoidable hospitalizations. The leadership changes and realignment have created a distinct trickle-down effect to facilities, which interviewees described as being generally positive.
- In both Payment-Only and Clinical + Payment facilities, interviewees said NFI 2 has had only a nominal effect on everyday practices and care of residents. Facility leadership, staff, and practitioners described NFI 2 as getting paid for things they were already doing. Staff are continuing their existing practices with minimal changes.
- Practitioners explained that the reimbursement rates for providers may be insufficient. Practitioners who already have strong relationships with facility staff, are confident in the facility's ability to care for residents, and those who come to the facility often (e.g., two or more times per week), have no trouble certifying residents for NFI 2. However, these practitioners also reiterated that the Initiative is just paying them for work they were already doing (i.e., visiting residents when there is a change in condition). For practitioners who do not come to the facility often, the reimbursements are not adequate incentives to change practice patterns. Reimbursements for care coordination also were described as inadequate, particularly given other requirements for claims submission (e.g., family members present).
- Facility interviewees indicated that the success of the model hinges on staff and leadership buy-in. Facilities that have been successful in identifying and treating the six qualifying conditions and submitting claims have either (1) designated a facility-based staff member to take ownership of spearheading the Initiative and/or (2) allocated reimbursements for staff-identified, facility-wide improvements (e.g., converting existing manual crank beds to electric beds, benefitting both facility residents and floor staff).
- Payment-Only interviewees reported that AQAF provided printed materials to introduce NFI 2 to facility staff and leadership, without sufficient explanation and training. Although AQAF is available for questions on an ongoing basis, Payment-Only facility interviewees said they felt disadvantaged in comparison to Clinical + Payment facilities that have an AQAF Coach. Interviewees added that even temporary access to a Coach would have been helpful in the early weeks of the Initiative.

- Some interviewees worried that the number of claims is tapering off and will continue to do so, as staff become more proficient at catching changes of condition early. The sooner residents are treated, the less likely they are to qualify for claim submission (i.e., high fever not sustained, bacteria counts not reaching required levels, etc.) In that way, the Initiative provides a disincentive to offer the best resident care, because facilities are rewarded financially for having a greater volume of “sicker” residents.
- Managed care is growing in presence across the state. Optum, a Medicare Advantage (MA) managed care product also present in other Initiative states, is marketing heavily to residents and families in a number of AQAF Initiative facilities. Similarly, several corporate owners, representing approximately 75 percent share of Alabama nursing facilities, have allied to create a new MA product, that rolled out in January 2018. The MA plans have features similar to the clinical interventions used in NFI 1. Facilities that are part of the allied corporations are actively preparing for the new MA plan to become available to their residents.

### **B.1.1 Initiative Implementation**

AQAF began preparing for NFI 2 in Summer 2016, with an implementation start date of December 2016. In Clinical + Payment facilities, the AQAF Coaches introduced the new payment model to facility staff. Two Clinical + Payment facilities opted not to continue with NFI 2 because of facility challenges unrelated to the Initiative. To recruit Payment-Only facilities, AQAF capitalized on existing corporate relationships. Payment-Only facilities were introduced to the Initiative through written materials and an AQAF site visit to ensure Initiative readiness. Payment-Only facilities received no formal training, but interviewees reported that AQAF is responsive to facility questions and concerns. To pass readiness review, some facilities purchased new equipment (e.g., EKG, secure messaging systems), but interviewees indicated that AQAF did not assist with those purchases.

### **B.1.2 Learning Communities**

AQAF provides ongoing support to facilities through quarterly Learning Community activities. Learning Communities focused on topics requested by facilities, a shift from the NFI 1 format in which AQAF leadership picked topics. Interviewees found these NFI 2 calls to be helpful.

In addition to Learning Community events for Payment-Only and Clinical + Payment facilities, Clinical + Payment facility administrators, DONs, and Coaches, received leadership training and mentorship from Scott Wozniak. Wozniak also provided leadership training in NFI 1 to facility administrators, and NFI 2 has expanded those offerings to include other facility leadership and AQAF Coaches. Clinical + Payment interviewees found these trainings and support useful.

### **B.1.3 INTERACT Tools and Other Components**

Clinical + Payment facilities continue to use the INTERACT tool suite, including SBAR [Situation, Background, Assessment, and Recommendation], Stop and Watch, and Care Paths. Some facilities have reported increased INTERACT tool use because of their usefulness in NFI 2 claims documentation (please see *Section 5.1* for more information). Similarly, AQAF encouraged all Payment-Only facilities to implement INTERACT tools to facilitate claims documentation and submission.

In addition to the INTERACT tools mentioned above, AQAF is encouraging use of the INTERACT Advanced Care Planning tool with some limited success. Alabama also has introduced a portable Do Not Resuscitate (DNR) order that would simplify the process of documenting end-of-life wishes between care settings. However, some facilities require additional practitioner signatures to accept the DNR, limiting use in several facilities.

Continuing from NFI 1, most Clinical + Payment facilities are maintaining their three teams for medication management, hospitalization tracking, and staff stability. Coaches continue supporting these teams toward the primary goal of reducing avoidable hospitalizations.

### **B.2 Sharing Collaborative**

AQAF leadership reported that they have had only some participation in Sharing Collaborative activities with CMS and other ECCPs, such as data and reporting workgroups. AQAF leadership also reported that interactions with CMS have been challenging at times because of cancelled one-on-one calls. AQAF did not provide any feedback on the Connect portal. Although AQAF participation in Sharing Collaborative activities was limited, AQAF leadership is enthusiastic about the prospect of collaborating with other ECCPs, a shift from their concern about sharing ideas during NFI 1.

### **B.3 Facility Staff and Practitioner Engagement**

Across facilities there is variability in facility staff and practitioner understanding, participation, and engagement in the Initiative.

#### **B.3.1 Facility Staff**

In Clinical + Payment facilities, the AQAF Coach is continuing NFI 1 activities: staff education and in-services, new-hire training, data collection, and encouraging INTERACT tool use. The AQAF Coaches are usually not involved in the data collection or claims submissions processes for NFI 2. However, Clinical + Payment facility interviewees felt that the billing process would be more successful if the Coaches were involved. Similarly, Payment-Only facilities felt the Initiative would be more successful with the help of a Coach, even temporarily.

Across both Payment-Only and Clinical + Payment groups, staff response to the Initiative varied. Some facility interviewees indicated that this Initiative has sharpened clinical care skills; however, interviewees from other facilities indicated that facility floor staff are not very familiar

with components of the Initiative, having only a general understanding of the goal to reduce hospitalizations and limited awareness of the focus on the six qualifying conditions.

Staff turnover also continues to be a concern, as new staff must be trained on Initiative components. Following AQAF training on staff stability in NFI 1, some Clinical + Payment facilities reported success in retaining staff by hiring based on fit within the facility, rather than clinical skills alone. One Clinical + Payment facility administrator explained, “We changed our culture. We hire by character now. You can teach skills, but you can’t teach compassion,” adding that their staff turnover rates among CNAs are roughly 90 percent lower than they were at the start of NFI 1.

### **B.3.2 Practitioners**

As of August 2017, practitioners reported limited to no interaction with AQAF, including no formal Initiative introduction. Engaging practitioners has been left to facilities; for facilities with strong relationships with their practitioners, this engagement process was said to be a simple matter of explaining the payment components. Facilities with weaker practitioner relationships faced more challenges engaging practitioners to participate in the Initiative. Despite most facility Medical Directors and practitioners being Initiative-certified, actual engagement varied. Some practitioners visited the facilities infrequently, and in those cases, other practitioners certified residents on their behalf. In many facilities, one or more practitioners already visited the facility two or more times per week, making NFI 2 certification convenient. Many facility interviewees highlighted that the Initiative has had a positive effect on practitioners’ practice patterns, bringing them to the facilities more often. In addition, some facilities introduced new technology tools in NFI 2 to enhance communication between facility staff and practitioners. For example, Q Link software provides secure text messaging to reach practitioners directly, thus providing real-time notification when NFI 2 certification may be necessary.

Beyond increased presence in facilities, interviewed practitioners reported increased confidence in the skills and capabilities of nursing facility staff. One Clinical + Payment practitioner explained, Nurses’ as well as [CNAs’] knowledge and perception of recognizing clinical changes has improved. It has gone from black and white TV to ultra HD,” adding that the facility staff are the practitioner’s “eyes and ears” in the facility; if their skills increase, the practitioner feels more confident in their ability to treat residents in-house, rather than transferring to the hospital. Many nursing staff also felt empowered and motivated to keep residents in the facility as a result of both NFI 1 and NFI 2. However, some facilities reported tensions between nurse practitioners, more than practitioners, as nursing staff sometimes challenged nurse practitioners’ decisions to hospitalize residents.

### **B.4 Six Qualifying Conditions**

Facilities across both Payment-Only and Clinical + Payment groups conducted staff in-services and training to recognize and treat the six qualifying conditions. Some facilities also introduced tools to emphasize these conditions using mnemonics for remembering the six conditions and diagnosis criteria checklists at the nurses’ stations. New hires were introduced to the Initiative and the six qualifying conditions at orientation. Most facilities reported that



practices to identify and treat these conditions were not substantially different than their existing care routines, but some facilities adapted existing care criteria for identifying the six qualifying conditions to align with the CMS claims requirements. Despite initial training, staff in a few Payment-Only and Clinical + Payment facilities had limited understanding of the Initiative and the six qualifying conditions.

Although some facilities saw benefit in adding conditions to the Initiative (e.g., diabetes, falls), other facility interviewees commented that focusing attention on even more conditions would either (a) result in more high-acuity hospital transfers, or (b) would necessitate that facilities hire more staff and use more resources to provide additional care for “sicker” residents. These higher acuity residents were a concern for some facility leadership who feared that reimbursement rates would not be commensurate with the burden of hiring more clinical staff, purchasing additional equipment, and increasing services available to treat residents with more care needs.

## **B.5 Billing Practices**

Billing for both facilities and practitioners is dependent on good communication across all parties.

### **B.5.1 Facility Billing**

AQAF leadership reported that approximately half of facilities, regardless of group, are billing. Interviewees said that facilities with few to no claims have experienced challenges such as having few eligible residents, no formal process for data collection and claim submission, and poor facility leadership, staff, and/or practitioner buy-in. All facilities interviewed described one or more claims that were not submitted because of missing data or incorrect timing of documentation. As one Payment-Only facility DON stated, “I have 100 patients to take care of every day. Setting aside time every week, doing all this [claims documentation] – it’s very difficult. There are probably scenarios where we’ve carried this out [steps of the intervention], but we haven’t done the paperwork.” Other interviewees cited similar concerns about missed opportunities for billing due to incomplete documentation by facility staff.

Facility interviewees who described their facilities as being successful in identifying and treating the six qualifying conditions and submitting claims are allocating reimbursements for staff-identified, facility-wide improvements. One example from a few facilities was the purchase of electrically controlled beds to replace existing manual crank equipment, benefitting both staff and residents.

Notably, some facilities reported that corporate billing structures resulted in a disconnect between facility billing practices and receipt of incentive payments. Without concrete payments and visible purchases, interviewees reported that the Initiative results in extra burden for staff with low payoff and minimal tangible benefits.

Additionally, some interviewees reported that claims submissions have tapered-off as the Initiative continues. They felt that staff were catching changes in conditions faster, whereby the

conditions were caught and treated before reaching the acuity level (e.g., sustained time of illness or high bacterial culture counts) required for claims submission.

### **B.5.2 Practitioner Billing**

Some practitioners have been successful in submitting claims and have received incentive payments. Practitioner involvement depends largely on what percentage of their professional time is committed to the nursing facility. Practitioners who spend more time in the facility reap greater benefits from submitting claims.

AQAF leadership and practitioners described the incentive payments as being insufficient to effect substantial change, especially given that rates may be less than equivalent reimbursements for treating residents in hospitals. Because of these financial incentives to hospitalize, some practitioners commented that a punitive system may be more effective. Practitioners indicated that the extra effort (i.e., coming in to certify conditions) was not commensurate with payment. Similarly, most practitioners are not billing for care coordination, as these were said to be too challenging to coordinate and not worth the financial incentive. Those practitioners who are billing, described care coordination as an existing part of their practices, with the reimbursements being an added benefit.

### **B.5.3 Data Collection**

As part of implementation, AQAF leadership developed a packet of forms to facilitate data collection for submitting claims. These forms were also intended to ensure that all documentation was in one place in case of facility audit. AQAF was very vocal about the potential for audit, thus creating what one facility interviewees called a “culture of fear” in facilities. AQAF leadership said this fear led some facilities to refrain from submitting claims. AQAF’s new leadership is working to assuage these fears.

Given the volume of information required, the packets were burdensome for nurses, taking up to an hour to complete. Conversely, billing staff reported that because of the packet, claims submission is a very simple process that takes only a few minutes.

Additionally, AQAF required facilities to complete a data workbook for weekly submission. Facility interviewees reported that although they are tracking hospitalizations and related data, completing the workbooks weekly is taxing. Thus, AQAF leadership reported that more than half of facilities were not submitting workbooks on time.

As in NFI 1, AQAF uses monthly data from facilities to create scorecards for Payment-Only and Clinical + Payment facilities. Facility interviewees whose facilities had fewer eligible residents reported concerns about score calculations because they believe the scorecard hospitalization rates are not scaled to accommodate for variations in facility bed size and eligible populations. Smaller scorecard denominators would result in high percentages of hospitalizations. For example, if only 10 residents are eligible for a given facility, one hospitalization represents 10 percent avoidable hospitalizations on the AQAF scorecard, compared to another facility with 100 eligible residents, wherein one hospitalization equals only one percent hospitalization rate. Interviewees said these reports create a disincentive to

participate for facilities with fewer eligible residents. AQAF leadership indicated that the scorecards weight facilities to account for these size concerns, though RTI interview findings suggest a lack of facility interviewees awareness regarding these scorecard weights.

## **B.6 Perceived Effectiveness of the Initiative**

Early AQAF interview findings from NFI 2 indicate that facilities are optimistic about the possibilities regarding further reductions in avoidable hospitalizations. Although nearly all interviewees felt that the Initiative is promising, they insist that additional time is needed to see tangible results.

### **B.6.1 Potentially Avoidable Hospitalizations**

Interviewees reported that the Initiative has the potential to reduce avoidable hospitalizations and improve resident care. However, these goals are achieved only with facility leadership support, tangible incentives, practitioner buy-in, staff engagement, and willingness to accept culture change.

Some Payment-Only facilities reported reductions in hospitalization rates because of the Initiative. Clinical + Payment facility interviewees indicated that hospitalization rates under NFI 2 were similar to rates in the last year of NFI 1.

### **B.6.2 Resident and Family Perspective**

As in NFI 1, some facilities have experienced pushback from residents and families who prefer hospitalization to treating in house. AQAF leadership said these concerns are more prevalent in rural facilities and facilities with predominantly African-American residents. Despite these concerns, only one resident has opted out.

### **B.6.3 Quality Measures & State Inspection Survey Results**

Some facilities shared concerns that the Initiative would have a negative impact on their quality measure scores, particularly incidence of urinary tract infection (UTI). However, facilities felt that increased diagnoses of UTIs was positive for resident care quality, regardless of effect on quality measures.

According to facility interviewees, state surveyors are expected to shift focus to patient-centered care and quality improvement. Facility interviewees felt the Initiative would support these new state inspection survey goals, thus potentially improving future state inspection survey results for participating facilities.

## **B.7 Spillover and Contamination Effects**

Across Payment-Only and Clinical + Payment groups, all facility residents are treated as if they are eligible for the Initiative. In many cases, direct care staff are unaware of resident eligibility and complete all documentation toward possible claims submission for all residents. As was the case in NFI 1, AQAF is encouraging the adoption of key components, such as use of INTERACT tools, in both participating and nonparticipating facilities across the state.

## **B.8 Policies and External Stakeholders**

Since NFI 1, the health care delivery system and state policy climates in Alabama have shifted toward more managed care presence and increased partnerships across care settings.

### **B.8.1 Hospital Engagement**

In most cases hospitals are aware of the Initiative. Despite early concerns about hospital pushback because of decreased patient transfers, AQAf leadership and facility interviewees indicated that hospitals have been very supportive of the Initiative. Furthermore, interviewees reported that local hospitals view the Initiative as a means of reducing potential readmissions and associated penalties. Nursing facilities reported that their staff were working hard to avoid readmissions, believing that fewer readmissions will result in stronger relationships with hospitals and more new residents being referred from those hospitals. Some facilities described preferred provider lists, wherein local hospitals are more likely to refer patients to nursing facilities that have proven records of avoiding rehospitalizations.

Facility leadership are fostering relationships with hospitals to highlight nursing facility capacities and capabilities. Some facilities have met with hospital staff and emergency departments to make them aware of nursing facility services that can be provided in-house. Facility interviewees reported that prior to these meetings, hospitals largely were unaware of supports available for high-acuity residents.

### **B.8.2 Competing or Similar Initiatives**

At the start of NFI 1, Medicare Advantage had a small presence in Alabama, but the landscape is rapidly changing. Optum, a Medicare Managed Care Product, has grown in presence across the state and has been “marketing aggressively” to residents and families. Furthermore, several of the corporate owners of facilities across the state have created an alliance called Senior Select to develop a Medicare Advantage product called SIMPRA ADVANTAGE, which includes both a D-SNP (Special Needs Plan) and an I-SNP. SIMPRA ADVANTAGE has marketed to Senior Select residents by the end of 2017. Senior Select represents approximately 75 percent of long-term care facilities in the state. The SIMPRA Advantage model has features similar to the NFI 2 clinical care model in other ECCPs, including provision of a nurse practitioner and additional care coordination.

Local hospitals are also creating their own initiatives to reduce readmissions from nursing facilities. The IMPACT program, run by St. Vincent’s Hospital in Birmingham, focused on short-stay residents but had similarities with NFI because of its focus on education and care coordination. IMPACT reportedly dissolved as of August 2017. Another hospital-based effort focuses on congestive heart failure, providing additional facility resident monitoring with the help of a designated hospital nurse.

Because AQAf is the QIO for Alabama, through NFI 1 AQAf leadership focused on disseminating best-practices to facilities statewide through meetings of state nursing home associations and similar events. As of 2017, a management entity established a partnership between AQAf and the Mississippi QIO. To that end, the Mississippi QIO is working with a

local university to pilot an Initiative that provides NFI-like QAPI training to a select few RNs and DONs in the state. This Mississippi model focuses on training DONs to be change agents, similar to the role of Coaches in NFI. AQAF leadership explained that facility staff are more receptive to change when it comes from an internal source. Facility interviewees participating in NFI 2 also expressed similar sentiments about the benefits of having an internal facility staff champion.

Facility interviewees also reported additional effort to review specific conditions among facility residents, such as diabetes, falls, and hypertension. These efforts were spearheaded by corporate initiatives and, in some cases, AQAF's QIO side. Because some facilities were involved in multiple initiatives focusing on similar outcomes, some interviewees confused NFI 2 with other AQAF programs and did not fully understand its goals.

## **B.9 Conclusions and Next Steps**

As NFI 2 progresses, RTI will continue conducting telephone interviews and in-person site visits with both AQAF leadership and participating facility leadership, staff, and practitioners. We will be paying particular attention to the following topics:

- Differences between NFI 2 practices between Payment-Only and Clinical + Payment facilities, including the role of the AQAF Coach (Clinical + Payment) and/or facility staff Initiative champions
- Interviewee perceptions of the overall effect of the Initiative on both facility care provision and avoidable hospitalization rates
- Ongoing successes or challenges with the billing process and plans for use of reimbursement funds
- Continued effects, if any, of the recent AQAF leadership changes and Initiative model realignment
- Growing presence of managed care across the state.
- On January 17, 2018, CMS issued a Programmatic Assistance Letter (PAL) to AQAF leadership, indicating concerns with the results of AQAF's evaluation results from NFI 1. AQAF responded, indicating that they will change their Initiative model structure to include nurse practitioners and RNs who provide clinical care. RTI will be tracking progress with this model shift and related outcomes through Initiative Year 2.

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## APPENDIX C

### ADMISSIONS AND TRANSITIONS OPTIMIZATION PROGRAM (ATOP2)

#### C.1 Overview

*Nevada and Colorado Initiative Year 1 Site Visit Findings; August 21, 2017 – August 25, 2017 and November 13, 2017 – November 15, 2017*

##### **Key Findings:**

- Six of the nine visited facilities were routinely submitting claims at the time of the site visits.
- Additional practitioner outreach was reported to be needed by multiple interviewees in both groups. It appeared that practitioners may certify the six qualifying conditions, but they generally were not aware of the Initiative, nor did they bill. No practitioners had submitted care coordination claims for the visited facilities.
- HealthInsight Nevada Admissions and Transitions Optimization Program (ATOP2) retained the same number of RNs and APRNs as in NFI 1 but reduced the number of Clinical + Payment facilities they supported from 24 to 13, thereby providing substantially more support to those facilities. Consequently, Clinical + Payment interviewees reported more satisfaction and engagement with NFI 2 of the Initiative than they had in NFI 1.
- ATOP2 advanced practice register nurses (APRNs) in Clinical + Payment facilities were reported to certify the six qualifying conditions frequently.
- The ECCP [Enhanced Care Coordination Providers] was stepping up efforts to provide oversight and monitoring of nursing facility billing, including providing reports of “missed billing opportunities.”
- The use of free-standing hospitalist groups (e.g., not associated with a hospital) was as prevalent in Nevada’s Clinical + Payment facilities as it was during NFI 1. These types of providers did not appear to be widespread in the Payment-Only facilities.
- Recent Nevada legislation allows physician assistants and APRNs to sign physician orders for life-sustaining treatment (POLST) forms. One of the four visited facilities used ATOP2 APRNs in this capacity.
- One Clinical + Payment and three Payment-Only facilities withdrew from the Initiative as of November 2017. Reasons included data burden, managed care preference, and a safety violation.
- The Payment-Only facilities in Colorado reported that initiatives to reduce avoidable hospitalizations were not new to them, but rather ingrained in their standard of care.
- Managed care organizations appeared to have a stronger presence in Colorado than in Nevada. Payment-Only nursing facility leaders considered Optum (United Healthcare), which provides a nurse practitioner to long-stay residents in nursing facilities, to be an effective program to reduce avoidable hospitalizations.

HealthInsight, Nevada’s Quality Improvement Organization (QIO), implemented ATOP to improve care and reduce avoidable hospitalizations by addressing changes in conditions identified by INTERACT [**I**nterventions to **R**educe **A**cute **C**are **T**ransfers] and modified-INTERACT tools. The model deploys APRNs and RNs to provide direct clinical support, training, and education in participating nursing facilities. In NFI 1 of the Initiative, five APRNs and 10 RNs covered 24 facilities in Nevada. Because the State of Nevada has a total of 51 nursing facilities, the addition of Payment-Only facilities necessitated recruiting facilities from

another state. HealthInsight contracted Intermountain Quality Innovations (ImQI), a QIO, to implement the Initiative and recruit 24 Colorado facilities. During the readiness review process, HealthInsight reduced the number of participating facilities in Nevada to 14. All 38 facilities across Nevada and Colorado completed the CMS-required readiness review and staff training on the model and began implementation in December 2016. In July 2017, one facility in Nevada withdrew from the Initiative. By November 2017 three facilities in Colorado had withdrawn from the Initiative. NFI 2 of the Initiative is known as **ATOP2** in both states.

To improve facility support in NFI 2, the ECCP retained the same level of clinical staff and deployed them to fewer participating facilities. In NFI 1, one APRN and two RNs were clustered into pods and rotated among four to five nursing facilities. In NFI 2, each RN was assigned to one or two nursing facilities, depending upon the number of residents. One APRN rotates among six participating nursing facilities in the northern region, and three APRNs rotate among seven facilities in the southern region. Another fundamental change was the reduction, in NFI 2, of data entry required by APRNs and RNs. The Resident Registry that had been fraught with glitches, prone to error, and required substantial APRN and RN time for data input during NFI 1, was significantly streamlined for use in NFI 2. This enabled ECCP clinical staff to spend more clinical time to support nursing facility staff. **Table C-1** provides a summary of key ECCP characteristics for NFI 2.

**Table C-1**  
**ATOP2 summary for Initiative Year 1**

Organization Type	Private, nonprofit, community-based quality improvement organization (QIO)
ECCP nurse role	Clinical support, education, NFI 2 data collection
ECCP Facility-based staff (full-time equivalent [FTE])	11 Full-time RNs 4 Full-time APRNs
Number of facilities participating	34; 13 Clinical + Payment, 21 Payment-Only
Ownership changes since NFI 1	None
Facilities withdrawn to date	1 Clinical + Payment, 3 Payment-Only

The RTI evaluation team visited five payment-only, Payment-Only facilities in Colorado in August 2017; bed sizes ranged from 114 to 187. Two facilities had 5-star ratings, two had 4-stars, and one was a 3-star nursing facility. One of the 4-star nursing facilities provided services exclusively for residents with Alzheimer’s disease and related dementias (ADRD), and the 3-star nursing facility had a large population of younger adults with disabilities. In total, four NFAs, four DONs, four billing office managers, two MDS nurses, one medical records nurse, and one Medical Director were interviewed. Many of the facility interviews completed during this site visit were conducted in groups of two or more people. This was the preference of the facility staff, who indicated they would be able to give more complete information if the full team working on ATOP2 implementation were present in the same interview. The team also visited ImQI, the HealthInsight contractor overseeing implementation of the Initiative in Colorado.



In November 2017, the RTI team visited four Clinical + Payment nursing facilities in southern Nevada. One was a 5-star nursing facility, two were 4-star facilities, and one was a 3-star facility. Bed sizes ranged between 112 and 188 beds. The evaluation team interviewed three NFAs, four DONs, three ADONs, four facility nurses, four billing office managers, two directors of social services, one infection control nurse, one CNA, four ECCP RNs, and three ECCP APRNs. In general, interviews completed during the Nevada site visit were conducted with one to two nursing facility staff. ATOP2 leadership, including two staff members who were linked by video conference, were interviewed during RTI’s visit to the HealthInsight offices in Las Vegas.

**Table C-2** summarizes the major findings from the RTI site visits, including the facility buy-in to the Initiative, which was variable, number of facilities that hired additional staff, and number of facilities submitting claims and receiving payments. Additional information on each topic is discussed throughout this report.

**Table C-2**  
**Site visit interview summary findings for Initiative Year 1:**  
**Facility staff buy-in and implementation\***

Site visit interview summary findings for Initiative Year 1	Total	Clinical + Payment	Payment-Only
Facilities visited	9	4	5
Buy-in to NFI 2			
High	5	2	3
Medium	2	2	0
Low	0	0	0
No buy-in/Still in start-up phase	2	0	2
Number of facilities that hired new staff because of NFI 2	2	2	0
Number of facilities with resident opt-outs	0	0	0
Number of facilities submitting claims	6	4	2
Number of facilities with paid claims	5	4	1
Number of facilities where certified practitioners have formally withdrawn from NFI 2	0	0	0
Number of facilities with programs to reduce potentially avoidable hospitalizations that are unrelated to NFI 2	6	4	2
Number of facilities reporting that NFI 2 has been effective in reducing potentially avoidable hospitalizations	3	3	0

\* Data from the Clinical + Payment facilities reflects information gathered during a November 2017 visit. Data from the Payment-Only facilities reflects data gathered during an August 2017 visit.

NOTE: Buy-in is based on interviewer perceptions using the following definitions: *High buy-in*: Facilities that are billing regularly, with staff that are aware and engaged; overall, the facility interviewees speak highly of the Initiative and its impact on reducing avoidable hospitalizations. *Moderate buy-in*: Facilities that have begun to bill but are not doing so regularly; staff may recognize the Initiative and key components but may not be fully engaged. *Low buy-in*: Facilities that have not started billing and/or have not trained staff on the six conditions; generally limited engagement and limited participation in NFI 2.

### **C.1.1 Initiative Implementation**

Both during the site visit and during phone interviews, facility staff in Payment-Only facilities described positive one-on-one discussions with ImQI staff who assisted them with education on billing and documentation practices. ImQI also created a YouTube tutorial to assist nursing facility staff unfamiliar with entering data in the ECCP-required data collection Excel spreadsheets. ImQI staff visited facilities to provide training and oversight and had completed a tour of facilities located in the southern, remote areas of Colorado in August 2017. At the request of the Medicare-Medicaid Coordination Office (MMCO), they were also making regular, monthly visits and providing resources to a nursing facility that had been temporarily suspended from ATOP2 billing after receiving an immediate jeopardy tag during a state inspection survey. That facility subsequently withdrew from the Initiative.

Payment-Only facility staff reported attending webinars, from spring through fall 2016, hosted by ATOP2 in preparation for the start of the Initiative in December 2016. Trainings were generally targeted toward facility leadership, including the administrator, DON, and business office staff and focused on the definitions and documentation for the six qualifying conditions, data reporting, and billing procedures. Frontline staff received little to no formal training on ATOP2, but some were included in facility activities as the Initiative evolved. Facility staff who were trained recalled reviewing billing and clinical requirements of the program during the webinars. ImQI conducted some trainings with multiple facility staff at the facility corporate office. Most facilities reported that the one-on-one support provided by ImQI was more valuable than the initial webinars. One facility reported scheduling monthly meetings with ImQI between March and June 2016 to discuss aspects of the project during rollout. Other facilities required periodic refresher training or orientation because of staff turnover.

During the November 2017 site visit HealthInsight leadership reported a misunderstanding between the ECCP and CMS concerning the training of Payment-Only staff. Although they understood the need to provide education during rollout, they believed the ECCP had been instructed to taper their guidance after the initial training and rollout. After receiving clarification from CMS in May or June 2017, the ECCP began to plan additional education for the Payment-Only facilities. The nature of this education and the relative role of ImQI and HealthInsight was unclear to the site visit team.

Start-up and readiness review of NFI 2 were slower and more complicated than expected in Clinical + Payment facilities, resulting in a CMS corrective action letter in September 2016. Focusing on nursing facilities in Nevada, it noted the dearth of certified practitioners and missing data because of lack of participating facility compliance in submitting readiness review materials. This prompted a review of facilities that were engaged in NFI 2 activities resulting in reducing the number of participating facilities in Nevada.

In addition to NFI 2 billing webinars and resources that were available across Payment-Only and Clinical + Payment facilities, the ECCP nurses had provided on-site clinical training directly to Clinical + Payment facility staff. This training was in progress in June 2016, when the RTI team learned of it during our NFI 1 site visit. By the November 2017 RTI site visit, all visited facilities reported that the ATOP2 nurses had presented in-service trainings on NFI 2 and the six qualifying conditions to frontline staff in addition to leadership. These in-services were

primarily conducted during rollout, but some facilities indicated that the ATOP2 nurses provided additional in-services to orient new staff or to address particular concerns, as needed. Both ATOP2 and facility staff also reported spending time one-on-one with nursing staff to hone relevant clinical skills.

### **C.1.2 Learning Communities**

One-on-one conversations between ImQI and Payment-Only facilities were ongoing but Learning Community (LC) activities were not well attended as of August 2017. Some facilities reported limited involvement in initial Learning Community webinars, indicating they were not generally helpful. One administrator found that his facility was not far enough along in implementation for them to be useful, and others reported that the times were inconvenient. By the November 2017 site visit to Nevada, HealthInsight reported that they had surveyed participating facilities on the usefulness of the LC webinars and barriers to attendance. They found that facilities were interested in more frequent contact but were unable to participate in the 10:00 am scheduled webinars because of conflicts with their facility meetings. Following the ECCP's survey, a value-based purchasing LC webinar had been scheduled for the afternoon and was considered well attended with 35 attendees.

Beginning in December, HealthInsight planned to increase their bi-monthly webinars to monthly webinars and invite facilities to present on their experiences at alternating meetings. The ECCP also began sending weekly e-mail newsletters to participating facilities as well as monthly summary e-mails. In-person collaboratives were scheduled for twice a year, as they have been in previous years. These large group meetings are targeted at nursing facility staff and vetted practitioners involved in ATOP2 and designed to increase engagement.

### **C.1.3 INTERACT Tools and Other Components**

All five Payment-Only facilities interviewed said that INTERACT, specifically SBARs, had been in place for some time prior to start of the Initiative and three emphasized that early recognition of changes in condition was part of their standard of care. All four Clinical + Payment facilities visited reported good utilization of INTERACT tools and, similar to Payment-Only facilities, two had the tools built into their electronic medical records (EMR) alert charting system. ATOP2 nurses and ImQI staff confirmed that facilities generally had good use of the INTERACT tools, although there was variation in how frequently staff completed assessments. In one facility, leadership reported struggling to motivate frontline staff to complete SBARs at times because their practitioners preferred to receive a verbal update rather than read an SBAR. Leadership, however, continued to require SBARs to complete documentation. ATOP2 nurses also reported encouraging facility staff to complete documentation when identifying changes in condition.

## **C.2 Sharing Collaborative**

Members of the ATOP2 leadership team stated they found the sharing collaborative helpful. Particularly, interviews appreciated the sharing of information across ECCPs encouraged by these meetings.

### C.3 Facility Staff and Practitioner Engagement

#### C.3.1 Facility Staff

Most facility staff and ATOP2 nurses reported much greater satisfaction with the new ATOP2 staffing patterns than in NFI 1, noting that the ATOP2 nurses are now much more visible and involved on the floors. ATOP2 nurses were reportedly rounding on residents, participating in quality improvement and daily morning meetings, and providing in-service training and one-on-one mentoring.

When asked about potential success of the participating Payment-Only nursing facilities, given number of chains, increasing presence of managed care, number of remote facilities, and general engagement in the Initiative thus far, ImQI staff offered their assessment as

Clinical success:	50/50%
Data submissions:	70/30%
Overall success:	60/40%

ImQI further explained that the biggest success thus far was that the nursing facilities were submitting high-quality data each month; this had grown to 70 percent as more facilities received one-on-one guidance, repeated instructions, and perfected data collection processes. Additional clinical improvement was needed in about half the facilities, including improving early recognition of changes in conditions, standardizing communication through implementation of INTERACT and engagement of practitioners. Although the three visited facilities that were engaged in ATOP2 had INTERACT tools either fully integrated into their EMR alert charting system or they were using a combination of paper and EMR alert charting, it appeared this was not the case with most (nonvisited) Colorado facilities. Some reported billing solely for events that happened to qualify for the Initiative, without fully engaging in a process to identify changes in condition early and intentionally providing additional care. ImQI indicated that their future plans included providing facilities with more resources and reeducating them on the goals of the Initiative.

In addition to engagement in clinical improvements, two visited facilities reported that nursing staff and CNA turnover was a major challenge to clinical implementation, citing the need for consistent documentation. ImQI staff echoed this concern.

Two other facilities described the Initiative data requirements as a key challenge. In these facilities, regular data submissions to the ECCP were primarily the responsibility of one staff member and were described as onerous.

Some facilities also reported that the ATOP2 APRNs provided advance care planning support. Previously, ATOP2 nurses provided guidance during these conversations in NFI 1; however, effective May 2017, the state enacted legislation allowing Nevada APRNs and

Physician Assistants to sign POLST forms at the conclusion of the end-of-life discussion.<sup>15</sup> One facility reported utilizing the ATOP2 APRNs to sign POLSTs.

In general, facility leadership had the largest impact on the progress of the Initiative. Facilities with staff stability and clearly defined staff roles had the strongest buy-in and were more likely to be comfortable with the ATOP2 requirements. Facilities with high staff turnover or more competing priorities had lower buy-in and became bottlenecked at the leadership level.

### **C.3.2 Practitioners**

Four of the five visited Colorado facilities indicated that they had one to two practitioners who covered over 90 percent of their residents. In one of these, the primary physician worked in house full time. To ensure that a small group of practitioners attended the facility, three of the facilities reported consciously limiting the number of practitioners allowed in their facility. They claimed this allowed the facility staff to communicate more easily and effectively with practitioners and increase the quality of care. One facility also indicated that they discouraged hospitalists from seeing residents in the facility, preferring to avoid any conflicts of interest related to hospitalizations.

All the Colorado facilities interviewed reported that they had at least one practitioner who was aware of the need to reduce avoidable hospitalizations and willing to participate in the Initiative. No facilities, however, indicated that practitioners were billing under the Initiative codes or otherwise involved in the implementation. There were no reports of practitioners changing their practices in response to the Initiative, if they were aware of its implementation.

Initially, the ImQI staff had provided resources to practitioners concerning the Initiative but had not provided additional training or outreach after implementation. Through CMS-generated reports provided in August, ImQI staff had become aware that most certified practitioners were not billing. ImQI staff intended to make practitioner outreach its focus in the following months. At the time of the site visit, ImQI staff were in contact with leadership of major practitioner groups involved in the Initiative and planned to identify a practitioner ‘champion.’ The team hoped to partner closely with the leadership to drive practitioner engagement.

Unlike Colorado facilities that limit the number of practitioners in facilities, many Nevada facilities use a wide range of practitioners, often hospitalists. Similar to reports in NFI 1, most nursing facilities indicated that practitioners are present once every month or two and that physician extenders, often from hospitalist group practices, are the primary providers who visit the facilities several times a week to provide care.

All facilities reported that the majority of their physicians are associated with hospitalist groups, which they saw as a barrier to engagement with NFI 2 as it was during NFI 1 of the

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<sup>15</sup> Physician Orders for Life Sustaining Treatment: <https://www.nevadapolst.org/polst-ad-dnr>. 

Initiative. Hospitalist group practices in southern Nevada are generally independent and not part of a particular hospital. As facility staff explained, because of the group nature of hospitalist practices in NV, many physicians do not have “ownership,” or consistent responsibility for residents. Importantly, they are financially incentivized through their practice to treat the resident in a hospital setting, rather than at the resident’s nursing facility.

Practitioners were initially recruited by the ATOP2 APRNs during NFI 2 rollout, but their participation stalled after enrollment. At the time of the site visit, the ECCP was renewing efforts to engage practitioners and had begun additional outreach to physician groups. HealthInsight believed that a change in leadership of a large hospitalist group in the south provided an opportunity to improve provider engagement with ATOP2. At the time of the site visit HealthInsight had scheduled a meeting with the new leadership to discuss the Initiative. The ECCP also identified a billing manager from a large physician group in northern Nevada to act as a champion to communicate directly with practitioners. Finally, ATOP2 leadership described efforts to create a report showing practitioners’ lost potential revenue.

#### **C.4 Six Qualifying Conditions**

Of the six qualifying conditions, nursing facilities reported billing for urinary tract infections (UTIs) and pneumonia most frequently.

#### **C.5 Billing Practices**

##### **C.5.1 Facility Billing**

The five Payment-Only visited facilities indicated that they were in various stages of implementation. Two had not implemented the Initiative beyond monthly data submissions, two were billing regularly, and one nursing facility reported that it had ‘implemented’ and was ready to bill but had no opportunity thus far. In this facility, a full-time physician and nurse practitioner were present in-house, and the facility had focused on INTERACT use and reducing hospitalizations for many years prior to the Initiative. The facility staff cited their ability to rapidly respond to changes in condition as a barrier to billing, given that no residents had reached the clinical threshold for a qualifying condition. The staff reported, however, that they were tracking their eligible residents and engaged in the Initiative, which they believed allowed them to “*be paid for what we’re already doing.*” This was a theme common to three Payment-Only facilities that had frequent access to practitioners and INTERACT use integrated into their facility culture and EMR systems.

Two of the five Colorado facilities had billed retroactively at the time of the site visit. In one facility, the ATOP2 program was clinically implemented, but the billing office was delayed in submitting bills. In another facility, the ATOP2 program had not been formally implemented clinically until July 2017, but the nursing staff and billing office had reviewed residents’ medical records to substantiate occurrences of ‘billable opportunities’ from prior months. They identified ATOP2-eligible residents and submitted claims retroactively to December 2016, the start of the Initiative, if the progress notes comported with Initiative requirements. Both facilities indicated that the additional revenue would be used to improve the nursing facilities and patient care.

The importance of a champion to support the Initiative was clear in several facilities. In one facility, billing was not initiated until a new NFA joined and became involved in the Initiative. In another facility, the staff became aware that they had not been billing for eligible cases only when a new DON requested additional training from ImQI. In this facility, the MDS nurse and the billing office worked to identify previous cases that were eligible for reimbursement to back bill, while the new DON worked on clinical implementation of the model.

In the two facilities for which ATOP2 activities were limited to data collection, only the NFA and a billing office manager or medical records staff who completed the data collection were involved. Both NFAs expressed buy-in to the Initiative but indicated that turnover and other priorities kept them from further ATOP2 implementation. One NFA also reported that he was hesitant to bill Medicare without having an extensive quality check system in place, and his availability to create this system limited implementation.

Three of the four Nevada nursing facilities visited by RTI were certifying conditions and billing regularly. Two of these facilities were in the same chain, and each reported submitting between 12 and 16 claims per month, totaling over \$100K in revenue each. These facilities have between 75 and 90 eligible residents. The third facility had an ATOP2-eligible population of 40 residents and reported submitting approximately 25 claims over the course of the 11 months since implementation. Each of the three facilities reported that the supplemented payments were used to improve patient care. The fourth facility had approximately 15 eligible residents, few had progressed to the point of becoming clinically eligible for billing, and consequently only three claims had been submitted in 11 months of implementation.

None of the facilities reported difficulties submitting claims for reimbursement. Several facility staff reported that Medicare reimbursed more quickly for the Initiative codes than for their non-Initiative billing. In many cases, nursing facilities experienced more issues with timely documentation of changes in condition. Staff reported instances of delays in certification that prevented the facility from billing for the first days of the treatment.

### **C.5.2 Practitioner Billing**

No practitioners at the visited Colorado facilities were billing for the six qualifying conditions or for care coordination or reported to be involved in ATOP2 at the time of the Colorado site visit. The nursing facilities had ensured that practitioners were certified to participate in the Initiative, but largely had not involved them in implementation beyond utilizing their usual practitioner's notes for certification of the six qualifying conditions to proceed with facility billing. Facility staff indicated that they did not believe it was their responsibility to educate them.

All practitioner billing was done by third parties, separate from the facilities in Colorado. Facility staff opined that practitioner contracts are arranged in such a way that even if they billed for Initiative services, it would likely not affect their salary. They also suggested that it was a complicated process to adjust practitioner contracts to add another billing code and the amount offered by the Initiative may not be worth the effort.

Of the facilities interviewed, staff indicated that only one physician assistant in one of the four visited facilities was using the Initiative billing codes. No facilities reported practitioner use of the care coordination codes. Facility staff indicated that physician extenders were willing to certify and document eligible conditions to facilitate facility billing. However, facility staff generally used physician extenders' routine documentation as the basis for Initiative certification.

With the lack of provider engagement, facility staff reportedly rely on the ATOP2 APRNs to certify changes in condition for facility billing in the Initiative about 50 percent of the time. Facility staff and the ATOP2 RNs regularly track changes in condition that occur in each facility and coordinate with the ATOP2 APRNs to ensure that documentation is completed in an appropriate timeframe. One facility administrator expressed apathy with practitioner billing, reporting that they "*could just have the ATOP2 APRN certify instead.*"

Similar to the speculation by Colorado facility staff, Nevada staff gave a variety of reasons for the lack of practitioner engagement, including that (1) the salary structures of group practices would result in practitioners not receiving any additional revenue; (2) the group practice billing offices were unaware of the Initiative or unwilling to make adjustments to their billing processes; (3) the additional payment was not worth the additional time involved; and (4) their time was so limited that practitioners would not have time to learn about Initiative billing.

### **C.5.3 Data Collection**

Facilities in both states used a variety of approaches to Initiative-required data collection. Generally, business office staff, medical records, and the administrator kept an updated list of residents, insurance providers, and ATOP2 eligibility. Nursing staff, including the MDS coordinator and other floor staff, reported qualifying changes in condition to the staff who entered data. The business office manager or medical records staff conferred with the team near the end of the eligibility period or month to update the status of cases that were marked as potentially eligible. One Colorado facility integrated ATOP2 eligibility into its morning meeting, and the DON reviewed patient records for potentially eligible residents before forwarding the information to the MDS nurse. Another facility required one staff member to collect and enter all data. Facilities using a team-based approach for data collection were all billing successfully. In many cases, billing data collection was used to double-check the documentation on changes in condition collected during the month.

ImQI was responsible for training and monitoring data collection for both Payment-Only and Clinical + Payment facilities from implementation in December 2016 to July 2017. After July 2017, HealthInsight took responsibility for Clinical + Payment data collection and ImQI continued data support for Payment-Only facilities. HealthInsight instituted several levels of data checks, monitoring, and corrections due to variability in the facilities' data submissions. The HealthInsight data manager, project manager, and the ImQI data staff member hold weekly meetings to review data. Any data issues, such as inconsistent or missing dates or documentation, are reported to facilities for correction. A significant portion of the ECCP project manager's and ImQI staff time is spent liaising with facilities concerning data issues.

In Clinical + Payment facilities, ECCP nurses collect additional data using the NFI 2 resident registry. The NFI 1 resident registry was redesigned to be more streamlined and user



friendly and focus mainly on the six qualifying conditions and falls; consequently, ECCP nurse time on data input was drastically reduced from approximately 60 percent to 30 percent. HealthInsight leadership uses the registry data to provide monthly summaries of changes in condition to facilities that highlight potential “missed billing opportunities.”

Facility staff reported that the requirement to collect data on short-stay residents, who may only be in the facility for a few days and who were ineligible for ATOP2, was particularly burdensome. Data burden was the reason given by two of the five facilities that had withdrawn as of November 2017. In facilities with more responsibility sharing or compatibility between EMR and the reports, data reporting was less onerous. Another challenge, at least initially, was the ECCP-required use of Excel spreadsheets for data collection. Colorado nursing staff were not familiar with this software and required software upgrades and significant training by ImQI staff.

ImQI indicated that the Colorado facilities overall had been submitting reports with fewer errors and asking fewer questions concerning data requirements over time. However, recurring turnover necessitated retraining of nursing facility staff in data collection requirements.

## **C.6 Perceived Effectiveness of the Initiative**

### **C.6.1 Potentially Avoidable Hospitalizations**

The perceived effectiveness of the Initiative in reducing hospitalizations differed between Clinical + Payment and Payment-Only facilities. Interviewed staff in Clinical + Payment facilities in Nevada believed the Initiative had been effective in reducing hospitalization rates. Interviewees from Payment-Only facilities in Colorado indicated that it was too early to tell if the Initiative was effective in preventing hospitalizations.

### **C.6.2 Resident and Family Perspective**

Statewide in Nevada, 25 residents who had participated in NFI 1 opted out of NFI 2. In Colorado approximately 10 residents opted out when ATOP2 rolled out in that state. Neither facilities nor the ECCPs could provide specific reasons for opt-outs.

## **C.7 Spillover and Contamination Effects**

All facilities interviewed were focused on reducing avoidable hospitalizations in their short-stay population in addition to their involvement with ATOP2. When facilities made upgrades to their EMR systems and clinical capabilities to reduce rehospitalizations, all residents benefitted. Administrators reported that ATOP2 has reinforced efforts made to improve clinical care throughout the facility in response to its corporation’s focus on rehospitalizations.

HealthInsight is a QIO operating in four states (Oregon, Utah, New Mexico, and Nevada) and it participates in programs in at least one other state (Arizona). In NFI 1, HealthInsight shared ATOP resources and best practices with nonparticipating facilities as part of its mandate to improve quality throughout Nevada. HealthInsight intends to have in-person collaboratives twice a year during NFI 2. These large group meetings include participants beyond the Initiative; HealthInsight hopes to use them to engage practitioners in ATOP2 activities. In NFI 2, ATOP2

leadership reported that when they interact with participating and nonparticipating ATOP2 facilities, they provide information and resources on multiple HealthInsight programs, many of which focus on quality improvement in the Initiative’s six qualifying conditions.

## **C.8 Policies and External Stakeholders**

### **C.8.1 Hospital Engagement**

The RTI team learned that Payment-Only–associated hospitals may not be aware of ATOP2; however, they are participating in conversations with Payment-Only facilities concerning reducing avoidable hospitalizations in general. Some facilities reported holding “safe transitions” meetings to support communication between the hospital and facility, others were members of preferred provider networks or bundled payment initiatives with their local hospitals.

The Clinical + Payment facilities reported that their conversations with local hospitals were largely centered on rehospitalizations. Although one administrator described using the ATOP2 Initiative as a “selling point” when speaking to a hospital contact, he did not anticipate that the hospital would remember their involvement.

### **C.8.2 Competing or Similar Initiatives**

There appears to be very little managed care penetration in Nevada, unlike Colorado, where a number of managed care organizations are affecting the Initiative. All Payment-Only visited facilities reported that many long-stay residents had MCO coverage, including from Humana, Blue Cross, Kaiser, Aetna, and United Healthcare. The Denver area in particular was described as having a “*hot managed care market.*” When asked about other initiatives similar to ATOP2, facility administrators often cited Optum, stating that it was effective at reducing unnecessary hospitalizations. United Healthcare’s Optum program (formerly Evercare) was actively enrolling residents in all nursing facilities visited and had caused a reduction in the ATOP2 eligible population in other Payment-Only facilities. Optum operates an Institutional Special Needs Plan (I-SNP) product for residents in nursing facilities that has the potential to impact eligibility of the ATOP2 program. The plan offers frequent monitoring by an assigned Optum APRN to prevent avoidable hospitalizations, in addition to other plan benefits, including transportation and other supportive services.

The interviewed facility staff were not able to give clear criterion for facility participation in Optum or the basis on which facilities receive quarterly revenue from Optum; however, they did note the absence of any data collection requirement on the part of facilities. Some interviewees indicated that Optum staff had initially approached and were given access by Life Care corporate leadership to market its product to residents in certain Life Care facilities. Residents in one facility rejected the Optum program because they preferred the full-time in-house physician and nurse practitioner. They were not willing to switch to Optum and risk being unable to see their regular practitioners. An administrator at another facility noted that Optum penetration was increasing; it had grown from 25 residents to about 35 residents within eight months. Three other facilities mentioned Optum’s presence, but they did not cite it as a challenge to ATOP2 eligibility.

## C.9 Conclusions and Next Steps

Most of the Payment-Only and all of the Clinical + Payment facilities interviewed reported a desire to continue with the Initiative. Two Payment-Only facilities that had not fully implemented the Initiative or billed successfully indicated that they hoped to fully implement after other, more pressing, priorities (i.e., turnover and developing a quality check program) were concluded.

HealthInsight received a Programmatic Assistance Letter (PAL) from CMS on November 2, 2017, expressing concerns over several aspects of the Initiative's NFI 2 implementation in both groups. The particular areas of focus included the utilization of the ECCP nurses, the implementation of INTERACT tools within facilities, and the quality of clinical documentation. At the time of the RTI site visit, HealthInsight was preparing a response to the letter and had launched a series of workgroups within the organization to address key issues such as data collection and practitioner engagement and education. Many of the next steps discussed seemed to be in direct response to the letter, including increasing the frequency of webinars to be monthly, communicating with facilities weekly via e-mail updates, creating a payment reform work group, improving practitioner engagement and participation, and providing ongoing training to new nursing facility staff involved in the Initiative.

The focus of the RTI ATOP2 team during spring 2018 telephone interviews with both groups and the summer 2018 Clinical + Payment site visit will include assessing and understanding:

- progress with respect to practitioner engagement in each group and to understand reasons for nonparticipation,
- challenges with respect to Initiative care coordination meetings,
- progress made in educating Payment-Only facility staff on the Initiative,
- effects of managed care penetration, particularly in Colorado,
- the extent to which facilities are relying on ECCP APRNs for certification of the six qualifying conditions for billing purposes, and how facilities would sustain this practice when the Initiative would end, and
- the role of the ECCP APRNs in end-of-life discussions and POLST completion.

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**APPENDIX D**  
**MISSOURI QUALITY INITIATIVE (MOQI)**

**D.1 Overview**

*Missouri Initiative Year 1 Site Visit Findings; August 7, 2017 – August 18, 2017*

**Key Findings:**

- All visited facilities reported submitting claims; however, the volume of claims being submitted is variable across facilities.
- Interviewed practitioners reported billing inconsistently for the Initiative. Most practitioners did not feel the additional documentation required to bill for the qualifying visit or care coordination was worth the additional revenue.
- Consistent billing in facilities was facilitated by (1) having a practitioner (medical doctor [MD] or advanced practice register nurse [APRN]) who is consistently on site or available and is willing to make the qualifying diagnosis; (2) having a greater number of residents enrolled in the Initiative; (3) having a well-ordered communication and documentation process from the time the change in condition is first identified through the time that the claim is sent; (4) having a designated person to review all claims before they are submitted to ensure all information is present.
- Corporate facilities tend to send claims to their corporate offices for review and submission.
- Three facilities that are part of one corporation reported not having received the revenue for the claims they have submitted because their corporation is deciding what to do with the money.
- Generally, staff in facilities reported that the main impact of NFI 2 on their clinical processes has been improvements to their documentation of changes in condition. Clinical + Payment facilities reported continuing the policies and procedures put in place during NFI 1.

The goal of the original NFI 1 MOQI model was to effect facility culture change and reduce avoidable hospitalizations through placement of an APRN, with support from other MOQI staff, in each participating facility to provide and support clinical care (without writing orders), education and training, end-of-life care planning, quality improvement (QI) activities, and early identification of changes in condition using INTERACT tools. As of August 2017, NFI 2 had 16 Clinical + Payment facilities, each with a MOQI APRN, and 24 Payment-Only facilities (*Table D-1*). MOQI continues to use Missouri Health Connection (MHC) and Primaris as subcontractors in NFI 2.

**Table D-1**  
**MOQI summary for Initiative Year 1**

Organization Type	University of Missouri Sinclair School of Nursing
ECCP nurse role	Education, data collection, clinical care including confirming NFI 2 diagnoses (without writing orders), supporting facility staff with NFI 2 documentation
ECCP Facility-based staff (full-time equivalent [FTE])	17 Full-time APRNs
Number of facilities participating	40; 24 Payment-Only, 16 Clinical + Payment
Ownership changes since NFI 1	6
Facilities withdrawn to date	None

During the 9-day site visit, the evaluation team spoke with 10 members of the ECCP staff, 4 MOQI APRNs, and 54 facility interviewees, including NFAs, DONs, ADONs, RNs, LPNs, social workers, CNA), medical directors and an APRN, MDS nurses, and billing coordinators (facility based and corporate based).

Although interview findings suggest variability in Initiative participation, all facilities reported that they had submitted multiple claims as of August 2017 (*Table D-2*). Furthermore, three-quarters of interviewed facilities appeared to have strong Initiative buy-in, and all interviewed facilities reported that the Initiative has been effective in changing facility culture and has been effective in reducing hospitalization rates.

**Table D-2**  
**Site visit interview summary findings for Initiative Year 1:**  
**Facility staff buy-in and implementation (as of August 2017)**

Site visit interview summary findings for Initiative Year 1	Total	Clinical + Payment	Payment-Only
Facilities visited	8	4	4
Buy-in to NFI 2			
High	6	4	2
Medium	2	0	2
Low	0	0	0
No buy-in/Still in start-up phase	0	0	0
Number of facilities that hired new staff because of NFI 2	1	0	1
Number of facilities with resident opt-outs	3	2	1
Number of facilities submitting claims	8	4	4
Number of facilities with paid claims	5	3	2

(continued)

**Table D-2 (continued)**  
**Site visit interview summary findings for Initiative Year 1:**  
**Facility staff buy-in and implementation (as of August 2017)**

Site visit interview summary findings for Initiative Year 1	Total	Clinical + Payment	Payment-Only
Number of facilities where certified practitioners have formally withdrawn from NFI 2	0	0	0
Number of facilities with programs to reduce potentially avoidable hospitalizations that are unrelated to NFI 2	2	2	0
Number of facilities reporting that NFI 2 has been effective in reducing potentially avoidable hospitalizations	8	4	4

NOTE: Buy-in is based on interviewer perceptions using the following definitions: *High buy-in*: Facilities that are billing regularly, with staff that are aware and engaged; overall, the facility interviewees speak highly of the Initiative and its impact on reducing avoidable hospitalizations. *Moderate buy-in*: Facilities that have begun to bill but are not doing so regularly; staff may recognize the Initiative and key components but may not be fully engaged. *Low buy-in*: Facilities that have not started billing and/or have not trained staff on the six conditions; generally limited engagement and limited participation in NFI 2.

Below is a summary of RTI’s findings based on interviews with ECCP leadership and facility staff.

- Between NFI 1 and NFI 2, the MOQI experienced substantial changes in staffing. Turnover occurred in the project coordinator, project supervisor, and care transitions coach roles, but all these roles were filled by early 2017. Additionally, the ECCP added a new payment team consisting of a payment expert (40 percent FTE through Primaris), payment support lead, and payment support coordinator (position not yet filled). The changes in MOQI’s staffing were not reported to have adversely impacted the Initiative in any way.
- In both Payment-Only and Clinical + Payment facilities, interviewees said that the main impact that NFI 2 has had on everyday practices and care of residents were improvements in the documentation and communication after changes in condition. Aside from these changes, facility leadership, staff, and practitioners described NFI 2 as “getting paid for things they were already doing,” and staff are continuing their existing practices with minimal changes.
- Facility administrative leadership and practitioners explained that the reimbursement rates for practitioners may be insufficient. Practitioners commented that the Initiative is paying for the work they were already completing (i.e., visiting residents when there is a change in condition). For practitioners who do not come to the facility often, the reimbursement is not an incentive to visit more frequently.
- Reimbursement for care coordination was also described as inadequate, related to the amount of time and documentation required for claims submission. Practitioners explained that they could generate more revenue by submitting three “normal claims” in the time it took to submit one care coordination claim.

- Payment-Only interviewees reported that MOQI held multiple meetings and webinars and provided written materials focused on the purpose of the Initiative and the billing codes during the rollout of NFI 2. The MOQI support team, especially members of the payment team, were available to answer facilities' questions. Overall, Payment-Only facilities reported being satisfied with the way that MOQI rolled out the initiative.
- Facility interviewees indicated that the success of the model hinges on (1) having a practitioner (MD or APRN) consistently on site or available who is willing to make the qualifying diagnosis; (2) having enough residents enrolled in the Initiative; (3) having a well-ordered communication and documentation process from the time the change in condition is first identified through the time that the claim is sent; (4) having a designated person to review all claims before they are submitted to ensure all information is present. ECCP and facility staff members also emphasized the importance of DON and NFA stability and buy-in.
- Nursing facility staff turnover and lack of practitioner buy-in or availability, especially in Payment-Only facilities, were consistently identified as barriers to NFI 2.
- Facilities with a lower billing volume attributed this to having fewer eligible residents, identifying and treating changes in condition before they met the qualifying criteria, or difficulty recognizing and adequately documenting changes in condition.
- Managed care's presence is growing across the state. Optum, a managed care product also present in other Initiative states, is marketing heavily to residents and families in several MOQI facilities. One facility reported that, over the course of NFI 2, 10 MOQI residents were no longer eligible because they switched to Optum.

### **D.1.1 Initiative Structure and Implementation**

MOQI began preparing for NFI 2 in Spring 2016, with an implementation start date of October 2016. In Clinical + Payment facilities, the MOQI APRNs, with the help of the MOQI payment team and other MOQI staff, introduced the new payment model to facility staff. To recruit Payment-Only facilities, MOQI used a "multipronged" approach according to their application for participation in NFI 2. One MOQI staff member mentioned that they targeted facilities that were part of a corporation for the Payment-Only cohort. Payment-Only facilities were introduced to the Initiative through an in-person kickoff meeting, written materials, webinars, and site visits by MOQI staff, and they received training on the billing codes and the criteria for the six qualifying conditions. Additionally, Payment-Only interviewees reported that MOQI is responsive to facility questions and concerns. Facilities did not report purchasing new equipment to pass the readiness review; however, most facilities reported needing to work with their lab companies to decrease the turnaround times for EKGs and urinalysis labs. Two Payment-Only facilities purchased a telehealth cart with the intent of using them to qualify diagnosis, but one of these facilities later found out that they could not use the telehealth cart to qualify diagnoses because they were not a rural facility.



### **D.1.2 Learning Communities**

MOQI provides ongoing support to Clinical + Payment facilities through in-person quarterly LC meetings. The frequency of the LC meetings increased from quarterly to monthly during the end of NFI 1 and for the first few months of NFI 2. Learning Community meetings initially focused on education and implementation around NFI 2, including the billing codes, policies and procedures, and the six qualifying conditions. LC topics also included staff retention strategies, complexity science, and infection control. Clinical + Payment interviewees generally found these trainings and support to be useful.

### **D.1.3 INTERACT Tools and Other Components**

Clinical + Payment facilities continue to use the INTERACT tool suite, including SBAR, Stop and Watch, and Care Paths. Some facilities have reported increased INTERACT tool use because of their usefulness in NFI 2 claims documentation. Similarly, MOQI encouraged all Payment-Only facilities to implement INTERACT tools to facilitate claims documentation and submission, though some reported that they were using INTERACT tools before NFI 2. In addition to the INTERACT tools mentioned above, MOQI is also encouraging use of the INTERACT transfer tool. Some facilities are also using “Know it all before you call.”

Continuing from NFI 1, the ECCP continues to emphasize and support end-of-life and advance care planning and documentation, medication management, hospitalization tracking, health information technology support, and quality improvement in Clinical + Payment facilities.

## **D.2 Sharing Collaborative**

MOQI leadership reported that they have had only some participation in Sharing Collaborative activities with CMS and other ECCPs, such as data and reporting workgroups. MOQI leadership also reported that interactions with CMS have been collegial and helpful, emphasizing CMS’s willingness to work through problems during the rollout. One MOQI staff member mentioned that they are using the Connect portal but did not provide feedback on it.

## **D.3 Facility Staff and Practitioner Engagement**

There is variability across facilities in facility staff and practitioner understanding, participation, and engagement in the Initiative.

### **D.3.1 Facility Staff**

In Clinical + Payment facilities, the MOQI APRN is continuing NFI 1 activities: staff education and in-services, new-hire training, data collection, end-of-life care planning and documentation, and encouraging INTERACT tool use. The MOQI APRNs are usually the ones who qualify a diagnosis of one of the six qualifying conditions and work to ensure that the required documentation is complete before the claim is prepared. The Payment-Only facilities generally assigned one staff member to be in charge of collecting all of the documentation needed to submit a claim (more on Payment-Only billing practices in *Section 5.1, Facility Billing Practices*).

Across both Payment-Only and Clinical + Payment facilities, staff response to the Initiative was mostly positive. Facility interviewees often indicated that this Initiative's focus on the six qualifying conditions had sharpened clinical care skills and improved documentation practices and procedures. Awareness of the Initiative's components were variable across facilities and positions within facilities. Licensed nursing staff (LPNs and RNs) generally understood that the Initiative was about preventing avoidable hospitalizations and an increased emphasis on treating the six qualifying conditions; however, leadership staff in a couple of facilities chose not to tell facility staff about the payment component because, "leadership didn't want staff to ask for a raise because the nursing facility is getting more money." An APRN in another facility reiterated this point: "our staff doesn't really know that there is a payment piece involved. We know that they are skilled. We don't want them to rev up there charting thinking that they would get extra income." Consequently, staff in those facilities were not aware of the payment component. Most CNAs understood the Initiative through Stop and Watch, though some had a more nuanced understanding of the six qualifying conditions and the billing component. Many nursing staff also felt empowered and motivated to keep residents in the facility as a result of both NFI 1 and NFI 2.

Staff turnover continues to be a concern, and a few Payment-Only and Clinical + Payment facility staff reported that staffing has never been as difficult as it is now. Most interviewees attributed staffing difficulties to broader societal and economic trends. MOQI offered training on staff stability to leadership several times in different formats. The first offering was in November 2016, and it was offered again through the Voyce Conference in June 2017.

### **D.3.2 Practitioners**

As of August 2017, practitioners reported having variable interaction with MOQI, with some having limited to no interaction and others being highly engaged. MOQI and facility staff worked together to engage practitioners. MOQI provided written materials (also available on their NFI 2 website<sup>16</sup>) and webinars; MOQI staff reported to be available to answer practitioners' questions on an ongoing basis. There was not an official meeting to introduce practitioners to NFI 2, but a Medical Director in one facility reported that they attended general kickoff meeting. It is generally up to facility staff to relay Initiative details to the practitioners.

Most facilities believed that there were enough certified practitioners associated with their facility, and had practitioners, including other practitioners from the same office, who visited at least twice per week. The challenge that some facilities faced in regard to practitioner engagement was that none of their certified practitioners had enough patients in their facility. In other words, these facilities had enough certified practitioners, but the practitioners were not adequately incentivized to be highly engaged with the Initiative because relatively few of their patients were in the MOQI nursing home. The challenge in these cases, especially for the Payment-Only facilities, is that the practitioners visited the facilities infrequently. For example, one facility with this challenge had eight certified practitioners with approximately 70 eligible residents. Interview data does not suggest that practitioners are routinely certifying other

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<sup>16</sup> <https://nursinghomehelp.org/moqi-initiative/>

practitioners' patients. In Clinical + Payment facilities, the MOQI APRN could certify the change in condition. According to a number of facility interviewees and some practitioners, practitioners are coming in more often as a result of the Initiative. However, it should be mentioned the motivation of practitioners who came in more often was attributed to their desire to certify changes in condition to help their patient and the facility rather than their ability to bill for the visit. Beyond increased presence in facilities, most interviewed practitioners reported increased confidence in the skills and capabilities of nursing facility staff.

#### **D.4 Six Qualifying Conditions**

Facilities across both Payment-Only and Clinical + Payment conducted staff in-services and training to recognize and treat the six qualifying conditions. Staff in all of the interviewed facilities reported using INTERACT Tools (SBAR, Stop and Watch, and, in a few facilities, Care Paths) to identify and document the six qualifying conditions. Additionally, most facilities reported having diagnoses criteria checklists at the nurses' stations. New hires were introduced to the Initiative and the six qualifying conditions at orientation. Most facilities reported that practices to identify and treat these conditions were not substantially different than their existing care routines, but some facilities adapted existing care and documentation criteria for identifying the six qualifying conditions to align with the CMS claims requirements. Interviewees in some facilities also reported that a special "MOQI Phase 2" section containing radio buttons related to each of the six qualifying conditions was added to the Matrix electronic medical record (EMR).

Facility interviewees generally agreed that the six qualifying conditions and their criteria were appropriate targets for the Initiative. They reported that there was some confusion initially regarding the qualifying criteria for the urinary tract infection (UTI) diagnosis. Facility staff were unclear about whether they could start billing for treatment started before they received urinalysis lab results confirming the bacteria colony counts were >100,000. For most facilities, it took longer than 2 days, the timeframe to qualify and diagnosis after a change in condition, to obtain lab results. The confusion was alleviated in some facilities once MOQI staff clarified that billing could begin once the UTI diagnosis has been certified. The billing could continue if the UA was completed and met the criteria within 4 days of the initial diagnosis; alternatively, the billing needed to be expunged if the timeframe or colony counts were not met. However, facility staff and MOQI APRNs in a few facilities remained confused about the qualifying criteria for UTIs.

#### **D.5 Billing Practices**

Billing for both facilities and practitioners is dependent on good communication across all parties as well as the other criteria identified in the *Key Findings* section.

##### **D.5.1 Facility Billing**

MOQI leadership reported that all but a few facilities, regardless of model, are billing, but the volume of billing is variable. Interviewees in facilities that report billing in higher volumes generally utilized a system where the CNAs and floor nurses documented all residents' change in condition according to facility standards. This documentation was used by a staff member in the nursing facility's billing office, management, or the APRN in some Clinical +

Payment facilities to determine the resident's eligibility before finalizing the claim. This approach seemed to eliminate confusion among the nursing staff about who was in the Initiative. Successful facilities also tended to appoint a single person to organize documentation in preparation for claim submission. For example, one corporation that has 10 Payment-Only facilities and 1 Clinical + Payment facility hired a registered nurse to review and validate claims from all the facilities before they are sent to the billing department. Another Payment-Only facility hired a LPN to be responsible for collecting all the documentation necessary to submit a NFI 2 claims. As previously mentioned, billing was also facilitated by having practitioners who were available and willing to certify the diagnosis, especially in Payment-Only. Conversely, interviewees who reported that their facilities were billing in lower volumes struggled to implement and obtain buy-in for a system of documenting changes in condition and organizing the information necessary to submit claims. These facilities also faced challenges such as having few eligible residents and low engagement among practitioners. Notably, interviewees in one facility with low billing volumes explained that they were catching and treating changes in condition before they reached the criteria for the qualifying diagnosis.

Most of the facilities visited on the site visit rely on their corporate office to submit claims. One MOQI staff member believed that facilities that are not part of a corporation could implement the billing component more rapidly because they had fewer layers of bureaucracy. There was a 6-month delay in submitting claims for the 10 facilities that were part of the previously mentioned corporation because the corporate biller was getting an error message saying that the CMS system did not recognize the HCPCS code. Though this issue was resolved in June 2017, it was reported that these claims would not be reimbursed until late-August 2017. It should also be mentioned that the interviewees at the three facilities that were part of this corporation said that their facilities were not receiving additional revenue from the claims that they submitted because the corporation was collecting and deciding how to use the revenue. The rest of the visited facilities reported that they were receiving the revenue from NFI 2, and could determine how to use it. Most of these facilities had not yet used the additional revenue but planned to use it for equipment.

#### **D.5.2 Practitioner Billing**

Some practitioners have been successful in submitting claims and have received incentive payments for qualifying condition visits and follow up visits. Practitioner involvement depends largely on what percentage of their professional time is committed to the nursing facility. Practitioners who spend more time in the facility potentially reap greater financial benefits from submitting claims because they have a greater number of patients in that facility.

MOQI leadership and practitioners described the incentive payments as being insufficient to change practice patterns. Practitioners indicated that the extra effort (i.e., coming in to certify conditions) was not commensurate with payment. Furthermore, practitioners mentioned that they could submit three lower level claims, for example CPT 99310, Under Subsequent Nursing Facility Care, in the time that it took to submit one NFI 2 claim. Similarly, most practitioners felt that the care coordination were too challenging to coordinate given the requirement that the practitioner, resident and/or individual authorized to make health care decisions, as well as a member of the facility be present for at least 25 minutes. Because of the scheduling difficulties, care coordination were not worth the financial incentive to most practitioners. Practitioners

viewed the facility billing component as beneficial and wanted to help the facility by certifying changes in condition.

### **D.5.3 Data Collection**

The data collection in the Clinical + Payment facilities is similar to what it was during NFI 1. MOQI APRNs continue to do the bulk of the data collection. Specifically, APRNs continue to collect data on hospitalizations, changes in condition, INTERACT tool use, medication reviews, antipsychotic use, and advance directives. New in NFI 2, MOQI APRNs collect data on care coordination, the six qualifying conditions, and facility billing. MOQI also continues to provide Clinical + Payment facilities with monthly feedback reports.

The database, a spreadsheet that the ECCP used to collect data relevant to NFI 2, for the Payment-Only facilities was left “as simple as possible,” according to MOQI staff. The rationale behind doing so was to minimize the burden on facility staff. In Payment-Only facilities, the NFA or billing/business office staff do the data collection for the Initiative.

## **D.6 Perceived Effectiveness of the Initiative**

### **D.6.1 Potentially Avoidable Hospitalizations**

Most interviewees reported that the Initiative was reducing avoidable hospitalizations and improving resident care. There was consensus that the emphasis on recognizing, documenting, and treating the changes in condition related to the six qualifying diagnoses had improved the clinical competency of the nursing staff. Interviewees in Payment-Only and Clinical + Payment facilities also reported that the culture of sending residents to the hospitals after a change in condition had shifted to attempting to treat changes in condition in the facility whenever appropriate. As one DON from a Payment-Only facility stated, “Culture is changing here from, “is it bad enough that we can get them out of here?” to, “what can we do to keep them here?”

### **D.6.2 Resident and Family Perspective**

As in NFI 1, some facilities have experienced push-back from residents and families who prefer hospitalization to treating in-house. These residents and families tend to be the exception rather than the rule. Three facilities had residents who opted out of the Initiative. The reasons cited for resident opt outs were resident or family refusal and residents switching to managed care (See *Section 8.2, Competing or Similar Initiatives* more on managed care).

## **D.7 Spillover and Contamination Effects**

Across Payment-Only and Clinical + Payment facilities, all long-stay and short-stay facility residents are treated as if they are eligible for the Initiative. In many cases, direct care staff are unaware of resident eligibility and complete the clinical documentation toward possible claims submission for all residents. In most facilities, another staff member will adjudicate whether the resident is eligible and whether to proceed with submitting the claim.

There also may be contamination between Payment-Only and Clinical + Payment facilities. As previously mentioned, the corporate chain that owns 10 Payment-Only facilities and

one Clinical + Payment facility hired a staff member to validate all facility claims before they are sent to the corporate biller. The LPN who was hired by one Payment-Only facility to oversee the documentation related to NFI 2 reported that they also worked in a Clinical + Payment facility, and they were planning to bring knowledge and strategies that they learned from the Clinical + Payment facility to the Payment-Only facility.

## **D.8 Policies and External Stakeholders**

Since NFI 1, the policy climate in Missouri has continued to shift towards more managed care presence and increased partnerships across care settings.

### **D.8.1 Hospital Engagement**

In most cases, hospitals are aware of the Initiative. MOQI leadership and facility interviewees indicated that hospitals have been very supportive of the Initiative. Furthermore, interviewees reported that local hospitals view the Initiative as a means of reducing potential readmissions and associated penalties. Nursing facilities reported that their staff were working hard to avoid readmissions, believing that fewer readmissions will result in stronger relationships with hospitals and more new residents being referred from those hospitals. Some facilities described preferred provider lists, wherein local hospitals are more likely to refer patients to nursing facilities that have proven records of avoiding rehospitalizations.

Facility leadership are fostering relationships with hospitals to highlight nursing facility capacities and capabilities. Some facilities have met with hospital staff and emergency departments to make them aware of nursing facility services that can be provided in house. A couple of Clinical + Payment facilities also mentioned that they were involved in collaborative efforts with hospitals to reduce rehospitalizations related to coronary heart failure prior to the start of NFI 1.

### **D.8.2 Competing or Similar Initiatives**

Managed care presence in Missouri, which was first reported in NFI 1, continued to grow in NFI 2. Optum, a Medicare Managed Care Product from United Healthcare, is growing in presence across the state and is marketing to residents and families. Optum APRNs visit beneficiaries/residents in the nursing facility and can write orders. A MOQI APRN in one facility reported that 10 MOQI residents had switched to Optum and that up to 50 percent of the residents in the facility were managed care beneficiaries. Furthermore, a MOQI staff member mentioned that, when recruiting facilities for Payment-Only, they “had to go into rural areas because St. Louis had too much managed care penetration.”

In general, facilities did not report participating in many other initiatives with the goal of reducing avoidable hospitalizations. Staff in a few of the Clinical + Payment facilities reported working with St. Joseph’s and Mercy Hospital to reduce avoidable hospitalizations related to congestive heart failure (CHF). The program involved nursing facility staff meeting with “nurse navigators” from the hospitals monthly to discuss readmissions of residents with CHF.

## **D.9 Conclusions and Next Steps**

As NFI 2 progresses, RTI will continue conducting telephone interviews and in-person site visits with both MOQI leadership and participating facility leadership, staff, and practitioners. We will be paying particular attention to the following topics:

- Differences between NFI 2 practices between Payment-Only and Clinical + Payment facilities, including the role of the MOQI APRN (Clinical + Payment) and/or facility staff Initiative champions
- Interviewee perceptions of the overall effect of the Initiative on both facility care provision and avoidable hospitalization rates
- Ongoing successes or challenges with the billing process and plans for use of reimbursement funds
- Barriers and facilitators to practitioner engagement with the Initiative
- Growing presence of managed care across the state.

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## APPENDIX E NEW YORK REDUCING AVOIDABLE HOSPITALIZATIONS (NY-RAH)

### E.1 Overview

#### *New York Initiative Year 1 Site Visit Findings; September 25, 2017 – October 5, 2017*

##### **Key Findings:**

- Facilities are moderately to highly engaged in facility billing. The ECCP noted seven Payment-Only facilities had not billed as of October 2017. Two of the seven did not continue into Initiative Year 2 because they failed to meet the minimum requirements for participation in the project and did not provide confirmation of billing by the end of Year 1.
- Practitioners from both groups report moderate engagement with the practitioner billing codes and a few have received reimbursement. Practitioners report that time and unclear documentation requirements prevent them from billing and using the practitioner codes, especially for the Initiative care coordination billing code.
- Among Clinical + Payment facilities, RNCCs and facility-based champions ensure the Initiative is running smoothly. In Payment-Only facilities, multiple champions per facility make for more successful implementation as indicated by high facility staff engagement with the project.
- Increased corporate buy-in can increase facility and practitioner engagement with the Initiative.
- According to NFAs and practitioners, readmission penalties in NY are partially responsible for driving the change to treat residents in house, whether short- or long-stay.
- The majority of nursing facility staff and practitioners stated the Initiative is having a positive effect on reducing avoidable hospitalizations because it helps to focus the efforts of both nursing facility staff and practitioners through education and reimbursement.
- Managed care plans have plateaued in NY State and are less of a threat to reducing the eligible long-stay populations among participating nursing facilities. The ECCP also purposely recruited Payment-Only nursing facilities outside of the state Fully Integrated Duals Advantage (FIDA) counties to reduce interference with the FIDA program.

The Greater New York Hospital Association Foundation continued the New York Reducing Avoidable Hospitalizations (NY-RAH) project from NFI 1 to NFI 2 in fall 2016. The NFI 1 NY-RAH project goal was to promote culture change through the assignment of a Registered Nurse Care Coordinator (RNCC) who educated and trained nursing facility staff on tools to prevent avoidable hospitalizations of long-stay nursing facility residents. As in NFI 1, the NY-RAH model, continues to focus on the use of the INTERACT Tools, primarily the SBAR and Stop and Watch, along with the use of Quality Improvement (QI) tools to inform Quality Assurance Performance Improvement (QAPI) projects aimed to improve clinical processes within the nursing facility. The NFI 1 model also continues to focus on palliative and hospice care, advance directives, and electronic solutions, which primarily focused on the Direct Messaging technology in NFI 1. New for NFI 2, the ECCP will promote an antibiotic stewardship program.

There are a total of 60 NY-RAH participating nursing facilities<sup>17</sup> with 27 Clinical + Payment facilities and 33 Payment-Only facilities (*Table E-1*). As of October 2017, there were 21 Clinical + Payment facility based RNCCs and four vacancies. The ECCP has maintained its NFI 1 partnership with the Icahn School of Medicine at Mount Sinai for overseeing, managing, and training RNCCs. In addition, MedAllies continues to be a partner in NFI 2 for the Direct messaging software. New for NFI 2, the ECCP contracted with a new subcontractor to conduct NFI2 facility readiness reviews.

**Table E-1**  
**NY-RAH summary for Initiative Year 1**

Organization Type	The Greater New York Hospital Association Foundation
ECCP nurse role	Staff education, NFI 2 data collection, support staff with billing and documentation for NFI 2
ECCP Facility-based staff (full-time equivalent [FTE])	21 Full-time Registered Nurses (RNs) (4 RN vacancies as of August 2017)
Number of facilities participating	60; 27 Clinical + Payment-Only, 33 Payment-Only*
Ownership changes since NFI 1	1
Facilities withdrawn to date	Two facilities were asked to leave the project as of November 2017 because they failed to meet the minimum requirements for participation and did not provide confirmation of billing by the end of Year 1.

\* Two Payment-Only facilities did not continue in NFI 2, Initiative Year 2. See Section 1 for more detail.

During the 9-day site visit, which took place in late September and early October 2017, the evaluation team spoke with eight members of the ECCP leadership staff and conducted 58 facility interviews, including with ECCP RNCCs, NFAs, assistant NFAs, DONs, ADONs, medical directors, and other practitioners<sup>18</sup> (e.g., NPs affiliated with facility physicians and attending physicians), RNs, CNAs, education directors/coordinators, MDS nurses, medical records staff and other administrative staff, billing and finance coordinators, and corporate staff members directly involved with the project.

Although interview findings suggest variability in Initiative participation, all facilities reported that they had submitted multiple claims as of October 2017 (*Table E-2*). Furthermore, three-quarters of interviewed facilities appeared to have strong Initiative buy-in.

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<sup>17</sup> One NFI 1 facility opted out of NFI 2 before the Initiative started.

<sup>18</sup> The RTI team spoke to 12 practitioners (7 Medical Directors, 3 physicians, and 2 APRNs) during the site visit.

**Table E-2**  
**Site visit interview summary findings for Initiative Year 1:**  
**Facility staff buy-in and implementation (as of October 2017)**

Site visit interview summary findings for Initiative Year 1	Total	Clinical + Payment	Payment-Only
Facilities visited	8	4	4
Buy-in to NFI 2			
High	6	4	2
Medium	2	0	2
Low	0	0	0
No buy-in/Still in start-up phase	0	0	0
Number of facilities that hired new staff because of NFI 2	1	1	0
Number of facilities with resident opt-outs	0	0	0
Number of facilities submitting claims	8	4	4
Number of facilities with paid claims	8	4	4
Number of facilities where certified practitioners have formally withdrawn from NFI 2	0	0	0
Number of facilities with programs to reduce potentially avoidable hospitalizations that are unrelated to NFI 2	8	4	4
Number of facilities reporting that NFI 2 has been effective in reducing potentially avoidable hospitalizations	8	4	4

NOTE: Buy-in is based on interviewer perceptions using the following definitions: *High buy-in*: Facilities that are billing regularly, with staff that are aware and engaged; overall, the facility interviewees speak highly of the Initiative and its impact on reducing avoidable hospitalizations. *Moderate buy-in*: Facilities that have begun to bill but are not doing so regularly; staff may recognize the Initiative and key components but may not be fully engaged. *Low buy-in*: Facilities that have not started billing and/or have not trained staff on the six conditions; generally limited engagement and limited participation in NFI 2.

Below is a summary if RTI’s findings based on interviews with ECCP leadership and facility staff.

- The NY-RAH ECCP has experienced minimal leadership turnover since NFI 1. The Mount Sinai Clinical Director position changed from the last year of NFI 1 to NFI 2. The Deputy Project Director also resigned during the middle of the first NFI 2 Initiative year. The previous Assistant Project Director took on this role with all members of the ECCP leadership reporting that it was a seamless transition. One new staff member was hired in fall 2017 to assist the ECCP medical director with practitioner outreach for all participating nursing facilities and focus on the payment reform aspect of the Initiative. The purpose of this new role is to assist and train practitioners to increase the use of the two practitioner billing codes (G9685 and G9686) and help enhance facility billing processes and workflows.

- The sentiment from both Clinical + Payment and Payment-Only nursing facility administrative staff, nursing staff, and practitioners overall was that NFI 2 was helping them to treat more long-stay residents in-house, especially with regards to the six qualifying conditions, and thereby reducing avoidable hospitalizations. Across both types of facilities, multiple practitioners caveated their sentiment by adding they had been treating residents in-house for many years but that this project was now providing the nursing facility adequate reimbursement for their work. A few additional practitioners added the project had increased nursing staff (RNs, LPNs, and CNAs) engagement in recognizing early acute changes in conditions (ACOCs) and their timely communication of such changes to the practitioners. This was noted as in comparison to the past when practitioners and nurses have collaborated less on this effort.
- Clinical + Payment and Payment-Only facility nursing leadership stated that New York's hospitals and their focus on reducing hospital readmission penalties is an important factor for understanding the overall culture to avoid hospital admissions for both short- and long-stay residents. Administrators, DONs, and practitioners reported a spillover effect from these efforts to reduce hospital readmission penalties to the long-stay population in all NY nursing facilities. As reported in the evaluation of NFI 1, main feeder hospitals and their hospital system continue to meet regularly with nursing facility administration and corporate senior leadership to push-back on SNF readmissions and now are also pressuring nursing facilities to prevent long-stay initial admissions to prevent eventual, potential SNF readmission.
- Highly engaged facilities have a teamwork approach. Successful Clinical + Payment facilities, have an RNCC that is integrated with the nursing facility staff but also has key champion(s) that take ownership of the Initiative responsibilities, so everything does not rely on the RNCC. Likewise, in the Payment-Only facilities, multiple champions per facility make for more successful implementation. Facilities with only one champion can be successful but are more limited in their engagement.
- The engagement of for-profit, Payment-Only facilities is also driven by the level of buy-in from their corporate office that may act as a substitute ECCP organization for driving the implementation and adoption of the NFI 2 billing practices.
- Different nursing facility factors may affect their ability to bill for the six qualifying conditions. Nursing facilities with larger population of long-stay residents who have a higher acuity level may be more likely to bill compared to nursing facilities with more stable long-term care populations. At least one Clinical + Payment facilities we visited has a 90-bed ventilator and tracheostomy unit. Clinical staff (nurses and dietary) told us that many of their eligible ACOCs are identified from residents on that floor.
- The ECCP provides all participating facilities with quarterly reports that indicate which of the six qualifying conditions are most commonly billed. Across all

facilities, UTIs, skin infections, and pneumonia are billed the most as changes in condition. CHF and COPD, followed by dehydration, are less commonly billed.

### **E.1.1 Initiative Implementation**

The ECCP prepared for the start of NFI2 (October 2016) throughout the final year of NFI 1. Readiness reviews, conducted by their subcontractor, were completed during summer and fall 2016. The ECCP had all facilities submit one test claim initially. ECCP leadership stated that most facilities did not start participating until February or March 2017 and only very few facilities were able to start as early as December 2016 and January 2017.

Leadership indicated that Clinical + Payment facilities were recruited using promotional materials that stated that CMS was rewarding them for the great work they did during NFI 1, with the new payment reform project. One member of NY-RAH leadership indicated that Clinical +Payment facilities were recruited using promotional materials that informed them about NFI2. These promotional materials complemented the facilities on their participation and hard work for NFI1. Payment-Only facilities were approached and recruited by the ECCP reaching out directly by phone and utilizing Nursing Home Associations to help to distribute NFI 2 project information. The ECCP required all facilities to adopt standard policies on the six qualifying conditions that were reviewed and approved by the ECCP leadership. Although the ECCP required all facilities to have completed these policies prior to the readiness review, some facilities were still completing their policies at the time of the site visit (September/October 2017).

Education on the six qualifying conditions for all facility staff was required. In the Clinical + Payment facilities, the RNCC and one other facility champion educated the majority of all staff. In Payment-Only facilities, facility DONs, ADONs, and nurse educators were primarily responsible for educating staff.

### **E.1.2 Learning Communities**

The ECCP disseminates training and Initiative information via scheduled Learning Community webinars for all facilities and practitioners. These webinars are archived and posted on the ECCP website.<sup>19</sup> to allow facilities to participate in real time or to view the content at a more convenient time. Most webinar content was tailored to either Clinical + Payment or Payment-Only facilities, however, in a few cases, content was developed for both audiences. Nursing facility leadership were mostly in agreement that these webinars were more helpful at the start of the Initiative and have become less necessary as facility staff have become more comfortable with the Initiative requirements. Some facilities were selected or volunteered to present on their processes during these webinars; nursing leadership staff commented that these webinars were some of the most valuable. Practitioner participation in the webinars was described as low by both ECCP leadership and interviewed practitioners.

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<sup>19</sup> Available at: <https://www.nyrah.org/PressRoom.aspx> 

Other educational information for the Initiative is provided on the ECCPs website. For example, the ECCP created a NY-RAH Facility Guidelines Quick Reference Handout<sup>20</sup> that describes the criteria required for each of the six qualifying conditions. For practitioners, the ECCP created a Practitioner Payment Project Tool<sup>21</sup> to highlight the benefit of using the two practitioner billing codes (G9685 and G9686).

### **E.1.3 INTERACT Tools and Other Components**

As part of the nursing facility billing requirements, the ECCP required facilities to adopt a tool to document and communicate ACOCs to practitioners. Tools included in the INTERACT program (e.g., SBAR and Stop and Watch) were used as examples. Clinical + Payment facilities use the SBAR to document ACOCs and for communicating changes to practitioners.

Many Clinical + Payment facilities have also chosen to continue their implementation of the Stop and Watch although the focus has reduced noticeably since NFI 1. Some ECCP RNs continue to assess the use of the Stop and Watch and follow-up with staff for retraining.

Payment-Only facilities are regularly using the SBAR to document changes in condition for facility billing. All but one Payment-Only facility reported using the SBAR also. The noted exception reported using a modified version of the SBAR. These facilities are having less success with the Stop and Watch. Although all these facilities reported using the Stop and Watch before NFI 2, most reported not being able to sustain its use because of lack of staff education and time for a champion to provide constant reminders.

## **E.2 Facility Staff and Practitioner Engagement**

### **E.2.1 Facility Staff**

Facility staff among the Clinical + Payment facilities are highly engaged. All key leadership are involved, including administrators, DONs, and medical directors.

RNCCs are instrumental to the engagement of Clinical + Payment facilities and assist facilities with their billing and documentation questions. In some facilities RNCCs are responsible for the data collection process and in other facilities they are responsible for a piece of the data collection process in collaboration with a facility-based staff member. RNCCs are typically involved in meetings to review ACOCs and to review any residents that have been hospitalized. RNCCs in some facilities are also very involved in auditing the documentation required for billing or required by the facility for documentation (i.e., the SBAR and practitioner documentation). RNCCs also provide all relevant training on the six qualifying conditions and required documentation to nursing staff. RNCCs, as noted earlier, may also train facility staff on the use of the INTERACT tools, as in NFI 1.

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<sup>20</sup> [https://www.nyrah.org/Materials/NYRAH\\_Facility\\_Billing\\_Guidelines.pdf](https://www.nyrah.org/Materials/NYRAH_Facility_Billing_Guidelines.pdf) 

<sup>21</sup> [https://www.nyrah.org/Materials/NY-RAH\\_Practitioner\\_Payment\\_Projection\\_Tool\\_V2.xlsx](https://www.nyrah.org/Materials/NY-RAH_Practitioner_Payment_Projection_Tool_V2.xlsx) 

Payment-Only facility staff engagement is varied. Among the four Payment-Only facilities, two facilities were highly engaged because multiple members of key leadership (e.g., administrator and DONs) were directly involved with the Initiative. However, in two facilities, both with recent turnover of key administrative and clinical staff, engagement was motivated only by the single facility-based RN champion. Practitioners in these facilities were also less engaged and had not billed yet although practitioners in one facility commented they were treating residents in place. In one Payment-Only facility, the medical director said they often send residents to the hospital because they are discharged too soon or their family requests they should be sent to the hospital.

### **E.2.2 Practitioners**

Practitioners are less engaged with the practitioner billing codes as opposed to certifying conditions for the nursing facility payments.

Four Clinical + Payment facilities' practitioners had submitted at least one claim, and all said they had received payment. Two Payment-Only facilities had practitioners who confirmed that had submitted and received payments. Practitioners, who had not billed or those who knew of practitioners not billing, often said time was the biggest barrier to using the billing codes, with the amount of time spent on documentation being their primary concern. Practitioners with large panels (50+ residents) said documentation was more onerous. However, one practitioner commented they could effectively use the codes and document because they only have a panel of 20 residents. Therefore, larger resident panels may be a deterrent to some practitioners using the codes because of the amount of documentation required.<sup>22</sup> Many practitioners indicated they had technical difficulties with billing (see *Section 5.1* for more information).

### **E.3 Six Qualifying Conditions**

Among Clinical + Payment facilities, RNCCs were primarily responsible for training staff on the six qualifying conditions. Among some Clinical + Payment facilities and all Payment-Only nursing facilities, key nursing facility clinical leadership (DON, ADONs, and nurse educators) also helped to train staff.

In all visited facilities the majority of nursing facility staff were not trained on Initiative eligibility criteria. Typically, only a few key staff members were trained on and aware of the eligibility criteria. Nursing facility leadership deliberately took this approach so that all residents received the same quality of care.

Some Clinical + Payment and Payment-Only facilities provided documentation templates to practitioners to help them quickly document their certification of a change in condition. One Clinical + Payment facility provided EMR templates for practitioners and nursing staff. One Payment-Only facility created paper-based templates for nursing staff and practitioners to accurately document changes in condition. In one Payment-Only nursing facility, nurses complained about the amount of unnecessary paperwork—in this facility the facility-based champion and corporate liaison had created six different SBAR forms, one per each of the six

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<sup>22</sup> Another ECCP medical director made this same assumption during our practitioner survey cognitive interview.

qualifying conditions, for documenting the relevant changes in conditions for the six qualifying conditions.

The ECCP also continued providing quarterly reports to all Clinical + Payment facilities as they did in NFI 1. New to NFI 2, the ECCP provides a Payment Incentive Report, to Clinical + Payment and Payment-Only nursing facilities, which tracks how many times in a quarter a facility has a billed one of the six qualifying conditions.

## **E.4 Billing Practices**

### **E.4.1 Facility Billing**

All nursing facilities visited were successfully billing. At the time of our visit, ECCP leadership reported that seven facilities, which were not part of our site visit, had not yet submitted a claim. The ECCP issued a letter to those facilities requiring they meet the following criteria by October 23, 2017: (1) a letter to the ECCP from the facility administrator attesting to their continuing interest in participating; (2) a copy of a claim submitted for one of the nursing facility payment codes (G9679–G9684) for a minimum of three eligible residents; and (3) an update the NY-RAH data portal with the resident roster, hospital transfers and discharges, and billed changes of condition. Two facilities did not meet these requirements and were not invited to participate in Initiative Year 2, as of November 2017.

All facilities visited reported they had submitted claims, received reimbursement, and all but one was aware of the payment amount. Of the Clinical + Payment facilities, the range of claims reimbursed was between \$20K to \$300K. In comparison, Payment-Only facilities had billed less as evidenced by their lower reimbursement amounts. Of two Payment-Only facilities belonging to the same chain, a corporate billing representative estimated they had received \$50K to \$75K in revenue. The nurse champion from a third Payment-Only facility estimated they had received about \$19K. The administrator from another Payment-Only facility said only their corporate office would know the total reimbursement amount they had received.

Additional factors, to the previously noted difference in resident acuity level, may be cause for the number of ACOC for which a nursing facility can identify. One nursing facility gave the example of both their core processes and close hospital proximity as reasons why they had not billed as much as other nursing facilities. The Clinical + Payment facility with \$24K in reimbursement, for example, commented they do have not as many qualifying conditions because they catch the changes in condition early before they develop into one of the six qualifying conditions saying, “We have a gross reduction in UTI. Prior to April we had six UTI in-house. We did in-services. We trained on resident hydration time for every hour, [so that] as much as possible the resident is hydrated. We saw a drastic reduction to two [UTIs].” This facility also attributed their ability to catch early changes in condition to their special circumstance of being owned and operated by a hospital, which is located directly across the street. The nursing facility and hospital are on a compatible EMR system that lessens their wait time for lab results significantly; most of their practitioners are shared between the hospital and the nursing facility, which also facilitates quick practitioner response and treatment of residents in house.



The facility that had billed \$300K reported their eligible resident population was more complex, because they had a large ventilator unit; therefore, they had a sicker population and the six qualifying conditions were more common.

NY-RAH facilities may be more successful at billing because they appear to have a greater supply of practitioners as compared to some other ECCPs. Most have access to practitioners every day, sometimes including evening and weekends, to certify one of the six qualifying conditions for the nursing facility payment. Practitioners, including medical directors, often have APRNs that can assist and provide the nursing facility billing diagnosis documentation.

At least two Payment-Only facilities, which belong to the same chain, reported their corporate billing staff were also involved in a second level quality review of billing documentation. One corporate staff member commented that they also assess missed billing opportunities by reviewing special orders (e.g., pharmacy or nebulizer orders) that often align to ACOCs. If they find an order that is linked to an ACOC, they bring this to the attention of the nursing facility as a missed opportunity.

Practitioners, across both facility types, also stated another success of the Initiative is that the communication between practitioners and nursing clinical staff on how best to address changes in conditions to treat residents in-house, has increased.

#### **E.4.2 Practitioner Billing**

A common issue among practitioners in NY was determining the correct Tax ID to use for billing. This is especially problematic for those practitioners that have their own company. One practitioner explained that her biller uses her company Tax ID but that for NY-RAH they had to reactivate her personal Tax ID, linked to her social security number, which took 6 months.

A few practitioners who had billed the G9685 code for six qualifying conditions reported that the documentation requirements were burdensome. A few other practitioners disagreed saying the documentation requires no more time commitment than what they usually spend on their clinical notes.

Most practitioners agreed that the Care coordination code (G9686) documentation requirements are also burdensome and unclear, preventing them from billing. As one participant said, “As compared to regular payment, these are more [higher payment] than the regular bill. It may not be enough for the time spent. A lot of doctors say they would rather see several regular patients than receive the extra payment from one patient.”

Employment status is an important potential factor affecting whether practitioners bill or not. Practitioners who are self-employed may more often directly receive the payment, thereby incentivizing their use of and billing with the practitioner codes. Medical directors, who are employed by the nursing facility or those practitioners who are salaried by a large medical group are not eligible to bill using the Initiative codes.

Large medical groups may affect practitioners buy-in by not adopting the billing codes. ECCP leadership shared that at least one large, national practitioner group, Team Health, had

decided not to change their billing systems to accept the practitioners billing codes because the demonstration does not apply to all of their practitioners. This may affect practitioners in other state ECCPs because Team Health is a nationally based medical group.

Nursing corporate staff across Payment-Only and Clinical + Payment facilities commented that practitioners are hesitant to bill, using the practitioner billing codes, because they are concerned about being audited by CMS. Practitioners we interviewed did share this but stated their lack of time was more of a barrier to their participation and use of the practitioner billing codes.

#### **E.4.3 Data Collection**

Data collection was reported as burdensome across all facilities. In Clinical + Payment facilities RNCCs were responsible for most of the data collection activities but often work closely with a nursing facility's designated staff or team for the NY-RAH Initiative. All but one RNCCs were highly engaged in facility, weekly or monthly meetings to review all new reported changes in conditions, hospitalizations, in addition to reviewing and auditing all required documentation submitted with nursing facility payment claims.

Among Payment-Only facilities, two types of project team models were being implemented. In two facilities, a core team composed of the administrator, DON, an RN, and at least one member of the administrative team (e.g., front desk or medical records staff), all assisted with data collection or review of potential claim for submission. Internal reviews of data occur among core leadership, as with Clinical + Payment-Only. In two other facilities, one champion was responsible for all aspects of the Initiative because both had experienced substantial recent turnover among the Administrator and DON. This left one registered nurse primarily responsible for the project implementation. Both nurses reported some limitations in their effectiveness for championing the Initiative as they had to also complete their required clinical duties.

#### **E.5 Perceived Effectiveness of the Initiative**

Most nursing facility staff and practitioners agreed that the Initiative was likely having a positive effect on reducing avoidable hospitalizations. However, most nursing facility staff and practitioners said it was difficult to attribute all reductions in avoidable hospitalizations only to NFI 2.

#### **E.6 Spillover and Contamination Effects**

##### **E.6.1 Spillover**

Most nursing facilities agreed the Initiative was also having a positive effect on reducing rehospitalizations of short-stay residents.

All facilities visited said they were implementing the policies and procedures for the six qualifying conditions across the whole house regardless if the resident's insurance or stay qualified them for the Initiative. Staff were not trained about criteria for eligibility, therefore, all documentation for the six qualifying conditions is required for all residents in the nursing

facility. For example, clinical staff in the rehabilitation units of these nursing facilities are required to use the Stop and Watch, SBAR and track and report the conditions the same way as clinical staff do for long-stay eligible residents. A few facilities even do not separate the potential billable conditions by payer status until it reaches a core set of team members who are the only ones that know the payer status.

### **E.6.2 Contamination**

Potential contamination of comparison facilities is a key issue for New York, especially with regards to Payment-Only facilities that are owned by large corporate chains. Two Payment-Only facilities, owned by the same corporation, reported that their corporate partners are very invested and involved in the Initiative. One interview with a staff member of a corporate office revealed that they own and provide administrative support services to 42 nursing facilities in New York, including two Clinical + Payment facilities and seven Payment-Only facilities. The corporate office was requiring all their facilities to follow the same policies and procedures for documenting the six qualifying conditions for all residents, including short- and long-stay. The corporate office was then reviewing ACOC for all facility residents in monthly “ACOC Meetings,” which were for all facilities not just the participating Clinical + Payment and Payment-Only facilities. The corporate billing representative stated that “[we] never had ACOC meetings before this and the short-stay hospitalization meetings are focused differently [now]. Every morning meeting, facilities discuss eligible residents and change of condition.” Another corporate representative, for a different facility, indicated that their new procedures have helped them, saying “This project got us to think across the board about change in condition. The facility-based champion sends spreadsheet at end of month back to corporate Chief Clinical Officer and he will have a call at least once a month, or every other month with each facility and we go and look at all special orders that often align with an ACOC to catch misses, such as pharmacy orders, and nebulizer orders. The Chief Clinical Officer makes recommendations – holds them accountable for missing ACOCs that could have been documented and followed.”

## **E.7 Policies and External Stakeholders**

### **E.7.1 Hospital Engagement**

Most nursing facility leadership stated that hospitals are somewhat knowledgeable about the NY-RAH project and its goal to reduce avoidable hospitalizations. Nursing facility leadership caveated this by stating that hospitals likely would not know the project by name and that hospitals are much more focused on reducing short-stay readmissions to prevent penalties. However, as previously noted, some nursing facility leadership acknowledged that hospitals are pushing back on all admissions, including long-stay residents, to move upstream to avoid potential future readmissions.

### **E.7.2 Competing or Similar Initiatives**

New York State’s DSRIP Program, does not affect beneficiary enrollment but has a similar goal of reducing avoidable hospitalizations (by 25 percent) and requires the use of the INTERACT tools among some of the Performer Provider Systems (PPS), some of which include Payment-Only, Clinical + Payment-Only, and potential comparison facilities. DSRIP not only

includes participating nursing facilities but also hospital systems that make up some of the PPSs. NFI 2 is the first instance we have learned from nursing facility leadership about a trickle-down effect from hospitals to nursing facilities, wherein hospitals are partnering with nursing facilities and other health services to reduce avoidable hospitalizations. For example, two Payment-Only practitioners told us about a specific phone number they can now call when they are sending residents for a lab and to ensure they will not be hospitalized. We learned of a similar program, facilitated by the DSRIP project, among some Clinical + Payment feeder hospitals also.

The state FIDA health plan continued its implementation and overlap with potential NFI 2 nursing facilities as it did with NFI 1. As reported in the last year of NFI 1, FIDA continues to have little effect on the number of eligible beneficiaries. ECCP leadership also purposely recruited Payment-Only nursing facilities outside of the state FIDA counties to reduce interference with the FIDA program. This decision was made in collaboration with the state's Medicaid office.

ECCP nor facility leadership reported any increases in Medicare Advantage health plans among Clinical + Payment or Payment-Only facilities. One member of ECCP leadership commented that enrollment in these health plans has “plateaued” and was having little to no effect on reducing eligible beneficiaries.

### **E.7.3 Additional NY-RAH Model Components Initiatives**

As previously noted, the ECCP also added an antibiotic stewardship (AS) event to its NFI 2, Initiative Year 1 model to help nursing facilities prepare for the latest CMS participation requirements. Only the initial training had been provided to facilities at the time of our site visit. Almost all nursing facility leadership staff noted that New York State also has its own AS program that they are also participating in.

Direct messaging and palliative care, two NFI 1 foci, will be continued in NFI 2. The ECCP leadership noted that there had been little time to focus on these goals and that facilities and practitioners required a lot of assistance with billing.

## **E.8 Conclusions and Next Steps**

As NFI 2 progresses, RTI will continue conducting telephone interviews and in-person site visits with both NY-RAH leadership, ECCP nurses, and participating facility leadership, staff, and practitioners. We will be paying particular attention to the following topics:

- Differences between NFI 2 practices between Clinical + Payment and Payment-Only facilities, including the role of the RNCC (Clinical + Payment-Only) and/or facility staff Initiative champions
- The role of corporate offices, especially for Payment-Only facilities, in driving engagement and spillover to other nursing facilities
- Interviewee perceptions of the overall effect of the Initiative on both facility care provision and avoidable hospitalization rates

- Ongoing successes or challenges with the billing process and plans for use of reimbursement funds
- Assessment of other competing or similar local, state, or federal initiatives.

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**APPENDIX F**  
**OPTIMIZING PATIENT TRANSFERS, IMPACTING MEDICAL QUALITY, AND**  
**IMPROVING SYMPTOMS: TRANSFORMING INSTITUTIONAL CARE**  
**(OPTIMISTIC)**

**F.1 Overview**

*Indiana Initiative Year 1 Site Visit Findings; August 27 – 31, 2017 and  
November 6 – 10, 2017*

***Key Findings:***

- A majority of visited facilities reported submitting claims for the Initiative.
- Not all practitioners have been engaged in both the certification and billing process, although more practitioners certify patients than submit claims. Practitioners rarely used the care coordination code.
- Implementing NFI 2 required Optimizing Patient Transfers, Impacting Medical Quality, and Improving Symptoms: Transforming Institutional Care (OPTIMISTIC) to expand its data collection and management staff for research and project coordination, and reallocate time for three OPTIMISTIC RNs to assist with supervisory activities.
- During the first year of NFI 2, OPTIMISTIC staff reduced their efforts on some elements of the clinical model as they focused on facilitating implementation of the payment model.
- Payment-Only facilities had fewer systems in place to implement NFI 2, resulting in lower engagement, less reported billing, and lower perception that NFI 2 results in a reduction of avoidable hospitalizations.
- Some facility staff and practitioners in both Payment-Only and Clinical + Payment facilities expressed wanting a better understanding of the various components of NFI 2.
- Staff turnover in facility leadership and billing positions hindered NFI 2 implementation in several facilities.
- Facilities often cited difficulties integrating NFI 2 data collection and billing requirements into existing software programs and facility processes.

The goal of the OPTIMISTIC project is to reduce avoidable hospitalizations through improving the quality of and access to (1) medical care, (2) transitional care, and (3) palliative care for long-stay nursing facility residents. As of August 2017, NFI 2 has 17 Clinical + Payment facilities and 23 Payment-Only facilities. The number of participating facilities originally was 19 Clinical + Payment and 25 Group facilities; however, two Clinical + Payment and one Payment-Only facility withdrew because of a change in corporate ownership. OPTIMISTIC reported the second Payment-Only facility withdrew, stating the facility participation requirements for NFI 2 were too burdensome (*Table F-1*).

**Table F-1**  
**OPTIMISTIC summary for Initiative Year 1**

Organization Type	Nonprofit university
ECCP nurse (RN/APRN) role	Education, assessment, writing orders, care provision, support facility staff in contacting practitioners for certification and obtaining orders to bill for NFI 2
ECCP Facility-based staff (full-time equivalent [FTE])	18.2 Registered Nurses (RNs) <sup>a</sup> and 5.6 Advanced Practice Registered Nurse (APRNs)
Number of facilities participating	40; 17 Clinical + Payment, 23 Payment-Only
Ownership changes since NFI 1	0
Facilities withdrawn to date	2 Clinical + Payment, 2 Payment-Only

<sup>a</sup> This includes 0.8 FTE of RN supervisory duties.

During the 9-day site visit conducted over two weeks in August and November 2017, the evaluation team spoke with 16 members of the ECCP leadership team and interviewed 52 facility staff, including four ECCP RNs and two ECCP APRNs. Facility interviews included NFAs, DONs, ADONs, charge nurses/unit managers, a CNA, medical directors and other practitioners (e.g., NPs affiliated with facility physicians), MDS nurses, a documentation nurse, a transitional care nurse, a nurse navigator, social workers, a reimbursement specialist, and facility and corporate billing staff. In addition, an interview with the Medical/Transitions Core Lead and a physician's group practice administrator were conducted by phone.

Interview findings suggested moderate to high Initiative engagement in all facilities. Changes in facility leadership as well as competing priorities (e.g., state inspection survey related activities, preparation for changes to the federal regulations) impacted the degree to which facilities could devote time and resources to NFI 2. Two Clinical + Payment facilities reported they had submitted one or more claims as of the August 2017 site visit, and three Payment-Only facilities reported that they had submitted claims as of the November 2017 site visit. (**Table F-2**). Some facility interviewees were not sure how many claims actually had been submitted and/or how much revenue had been generated because the facility submitted bills to a corporate billing office and did not know the status of claims submission. Some interviewees also identified that opportunities were missed either because a certification was not completed in a timely manner or staff failed to adequately document appropriate assessments during the monitoring period.



**Table F-2**  
**Site visit interview summary findings for Initiative Year 1:**  
**Facility staff buy-in and implementation\***

Site visit interview summary findings for Initiative Year 1	Total	Clinical + Payment	Payment-Only
Facilities visited	8	4	4
Buy-in to NFI 2			
High	3	2	1
Medium	4	2	2
Low	1	0	1
No buy-in/Still in start-up phase	0	0	0
Number of facilities that hired new staff because of NFI 2	0	0	0
Number of facilities with resident opt-outs	4	1	3
Number of facilities submitting claims	5	2	3
Number of facilities with paid claims	4	1	3
Number of facilities where certified practitioners have formally withdrawn from NFI 2	0	0	0
Number of facilities with programs to reduce potentially avoidable hospitalizations that are unrelated to NFI 2	7	3	4
Number of facilities reporting that NFI 2 has been effective in reducing potentially avoidable hospitalizations	3	3	0

\* Data from the Clinical + Payment facilities reflects information gathered during an August 2017 visit. Data from the Payment-Only facilities reflects data gathered during a November 2017 visit.

NOTE: Buy-in is based on interviewer perceptions using the following definitions: *High buy-in*: Facilities that are billing regularly, with staff that are aware and engaged; overall, the facility interviewees speak highly of the Initiative and its impact on reducing avoidable hospitalizations. *Moderate buy-in*: Facilities that have begun to bill but are not doing so regularly; staff may recognize the Initiative and key components but may not be fully engaged. *Low buy-in*: Facilities that have not started billing and/or have not trained staff on the six conditions; generally limited engagement and limited participation in NFI 2.

Below is a summary of RTI's findings based on interviews with ECCP leadership and facility staff.

- Implementing NFI 2 required OPTIMISTIC to expand its non-clinical staff to facilitate research and project coordination, data collection, and management. OPTIMISTIC RN hours have also been reallocated to provide an additional 0.8 FTE for RN supervision.
- Turnover in facility leadership and billing office staff presented barriers to implementing the changes required to successfully implement OPTIMISTIC, delaying progress in implementation for those facilities.
- Some facilities and practitioners reported needing a better understanding of billing criteria.

- Several facility leaders, staff, and practitioners described using the NFI 2 billing codes as “getting paid for things they were already doing.”
- The focus during this first year has been on training and implementing systems related to the billing model. As a result, ECCP staff, including leadership, stated some NFI 1 interventions, such as the polypharmacy collaborative care review and advance care planning, have “taken a back seat.”
- Payment-Only facilities reported that they desired an employee who was responsible for driving the Initiative but had difficulty allocating facility staff time to this role.
- Payment-Only facilities had varied success in developing systems to assure that appropriate billing occurred.
- Resident enrollment in managed care organizations (e.g., OPTUM) and an increase in residents who are electing the hospice benefit has reduced the number of residents who are eligible for the Initiative.

### **F.1.1 Initiative Structure & Implementation**

OPTIMISTIC began preparing for NFI 2 in Spring 2016, sending an informational packet to facilities who might participate. The project manager also conducted four regional, in-person meetings to present the information about NFI 2, answer questions, and collect Letters of Intent from facilities. In addition, two conference calls were held with Clinical + Payment facilities to introduce NFI 2 and answer questions.

OPTIMISTIC continues to maintain a public website (<https://www.optimistic-care.org/>), which serves as a platform for facility and practitioner education. The website offers access to webinars pertaining to the six qualifying conditions as well as access to various data collection and documentation tools. In addition, topics such as advance care planning, palliative care, and antibiotic stewardship are addressed. This website serves as a key training resource for participating facilities but is equally accessible to nonparticipating facilities.

OPTIMISTIC leadership related that their existing relationships with Clinical + Payment facilities from NFI 1 enhanced communication with them regarding NFI 2. Initially, OPTIMISTIC leadership understood that their involvement with the Payment-Only facilities was intended to be more “hands off”; however, later direction from the Centers for Medicare & Medicaid Services (CMS) prompted them to develop a team of individuals within the OPTIMISTIC leadership team to provide more active support, such as monthly calls to the Payment-Only facilities. This team consists of an implementation specialist, the clinical supervisor, and a research assistant.

Numerous facility interviewees reported that supportive leadership staff and good communication were key to the successful implementation of the Initiative. These were necessary both at the facility level and at the corporate level for those facilities that were part of a corporation.

### **F.1.2 Learning Communities**

The Education and Training Team Lead, who is assisted by a designated project coordinator, is responsible for organizing the LCs with all participating facilities across both groups. At the beginning of NFI 2, LCs focused on addressing billing and data collection, but starting in January 2017, LCs focused on educating attendees on the six qualifying conditions, highlighting one condition each month over a 6-month period. OPTIMISTIC provides a learning track targeting facility leadership, as well as a separate track targeting clinical practitioners, such as medical directors, primary care physicians, APRNs, and DONs. At least one of these learning sessions offered continuing medical education credits.

In addition to monthly online webinars, OPTIMISTIC holds quarterly Advisory Board meetings in Indianapolis. Some administrators from more rural communities reported that they rarely attended the meetings because of the amount of time required to travel to Indianapolis and generally did not access recordings of the webinars on the OPTIMISTIC website. Although attendance at the Advisory Board meetings generally is low, attendees rate the sessions highly.

Besides formal education formats, facility staff also reported learning about best practices for OPTIMISTIC from corporate sister facilities, from staff who had experience in other OPTIMISTIC facilities, and through relationships with other facility leaders participating in OPTIMISTIC.

### **F.1.3 INTERACT Tools and Other Components**

OPTIMISTIC RNs and APRNs continue to be integral in identification of changes in condition in Clinical + Payment facilities. Although OPTIMISTIC's goal is to have the facility staff perform resident assessments, in at least two of the four Clinical + Payment facilities visited, the OPTIMISTIC RNs reported that they performed approximately half the assessments independently because facility nurses were too busy.

The OPTIMISTIC transitional care intervention continues to be a priority for the OPTIMISTIC APRNs. In this process, the OPTIMISTIC APRN assesses a resident who has been readmitted to the facility from the hospital within 24 hours. One APRN stated that this process catches potential problems (e.g., failure to monitor a lab) and has been instrumental in preventing quick rebounds back to the hospital.

Both Payment-Only and Clinical + Payment facilities reported using tools similar to the INTERACT SBAR; however, because use of the tool was not mandatory, some facilities stated staff used the tool inconsistently. Facilities reported using Stop and Watch rarely, if at all.

In Clinical + Payment facilities, the OPTIMISTIC Palliative Care Lead reported that work on advance care planning was paused for a period of time while OPTIMISTIC nurses focused on implementation of NFI 2. During NFI 2, OPTIMISTIC APRNs will receive training in Vital Talks, a program aimed at educating APRNs and MDs in how to have difficult discussions with patients and their families during times of crisis. Three OPTIMISTIC RNs have become instructors for the Respecting Choices program, and OPTIMISTIC nurses continue to be certified annually in this program.

Also in Clinical + Payment, OPTIMISTIC has a well-defined process for its polypharmacy collaborative care review (CCR) intervention process; however, OPTIMISTIC nurses reported they have not performed CCRs since the rollout of NFI 2. One OPTIMISTIC APRN stated that polypharmacy issues are addressed in other OPTIMISTIC interventions such as transition visits, although it is challenging for APRNs to capture the data related to medication reductions that have occurred through those other interventions. One APRN noted that the process of reducing psychoactive drugs is difficult because nonpharmacological interventions require more staff resources and suggested that a broader approach may be a more efficient use of OPTIMISTIC staff time rather than individual reductions.

## **F.2 Sharing Collaborative**

Members of the OPTIMISTIC leadership team stated they found the sharing collaborative helpful during the rollout of NFI 2, but that it has become a decreased priority over time. One team member stated that seeing the SSS-Telligen reports has been most informative. Sharing information with other ECCPs has also been helpful, and OPTIMISTIC has hosted representatives from Missouri and Pennsylvania to share strategies for data collection and care coordination information.

## **F.3 Facility Staff and Practitioner Engagement**

Across facilities there was variability in facility staff and practitioner understanding, participation, and engagement in NFI 2.

### **F.3.1 Facility Staff**

Facility leadership in both groups reported that competing priorities, such as state inspection survey related activity and preparation for NFI 2 of the new nursing facility regulations, interfered with implementation of NFI 2. Turnover in leadership, billing, and direct care staff also impacted staff engagement. At least one new NFA and one new DON explained they had not had time to learn about the OPTIMISTIC program because they were too busy learning about their respective roles in their facilities.

OPTIMISTIC RNs and APRNs assisted with the implementation of NFI 2 in the Clinical + Payment facilities, often driving the degree to which facility and staff were engaged in the process. The lack of a designated lead person contributed to lack of engagement in the Payment-Only facilities. In Payment-Only facilities, the role of oversight of the Initiative was added to the responsibilities of different individuals, including MDS coordinators, nurse navigators, or unit managers.

Lastly, several interviewees reported they did not receive feedback on their NFI 2 activities. Some corporately owned facilities did not know the status of claims they had submitted to the central billing offices, nor did they know whether reimbursement had been received. Other interviewees expressed they would like to receive feedback from OPTIMISTIC to get a sense of how they were performing compared to other facilities. It is not clear whether this lack of feedback impacted the level of facility engagement.

### **F.3.2 Practitioners**

From the outset of NFI 2, OPTIMISTIC made it clear that it was up to the facility to identify and engage their own practitioners. Practitioners reported widely varying engagement with OPTIMISTIC, from practitioners who actively submitted bills and attended LC meetings to others who refused to certify residents. As of the RTI site visit, no practitioners had withdrawn from the Initiative.

Overall practitioner engagement with NFI 2 is moderate. Although most facility practitioners are certified for the Initiative, not all are billing for the six qualifying conditions and fewer are billing care coordination visits. Interviewees reported that the time necessary to complete the documentation is too great for practitioners with tight schedules. One practitioner explained that this is particularly true for practitioners whose electronic medical records do not permit importing examination data from one visit to another, requiring practitioners to complete time-consuming documentation each time that they bill for the Initiative. Schedules also made it difficult to do an on-site visit within the 48-hour window. One medical director who initially attempted to submit claims reported the claims were automatically denied, and he has made no further attempts. In the case of care coordination, practitioners cited additional scheduling problems because of the coordination necessary to get the required participants assembled. One practitioner stated when he conferences with residents/families, he can do so in less than 25 minutes. Some practitioners felt that the amount of reimbursement was sufficient for the resident evaluation, but no practitioners stated that the care coordination reimbursement was sufficient. No practitioners reported using the care coordination code, and at least one practitioner was not even aware that it existed.

Some facility staff felt the Initiative increased communication between nursing staff and practitioners, stating that more medicine was being done at the bedside rather than over the phone. In general, facility staff and practitioners stated they had not changed practice or treatment patterns and felt payment was now being made for services they had always provided.

### **F.4 Six Qualifying Conditions**

In Clinical + Payment facilities, OPTIMISTIC RNs and APRNs have undergone extensive training in the six conditions, making use of simulation labs, retrospective audits, and staff shadowing. At the time of the RTI site visit in August, training for each of the six qualifying conditions was being repeated. Although the full training is not available to Payment-Only facilities, OPTIMISTIC has made select training materials available on the OPTIMISTIC website, including PowerPoint slides presentations, webinars, educational documents, and forms that can be viewed and downloaded. Payment-Only facilities reported that they rarely accessed these materials.

OPTIMISTIC leadership has “made it very clear [to facility staff] that OPTIMISTIC nurses were not accountable for the certification process and were to serve only as advisors to the process” in Clinical + Payment facilities. The OPTIMISTIC RNs/APRNs perform resident assessments either with the facility staff or independently, and it is the responsibility of the facility staff to contact the practitioner, obtain orders, and capture the certification. The OPTIMISTIC RNs regularly follow up to make sure residents get certified and that appropriate

criteria have been met. Furthermore, OPTIMISTIC RNs work with staff in an advisory capacity to ensure that assessments, treatments, and documentation are completed as necessary for each certified episode. Payment-Only facilities must identify members of their own staff to drive the processes of identifying, certifying, and monitoring of billable episodes.

Some Payment-Only facilities could assign these responsibilities to existing nursing staff, who already had dedicated roles focused on preventing avoidable hospitalizations or acting as a liaison between practitioners and nurses. Others who did not have such an existing role tended to struggle more with implementing the Initiative. According to the corporate representatives from one such facility

*“Having an on-site nurse would be a wonderful thing...even just someone in here every couple of weeks to reeducate... I would love to see someone in here as far as providing that support like in other buildings.”*

In both Payment-Only and Clinical + Payment facilities, staff identify certification opportunities during morning meetings and reports, such as events and order changes. Facility practitioners also capture potential opportunities through direct resident observations and resident rounds. In Clinical + Payment facilities, OPTIMISTIC RNs and APRNs identify resident changes in condition and certification opportunities through staff and resident interactions and observations. Some facilities reported missed certification opportunities because a practitioner was not able to certify within the 48-hour window. This was more problematic for the Payment-Only facilities that were located in rural areas. (Note: All Clinical + Payment facilities are located within Greater Indianapolis).

Overall, most facilities had sufficient processes in place to identify residents who had a change in condition. Although staff-reported UTI and pneumonia were the two diagnoses most frequently certified, staff reported that they found all six qualifying conditions to be relevant. Respondents across all facilities reported that they would neither add nor subtract any conditions from the list. Both Payment-Only and Clinical + Payment facilities reported missed billing opportunities despite certification because staff failed to document necessary assessments during the monitoring period.

## **F.5 Billing Practices**

Some OPTIMISTIC facilities and their practitioners reported they initiated billing in October 2016 and, after an initial delay, reimbursement for appropriate and correctly submitted claims has been received in a timely manner. Other facilities and practitioners reported initial and ongoing problems with the billing process.

### **F.5.1 Facility Billing**

OPTIMISTIC facilities began billing in October 2016 with varying degrees of success. Payment-Only facilities reported that estimated reimbursement ranged from \$14,000 to \$50,000. Clinical + Payment facilities, reported that estimated reimbursement ranged from \$29,000 to \$92,000. (Note: The first figure was reported during the Clinical + Payment site visit in August

2017; the latter amount was reported to the RTI team during the Payment-Only site visit in November 2017.)

Facilities reported a variety of issues with billing code implementation. Some facilities in both Payment-Only and Clinical + Payment related they experienced difficulties because they submitted charges to a corporate billing office that did not know about the codes. This delayed billing for as long as 6 to 12 months while billing systems were modified to incorporate the new NFI 2 codes. Some facilities reported they had stopped billing when problems with their billing process occurred or when the initial claims were not reimbursed. In addition, facility leadership often reported their financial software programs did not recognize the codes, and a new process had to be designed to incorporate them. In nearly all facilities, billing staff were required to manually enter charges for the new codes.

### **F.5.2 Practitioner Billing**

Not all practitioners have been engaged in both the certification and billing process, although more practitioners certify patients than submit claims. OPTIMISTIC relies on facilities to take the lead to engage and educate practitioners, leading to diverse understanding among participating practitioners. OPTIMISTIC staff work also directly with providers and practice managers on implementing the billing codes. OPTIMISTIC leadership stated practitioners are concerned billing the codes will trigger an audit from CMS. Billing also is impacted by the documentation time, in part because of the increased need for narrative text or copies of nursing facility records. Practitioners rarely used the care coordination code, citing scheduling difficulties, the amount of time required to bill, and an insufficient amount of reimbursement.

Practitioners from large group practices reported the payment was not an incentive, as payment received is reimbursed to the group practice and not the individual practitioner. Practitioners' workload also affected the use of the billing codes. Those whose practice focuses on nursing facilities tend to be very interested in the codes, while practitioners who practice in multiple settings (i.e., clinic, hospital, home health) are less engaged with NFI 2 billing.

Some practitioners reported that they stopped billing the codes when initial reimbursement was not received. Additionally, at least one practitioner was unwilling to bill for episodes for which the facility did not submit claims.

Like facilities, practitioners needed someone to drive the administrative process to modify current billing systems in order to successfully bill for the codes.

### **F.5.3 Data Collection**

OPTIMISTIC has a team of five individuals (a senior analyst, three data analyst specialists, and a program assistant) who are responsible for making sure that CMS, the OPTIMISTIC leadership team, and participating facilities have the data they need. They support the data capture tool, used by the OPTIMISTIC nurses in Clinical + Payment facilities, which is built off the REDCap platform and includes a medical record system to capture resident information associated with RN and APRN encounters (i.e., transition visits, changes in resident

condition, medication reductions. The team also receives resident payer information and MDS data on a weekly basis.

Across both Payment-Only and Clinical + Payment facilities, a billing office staff member or MDS coordinator typically is the individual responsible for data collection at the facility level. These individuals enter data files in the OPTIMISTIC portal, and OPTIMISTIC staff check the submitted data for accuracy before exporting the required data to CMS. The relative burden of this process typically depended on whether the facility could export reports from their electronic billing system or needed to do manual data entry to fulfill the data collection requirements for OPTIMISTIC. Some facilities reported that the data collection process did not take much time, while others reported the process was an ongoing burden.

OPTIMISTIC tracks the rate at which facilities are certifying residents and documenting the necessary information for each of the six qualifying conditions. The team analyzes variation among facilities to determine where they need to provide additional assistance or education to specific facilities or to OPTIMISTIC RNs and APRNs.

The OPTIMISTIC data analyst team stated that their biggest challenge was creating a system for facilities to submit NFI 2 data. An analyst reported, “Until they actually started to see [benefits], all they saw was more work. They gave us as minimal as possible....we’ve had to clean up a lot of junk data. The turnover [of staff] is a major problem... Facilities saw the work as duplicative because they already send the data to CMS...why don’t they [CMS] just take the data from that.” The team is working on refining the OPTIMISTIC data entry system to minimize the potential that facilities will submit erroneous data.

## **F.6 Perceived Effectiveness of the Initiative**

Facilities from Clinical + Payment typically perceived the Initiative to be more effective than facilities from Payment-Only. Most interviewees in Clinical + Payment associated their perceived successes in reducing potentially avoidable hospitalizations with interventions implemented by OPTIMISTIC in NFI 1. Payment-Only facilities typically felt that it was too early for them to see an impact from the Initiative, although interviewees stated they felt the Initiative was having a positive impact because it “brought an awareness” that residents could and should be treated in place. Several facility staff and practitioners stated they are eager to see data that measure the success of the Initiative, and OPTIMISTIC leadership remarked they are getting requests to repeat training sessions.

### **F.6.1 Potentially Avoidable Hospitalizations**

Interviewees across facilities in both groups reported that the Initiative has the potential to reduce avoidable hospitalizations and improve resident care. Keys to the success of the Initiative include facility leadership support, effective communication systems, and development of caregiving and billing processes compatible with the Initiative requirements. Critical to the success of the Initiative is a champion who can drive and oversee the program. Additionally, staff, residents, and families need to be educated on the benefits of treating residents in house.



## **F.6.2 Resident and Family Perspective**

The majority of residents who are eligible for the Initiative do not opt out. The relatively few residents who opt out of the program typically do so because of fears that the resident will not be hospitalized when hospitalization is necessary. Two Payment-Only facilities reported that families are responsible for most (50 to 75 percent) resident hospitalizations, as a number of residents or resident families request hospitalization, even when treatment is available in-house. More education is needed for staff, residents, and families to change this hospitalization mentality.

## **F.6.3 Quality Measures & State Inspection Survey Results**

Facilities did not feel the Initiative had an impact on state inspection survey results. However, some interviewees shared concerns that the Initiative would have a negative impact on their quality measure scores, particularly incidence of UTI and dehydration. Despite that, interviewees felt that early identification and treatment of the six qualifying conditions, including UTIs, was worth improved resident care. One MDS nurse was enthusiastic because identifying residents with the conditions might result in increasing the resident's RUG (Resource Utilization Group) score and capturing additional revenue.

## **F.7 Spillover and Contamination Effect**

The Initiative has had spillover into care of residents within facilities, contamination among facilities not participating but part of a corporation who has a participating facility, and potential contamination to facilities both within Indiana and to other states. The OPTIMISTIC website is accessible to the public and includes extensive resources for interested facilities and providers with no OPTIMISTIC affiliation. OPTIMISTIC also is planning to make their model available to interested parties and has had representatives from at least one group of out of state facilities on site to learn about the model.

Many participating facilities have processes or programs outside of the Initiative that are focused on preventing hospitalizations. The primary examples are use of INTERACT or similar forms, quality improvement endeavors, and formal communications/meetings with referring hospitals that are looking at discharge and readmission patterns.

At least one interviewee reported that following a conference presentation by Leading Age (a not-for-profit organization representing aging services), their facility introduced a new intervention for UTI. Consequently, the interviewee said the percentage of residents with UTI dropped from 14 to 3 percent within 2 months. This has the potential for contaminating the results related to the diagnosis of UTI obtained in NFI 2.

Finally, the impact of implementation of the revised nursing facility regulations has the potential for contaminating NFI 2 results. New regulations effective November 2017 require facilities to conduct a self-assessment that identifies the different diagnoses of residents who are admitted to their facilities and assures that staff has the necessary competencies to provide care. The regulations also require that facilities implement an antibiotic stewardship program. These requirements are intended to provide better identification of changes in resident condition, staff

care of residents, and improvement in infection prevention and control programs, which may further contaminate potential effects of NFI 2.

## **F.8 Policies and External Stakeholders**

### **F.8.1 Hospital Engagement**

Most facilities reported that referring hospitals were aware that a facility was participating in OPTIMISTIC and were interested in the potential of the Initiative to reduce readmissions. Practitioners who were actively engaged in the Initiative were instrumental in increasing hospital knowledge of facility participation.

### **F.8.2 Competing or Similar Initiatives**

Facilities typically were involved in similar initiatives to improve care and avoid hospitalizations. Several hospital networks had initiatives to reduce hospitalizations and had regularly scheduled meetings with facilities to discuss admissions and discharges. In addition, the accountable care organization OPTUM has a growing presence within Indiana and serves residents in many participating facilities.

Several facilities reported that competing priorities often prevented implementation and sustainability of the Initiative. The most frequently reported priorities were the onboarding of new staff and state inspection survey-related activities.

## **F.9 Conclusions and Next Steps**

Interviewees, particularly in the Payment-Only facilities, identified several areas where improvements in structure or processes would enhance their ability to participate in the Initiative. These included the following:

- Increasing practitioner engagement in the Initiative
- Establishing and maintaining communication processes within the facility and with corporate staff when appropriate
- Developing a billing process, including modification of electronic systems, to accommodate the new codes
- Developing a data collection process, including modification of electronic systems, to accommodate data gathering requirements
- Identifying a champion to oversee the Initiative.

The RTI team will be paying particular attention to these concerns going into future site visits and telephone interviews in the coming years.

**APPENDIX G**  
**UNIVERSITY OF PITTSBURGH MEDICAL CENTER COMMUNITY PROVIDER SERVICES PROGRAM TO REDUCE AVOIDABLE HOSPITALIZATIONS (RAVEN)**

**G.1 Overview**

*Pennsylvania Initiative Year 1 Site Visit Findings; September 24 – 29, 2017  
and November 6 – 10, 2017*

**Key Findings:**

- All visited facilities had submitted claims for the Initiative.
- Interviewed practitioners were billing inconsistently for the Initiative. Of those that were billing, most were unaware if their billing offices had encountered any challenges in submitting Initiative claims. The Initiative care coordination billing code was rarely used.
- Staff in Clinical + Payment facilities rely heavily on RAVEN nurses to complete Initiative activities, including determining resident eligibility, providing clinical care, and completing NFI 2 documentation for the six qualifying conditions.
- At the time of RTI’s site visit in September 2017, ECCP leadership reported that, Payment-Only facilities are generally more engaged with NFI 2 than Clinical + Payment facilities. ECCP Leadership attribute this higher engagement to the NFI 2 requirements for participation (e.g., higher Nursing Home Compare Rating) in the Payment-Only model. Telemedicine use and equipment, available only to Clinical + Payment facilities, are undergoing major changes from NFI 1. Use is reportedly increasing across Clinical + Payment facilities.
- All visited facilities in both groups have other programs or policies in place to reduce avoidable hospitalizations.
- In both groups, two concerns are consistently cited as the largest barriers to Initiative success: (1) insufficient practitioner buy-in, and (2) turnover of facility leadership and clinical staff.
- Staff in Clinical + Payment facilities reported that the Initiative was effective in reducing hospitalizations. Payment-Only facilities were unsure of the impact of the Initiative.
- Managed care penetration is increasing in Eastern Pennsylvania with Optum marketing aggressively to expand their presence.

The University of Pittsburgh Medical Center Community Provider Services Program to Reduce Avoidable Hospitalizations (RAVEN) builds on the NFI 1 ECCP model with the addition of the new payment component. The goal of the RAVEN model is to implement a range of clinical and educational interventions, and/or a new payment component with a focus on improving communication and coordination among facility staff members and practitioners and reducing avoidable hospital admissions and readmissions. During NFI 1, the RAVEN model used seven key components to achieve these goals: clinical care and education provided by APRNs and RNs, support provided by Lead APRNs, trainings provided by the ECCP and partners, INTERACT tool use, end-of-life care planning support, quality initiative (QI) activities, and telemedicine (*Table G-1*).

As of November 2017, the RAVEN Initiative had 15 Clinical + Payment group facilities and 20 Payment-Only group facilities. RAVEN has maintained a relationship with Jewish Health

Foundation (JHF) and RxPartners for NFI 2. As in NFI 1, The JHF continues to provide educational support to Clinical + Payment facilities in NFI 2 with minimal changes to their role. RxPartners also maintains their NFI 1 role, providing Interdisciplinary Medication Review Teams and medication reviews in the Clinical + Payment group. For NFI 2, Robert Morris University is no longer involved in education activities, and telemedicine implementation and support were transferred to Curavi.<sup>23</sup>


**Table G-1**  
**RAVEN summary for Initiative Year 1**

Organization Type	Not-for-profit health care system, university medical center with multiple facilities (UPMC system)
ECCP nurse role (one nurse per facility in Clinical + Payment group)	Patient assessment, clinical care including confirming NFI 2 diagnoses, writing orders, advance care planning, education, telemedicine support, documentation for six qualifying conditions
ECCP nurse (one nurse shared by all facilities in Payment-Only group)	Facility liaison with monthly visits and telephonic/e-mail support—no clinical role, only supports facilities through education and training
ECCP Facility-based staff (full-time equivalent [FTE])	15 FTE total <sup>a</sup> : 11 APRNs, 4 RNs
Number of facilities participating	35; 15 Clinical + Payment, 20 Payment-Only
Ownership changes since NFI 1	0
Facilities withdrawn to date	Payment-Only: 0 Clinical + Payment: 0 (3 facilities chose not to participate in NFI 2)

<sup>a</sup> As of September 2017, one facility was without facility-based ECCP staff. A new APRN was hired for this position with an anticipated start date in October 2017. The nursing facility liaison for Payment-Only facilities is not included in this count as she is not considered facility based.

During the site visits, the evaluation team spoke with 14 members of the ECCP leadership staff and 65 facility staff members, including RAVEN nurses, NFAs, DONs, ADONs, RNs, LPNs, medical directors and other practitioners (e.g., NPs affiliated with facility physicians), education directors/coordinators, MDS nurses, billing coordinators, social services directors. We also interviewed some facility residents.

Although interview findings suggested variability in Initiative engagement, all visited facilities reported that they had submitted one or more claims as of November 2017 (**Table G-2**). A majority of interviewed facilities appeared to have moderate Initiative buy-in, with most believing that the Initiative has been or soon will be effective in reducing hospitalization rates. Notably, all visited facilities also had implemented other initiatives or programs aimed at reducing hospitalization rates.

<sup>23</sup> Curavi is a start-up providing telemedicine services to nursing facilities. The for-profit company is owned and seed-funded by UPMC and was born out of UPMC’s experiences in providing telemedicine services for their nursing facilities, as well as through the RAVEN program. See: <https://curavihealth.com/> 

**Table G-2**  
**Site visit interview summary findings for Initiative Year 1:**  
**Facility staff buy-in and implementation\***

Site visit interview summary findings for Initiative Year 1	Total	Clinical + Payment	Payment-Only
Facilities visited	8	4	4
Buy-in to NFI 2			
High	1	0	1
Moderate	5	3	2
Low	2	1	1
No buy-in/still in start-up phase	0	0	0
Number of facilities that hired new staff because of NFI 2	0	0	0
Number of facilities with resident opt-outs	3	2	1
Number of facilities submitting claims	8	4	4
Number of facilities with paid claims	6	2	4
Number of facilities where certified practitioners have formally withdrawn from NFI 2	0	0	0
Number of facilities with programs to reduce potentially avoidable hospitalizations that are unrelated to NFI 2	8	4	4
Number of facilities reporting that NFI 2 has been effective in reducing potentially avoidable hospitalizations	5	3	2

\* Data from the Clinical + Payment facilities reflects information gathered during a September 2017 visit. Data from the Payment-Only facilities reflects data gathered during a November 2017 visit.

NOTE: Buy-in is based on interviewer perceptions using the following definitions: *High buy-in*: Facilities that are billing regularly, with staff that are aware and engaged; overall, the facility interviewees speak highly of the Initiative and its impact on reducing avoidable hospitalizations. *Moderate buy-in*: Facilities that have begun to bill but are not doing so regularly; staff may recognize the Initiative and key components but may not be fully engaged. *Low buy-in*: Facilities that have not started billing and/or have not trained staff on the six conditions; generally limited engagement and limited participation in NFI 2.

Below is a summary of RTI's findings based on interviews with ECCP leadership and facility staff.

- In Clinical + Payment facilities, the physical presence of the RAVEN APRN or RN continues to be the most valued component of the Initiative.
- According to ECCP Leadership, facilities participating in the Payment-Only model are more engaged in NFI 2 compared to facilities participating in the Clinical + Payment model. ECCP Leadership attribute this higher engagement to the NFI 2 requirements for participation (e.g., higher Nursing Home Compare Rating) in the Payment-Only model.
- Managed care presence is growing in Eastern Pennsylvania, where a majority of Payment-Only facilities are located. Some NFAs expressed concern that number

of RAVEN-eligible residents would decrease dramatically in the coming two to three years because of the increasing prevalence of managed care.

- Staff in Clinical + Payment facilities reported that the Initiative was effective in reducing hospitalizations but attributed this effectiveness to the RAVEN nurses, not the additional payments. Payment-Only facilities were unsure of the impact of the Initiative as most facilities had low hospitalization rates before the Initiative.
- In both Clinical + Payment and Payment-Only facilities, limited practitioner availability and engagement and nursing staff turnover were the most commonly cited challenges to Initiative success.
- In Clinical + Payment facilities, ECCP staff reported an increase in telemedicine usage. However, connectivity and logistical issues continued to hamper full use of the telemedicine component. Changes are being implemented as Curavi takes over telemedicine support. Curavi will provide facilities with new telemedicine carts, with enhanced capabilities, and provide back-up clinical coverage via the carts.
- With the addition of the payment model, RAVEN hired a nursing facility liaison (1 FTE), practitioner liaison (0.2 FTE). The full-time RN nursing facility liaison travels to the Payment-Only facilities providing technical support. At the time of our visit to the ECCP (late September 2017), the physician liaison role was still being developed.
- None of the practitioners interviewed at Payment-Only facilities reported much contact with the ECCP.
- All interviewed Clinical + Payment and Payment-Only facilities had other programs or policies in place to reduce avoidable hospitalizations. All Payment-Only facilities visited had been participating in such programs or using tools to reduce hospitalizations prior to NFI 2.

### **G.1.1 Initiative Implementation**

Implementation of NFI 2 began on October 1, 2016. Of the 18 facilities remaining at the end of NFI 1, 15 continued to the Clinical + Payment Model. Twenty new facilities were recruited by UMPC-RAVEN to participate in the Payment-Only model.

In the Clinical + Payment facilities, the RAVEN team introduced the new payment component to facility staff members, focusing on facility administration and leadership including DONs and NFAs. RAVEN leadership reported that they wanted to give the Clinical + Payment facilities more “ownership” of the Initiative, particularly in regard to data collection and submission. Currently, embedded RAVEN staff complete a majority of data collection; however, RAVEN leadership expressed the hope that facility staff will soon take control of this process. In the Payment-Only model, where most facilities are corporate owned, most interviewees reported that RAVEN leadership trained corporate entities about the Initiative, and then, in turn, the corporate offices trained facility staff. In these cases, the corporate offices were the main points

of contact if facilities had Initiative-related questions; the corporate offices were generally supportive of the Initiative.

RAVEN added the role of Nursing Facility Liaison to help Payment-Only facilities with Initiative implementation and technical questions in January 2017. This liaison, an RN by training, travels to Payment-Only facilities to train staff on the RAVEN Initiative and its goals and talk to facility leadership about challenges, successes, and best practices. All facilities reported that the support of the liaison is very helpful, as she serves as a point-person in case any issues or concerns arise.

In most, but not all cases, facility interviewees in both groups said that training was adequate, and the written materials provided were of a high quality. One of the visited Payment-Only facilities reported misunderstanding some aspects of the billing details, leading to some missed billing opportunities, and only learning the “complete picture” at the Leadership Day training that happened in October 2017 (a year after the NFI 2 start) and with the support of the RAVEN Nursing Facility Liaison.

Facility leadership did not report needing to purchase equipment in order to pass the readiness review for the payment model. Some Clinical + Payment facilities did report needing to renegotiate contracts to ensure that results of labs and imaging were received in an adequate time frame to have the appropriate documentation for a diagnosis. None of the facilities reported hiring new staff specifically to support NFI 2.

### **G.1.2 Learning Communities**

RAVEN provided support to facilities through ongoing Learning Community activities, including webinars and conference calls. RAVEN leadership held separate monthly calls for the Clinical + Payment and Payment-Only facilities. Although call attendance varied, facility staff in attendance reported that the information shared was useful; others who did not attend the calls but reviewed printed meeting materials also provided positive feedback. RAVEN leadership noted that Payment-Only facilities participated more regularly in these calls than Clinical + Payment facilities. Interviewees from Payment-Only facilities found the sharing of best practices between facilities to be the most useful part of these calls. For example, one facility presented to the Learning Community a program they had developed to reduce hospitalizations during the weekend; another facility reported finding the presentation very informative.

Along with these monthly calls, the ECCP also held a Leadership Day in late 2017 for participating facilities. Again, the ECCP held separate days for the Clinical + Payment and Payment-Only facilities. All interviewees that attended found the trainings very useful and appreciated the opportunity to meet with leadership from other facilities in person.

### **G.1.3 INTERACT Tools and Other Components**

**INTERACT Tools.** Clinical + Payment facilities continue the use of INTERACT Tools, but there is less emphasis on tool use education. All visited Payment-Only facilities were also using INTERACT Tools, including the SBAR, Stop and Watch, and, in some cases, the INTERACT Transfer tool. All Payment-Only facilities reported using these tools before the Initiative was introduced and they used electronic versions of the tool in the electronic medical

record, Point Click Care (PCC). In both Clinical + Payment facilities and Payment-Only facilities, Stop and Watch use was inconsistent. SBARs were used more widely. In the Clinical + Payment facilities, condition-specific SBARs were developed by JHF; two facilities used these forms in the identification and diagnosis of the six conditions.

**End-of-Life Care.** As in NFI 1, RAVEN nurses are still participating in end-of-life care planning in Clinical + Payment facilities. RAVEN nurses continue to engage residents and families in discussions about end-of-life wishes.

Although NFI 2 does not provide any end-of-life education or support to Payment-Only facilities, some Payment-Only facility staff discussed the intersection of RAVEN and end-of-life planning even though this intersection was minimal. Some interviewees felt that the Initiative helped focus their attention on changes in condition and made it easier to communicate with families about resident decline; however, this sentiment was not widely reported. Notably, one facility we visited had a significant proportion of residents with guardianship, and in that county, all end-of-life decisions (i.e., putting a resident on hospice) required procuring a court order. This requirement poses a significant barrier to end-of-life care planning in that facility.

**Medication Management.** RxPartners continues medication review and the interdisciplinary team activities from NFI 1 in the Clinical + Payment facilities, primarily focusing on the Interdisciplinary Review Teams (IDT). These teams are now in place in eight Clinical + Payment facilities. Additionally, medication review continues on all new RAVEN patients. Medication management activities appear to be a small element of the Initiative, with limited awareness among facility staff.

#### **G.1.4 Telemedicine**

The telemedicine component from NFI 1, including the ability to consult with the RAVEN Telemedicine APRN during nights and weekends, continues in the Clinical + Payment facilities. The RAVEN on-call APRN can certify conditions for facility payment via telemedicine. In facilities without a RAVEN APRN, RAVEN RNs utilize telemedicine, during business hours, to communicate with RAVEN APRNs in other RAVEN facilities so that these APRNs can certify conditions for facility payment.

Facility staff continue to support telemedicine and believe it is valuable. Although facilities are using telemedicine slightly more in NFI 2 compared to NFI 1, utilization still remains low. Facility staff continue to find the telemedicine cart cumbersome, and report difficulties with the user interface and wireless connectivity.

To address challenges with telemedicine, RAVEN transferred all components of telemedicine, including technical support, management, and education, to Curavi. According to ECCP leadership, the transfer of telemedicine services to Curavi was done in a cost neutral manner. Curavi implemented improvements, including a smaller and more mobile cart; a more intuitive, user-friendly interface that does not require a log-in; a scanner for sharing documentation; and an EMR system which has integrated documentation for the six qualifying conditions and automates communication of the encounter to both practitioners and nursing facilities. The agreement between UPMC-RAVEN and Curavi for telemedicine services allowed



for the telemedicine nurse educator and telemedicine APRN to continue their roles, as Curavi employees. Additionally, Curavi will now be responsible for back-up telemedicine coverage, rather than the previous rotation of on-call RAVEN APRNs. In response to facility requests for telemedicine availability later in the evenings when hospital transfers occur more often, the hours of telemedicine coverage have shifted, beginning at 6:00 pm rather than 4:00 pm. The new cart is being provided to facilities on a rolling basis as the new carts are custom made by a vendor. Rollout of the new carts began the week of September 24, 2017.

## **G.2 Sharing Collaborative**

RAVEN leadership reported only moderate NFI 2 participation in Sharing Collaborative activities with CMS and other ECCPs, but NFI 2 participation was higher than in NFI 1. Leadership staff reported receiving direct guidance from CMS about billing concerns and reported using the meetings as a venue to share experiences with the Initiative, including chart auditing. RAVEN leadership felt that the Connect Portal could be a useful tool, but it is difficult to be proactive about using it and to incorporate it into the general workflow. Overall, RAVEN leadership found direct communication between ECCPs most valuable. For example, one of the RAVEN co-directors spoke at an Indiana nursing facility leadership meeting to share best practices from the RAVEN program.

As a result of cross-ECCP collaboration fostered by the Sharing Collaborative, RAVEN leadership reached out to the New York ECCP to obtain assistance in modifying a payment estimating tool that NY-RAH developed to help facilities estimate reimbursements they could receive from the new billing codes. Clinical + Payment facilities reported receiving information from this tool on a quarterly basis during check-in meetings with RAVEN leadership. Facility leadership believed this tool was helpful in estimating missed billing opportunities and utilized this information to understand potential revenue from the new payment codes. Payment-Only facilities were not aware of any RAVEN tool used to understand potential NFI 2 revenue.

## **G.3 Facility Staff and Practitioner Engagement**

Across facilities there is variability in facility staff and practitioner understanding, participation, and engagement in the Initiative.

### **G.3.1 Facility Staff**

Awareness of and engagement with the Initiative varies across both Initiative components and staff type in the Clinical + Payment facilities and Payment-Only facilities. Administrative staff, DONs and unit managers were familiar with the goals of NFI 2. However, only one of the four Clinical + Payment facilities and one of the four Payment-Only facilities visited reported widespread staff awareness of the payment model as it relates to the six qualifying conditions. In the Clinical + Payment facilities, floor staff, including RN, LPN, and CNA understanding of the RAVEN Initiative was limited to awareness of the RAVEN APRN or RN assigned to the facility and that nurse's role in taking care of residents. The ECCP staff embedded in facilities help to diagnose and confirm conditions. In some cases, facility RNs in a leadership or administrative role (DON, MDS nurse, nurse educator, ADON) reviewed charts for changes in condition and then prepared documentation to be submitted to the appropriate billing office and the ECCP.

Embedded ECCP staff involvement in the preparation of documentation for billing varied. In one facility, the embedded ECCP staff was more involved in this process, completing the information for the billing office and data submission to the ECCP, while in other facilities the ECCP staff assisted with chart reviews or identifying situations for which facilities could bill. In all the Clinical + Payment facilities visited, nursing staff reported communication and collaboration with the ECCP APRN or RN to keep residents in the facility.

In the Payment-Only facilities, the Initiative was driven by facility leadership. In some cases, the DON notified the staff of a resident's RAVEN eligibility, worked with the nursing staff to ensure that all proper documentation is put together, called the practitioner to certify the diagnoses, and compiled all necessary information to send to the billing office. In another facility, the Initiative was spearheaded by the facility's two APRNs. Much like the DON, these APRNs informed floor staff of resident eligibility for the Initiative, urged staff to complete appropriate charting for the condition, confirmed the diagnosis, and completed all necessary paperwork for both the billing office and the RAVEN leadership. Therefore, facility floor staff were aware of the Initiative and its goals but had very limited involvement in the Initiative. Although the Initiative was meant to be "nursing driven," many facilities in both groups reported that the Initiative was driven by facility leadership (NFA, DON), ECCP staff (RAVEN nurses), or certified practitioners (non-ECCP APRNs, medical directors).

As with NFI 1, high nursing facility staff turnover remains a pervasive problem, affecting all aspects of implementation; facility nursing leadership reported difficulties with sustaining tool use, training staff on the six qualifying conditions and the Initiative, and reinforcing overall nursing skills. Almost all facilities reported that staff and leadership turnover were among the biggest barriers to the Initiative.

### **G.3.2 Practitioners**

Practitioners reported variable interaction and engagement with the Initiative, with some having limited interaction and others being moderately or highly engaged. RAVEN leadership staff reported that facilities were responsible for identifying and engaging interested practitioners during the rollout of NFI 2. In some Clinical + Payment facilities, RAVEN staff provided written materials with billing codes and webinars for practitioners. However, practitioner engagement with the additional materials was low and appeared to be largely driven by practitioners' schedules in the facility. In cases where practitioners were in the facility 3 to 5 days a week, more diagnoses could be confirmed, leading to more facility and practitioner billing and to higher facility and practitioner buy-in. In facilities where practitioners were not readily available, interviewees reported more missed billing opportunities.

Interview data indicate that Initiative billing requirements posed a significant barrier to practitioner involvement. The 48-hour window for certification of six qualifying conditions was seen to be too short, especially in facilities with inconsistent practitioner presence. In one Payment-Only facility, the medical director opted not to participate in the Initiative, citing the time window requirement as the reason. According to the facility's DON, "*Our medical director was up-front from the beginning. He said, 'I think it [RAVEN] will be very successful, but I can't commit to it.' He has too much integrity to sign up for something he knows he'd fail at to begin with. He said, 'I'd love to say I'll participate, but what you're asking me to do, I can't do....I*

*can't drop [everything I am doing] and run to you. I'll help you in any way I can, but I can't commit.*" In facilities with consistent practitioner presence, the 48-hour certification window was not reported to be a significant challenge. One practitioner shared that she could come to certify whenever needed, including weekends, because she is "local"; however, she also commented that this is not the case for most practitioners practicing in the building, meaning most of the RAVEN workload fell to her.

In both groups, practitioners reported not using the care coordination code because the 25-minute requirement was considered impractical; practitioners were not able to devote this much time to one resident. The financial incentive was also reported to be insufficient. Only one APRN in a Payment-Only facility reported completing and billing for one care coordination. Interviewees also mentioned that scheduling conferences is often difficult since various individuals with diverging schedules must be present. One medical director reported that *"it's just too difficult to get everyone together."* Others suggested that instead of the care coordination payments being made to practitioners, they should be made to the nursing facilities, as it is generally nursing facility staff who coordinate and facilitate these meetings.

Overall practitioner buy-in to NFI 2 was moderate in Clinical + Payment facilities. Although most facility medical directors and practitioners are certified for the Initiative, few practitioners are billing for the six qualifying conditions or for the care coordination visits. Interviewees reported that the time necessary to complete all the documentation is a barrier, given practitioners' tight schedules, adding that the incentive is too low to change practice patterns. In many cases, practitioners reported that they would do what is right for their patients regardless of any financial incentive. However, some facility interviewees indicate that the Initiative has had some effect on practitioners' practice patterns. Clinical + Payment facility staff also reported increased communication between nursing staff members and practitioners to complete the certification to billing process within the restricted timeframe. Some nonparticipating practitioners also expressed support for the Initiative and reported good working relationships with the RAVEN nurses.

Practitioner buy-in among visited Payment-Only facilities appeared to be higher than in Clinical + Payment facilities. All interviewed practitioners had billed for the six qualifying conditions at least once and were generally supportive of the Initiative. Like the Clinical + Payment facility practitioners, most Payment-Only facility practitioners had not completed or billed for an Initiative care coordination.

#### **G.4 Six Qualifying Conditions**

Some Clinical + Payment facilities introduced strategies to make staff aware of the conditions such as placing a list of the conditions in the charts of RAVEN eligible patients on brightly colored paper, having condition-specific SBARs at nurse's stations, and having specialized teams to understand each condition and educate fellow facility staff.

Practitioner, facility staff, and ECCP nurse interviewees believed the six qualifying conditions targeted in the payment reform were appropriate for the Initiative eligible population. However, many in the Clinical + Payment interviewees believed that the clinical criteria for payment were too severe. Interviewees felt that they were preventing hospitalizations and

treating residents in house before residents' conditions reached the severity level required to bill for NFI 2. One specific example given was the criteria for pneumonia; ECCP APRNs asserted that if an individual were to meet the clinical criteria for pneumonia, they would probably already be in the hospital. In the Payment-Only facilities, all interviewees felt that the conditions and the clinical criteria for payment were correct. Interviewees across both facility groups reported that the dehydration billing code is rarely used.

## **G.5 Billing Practices**

### **G.5.1 Facility Billing**

All interviewed facilities have been submitting claims for the Initiative without major difficulties. In most visited facilities, facility leadership, not nursing staff, assumed most of the responsibilities for documentation. In one visited facility, the RAVEN APRN collected and submitted the documentation. One DON stated, *"I don't want to add more paperwork for my staff."* In all interviewed facilities, a designated individual—generally a nurse in a leadership or administrative position—gathers the appropriate information for billing. This individual will then fill out the paperwork and submit to the appropriate billing office. Of the facilities visited, none completed the billing process in house. In most cases, facilities submit paperwork to their corporate office for billing.

Only two Clinical + Payment facilities visited seemed to have knowledge of the number of claims submitted and total reimbursement amount. The Clinical + Payment facilities did not generally receive reimbursements back from the corporate office; rather, payments were rolled into the facility's overall budget, with no way of telling what additional money had come from the RAVEN Initiative. Only one Clinical + Payment facility specifically mentioned having the ability to access 'RAVEN Funds' to purchase additional equipment for the facility.

Conversely, all Payment-Only facilities visited had a general idea of the number of claims they had submitted. These facilities also received reimbursements back from the corporate office and could distinguish between general revenue and RAVEN-related reimbursement. Only one of the interviewed facilities had used the reimbursement to date, with the others having no concrete plans for using the reimbursement. This one facility used the reimbursement to buy housekeeping equipment. This facility planned to use any additional payments to purchase new imaging equipment.

### **G.5.2 Practitioner Billing**

Only two of the five interviewed Clinical + Payment practitioners used or attempted to use the new practitioner codes for billing. In the Payment-Only model, all interviewed practitioners had billed for the six qualifying conditions. In cases where the practitioner is salaried by the nursing facility or corporation, the facility or corporation bill on behalf of the practitioner. For attending practitioners, a billing office submits the claims. Regardless of how the claims are submitted, practitioners were generally unaware of the details of the billing process after they provide the necessary paperwork to their designated biller. The practitioners did not know about billing problems and were generally unaware if the claims had been paid. Overall, practitioners reported little personal financial incentive from the Initiative.

### **G.5.3 Data Collection**

As part of the Initiative, all participating facilities must submit data to the ECCP on rehospitalizations, resident changes in condition, and completed care coordination. For Clinical + Payment facilities, data collection continues as it did in NFI 1, with the ECCP nurse collecting and reporting this information. The tools utilized for data collection in Clinical + Payment facilities have evolved over the course of the Initiative, with ECCP nurses reporting a substantial decrease in the amount of time devoted to data collection. In the Payment-Only facilities all data collection is completed by facility leadership staff.

## **G.6 Perceived Effectiveness of the Initiative**

### **G.6.1 Potentially Avoidable Hospitalizations**

A majority of the facility staff interviewed in the Clinical + Payment facilities reported that the Initiative was effective at reducing hospitalizations. The reduction in hospitalizations, however, was attributed to the ECCP staff embedded within facilities, not the payment component.

In the Payment-Only Model, interviewees were unsure about the impact of the Initiative on reducing avoidable hospitalizations. Most visited facilities had low hospitalization rates to begin with and were unable to tell if the rate had decreased after the RAVEN Initiative was implemented.

### **G.6.2 Resident and Family Perspective**

In ECCP + Payment facilities, residents, and families had a general understanding of the RAVEN program and its goals. Residents and families interviewed identified the RAVEN nurse assigned to the facility and described the primary goal of the program. Conversely, in Payment-Only facilities, interviewees reported that residents and families were generally unaware of the Initiative. In most Payment-Only facilities, residents and families were told about the Initiative and given written material about it upon admission to the long-stay unit. However, residents and families often did not read the materials. In one facility, residents or families were not informed about the RAVEN Initiative in any capacity. This facility shared that they tried to inform residents and families of the Initiative in the initial phases but found that residents and families “*didn’t care,*” or were not going to be in the facility for the requisite 101 days. Therefore, they stopped informing residents or families about RAVEN.

Minimal opt-outs of the RAVEN program were reported in both groups. Some residents opted-out to transition to managed care. Other residents and families opted-out because they were uncomfortable with the data transfer and had a “misunderstanding and mistrust of the government” and the programs offered.

As in previous years, facilities reported that they have experienced some pushback from residents and families who prefer hospitalization to treating in-house. However, in Clinical + Payment facilities, this pushback has decreased due, in part, to family education by the RAVEN nurses.

### **G.6.3 Quality Measures & State Inspection Survey Results**

In the Clinical + Payment facilities, the RAVEN Initiative was reported to have little impact on quality measures or state inspection survey results. The ECCP or RAVEN nurses did not participate directly in helping to prepare for state inspections. Although the Payment-Only facilities also did not report any impact of RAVEN on their inspection results or quality measures, the fact that the facilities were higher performing (e.g., 3 stars and above), made the Initiative easier to implement.

### **G.7 Spillover and Contamination Effects**

As in NFI 1, RAVEN nurses in Clinical + Payment facilities continue to advise facility staff on ineligible residents in emergencies or upon request. They reported that the Initiative has led to a culture change wherein nurses are assessing and treating residents more regularly, regardless of resident eligibility.

In the Payment-Only model, facilities reported limited spillover of the Initiative onto ineligible residents. One facility leader reported that they were still waiting for that “culture change” to take hold and for the facility nurses to begin taking the information they learned from RAVEN and applying it to all residents.

### **G.8 Policies and External Stakeholders**

#### **G.8.1 Hospital Engagement**

In the Clinical + Payment model, facilities reported that hospitals were aware of the Initiative but did not appear to be engaged or provide any preferential treatment based on facilities’ involvement in the RAVEN Initiative. Most Payment-Only facility interviewees were unsure if local hospitals were aware of the Initiative. Payment-Only facility interviewees reported that many hospitals have their own programs in place to reduce avoidable hospitalizations, although these programs focus on short-stay rehab patients. One of the NFAs interviewed in a Payment-Only facility said that they use their low hospitalization rates to market themselves to local hospitals and build relationships. Although the RAVEN Initiative is not directly part of their marketing materials, the NFA felt that it played an important role in showing that the facility is focused on reducing hospitalization rates.

#### **G.8.2 Competing or Similar Initiatives**

All visited facilities, in both groups, had competing or similar initiatives in place to reduce avoidable hospitalizations. Most facilities had corporate programs that helped facilities track hospitalization rates and reduce readmissions. One Clinical + Payment facility had a NFI 2-like corporate program to reduce hospitalizations for about 10 target conditions, some of which were the same as the six NFI 2 conditions. As part of this program, the facility had a consulting corporate practitioner who reviewed all hospitalizations. Many visited facilities had ambitious hospitalization rate benchmarks determined by their corporate offices.

One corporation with many Payment-Only facilities has rolled out numerous pilot programs in their facilities. One such program provided facilities with iPods and iPads to take

pictures of wounds and track progress over time and avoid exacerbation that might result in hospitalizations. This corporation is also rolling out an Accountable Care Organization (ACO) model in its facilities which could impact the RAVEN Initiative, although the specifics remain unclear.

The presence of managed care differed between the Clinical + Payment facilities and Payment-Only facilities. In western Pennsylvania, where the Clinical + Payment facilities are located, managed care penetration was already high before the start of NFI 1. Therefore, managed care was not regarded as a major concern in visited facilities this Initiative Year. One Clinical + Payment facility shared that they were approached by Optum but refused to participate because they believed Optum would be in direct conflict with the RAVEN Initiative.

In contrast, the presence of managed care is growing in eastern Pennsylvania, where a majority of Payment-Only facilities are located. In some of these areas, Optum is aggressively recruiting residents, thus threatening RAVEN enrollment. One facility interviewee shared that there is a large financial incentive for facilities to have residents join Optum; therefore, leaders in that facility are working with Optum to increase enrollment in the program. Furthermore, the dedicated OPTUM APRN provides extra support to the residents and takes some burden off attending practitioners and floor nurses. Although managed care presence is currently low in visited facilities, it is quickly expanding, and one facility's leadership estimated that it would take over the area in the next 2 to 3 years.

## **G.9 Conclusions and Next Steps**

As NFI 2 progresses, RTI will continue conducting telephone interviews and in-person site visits with both RAVEN leadership and participating facility leadership, staff, and practitioners. We will be paying particular attention to the following topics:

- Differences between NFI 2 practices between Clinical + Payment facilities and Payment-Only facilities
- The evolution of the role of the RAVEN nurse in the Clinical + Payment facilities
- Interviewee perceptions of the overall effect of the Initiative on both facility care provision and avoidable hospitalization rates
- Ongoing successes and challenges with the billing process and plans for use of reimbursement funds
- Impact of NFI 2 financial incentives on practitioner engagement and practice patterns
- Use of telemedicine in Clinical + Payment facilities
- Growing presence of managed care across the state.

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## **APPENDIX H STAKEHOLDER SUMMARIES, INITIATIVE YEAR 1**

### **H.1 AQAF (Alabama)**

#### **H.1.1 Stakeholder 1**

AQAF Stakeholder 1 reported that readmission rates in Alabama were high but have been dropping. She believed that this was mostly because of work being done by AQAF. She reported that nursing facilities (NFs) are challenged by increasing patient acuity, polypharmacy (because of the lack of medical director effort in this area) and a need for better advance care planning (Alabama is not a POLST [Physician Orders for Life Sustaining Treatment] state and these conversations are not happening). She also reported a unique partnership between the University of Alabama Birmingham (UAB) hospital, 13 skilled nursing facilities (SNFs), and Trident (a company that supplies NPs to SNFs). The hospital has contracted with Trident to provide care to UAB patients in the 13 SNFs. The hospital also meets monthly with the SNFs to perform root cause analysis around readmissions. The hospital is also planning to create a SNF preferred provider network and is in the process of determining what metrics to use. In terms of improving quality more generally, she reported there are four teams working to improve quality in the Birmingham metro area. The teams are focused on reducing readmissions, medication reconciliation, and advance directives. AQAF is also working with hospitals, SNFs, home health agencies, and Area Agencies on Aging, as well as fire and rescue to improve care transitions. She reports that AQAF is trying to hardwire the INTERACT (Interventions to Reduce Acute Care Transfers) in all NFs in the state.

#### **H.1.2 Stakeholder 2**

AQAF Stakeholder 2 named funding and regulations and lack of availability of well-trained staff as the main challenges for NFs in Alabama. The regulation she most complained about was that NFs are unable to treat sex offenders, even if they are incapacitated. She cited a need for geri-psych facilities that could provide more secure care for this population. The stakeholder noted that, in rural areas, it was difficult to find highly qualified staff. In terms of hospitalizations, she believed that Alabama was doing pretty well and reported that her organization was involved mainly in providing data from the Quality Improvement Organization (QIO) to NFs. She reported that most of her organization's quality improvement efforts were driven by the QIO and their current scope of work. She also reported that medical directors are being provided education through the AL Medical Directors Association and said that recent training included information about interventions that could be tried in the nursing facility before sending people to the hospital, essentially educating MDs about the fact that people can be cared for in NFs. She stated that hospitalization rates would be lower if everyone was on the same page regarding the INTERACT tools.

## **H.2 ATOP2 (Nevada)**

### **H.2.1 Stakeholder 1**

ATOP2 Stakeholder 1 noted that a primary challenge in Nevada is the low number of NFs and a lack of clinicians and nurses. He also stated that there is a general lack of understanding of what NFs can do. He noted that he believed that Medicare Advantage (MA) plans will drive innovation in NFs and allow them to take on patient care responsibilities that used to be held only by hospitals. He mentioned that Optum is working on a payment system similar to the ATOP Initiative that would pay NFs a higher rate for treating residents in place. He also stated that nursing facility quality in the state was driven by HealthInsight and the current CMS 11<sup>th</sup> scope of work, this includes antibiotic stewardship. He reported that nursing facility use of the INTERACT tools was still spotty in the state. He complained that NFs will contract with hospitalist groups to “get heads in the beds,” but that those relationships often incentivize hospitalizations.

### **H.2.2 Stakeholder 2**

ATOP2 Stakeholder 2 stated that the greatest barriers to nursing facility quality in NV are money and staffing. She noted that Medicaid payments had not been increased in 15 years before a 10 percent increase in July 2017. She also noted an influx of Medicare-only facilities in NV that are cream-skimming Medicare patients that would have previously helped the case mix of NFs that accept Medicare and Medicaid. She also noted trouble that NFs are having with a recent opioid-related law. Because of the law, hospital Medical Directors will not send patients to the SNF with an opioid prescription. Therefore, patients are arriving at facilities (often at night) without pain meds. Medical Directors are not at the facility at that time and, because the law says the physicians must have a relationship with the patient before prescribing an opioid, the physicians will not write a prescription without seeing the patient. This results in patients going up to 24 hours without pain medication. She mentioned that another difficulty NFs are having is MA plans discharging people from the hospital too soon. Although she did acknowledge that Nevada still has low MA penetration. She believes the only organization in Nevada working on the hospitalization issue is HealthInsight.

## **H.3 ATOP2 (Colorado)**

### **H.3.1 Stakeholder 1**

This stakeholder stated that the biggest challenge for NFs in the state is lower Medicaid reimbursement coupled with the rapidly increasing acuity of residents; rural NFs receive less reimbursement. She also mentioned competition from hospitals for RNs as a challenge as well as the amount of new regulations. She reported that Colorado is part of the Healthy Transitions Cooperative, which aims to improve transitions between hospital, SNFs, and home health. She also mentioned that the QIO and other groups are working on antimicrobial stewardship. Her organization continues to push reduction of antipsychotics work and provides data to NFs for identifying and addressing quality issues. She thought that hospitalizations could be reduced through reimbursement to NFs for NPs. She mentioned that INTERACT training is now restricted to individual facilities (i.e., a hospital cannot provide it to multiple NFs).

### **H.3.2 Stakeholder 2**

This stakeholder is a member of the South Denver Care Continuum that is working on improving transitions. She stated that the biggest challenge for NFs in Colorado is the somewhat adversarial survey process and a very low unemployment rate that makes it difficult to find and retain nurses and CNAs. NFs are often competing with hospitals for staff and the hospitals can pay signing bonuses. However, she also discussed the closer relationships that have developed with hospitals around care transitions. The transitions team she is working with includes the two largest hospital systems, 14 or 15 NFs in the Denver area, 29 home health and home care agencies, and 6 hospices (“anyone who touches seniors”). They have implemented INTERACT, Patient Activation Measure scores, and a program they developed to keep people healthy at home. Telligen, their QIO, is collecting data and they have greatly reduced readmission rates. She stated that hospitals now expect NFs to use INTERACT. She mentioned that, because of new internal restrictions, she is no longer allowed to teach INTERACT outside of her facility. Her company is also working on antibiotic stewardship using the McGeer criteria and have instituted direct nursing facility admission.

### **H.3.3 Stakeholder 3**

This stakeholder stated that the biggest challenge facing NFs is implementing the new regulatory requirements, which he referred to as unfunded mandates. He also complained of a growing homeless population, many of whom have opioid addictions. He stated that homeless persons will be hospitalized and sent to NFs who are not allowed to discharge to an unsafe location and, therefore, must keep them. He stated that most hospitalizations are because of providers being unaware of what NFs can handle in-house and families not being properly prepared for the things that can happen in a nursing facility, such as medication side effects. He said that he thought the MD issue (i.e., their readiness to send residents to the hospital) was improving because of the oversupply of nursing facility MDs. NFs now have the power to demand certain behaviors from MDs, including that they avoid hospitalizations and work with pharmacists on antibiotic stewardship and the use of antipsychotics and antidepressants. The NFs he works with now also have pain management programs to wean people off opioids. They also work with the area hospitals, so that residents cannot obtain medication by calling 911.

## **H.4 MOQI (Missouri)**

### **H.4.1 Stakeholder 1**

This stakeholder reported that staffing and reimbursement are the biggest barriers to quality in nursing facilities in Missouri. She also discussed the need for more APRNs in NFs and the limitations on this caused by Missouri regulations. For example, APRNs must have a practice agreement with an MD who is located within 30 or 50 miles (depending on urban or rural location) and that the MD must visit the facility and do a 10 percent chart audit every 14 days. Her organization has worked for many years to try to get these regulations removed or loosened but have had no success. They have been unable to have even the mileage restrictions lifted. She stated that these regulations are especially burdensome in rural areas where MDs are already in short supply.

## **H.5 NY-RAH (New York)**

### **H.5.1 Stakeholder 1**

This stakeholder discussed the fact that New York City (NYC) has a very well-developed home care system and there is not as much focus on NFs. He did not believe that workforce issues affect NFs in NYC because of available low-wage, low-skilled workers and stated that one problem is the large size of NFs in NYC; they are not Green House friendly. He reported that both the Delivery System Reform Incentive Payment (DSRIP) and Fully Integrated Duals Advantage (FIDA) programs were failing because of misplaced incentives. He reported being surprised by the number of Institutional Special Needs Plans (I-SNPs) in NFs in NYC. HealthFirst is the largest MA plan and they are using the Evercare model. He also reported being surprised that “people are not talking about their measures and actual rates.” He also reported that the governor recently floated the idea of removing institutionalized people from the managed long-term care (MLTC) program.

### **H.5.2 Stakeholder 2**

This stakeholder began by discussing the DSRIP program. The DSRIP program is a waiver program that is using savings gained from Medicaid system reforms to further reform the Medicaid system to one that is primarily performance based. The goal is that 80 percent of Medicaid contracts will be performance based. The program is run through regional Performing Provider Systems (PPS) that partner with organizations to improve performance. PPSs are able to select projects from a menu of 44 projects but cannot select more than 10. Only two of the 44 projects are focused on NFs: (1) Implementing the INTERACT program and (2) care transition intervention for SNF residents. Therefore, most PPSs are working with hospitals or other providers and NFs are only involved with DSRIP peripherally. A recent policy change she mentioned was the state getting rid of their bed-hold policy. She thought this happened in the last year. In terms of challenges in long-term care (LTC), she mentioned that many nonprofits in the state are being bought by large for-profit chains. She believes that this is detrimental because the for-profit chains are not as well integrated in the community and not as well connected with local hospitals. She thought a positive trend was the move toward increased use of HIT and interoperability. She stated that the GNYHA has been pushing this, and a recent policy change would require that NFs participate in the Regional Health Information Organizations.

### **H.5.3 Stakeholder 3**

These stakeholders stated that New York NFs face many challenges, but the main challenges are financial. They mentioned that New York leads the nation in per resident, per day in Medicaid shortfalls in funding. They also mentioned that Medicaid has not had an inflation increase in NY in 11 years. In addition, they reported that NFs in New York are facing cuts to capital reimbursement, cuts to the case mix payment system and additional penalties for various quality indicators that the state has initiated. They reported that under this system NFs pay 2 percent into an incentive pool and that NFs in the top two quintiles, based on performance, receive more than 2 percent back, those in the third quintile break even and those in the fourth and fifth quintiles lose money. They also reported that New York plans to begin taking additional penalty payments from those in the fourth and fifth quintiles, but that the money will go into the

general fund rather than to NFs. They also mentioned that several forces, including the DSRIP program, are causing hospitals to discharge higher and higher acuity patients to NFs. However, NFs do not receive extra funding to care for these sicker patients. They mentioned that though DSRIP has pumped billions of dollars into health care in New York, only a tiny proportion of that has gone to NFs. In terms of reducing hospitalizations and other quality improvement programs, their organization is providing a lot of education, including INTERACT. When asked about bed-hold policies, they reported that New York is trying to do away with the bed-hold payment, but that NFs will still be expected to hold the bed when residents are in the hospital.

## **H.6 OPTIMISTIC (Indiana)**

### **H.6.1 Stakeholders 1**

These stakeholders reported that the biggest challenge in Indiana is workforce related. Too few workers available and too few who can pass a drug screen. They also reported that Indiana is very over-bedded, with 557 NFs and an average occupancy of 74 percent. They also reported a downturn in Part A usage because of demographics (i.e., the Lost Generation, those born during the 1930s and early 1940s) and dramatic growth in MA. They have also had tremendous growth in assisted living facilities. A recent moratorium on nursing bed supply may help. Positives in the state are recent Accountable Care Organizations (ACOs) and other payment reform models that some NFs have been able to take advantage of. Another positive is the regulatory environment in Indiana. Indiana collects a provider tax that is then used to reward NFs under a pay-for-performance model that has been in existence since 2005; 9 percent of a NFs rate is based on performance, primarily survey performance. They felt that all organizations they deal with are now focusing on hospitalizations. However, the Medicaid office refused to include hospitalization rates in the value-based performance model they are developing, arguing that hospitalizations fall to Medicare. They thought this was a lost opportunity. Finally, they reported that due to OPTIMISTIC other facilities are getting onboard with having extenders in their buildings.

### **H.6.2 Stakeholder 2**

This stakeholder discussed the state's value-based purchasing system and the fact that the formula is being changed to focus less on regulatory compliance and more on quality outcomes and staff retention. The program is funded through a provider tax. She mentioned that one challenge in the state is that the "carrots and sticks" do not line up well and that the different agencies and divisions are sending conflicting messages to providers. She also mentioned that Indiana is very over-bedded and that they have done internal work showing the correlation between low occupancy in facilities and quality. She also mentioned the unique situation in Indiana whereby a facility can receive a higher Medicaid rate if it is owned by a county hospital. This has caused many NFs to be purchased by county hospital systems. She stated that this arrangement has helped the county hospitals financially but has not improved care quality for the Medicaid residents in the NFs. There is not much focus on nursing facility hospitalizations in the state, but a few local coalitions (formed through a U of Indianapolis project) have decided to focus on these. There does seem to be a focus on advance care planning. This is due, in part, to the OPTIMISTIC project. The new value-based payment (VBP) structure will incentivize NFs having a trained advance care planning specialist.

## **H.7 RAVEN (Pennsylvania)**

### **H.7.1 Stakeholder 1**

This stakeholder stated that the biggest challenge currently facing nursing facilities are all of the new nursing facility regulations, especially those focused on person-centered care (PCC). She expressed that it will be difficult for NFs to implement the required changes with their limited resources, especially limited staffing. She said that Pennsylvania has a lot of turnover and a lot of use of agency staff who do not know care plans, and this results in hospitalizations. She also said that she thought most NFs had become overly focused on safety because of the regulations they face and would have a hard time refocusing on PCC. She would like to see CMS provide more guidance related to PCC. She also suggested that NFs in the state should be partnering with non-profits that help implement culture change. She also mentioned a program that trains nursing facility residents to become “empowered expert residents” who become advocates for the residents in their own NFs.

### **H.7.2 Stakeholder 2**

This stakeholder stated that the biggest challenge for NFs in the state is staffing and turnover. In cities, this is turnover and retention of direct-care staff, but in rural areas facilities have difficulty attracting and retaining MDs and other high-skill staff. Reimbursement is also a challenge because two-thirds of PA’s Medicaid budget goes to long-term services and supports. She also discussed the fact that SNF margins are very thin and this allows them little ability to innovate. She also stated that the inspection system in the state is scary to NFs because it is based more on the whims of individual surveyors. She stated that the survey system should include more education. In terms of opportunities, she mentioned that the push for fewer rehospitalizations was resulting in better relationships between hospitals and SNFs and that some hospitals were even placing NPs in NFs. Pennsylvania is also about to pass POLST legislation, and she thought this could greatly reduce rehospitalizations, especially as families become more educated about the dangers of hospitalizations for seniors. Beginning January 1, Pennsylvania will also implement Managed LTSS (MLTSS) and managed care companies will do a lot to reduce nursing facility use and hospitalizations. She also mentioned that in the MLTSS system people must choose between Managed Care Organizations and LIFE (the Pennsylvania version of the Program All-Inclusive Care for the Elderly).

### **H.7.3 Stakeholder 3**

This stakeholder stated that the biggest challenge NFs face is finding good staff, especially RNs. She noted that NFs are worried that the new managed Medicaid system will begin to affect census soon because they believe there will be a shift to more in-home care. She mentioned that NFs participating in the bundled payment program have been horrified at the short length of stay hospitals want. Some hospitals have also selected preferred SNF partners based on success with certain diagnoses (i.e., they have different networks for different diagnoses). As part of the bundle, the NFs instituted a nurse navigator system to follow up on discharged patients. They plan to keep this system in place when the bundle ends but will use risk-stratification to identify high-risk patients. In terms of hospitalizations, she believes that the MDs are still the biggest problem. She hopes that MD education will help with that and that the

recent introduction of a new MD-based ACO will allow for that education. One way they have tried to address this is ridding their NFs of “onesie-twosie” MDs by encouraging residents to take the medical director as their MD. Some of their facilities are also closed buildings, meaning they have restricted the MDs who can work there. They also seem to use a robust data system and QI programs involving monthly and quarterly analyses of the reasons for hospitalizations.

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## **APPENDIX I**

### **SURVEY FINDINGS, INITIATIVE YEAR 1**

*Appendix I* presents the full survey responses of all close-ended questions from the NFA and Practitioner Surveys. Respondents were asked to focus on their experiences with NFI 2 at a specific facility during the 2017 calendar year, which largely overlaps with Initiative Year 1. Data collection occurred from January through March of 2018. All responses are stratified by ECCP and by intervention group, and include the number of respondents for each group, along with a **percentage** distribution of answers to each survey question.

**I.1 NFA Survey**

**Table I-1  
What is your role at <FACILITY\_NAME>?**

Responses	Overall	By ECCP (All Clinical + Payment and Payment-Only facilities)						By intervention group (All ECCP facilities)	
		AQAF (AL)	ATOP2 (CO/NV)	MOQI (MO)	NY-RAH (NY)	OPTIMISTIC (IN)	RAVEN (PA)	Clinical + Payment	Payment-Only
<i>N</i>	216	33	26	35	56	35	31	95	121
Nursing Facility Administrator/ Executive Director, or equivalent, %	87.5	87.9	76.9	100.0	85.7	88.6	83.9	91.6	84.3
Director of Nursing, or equivalent, %	3.2	6.1	3.8	0.0	3.6	0.0	6.5	4.2	2.5
Billing Office Manager, Billing Coordinator, or equivalent, %	4.6	3.0	11.5	0.0	5.4	5.7	3.2	4.2	5.0
Other, % (describe)	4.6	3.0	7.7	0.0	5.4	5.7	6.5	0.0	8.3

I-2

**Table I-2  
When did you start working at <FACILITY\_NAME>?**

Responses	Overall	By ECCP (All Clinical + Payment and Payment-Only facilities)						By intervention group (All ECCP facilities)	
		AQAF (AL)	ATOP2 (CO/NV)	MOQI (MO)	NY-RAH (NY)	OPTIMISTIC (IN)	RAVEN (PA)	Clinical + Payment	Payment-Only
<i>N</i>	216	33	26	35	56	35	31	95	121
Before September 2012, %	44.0	45.5	26.9	48.6	60.7	34.3	32.3	45.3	43.0
Between September 2012 and [MONTH1] 2016, %	33.3	24.2	46.2	42.9	21.4	37.1	38.7	31.6	34.7
[MONTH2] 2016 or later, %	22.7	30.3	26.9	8.6	17.9	28.6	29	23.2	22.3

**Table I-3**

**Approximately how many practitioners (i.e., physicians, nurse practitioners [NPs], and physician assistants [PAs]) care for eligible long-stay residents at your facility?**

Responses	Overall	By ECCP (All Clinical + Payment and Payment-Only facilities)						By intervention group (All ECCP facilities)	
		AQAF (AL)	ATOP2 (CO)	MOQI (MO)	NY-RAH (NY)	OPTIMISTIC (IN)	RAVEN (PA)	Clinical + Payment	Payment-Only
<i>N</i> *	164	33	16	20	56	21	18	43	121
Mean	5.6	4.4	7.8	5.9	5.8	4.4	6.4	6.1	5.5
SD	4.3	1.8	8.8	3.8	3.7	2.8	4.4	4.0	4.4
Minimum	1	2	2	1	1	2	2	1	1
Maximum	37	8	37	15	20	15	18	20	37

\* = Skip pattern. Respondents were Payment-Only (all ECCPs) or Clinical + Payment (AQAF/NY-RAH only).

**Table I-4**

**Excluding the <ECCP Nurse>, approximately how many practitioners (i.e., physicians, nurse practitioners [NPs], and physician assistants [PAs]) care for eligible long-stay residents at your facility?**

Responses	Overall	By ECCP (All Clinical + Payment and Payment-Only facilities)						By intervention group (All ECCP facilities)	
		AQAF (AL)	ATOP2 (NV)	MOQI (MO)	NY-RAH (NY)	OPTIMISTIC (IN)	RAVEN (PA)	Clinical + Payment	Payment-Only
<i>N</i> *	52	0	10	15	0	14	13	52	0
Mean	7.0	—	5.7	9.9	—	4.1	7.8	7	—
SD	5.5	—	5.3	6.9	—	3.1	4.2	5.5	—
Minimum	1	—	2	3	—	1	2	1	—
Maximum	25	—	18	25	—	12	17	25	—

\* = Skip pattern. Respondents were Clinical + Payment (not AQAF/NY-RAH).

— = data not available.

**Table I-5****Approximately how many practitioners are currently approved to participate in <Initiative> at your facility?**

Responses	Overall	By ECCP (All Clinical + Payment and Payment-Only facilities)						By intervention group (All ECCP facilities)	
		AQAF (AL)	ATOP2 (CO/NV)	MOQI (MO)	NY-RAH (NY)	OPTIMISTIC (IN)	RAVEN (PA)	Clinical + Payment	Payment-Only
<i>N</i>	216	33	26	35	56	35	31	95	121
Mean	4.2	3.6	4.8	4.6	4.7	3.5	4.0	4.9	3.7
SD	3.4	2.1	5.3	4.0	3.2	2.8	2.8	4.0	2.8
Minimum	0	1	0	1	0	1	1	1	0
Maximum	20	8	20	20	20	15	10	20	20

**Table I-6****Among currently approved practitioners for <Initiative>, approximately how many are salaried by your nursing facility/corporation?**

Responses	Overall	By ECCP (All Clinical + Payment and Payment-Only facilities)						By intervention group (All ECCP facilities)	
		AQAF (AL)	ATOP2 (CO/NV)	MOQI (MO)	NY-RAH (NY)	OPTIMISTIC (IN)	RAVEN (PA)	Clinical + Payment	Payment-Only
<i>N</i>	216	33	26	35	56	35	31	95	121
Mean	0.7	0.5	0.8	0.3	1.3	0.3	1.0	0.7	0.8
SD	1.6	0.8	2.4	0.5	2.1	0.6	1.6	1.6	1.6
Minimum	0	0	0	0	0	0	0	0	0
Maximum	12	3	12	2	8	2	8	8	12

**Table I-7**  
**Do you have a full-time physician, NP, or PA at your facility who cares for eligible long-stay residents?**

Responses	Overall	By ECCP (All Clinical + Payment and Payment-Only facilities)						By intervention group (All ECCP facilities)	
		AQAF (AL)	ATOP2 (CO)	MOQI (MO)	NY-RAH (NY)	OPTIMISTIC (IN)	RAVEN (PA)	Clinical + Payment	Payment-Only
N*	164	33	16	20	56	21	18	43	121
Yes, %	45.7	42.4	56.3	10.0	60.7	28.6	55.6	53.5	43.0
No, %	50.6	51.5	43.8	90.0	39.3	52.4	44.4	46.5	52.1
Other, % (describe)	3.7	6.1	0.0	0.0	0.0	19.0	0.0	0.0	5.0

\* = Skip pattern. Respondents were Payment-Only (all ECCPs) or Clinical + Payment (AQAF/NY-RAH only).

**Table I-8**  
**Excluding the <ECCP Nurse>, do you have a full-time physician, NP, or PA at your facility who cares for eligible long-stay residents?**

Responses	Overall	By ECCP (All Clinical + Payment and Payment-Only facilities)				By intervention group (All ECCP facilities)	
		ATOP2 (NV)	MOQI (MO)	OPTIMISTIC (IN)	RAVEN (PA)	Clinical + Payment	Payment-Only
N*	52	10	15	14	13	52	0
Yes, %	34.6	50.0	6.7	64.3	23.1	34.6	—
No, %	61.5	40.0	93.3	35.7	69.2	61.5	—
Other, % (describe)	3.8	10.0	0.0	0.0	7.7	3.8	—

\* = Skip pattern. Respondents were Clinical + Payment (not AQAF/NY-RAH).

**Table I-9**  
**In 2017, did your facility use any of the <Initiative> facility billing codes (G9679–G9684) for any of the six qualifying conditions?**

Responses	Overall	By ECCP (All Clinical + Payment and Payment-Only facilities)						By intervention group (All ECCP facilities)	
		AQAF (AL)	ATOP2 (CO/NV)	MOQI (MO)	NY-RAH (NY)	OPTIMISTIC (IN)	RAVEN (PA)	Clinical + Payment	Payment-Only
<i>N</i>	215	33	26	34	56	35	31	95	120
Yes, %	88.8	90.9	76.9	85.3	91.1	91.4	93.5	92.6	85.8
No, %	3.7	6.1	15.4	0.0	1.8	2.9	0.0	2.1	5.0
Unsure, % (describe)	7.4	3.0	7.7	14.7	7.1	5.7	6.5	5.3	9.2

**Table I-10**  
**How frequently did the <ECCP Nurse> confirm a qualifying diagnosis?**

Responses	Overall	By ECCP (All Clinical + Payment and Payment-Only facilities)				By intervention group (All ECCP facilities)	
		ATOP2 (NV)	MOQI (MO)	OPTIMISTIC (IN)	RAVEN (PA)	Clinical + Payment	Payment-Only
<i>N*</i>	52	10	15	14	13	52	0
Never	3.8	10.0	0.0	7.1	0.0	3.8	—
Rarely	1.9	0.0	0.0	7.1	0.0	1.9	—
Sometimes	19.2	10.0	20.0	21.4	23.1	19.2	—
Often	36.5	50.0	33.3	42.9	23.1	36.5	—
Always	38.5	30.0	46.7	21.4	53.8	38.5	—

\* = Skip pattern. Respondents were Clinical + Payment (not AQAF/NY-RAH).

**Table I-11****How does your facility submit claims to Medicare for using the <Initiative> facility billing codes (G9679–G9684)?**

Responses	Overall	By ECCP (All Clinical + Payment and Payment-Only facilities)						By intervention group (All ECCP facilities)	
		AQAF (AL)	ATOP2 (CO/NV)	MOQI (MO)	NY-RAH (NY)	OPTIMISTIC (IN)	RAVEN (PA)	Clinical + Payment	Payment-Only
N*	190	29	20	29	51	32	29	87	103
Submitted directly by my facility, %	45.3	69.0	55.0	37.9	43.1	40.6	31.0	46.0	44.7
Submitted by my facility's corporate/chain administrative office, %	48.4	31.0	35.0	62.1	39.2	59.4	65.5	48.3	48.5
Submitted by an independent billing contractor, %	4.7	0.0	5.0	0.0	15.7	0.0	0.0	5.7	3.9
Other, % (describe)	1.6	0.0	5.0	0.0	2.0	0.0	3.4	0.0	2.9

\* = Skip pattern. Respondents were using billing codes.

**Table I-12****How does your facility receive payments for using the <Initiative> facility billing codes (G9679–G9684)?**

Responses	Overall	By ECCP (All Clinical + Payment and Payment-Only facilities)						By intervention group (All ECCP facilities)	
		AQAF (AL)	ATOP2 (CO/NV)	MOQI (MO)	NY-RAH (NY)	OPTIMISTIC (IN)	RAVEN (PA)	Clinical + Payment	Payment-Only
N*	189	29	20	29	51	31	29	87	102
My facility receives payment directly from Medicare, %	59.8	72.4	60.0	51.7	72.5	54.8	37.9	57.5	61.8
My facility's corporate/chain administrative office receives payment from Medicare, %	37.6	27.6	40.0	41.4	25.5	45.2	55.2	41.4	34.3
Other, % (describe)	2.6	0.0	0.0	6.9	2.0	0.0	6.9	1.1	3.9

\* = Skip pattern. Respondents were using billing codes.

**Table I-13**  
**My facility's corporate/chain administrative office...**

Responses	Overall	By ECCP (All Clinical + Payment and Payment-Only facilities)						By intervention group (All ECCP facilities)	
		AQAF (AL)	ATOP2 (CO/NV)	MOQI (MO)	NY-RAH (NY)	OPTIMISTIC (IN)	RAVEN (PA)	Clinical + Payment	Payment-Only
N*	71	8	8	12	13	14	16	36	35
Transfers all payment directly to my facility, %	76.1	50.0	100.0	58.3	92.3	78.6	75.0	69.4	82.9
Transfers some payment to my facility, %	5.6	25.0	0.0	16.7	0.0	0.0	0.0	5.6	5.7
Does not transfer any payment to my facility, %	18.3	25.0	0.0	25.0	7.7	21.4	25.0	25.0	11.4

\* = Skip pattern. Respondents indicated their facility's corporate/chain administrative office received payment.

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**Table I-14**  
**Have you or your staff received the following types of support related to <Initiative>? Educational materials and training (e.g., toolkits, webinars)**

Responses	Overall	By ECCP (All Clinical + Payment and Payment-Only facilities)						By intervention group (All ECCP facilities)	
		AQAF (AL)	ATOP2 (CO/NV)	MOQI (MO)	NY-RAH (NY)	OPTIMISTIC (IN)	RAVEN (PA)	Clinical + Payment	Payment-Only
N	212	32	26	34	56	34	30	94	118
Yes, and this support was sufficient, %	93.9	96.9	84.6	91.2	96.4	97.1	93.3	94.7	93.2
Yes, but this support was not sufficient, %	4.7	3.1	11.5	5.9	1.8	2.9	6.7	3.2	5.9
No, not received, %	1.4	0.0	3.8	2.9	1.8	0.0	0.0	2.1	0.8



**Table I-15****Have you or your staff received the following types of support related to <Initiative>? *Help with data collection and reporting***

Responses	Overall	By ECCP (All Clinical + Payment and Payment-Only facilities)						By intervention group (All ECCP facilities)	
		AQAF (AL)	ATOP2 (CO/NV)	MOQI (MO)	NY-RAH (NY)	OPTIMISTIC (IN)	RAVEN (PA)	Clinical + Payment	Payment-Only
<i>N</i>	212	32	26	34	56	34	30	94	118
Yes, and this support was sufficient, %	91.5	96.9	76.9	91.2	92.9	97.1	90.0	94.7	89.0
Yes, but this support was not sufficient, %	5.7	3.1	7.7	5.9	7.1	2.9	6.7	5.3	5.9
No, not received, %	2.8	0.0	15.4	2.9	0.0	0.0	3.3	0.0	5.1

**Table I-16****Have you or your staff received the following types of support related to <Initiative>? *Guidance on documentation requirements for nursing facility staff and/or practitioners***

Responses	Overall	By ECCP (All Clinical + Payment and Payment-Only facilities)						By intervention group (All ECCP facilities)	
		AQAF (AL)	ATOP2 (CO/NV)	MOQI (MO)	NY-RAH (NY)	OPTIMISTIC (IN)	RAVEN (PA)	Clinical + Payment	Payment-Only
<i>N</i>	212	32	26	34	56	34	30	94	118
Yes, and this support was sufficient, %	89.2	84.4	80.8	94.1	89.3	91.2	93.3	91.5	87.3
Yes, but this support was not sufficient, %	9.4	15.6	11.5	5.9	10.7	5.9	6.7	8.5	10.2
No, not received, %	1.4	0.0	7.7	0.0	0.0	2.9	0.0	0.0	2.5

**Table I-17**

**Have you or your staff received the following types of support related to <Initiative>? *On-call support (phone, e-mail, or on-site) for questions about <Initiative> facility billing codes (G9679–G9684)***

Responses	Overall	By ECCP (All Clinical + Payment and Payment-Only facilities)						By intervention group (All ECCP facilities)	
		AQAF (AL)	ATOP2 (CO/NV)	MOQI (MO)	NY-RAH (NY)	OPTIMISTIC (IN)	RAVEN (PA)	Clinical + Payment	Payment-Only
N	212	32	26	34	56	34	30	94	118
Yes, and this support was sufficient, %	91.5	90.6	84.6	97.1	87.5	97.1	93.3	87.2	94.9
Yes, but this support was not sufficient, %	3.8	6.3	3.8	0.0	5.4	2.9	3.3	6.4	1.7
No, not received, %	4.7	3.1	11.5	2.9	7.1	0.0	3.3	6.4	3.4

**Table I-18**

**Have you or your staff received the following types of support related to <Initiative>? *Quality control and review prior to billing***

Responses	Overall	By ECCP (All Clinical + Payment and Payment-Only facilities)						By intervention group (All ECCP facilities)	
		AQAF (AL)	ATOP2 (CO/NV)	MOQI (MO)	NY-RAH (NY)	OPTIMISTIC (IN)	RAVEN (PA)	Clinical + Payment	Payment-Only
N	212	32	26	34	56	34	30	94	118
Yes, and this support was sufficient, %	72.2	81.3	65.4	79.4	58.9	70.6	86.7	80.9	65.3
Yes, but this support was not sufficient, %	8.0	6.3	7.7	8.8	12.5	2.9	6.7	7.4	8.5
No, not received, %	19.8	12.5	26.9	11.8	28.6	26.5	6.7	11.7	26.3

**Table I-19**

**Overall, have you and your staff received sufficient support about using the <Initiative> *facility* billing codes (G9679–G9684)?**

Responses	Overall	By ECCP (All Clinical + Payment and Payment-Only facilities)						By intervention group (All ECCP facilities)	
		AQAF (AL)	ATOP2 (CO/NV)	MOQI (MO)	NY-RAH (NY)	OPTIMISTIC (IN)	RAVEN (PA)	Clinical + Payment	Payment-Only
<i>N</i>	211	32	25	34	56	34	30	93	118
Yes, %	95.7	90.6	92.0	97.1	98.2	97.1	96.7	96.8	94.9
No, %	4.3	9.4	8.0	2.9	1.8	2.9	3.3	3.2	5.1

**Table I-20**

**How important is it that residents be treated on-site in the nursing facility whenever possible?**

Responses	Overall	By ECCP (All Clinical + Payment and Payment-Only facilities)						By intervention group (All ECCP facilities)	
		AQAF (AL)	ATOP2 (CO/NV)	MOQI (MO)	NY-RAH (NY)	OPTIMISTIC (IN)	RAVEN (PA)	Clinical + Payment	Payment-Only
<i>N</i>	211	32	25	34	56	34	30	93	118
Somewhat important, %	0.5	0.0	0.0	0.0	1.8	0.0	0.0	1.1	0.0
Very important, %	10.0	15.6	0.0	8.8	7.1	14.7	13.3	10.8	9.3
Extremely important, %	89.6	84.4	100.0	91.2	91.1	85.3	86.7	88.2	90.7

**Table I-21****Overall, it was easy to integrate the <Initiative> facility billing codes (G9679–G9684) into my facility’s existing processes.**

Responses	Overall	By ECCP (All Clinical + Payment and Payment-Only facilities)						By intervention group (All ECCP facilities)	
		AQAF (AL)	ATOP2 (CO/NV)	MOQI (MO)	NY-RAH (NY)	OPTIMISTIC (IN)	RAVEN (PA)	Clinical + Payment	Payment-Only
<i>N</i>	211	32	25	34	56	34	30	93	118
Strongly Agree, %	35.5	40.6	28.0	29.4	26.8	41.2	53.3	36.6	34.7
Agree, %	57.8	53.1	60.0	64.7	69.6	47.1	43.3	58.1	57.6
Disagree, %	5.2	3.1	8.0	5.9	3.6	8.8	3.3	4.3	5.9
Strongly Disagree, %	1.4	3.1	4.0	0.0	0.0	2.9	0.0	1.1	1.7

**Table I-22****It makes financial sense for my facility to use the <Initiative> facility billing codes (G9679–G9684).**

Responses	Overall	By ECCP (All Clinical + Payment and Payment-Only facilities)						By intervention group (All ECCP facilities)	
		AQAF (AL)	ATOP2 (CO/NV)	MOQI (MO)	NY-RAH (NY)	OPTIMISTIC (IN)	RAVEN (PA)	Clinical + Payment	Payment-Only
<i>N</i>	211	32	25	34	56	34	30	93	118
Strongly Agree, %	66.8	71.9	68.0	61.8	60.7	67.6	76.7	71.0	63.6
Agree, %	32.2	28.1	24.0	38.2	39.3	32.4	23.3	29.0	34.7
Disagree, %	0.9	0.0	8.0	0.0	0.0	0.0	0.0	0.0	1.7

**Table I-23**  
**<Initiative> has improved the quality/outcomes of resident care at my facility.**

Responses	Overall	By ECCP (All Clinical + Payment and Payment-Only facilities)						By intervention group (All ECCP facilities)	
		AQAF (AL)	ATOP2 (CO/NV)	MOQI (MO)	NY-RAH (NY)	OPTIMISTIC (IN)	RAVEN (PA)	Clinical + Payment	Payment-Only
<i>N</i>	211	32	25	34	56	34	30	93	118
Strongly Agree, %	58.3	65.6	56.0	58.8	50.0	61.8	63.3	68.8	50.0
Agree, %	38.9	34.4	28.0	38.2	50.0	35.3	36.7	31.2	44.9
Disagree, %	2.8	0.0	16.0	2.9	0.0	2.9	0.0	0.0	5.1

**Table I-24**  
**My facility has added documentation aids (e.g., templates for the six qualifying conditions) to facilitate Initiative implementation.**

Responses	Overall	By ECCP (All Clinical + Payment and Payment-Only facilities)						By intervention group (All ECCP facilities)	
		AQAF (AL)	ATOP2 (CO/NV)	MOQI (MO)	NY-RAH (NY)	OPTIMISTIC (IN)	RAVEN (PA)	Clinical + Payment	Payment-Only
<i>N</i>	211	32	25	34	56	34	30	93	118
Agree, %	85.8	90.6	72.0	85.3	92.9	79.4	86.7	88.2	83.9
Disagree, %	14.2	9.4	28.0	14.7	7.1	20.6	13.3	11.8	16.1

**Table I-25**

**My facility already had other non-<Initiative>-related practices in place to reduce potentially avoidable hospitalizations for eligible long-stay residents.**

Responses	Overall	By ECCP (All Clinical + Payment and Payment-Only facilities)						By intervention group (All ECCP facilities)	
		AQAF (AL)	ATOP2 (CO/NV)	MOQI (MO)	NY-RAH (NY)	OPTIMISTIC (IN)	RAVEN (PA)	Clinical + Payment	Payment-Only
N	211	32	25	34	56	34	30	93	118
Agree, %	81.5	75.0	72.0	76.5	83.9	94.1	83.3	81.7	81.4
Disagree, %	18.5	25.0	28.0	23.5	16.1	5.9	16.7	18.3	18.6

**Table I-26**

**Payments from the <Initiative> facility billing codes (G9679–G9684) are reimbursing my facility for care practices my staff were already performing.**

Responses	Overall	By ECCP (All Clinical + Payment and Payment-Only facilities)						By intervention group (All ECCP facilities)	
		AQAF (AL)	ATOP2 (CO/NV)	MOQI (MO)	NY-RAH (NY)	OPTIMISTIC (IN)	RAVEN (PA)	Clinical + Payment	Payment-Only
N	211	32	25	34	56	34	30	93	118
Agree, %	72.5	81.3	76.0	76.5	64.3	73.5	70.0	71.0	73.7
Disagree, %	27.5	18.8	24.0	23.5	35.7	26.5	30.0	29.0	26.3

**Table I-27**

**<Initiative> enrollment could decline in the coming months due to increasing resident enrollment in managed care.**

Responses	Overall	By ECCP (All Clinical + Payment and Payment-Only facilities)						By intervention group (All ECCP facilities)	
		AQAF (AL)	ATOP2 (CO/NV)	MOQI (MO)	NY-RAH (NY)	OPTIMISTIC (IN)	RAVEN (PA)	Clinical + Payment	Payment-Only
<i>N</i>	211	32	25	34	56	34	30	93	118
Agree, %	73.9	87.5	52.0	70.6	89.3	58.8	70.0	79.6	69.5
Disagree, %	26.1	12.5	48.0	29.4	10.7	41.2	30.0	20.4	30.5

**Table I-28**

**In 2017, how frequently did your facility miss an opportunity to bill for any of the six qualifying conditions for <Initiative>?**

Responses	Overall	By ECCP (All Clinical + Payment and Payment-Only facilities)						By intervention group (All ECCP facilities)	
		AQAF (AL)	ATOP2 (CO/NV)	MOQI (MO)	NY-RAH (NY)	OPTIMISTIC (IN)	RAVEN (PA)	Clinical + Payment	Payment-Only
<i>N</i>	211	32	25	34	56	34	30	93	118
Never, %	4.7	3.1	8.0	0.0	8.9	2.9	3.3	5.4	4.2
Rarely, %	37.9	40.6	36.0	35.3	37.5	32.4	46.7	38.7	37.3
Sometimes, %	46.9	46.9	40.0	50.0	44.6	52.9	46.7	52.7	42.4
Often, %	9.5	9.4	12.0	14.7	8.9	8.8	3.3	3.2	14.4
Always, %	0.9	0.0	4.0	0.0	0.0	2.9	0.0	0.0	1.7

**Table I-29**

**Are any of the following statements a reason your facility missed an opportunity to bill? *Staff did not realize resident was eligible for <Initiative>***

Responses	Overall	By ECCP (All Clinical + Payment and Payment-Only facilities)						By intervention group (All ECCP facilities)	
		AQAF (AL)	ATOP2 (CO/NV)	MOQI (MO)	NY-RAH (NY)	OPTIMISTIC (IN)	RAVEN (PA)	Clinical + Payment	Payment-Only
N*	201	31	23	34	51	33	29	88	113
Yes, a major reason, %	6.5	6.5	4.3	2.9	11.8	9.1	0.0	8.0	5.3
Yes, somewhat of a reason, %	38.3	22.6	30.4	44.1	35.3	39.4	58.6	37.5	38.9
Not a reason, %	55.2	71.0	65.2	52.9	52.9	51.5	41.4	54.5	55.8

\* = Skip pattern. Respondents indicated their facility missed an opportunity to bill.

**Table I-30**

**Are any of the following statements a reason your facility missed an opportunity to bill? *Staff did not recognize the resident's change in condition***

Responses	Overall	By ECCP (All Clinical + Payment and Payment-Only facilities)						By intervention group (All ECCP facilities)	
		AQAF (AL)	ATOP2 (CO/NV)	MOQI (MO)	NY-RAH (NY)	OPTIMISTIC (IN)	RAVEN (PA)	Clinical + Payment	Payment-Only
N*	201	31	23	34	51	33	29	88	113
Yes, a major reason, %	4.0	0.0	0.0	8.8	7.8	3.0	0.0	5.7	2.7
Yes, somewhat of a reason, %	37.3	25.8	21.7	52.9	35.3	45.5	37.9	38.6	36.3
Not a reason, %	58.7	74.2	78.3	38.2	56.9	51.5	62.1	55.7	61.1

\* = Skip pattern. Respondents indicated their facility missed an opportunity to bill.



**Table I-31**

**Are any of the following statements a reason your facility missed an opportunity to bill? *Practitioner did not confirm the qualifying diagnosis in the required time window***

Responses	Overall	By ECCP (All Clinical + Payment and Payment-Only facilities)						By intervention group (All ECCP facilities)	
		AQAF (AL)	ATOP2 (CO/NV)	MOQI (MO)	NY-RAH (NY)	OPTIMISTIC (IN)	RAVEN (PA)	Clinical + Payment	Payment-Only
N*	201	31	23	34	51	33	29	88	113
Yes, a major reason, %	24.4	22.6	30.4	29.4	23.5	18.2	24.1	22.7	25.7
Yes, somewhat of a reason, %	45.8	51.6	39.1	44.1	47.1	57.6	31.0	44.3	46.9
Not a reason, %	29.9	25.8	30.4	26.5	29.4	24.2	44.8	33.0	27.4

\* = Skip pattern. Respondents indicated their facility missed an opportunity to bill.

**Table I-32**

**Are any of the following statements a reason your facility missed an opportunity to bill? *Documentation of the change in condition was incomplete***

Responses	Overall	By ECCP (All Clinical + Payment and Payment-Only facilities)						By intervention group (All ECCP facilities)	
		AQAF (AL)	ATOP2 (CO/NV)	MOQI (MO)	NY-RAH (NY)	OPTIMISTIC (IN)	RAVEN (PA)	Clinical + Payment	Payment-Only
N*	201	31	23	34	51	33	29	88	113
Yes, a major reason, %	14.4	12.9	17.4	5.9	13.7	27.3	10.3	17.0	12.4
Yes, somewhat of a reason, %	56.7	61.3	60.9	64.7	58.8	48.5	44.8	60.2	54.0
Not a reason, %	28.9	25.8	21.7	29.4	27.5	24.2	44.8	22.7	33.6

\* = Skip pattern. Respondents indicated their facility missed an opportunity to bill.

**Table I-33**

**Are any of the following statements a reason your facility missed an opportunity to bill? *Claims not submitted due to concern about auditing***

Responses	Overall	By ECCP (All Clinical + Payment and Payment-Only facilities)						By intervention group (All ECCP facilities)	
		AQAF (AL)	ATOP2 (CO/NV)	MOQI (MO)	NY-RAH (NY)	OPTIMISTIC (IN)	RAVEN (PA)	Clinical + Payment	Payment-Only
N*	201	31	23	34	51	33	29	88	113
Yes, a major reason, %	1.5	0.0	0.0	0.0	3.9	3.0	0.0	2.3	0.9
Yes, somewhat of a reason, %	14.4	12.9	13.0	11.8	21.6	12.1	10.3	12.5	15.9
Not a reason, %	84.1	87.1	87.0	88.2	74.5	84.8	89.7	85.2	83.2

\* = Skip pattern. Respondents indicated their facility missed an opportunity to bill.

**Table I-34**

**Did your facility experience any of the following as a challenge related to <Initiative>? *Lack of corporate/chain buy-in***

Responses	Overall	By ECCP (All Clinical + Payment and Payment-Only facilities)						By intervention group (All ECCP facilities)	
		AQAF (AL)	ATOP2 (CO/NV)	MOQI (MO)	NY-RAH (NY)	OPTIMISTIC (IN)	RAVEN (PA)	Clinical + Payment	Payment-Only
N	211	32	25	34	56	34	30	93	118
Yes, a major reason, %	1.4	0.0	0.0	0.0	1.8	5.9	0.0	1.1	1.7
Yes, somewhat of a reason, %	5.2	3.1	8.0	0.0	3.6	8.8	10.0	6.5	4.2
Not a reason, %	93.4	96.9	92.0	100.0	94.6	85.3	90.0	92.5	94.1

**Table I-35**

**Did your facility experience any of the following as a challenge related to <Initiative>? *Lack of buy-in from residents and family members***

Responses	Overall	By ECCP (All Clinical + Payment and Payment-Only facilities)						By intervention group (All ECCP facilities)	
		AQAF (AL)	ATOP2 (CO/NV)	MOQI (MO)	NY-RAH (NY)	OPTIMISTIC (IN)	RAVEN (PA)	Clinical + Payment	Payment-Only
N	211	32	25	34	56	34	30	93	118
Yes, somewhat of a challenge, %	15.2	31.3	8.0	23.5	7.1	8.8	16.7	18.3	12.7
Not a challenge, %	84.8	68.8	92.0	76.5	92.9	91.2	83.3	81.7	87.3

**Table I-36**

**Did your facility experience any of the following as a challenge related to <Initiative>? *Lack of buy-in from nursing facility staff***

Responses	Overall	By ECCP (All Clinical + Payment and Payment-Only facilities)						By intervention group (All ECCP facilities)	
		AQAF (AL)	ATOP2 (CO/NV)	MOQI (MO)	NY-RAH (NY)	OPTIMISTIC (IN)	RAVEN (PA)	Clinical + Payment	Payment-Only
N	211	32	25	34	56	34	30	93	118
Yes, a major challenge, %	6.2	3.1	8.0	11.8	0.0	17.6	0.0	2.2	9.3
Yes, somewhat of a challenge, %	28.4	34.4	20.0	29.4	33.9	23.5	23.3	31.2	26.3
Not a challenge, %	65.4	62.5	72.0	58.8	66.1	58.8	76.7	66.7	64.4

**Table I-37****Did your facility experience any of the following as a challenge related to <Initiative>? *Lack of buy-in from practitioner***

Responses	Overall	By ECCP (All Clinical + Payment and Payment-Only facilities)						By intervention group (All ECCP facilities)	
		AQAF (AL)	ATOP2 (CO/NV)	MOQI (MO)	NY-RAH (NY)	OPTIMISTIC (IN)	RAVEN (PA)	Clinical + Payment	Payment-Only
<i>N</i>	211	32	25	34	56	34	30	93	118
Yes, a major challenge, %	6.2	6.3	0.0	14.7	3.6	5.9	6.7	2.2	9.3
Yes, somewhat of a challenge, %	37.9	34.4	32.0	35.3	46.4	38.2	33.3	40.9	35.6
Not a challenge, %	55.9	59.4	68.0	50.0	50.0	55.9	60.0	57.0	55.1

**Table I-38****Did your facility experience any of the following as a challenge related to <Initiative>? *Lack of resources (e.g., equipment, lab capabilities, or diagnostic testing response time)***

Responses	Overall	By ECCP (All Clinical + Payment and Payment-Only facilities)						By intervention group (All ECCP facilities)	
		AQAF (AL)	ATOP2 (CO/NV)	MOQI (MO)	NY-RAH (NY)	OPTIMISTIC (IN)	RAVEN (PA)	Clinical + Payment	Payment-Only
<i>N</i>	211	32	25	34	56	34	30	93	118
Yes, a major challenge, %	0.9	0.0	0.0	2.9	1.8	0.0	0.0	1.1	0.8
Yes, somewhat of a challenge, %	15.6	21.9	16.0	23.5	14.3	8.8	10.0	14.0	16.9
Not a challenge, %	83.4	78.1	84.0	73.5	83.9	91.2	90.0	84.9	82.2

**Table I-39**

**Did your facility experience any of the following as a challenge related to <Initiative>? *Not enough eligible residents***

Responses	Overall	By ECCP (All Clinical + Payment and Payment-Only facilities)						By intervention group (All ECCP facilities)	
		AQAF (AL)	ATOP2 (CO/NV)	MOQI (MO)	NY-RAH (NY)	OPTIMISTIC (IN)	RAVEN (PA)	Clinical + Payment	Payment-Only
<i>N</i>	211	32	25	34	56	34	30	93	118
Yes, a major challenge, %	4.7	3.1	4.0	8.8	5.4	5.9	0.0	4.3	5.1
Yes, somewhat of a challenge, %	18.0	21.9	12.0	14.7	21.4	20.6	13.3	18.3	17.8
Not a challenge, %	77.3	75.0	84.0	76.5	73.2	73.5	86.7	77.4	77.1

**Table I-40**

**Did your facility experience any of the following as a challenge related to <Initiative>? *Inadequacy of payments from the <Initiative> facility billing codes***

Responses	Overall	By ECCP (All Clinical + Payment and Payment-Only facilities)						By intervention group (All ECCP facilities)	
		AQAF (AL)	ATOP2 (CO/NV)	MOQI (MO)	NY-RAH (NY)	OPTIMISTIC (IN)	RAVEN (PA)	Clinical + Payment	Payment-Only
<i>N</i>	211	32	25	34	56	34	30	93	118
Yes, a major challenge, %	0.5	0.0	0.0	0.0	1.8	0.0	0.0	1.1	0.0
Yes, somewhat of a challenge, %	9.0	9.4	4.0	11.8	10.7	8.8	6.7	11.8	6.8
Not a challenge, %	90.5	90.6	96.0	88.2	87.5	91.2	93.3	87.1	93.2

**Table I-41**

**Did your facility experience any of the following as a challenge related to <Initiative>? *Turnover of nursing facility staff***

Responses	Overall	By ECCP (All Clinical + Payment and Payment-Only facilities)						By intervention group (All ECCP facilities)	
		AQAF (AL)	ATOP2 (CO/NV)	MOQI (MO)	NY-RAH (NY)	OPTIMISTIC (IN)	RAVEN (PA)	Clinical + Payment	Payment-Only
<i>N</i>	211	32	25	34	56	34	30	93	118
Yes, a major challenge, %	8.1	3.1	8.0	11.8	5.4	17.6	3.3	7.5	8.5
Yes, somewhat of a challenge, %	37.4	43.8	32.0	64.7	30.4	35.3	20.0	37.6	37.3
Not a challenge, %	54.5	53.1	60.0	23.5	64.3	47.1	76.7	54.8	54.2

**Table I-42**

**Did your facility experience any of the following as a challenge related to <Initiative>? *Turnover of nursing facility leadership***

Responses	Overall	By ECCP (All Clinical + Payment and Payment-Only facilities)						By intervention group (All ECCP facilities)	
		AQAF (AL)	ATOP2 (CO/NV)	MOQI (MO)	NY-RAH (NY)	OPTIMISTIC (IN)	RAVEN (PA)	Clinical + Payment	Payment-Only
<i>N</i>	211	32	25	34	56	34	30	93	118
Yes, a major challenge, %	8.1	0.0	16.0	11.8	5.4	14.7	3.3	5.4	10.2
Yes, somewhat of a challenge, %	18.5	28.1	8.0	23.5	16.1	17.6	16.7	16.1	20.3
Not a challenge, %	73.5	71.9	76.0	64.7	78.6	67.6	80.0	78.5	69.5

**Table I-43**

**Did your facility experience any of the following as a challenge related to <Initiative>? *Too much time needed for practitioners to travel to facility to conduct <Initiative> activities***

Responses	Overall	By ECCP (All Clinical + Payment and Payment-Only facilities)						By intervention group (All ECCP facilities)	
		AQAF (AL)	ATOP2 (CO/NV)	MOQI (MO)	NY-RAH (NY)	OPTIMISTIC (IN)	RAVEN (PA)	Clinical + Payment	Payment-Only
N	211	32	25	34	56	34	30	93	118
Yes, a major challenge, %	5.7	6.3	8.0	8.8	1.8	5.9	6.7	3.2	7.6
Yes, somewhat of a challenge, %	16.6	18.8	20.0	29.4	12.5	11.8	10.0	9.7	22.0
Not a challenge, %	77.7	75.0	72.0	61.8	85.7	82.4	83.3	87.1	70.3

**Table I-44**

**<Initiative> has reduced the number of potentially avoidable hospitalizations among eligible long-stay residents in my facility.**

Responses	Overall	By ECCP (All Clinical + Payment and Payment-Only facilities)						By intervention group (All ECCP facilities)	
		AQAF (AL)	ATOP2 (CO/NV)	MOQI (MO)	NY-RAH (NY)	OPTIMISTIC (IN)	RAVEN (PA)	Clinical + Payment	Payment-Only
N	211	32	25	34	56	34	30	93	118
Strongly Agree, %	45.0	50.0	28.0	38.2	46.4	50.0	53.3	58.1	34.7
Agree, %	47.9	40.6	56.0	55.9	51.8	41.2	40.0	38.7	55.1
Disagree, %	6.6	9.4	16.0	5.9	1.8	5.9	6.7	3.2	9.3
Strongly Disagree, %	0.5	0.0	0.0	0.0	0.0	2.9	0.0	0.0	0.8

## I.2 Practitioner Survey

**Table I-45**  
**What is your role at <FACILITY\_NAME>?**

Responses	Overall	By ECCP (All Clinical + Payment and Payment-Only facilities)						By intervention group (All ECCP facilities)	
		AQAF (AL)	ATOP2 (CO/NV)	MOQI (MO)	NY-RAH (NY)	OPTIMISTIC (IN)	RAVEN (PA)	Clinical + Payment	Payment-Only
<i>N</i>	241	41	24	29	75	27	45	122	119
Physician, %	62.2	58.5	45.8	62.1	74.7	51.9	60.0	59.8	64.7
Nurse Practitioner (NP), %	31.1	41.5	29.2	37.9	16.0	48.1	33.3	33.6	28.6
Physician Assistant (PA), %	5.8	0.0	20.8	0.0	8.0	0.0	6.7	6.6	5.0
Other, % (describe)	0.8	0.0	4.2	0.0	1.3	0.0	0.0	0.0	1.7

**Table I-46**  
**What is your role at <FACILITY\_NAME>? *Attending Physician***

Responses	Overall	By ECCP (All Clinical + Payment and Payment-Only facilities)						By intervention group (All ECCP facilities)	
		AQAF (AL)	ATOP2 (CO/NV)	MOQI (MO)	NY-RAH (NY)	OPTIMISTIC (IN)	RAVEN (PA)	Clinical + Payment	Payment-Only
<i>N*</i>	150	24	11	18	56	14	27	73	77
No, %	10.0	12.5	0.0	0.0	12.5	14.3	11.1	9.6	10.4
Yes, %	90.0	87.5	100.0	100.0	87.5	85.7	88.9	90.4	89.6

\* = Skip pattern. Respondents were physicians.



**Table I-47**  
**What is your role at <FACILITY\_NAME>? Medical Director**

Responses	Overall	By ECCP (All Clinical + Payment and Payment-Only facilities)						By intervention group (All ECCP facilities)	
		AQAF (AL)	ATOP2 (CO/NV)	MOQI (MO)	NY-RAH (NY)	OPTIMISTIC (IN)	RAVEN (PA)	Clinical + Payment	Payment-Only
N*	150	24	11	18	56	14	27	73	77
No, %	50.7	33.3	45.5	61.1	66.1	21.4	44.4	61.6	40.3
Yes, %	49.3	66.7	54.5	38.9	33.9	78.6	55.6	38.4	59.7

\* = Skip pattern. Respondents were physicians.

**Table I-48**  
**Do you/your medical group employ NPs or PAs who help you care for eligible long-stay residents at <FACILITY\_NAME>?**

Responses	Overall	By ECCP (All Clinical + Payment and Payment-Only facilities)						By intervention group (All ECCP facilities)	
		AQAF (AL)	ATOP2 (CO/NV)	MOQI (MO)	NY-RAH (NY)	OPTIMISTIC (IN)	RAVEN (PA)	Clinical + Payment	Payment-Only
N*	150	24	11	18	56	14	27	73	77
No, %	68.0	79.2	72.7	55.6	66.1	85.7	59.3	65.8	70.1
Yes, %	32.0	20.8	27.3	44.4	33.9	14.3	40.7	34.2	29.9

\* = Skip pattern. Respondents were physicians.

**Table I-49**  
**Which of the following best describes your primary employment status?**

Responses	Overall	By ECCP (All Clinical + Payment and Payment-Only facilities)						By intervention group (All ECCP facilities)	
		AQAF (AL)	ATOP2 (CO/NV)	MOQI (MO)	NY-RAH (NY)	OPTIMISTIC (IN)	RAVEN (PA)	Clinical + Payment	Payment-Only
<i>N</i>	240	41	24	29	75	26	45	122	118
I am salaried by <FACILTY_NAME> or their corporate chain, %	15.4	2.4	12.5	6.9	28.0	3.8	20.0	13.1	17.8
I function as an independent practitioner/part of a small medical group, %	52.5	75.6	62.5	37.9	53.3	30.8	46.7	56.6	48.3
I function as part of a large medical group (including a hospital system), %	28.8	17.1	16.7	55.2	16.0	65.4	28.9	27.9	29.7
Other, % (describe)	3.3	4.9	8.3	0.0	2.7	0.0	4.4	2.5	4.2

I-26

**Table I-50**  
**Typically, about how often are you at <FACILTY\_NAME> delivering direct patient care?**

Responses	Overall	By ECCP (All Clinical + Payment and Payment-Only facilities)						By intervention group (All ECCP facilities)	
		AQAF (AL)	ATOP2 (CO/NV)	MOQI (MO)	NY-RAH (NY)	OPTIMISTIC (IN)	RAVEN (PA)	Clinical + Payment	Payment-Only
<i>N</i>	240	41	24	29	75	26	45	122	118
Less than once per month, %	3.3	2.4	16.7	6.9	0.0	0.0	2.2	2.5	4.2
Once per month, %	5.8	14.6	0.0	3.4	0.0	3.8	13.3	6.6	5.1
2–3 times per month, %	12.1	24.4	12.5	41.4	1.3	3.8	4.4	10.7	13.6
1–2 times per week, %	28.3	24.4	37.5	37.9	30.7	11.5	26.7	27.0	29.7
3 or more times per week, %	50.4	34.1	33.3	10.3	68	80.8	53.3	53.3	47.5

**Table I-51**

**In a typical week, about how many hours are you delivering direct patient care at <FACILITY\_NAME>?**

Responses	Overall	By ECCP (All Clinical + Payment and Payment-Only facilities)						By intervention group (All ECCP facilities)	
		AQAF (AL)	ATOP2 (CO/NV)	MOQI (MO)	NY-RAH (NY)	OPTIMISTIC (IN)	RAVEN (PA)	Clinical + Payment	Payment-Only
N*	189	24	17	14	74	24	36	98	91
Mean	16.9	11.4	16.7	10.1	18.7	19.5	18.3	14.7	19.5
SD	13.6	8.1	15.4	8.6	15.0	11.6	14.1	11.8	14.9
Min	1	3	2	1	3	3	4	1	3
Max	70	35	50	30	70	50	50	70	50

\* = Skip pattern. Respondents were in facility at least once a week.

**Table I-52**

**This survey focuses on your experiences with [Initiative] at <FACILITY\_NAME> during the 2017 calendar year. Have you used the Initiative practitioner billing code?**

Responses	Overall	By ECCP (All Clinical + Payment and Payment-Only facilities)						By intervention group (All ECCP facilities)	
		AQAF (AL)	ATOP2 (CO/NV)	MOQI (MO)	NY-RAH (NY)	OPTIMISTIC (IN)	RAVEN (PA)	Clinical + Payment	Payment-Only
N	240	41	24	29	75	26	45	122	118
Yes, confirmation for any of the six qualifying conditions-only (billing code G9685), %	46.3	51.2	25.0	37.9	44.0	80.8	42.2	50.8	41.5
Yes, care coordination conferences for the Initiative-only (billing code G9686), %	1.3	2.4	0.0	0.0	1.3	0.0	2.2	0.0	2.5
Yes, both types of billing codes, %	15.4	14.6	0.0	3.4	25.3	3.8	22.2	10.7	20.3
No, neither type of billing code, %	34.2	26.8	70.8	55.2	26.7	15.4	31.1	38.5	29.7
Unsure, % (describe)	2.9	4.9	4.2	3.4	2.7	0.0	2.2	0.0	5.9

**Table I-53**

**Have you confirmed a diagnosis for any of the six qualifying conditions for a facility billing code (G9679–G9684), without submitting the corresponding practitioner billing code (G9685)?**

Responses	Overall	By ECCP (All Clinical + Payment and Payment-Only facilities)						By intervention group (All ECCP facilities)	
		AQAF (AL)	ATOP2 (CO/NV)	MOQI (MO)	NY-RAH (NY)	OPTIMISTIC (IN)	RAVEN (PA)	Clinical + Payment	Payment-Only
<i>N</i>	238	41	23	28	75	26	45	120	118
Yes, %	47.9	51.2	65.2	39.3	50.7	46.2	37.8	54.2	41.5
No, %	44.1	36.6	26.1	50.0	41.3	50.0	57.8	38.3	50.0
Unsure, % (describe)	8.0	12.2	8.7	10.7	8.0	3.8	4.4	7.5	8.5

**Table I-54**

**How do you receive payments for using the Initiative practitioner billing codes (G9685 or G9686)?**

Responses	Overall	By ECCP (All Clinical + Payment and Payment-Only facilities)						By intervention group (All ECCP facilities)	
		AQAF (AL)	ATOP2 (CO/NV)	MOQI (MO)	NY-RAH (NY)	OPTIMISTIC (IN)	RAVEN (PA)	Clinical + Payment	Payment-Only
<i>N*</i>	151	28	6	12	53	22	30	75	76
I am paid directly by Medicare for using Initiative billing codes, %	30.5	46.4	66.7	25.0	30.2	18.2	20.0	30.7	30.3
I indirectly receive payments for using Initiative billing codes, %	13.2	14.3	0.0	16.7	13.2	13.6	13.3	12.0	14.5
I do not receive payments for using Initiative billing codes, %	19.2	7.1	16.7	8.3	24.5	22.7	23.3	17.3	21.1
I am uncertain of how I get paid, %	37.1	32.1	16.7	50.0	32.1	45.5	43.3	40.0	34.2

\* = Skip pattern. Respondents were using billing codes.

**Table I-55**  
**How do you receive indirect payments for using Initiative billing codes?**

Responses	Overall	By ECCP (All Clinical + Payment and Payment-Only facilities)						By intervention group (All ECCP facilities)	
		AQAF (AL)	ATOP2 (CO/NV)	MOQI (MO)	NY-RAH (NY)	OPTIMISTIC (IN)	RAVEN (PA)	Clinical + Payment	Payment-Only
<i>N*</i>	20	4	0	2	7	3	4	9	11
I receive payments tied specifically to using Initiative billing codes, %	15.0	25.0	0.0	50.0	0.0	0.0	25.0	22.2	9.1
I receive payments for using Initiative billing codes because my compensation is tied to total billing, %	70.0	50.0	0.0	50.0	85.7	66.0	75.0	66.7	72.7
I receive payments in another way, % (describe)	15.0	25.0	0.0	0.0	13.3	33.3	0.0	11.1	18.2

\* = Skip pattern. Respondents indicated receiving indirect payments.

**Table I-56**  
**Why are you not paid for using Initiative billing codes?**

Responses	Overall	By ECCP (All Clinical + Payment and Payment-Only facilities)						By intervention group (All ECCP facilities)	
		AQAF (AL)	ATOP2 (CO/NV)	MOQI (MO)	NY-RAH (NY)	OPTIMISTIC (IN)	RAVEN (PA)	Clinical + Payment	Payment-Only
<i>N*</i>	29	2	1	1	13	5	7	13	16
Because I am salaried, %	93.1	100.0	100.0	0.0	92.3	100.0	100.0	92.3	93.8
Other, % (describe)	6.9	0.0	0.0	100.0	7.7	0.0	0.0	7.7	6.3

\* = Skip pattern. Respondents indicated not receiving payments.

**Table I-57****Did you receive education and training related to confirming a diagnosis for the six qualifying conditions for the Initiative?**

Responses	Overall	By ECCP (All Clinical + Payment and Payment-Only facilities)						By intervention group (All ECCP facilities)	
		AQAF (AL)	ATOP2 (CO/NV)	MOQI (MO)	NY-RAH (NY)	OPTIMISTIC (IN)	RAVEN (PA)	Clinical + Payment	Payment-Only
<i>N</i>	236	41	23	27	74	26	45	119	117
Yes, and this training was sufficient, %	63.1	53.7	30.4	48.1	77.0	80.8	64.4	62.2	64.1
Yes, but this training was not sufficient, %	14.4	19.5	4.3	11.1	13.5	15.4	17.8	16.0	12.8
No, I did not receive training, %	22.5	26.8	65.2	40.7	9.5	3.8	17.8	21.8	23.1

**Table I-58****How important is it that residents be treated on-site in the nursing facility whenever possible?**

Responses	Overall	By ECCP (All Clinical + Payment and Payment-Only facilities)						By intervention group (All ECCP facilities)	
		AQAF (AL)	ATOP2 (CO/NV)	MOQI (MO)	NY-RAH (NY)	OPTIMISTIC (IN)	RAVEN (PA)	Clinical + Payment	Payment-Only
<i>N</i>	236	41	23	27	74	26	45	119	117
Somewhat important, %	1.7	4.9	4.3	0.0	0.0	3.8	0.0	1.7	1.7
Moderately important, %	6.8	12.2	8.7	7.4	4.1	0.0	8.9	9.2	4.3
Very important, %	29.2	26.8	21.7	59.3	24.3	23.1	28.9	35.3	23.1
Extremely important, %	62.3	56.1	65.2	33.3	71.6	73.1	62.2	53.8	70.9

**Table I-59**  
**Overall, the clinical criteria for the six qualifying conditions for the Initiative are appropriate.**

Responses	Overall	By ECCP (All Clinical + Payment and Payment-Only facilities)						By intervention group (All ECCP facilities)	
		AQAF (AL)	ATOP2 (CO/NV)	MOQI (MO)	NY-RAH (NY)	OPTIMISTIC (IN)	RAVEN (PA)	Clinical + Payment	Payment-Only
<i>N</i>	233	41	21	27	74	26	44	119	114
Strongly Agree, %	46.4	48.8	38.1	37.0	40.5	61.5	54.5	39.5	53.5
Agree, %	49.8	48.8	47.6	59.3	54.1	38.5	45.5	58.8	40.4
Disagree, %	3.0	2.4	14.3	0.0	4.1	0.0	0.0	0.8	5.3
Strongly Disagree, %	0.9	0.0	0.0	3.7	1.4	0.0	0.0	0.8	0.9

**Table I-60**  
**I am notified in a timely manner of any qualifying resident's change in condition.**

Responses	Overall	By ECCP (All Clinical + Payment and Payment-Only facilities)						By intervention group (All ECCP facilities)	
		AQAF (AL)	ATOP2 (CO/NV)	MOQI (MO)	NY-RAH (NY)	OPTIMISTIC (IN)	RAVEN (PA)	Clinical + Payment	Payment-Only
<i>N</i>	234	41	22	27	74	26	44	119	115
Strongly Agree, %	37.2	36.6	50.0	25.9	39.2	42.3	31.8	31.1	43.5
Agree, %	49.6	46.3	36.4	55.6	54.1	34.6	56.8	53.8	45.2
Disagree, %	11.5	14.6	9.1	14.8	6.8	19.2	11.4	12.6	10.4
Strongly Disagree, %	1.7	2.4	4.5	3.7	0.0	3.8	0.0	2.5	0.9

**Table I-61**  
**<Initiative> has improved the quality/outcomes of resident care at <FACILITY\_NAME>.**

Responses	Overall	By ECCP (All Clinical + Payment and Payment-Only facilities)						By intervention group (All ECCP facilities)	
		AQAF (AL)	ATOP2 (CO/NV)	MOQI (MO)	NY-RAH (NY)	OPTIMISTIC (IN)	RAVEN (PA)	Clinical + Payment	Payment-Only
<i>N</i>	232	41	21	27	74	26	43	119	113
Strongly Agree, %	34.5	34.1	28.6	29.6	39.2	34.6	32.6	29.4	39.8
Agree, %	52.6	51.2	38.1	51.9	52.7	50.0	62.8	58.0	46.9
Disagree, %	11.6	12.2	33.3	14.8	8.1	11.5	4.7	10.9	12.4
Strongly Disagree, %	1.3	2.4	0.0	3.7	0.0	3.8	0.0	1.7	0.9

**Table I-62**  
**It makes financial sense for me personally to use the Initiative practitioner billing code for *confirmation* for any of the six qualifying conditions (G9685).**

Responses	Overall	By ECCP (All Clinical + Payment and Payment-Only facilities)						By intervention group (All ECCP facilities)	
		AQAF (AL)	ATOP2 (CO/NV)	MOQI (MO)	NY-RAH (NY)	OPTIMISTIC (IN)	RAVEN (PA)	Clinical + Payment	Payment-Only
<i>N</i>	232	41	21	27	73	26	44	118	114
Strongly Agree, %	38.4	46.3	38.1	22.2	39.7	42.3	36.4	28.0	49.1
Agree, %	47.4	43.9	33.3	51.9	56.2	34.6	47.7	52.5	42.1
Disagree, %	11.2	9.8	23.8	14.8	4.1	15.4	13.6	16.1	6.1
Strongly Disagree, %	3.0	0.0	4.8	11.1	0.0	7.7	2.3	3.4	2.6



**Table I-63**

**It makes financial sense for me personally to use the Initiative practitioner billing code for *care coordination* conferences for the Initiative (G9686).**

Responses	Overall	By ECCP (All Clinical + Payment and Payment-Only facilities)						By intervention group (All ECCP facilities)	
		AQAF (AL)	ATOP2 (CO/NV)	MOQI (MO)	NY-RAH (NY)	OPTIMISTIC (IN)	RAVEN (PA)	Clinical + Payment	Payment-Only
<i>N</i>	233	41	21	27	74	26	44	119	114
Strongly Agree, %	24.0	26.8	19.0	7.4	32.4	15.4	25.0	15.1	33.3
Agree, %	50.2	53.7	38.1	51.9	59.5	34.6	45.5	54.6	45.6
Disagree, %	21.5	17.1	38.1	29.6	8.1	34.6	27.3	23.5	19.3
Strongly Disagree, %	4.3	2.4	4.8	11.1	0.0	15.4	2.3	6.7	1.8

**Table I-64**

**Overall, it was easy to integrate the Initiative practitioner billing codes into my practice's existing processes.**

Responses	Overall	By ECCP (All Clinical + Payment and Payment-Only facilities)						By intervention group (All ECCP facilities)	
		AQAF (AL)	ATOP2 (CO/NV)	MOQI (MO)	NY-RAH (NY)	OPTIMISTIC (IN)	RAVEN (PA)	Clinical + Payment	Payment-Only
<i>N</i>	150	28	6	12	52	22	30	75	75
Strongly Agree, %	33.3	28.6	50.0	41.7	36.5	22.7	33.3	21.3	45.3
Agree, %	50.0	53.6	50.0	50.0	51.9	54.5	40.0	56.0	44.0
Disagree, %	16.0	17.9	0.0	8.3	9.6	22.7	26.7	21.3	10.7
Strongly Disagree, %	0.7	0.0	0.0	0.0	1.9	0.0	0.0	1.3	0.0

**Table I-65**

**I am confident that my billing staff/service are submitting my claims using the Initiative practitioner billing codes.**

Responses	Overall	By ECCP (All Clinical + Payment and Payment-Only facilities)						By intervention group (All ECCP facilities)	
		AQAF (AL)	ATOP2 (CO/NV)	MOQI (MO)	NY-RAH (NY)	OPTIMISTIC (IN)	RAVEN (PA)	Clinical + Payment	Payment-Only
<i>N</i>	150	28	6	12	52	22	30	75	75
Strongly Agree, %	34.0	35.7	66.7	33.3	30.8	36.4	30.0	28.0	40.0
Agree, %	51.3	53.6	33.3	25.0	65.4	50.0	40.0	50.7	52.0
Disagree, %	13.3	10.7	0.0	33.3	3.8	9.1	30.0	20.0	6.7
Strongly Disagree, %	1.3	0.0	0.0	8.3	0.0	4.5	0.0	1.3	1.3

**Table I-66**

**Payments from the Initiative practitioner billing codes are reimbursing me for care practices I was already performing.**

Responses	Overall	By ECCP (All Clinical + Payment and Payment-Only facilities)						By intervention group (All ECCP facilities)	
		AQAF (AL)	ATOP2 (CO/NV)	MOQI (MO)	NY-RAH (NY)	OPTIMISTIC (IN)	RAVEN (PA)	Clinical + Payment	Payment-Only
<i>N</i>	150	28	6	12	52	22	30	75	75
Strongly Agree, %	34.0	39.3	33.3	25.0	28.8	45.5	33.3	28.0	40.0
Agree, %	50.0	57.1	50.0	41.7	53.8	36.4	50.0	52.0	48.0
Disagree, %	14.7	3.6	16.7	33.3	17.3	9.1	16.7	17.3	12.0
Strongly Disagree, %	1.3	0.0	0.0	0.0	0.0	9.1	0.0	2.7	0.0

**Table I-67**

**I am confident that <FACILITY\_NAME> clinical staff are able to assess and treat residents on-site for the six qualifying conditions for the Initiative during the day shift.**

Responses	Overall	By ECCP (All Clinical + Payment and Payment-Only facilities)						By intervention group (All ECCP facilities)	
		AQAF (AL)	ATOP2 (CO/NV)	MOQI (MO)	NY-RAH (NY)	OPTIMISTIC (IN)	RAVEN (PA)	Clinical + Payment	Payment-Only
<i>N</i>	233	40	22	27	74	26	44	118	115
Strongly Agree, %	49.4	55.0	50.0	48.1	55.4	50.0	34.1	37.3	61.7
Agree, %	45.9	40.0	36.4	44.4	44.6	42.3	61.4	55.9	35.7
Disagree, %	4.3	5.0	13.6	7.4	0.0	7.7	2.3	5.9	2.6
Strongly Disagree, %	0.4	0.0	0.0	0.0	0.0	0.0	2.3	0.8	0.0

**Table I-68**

**I am confident that <FACILITY\_NAME> clinical staff are able to assess and treat residents on-site for the six qualifying conditions for the Initiative during evenings.**

Responses	Overall	By ECCP (All Clinical + Payment and Payment-Only facilities)						By intervention group (All ECCP facilities)	
		AQAF (AL)	ATOP2 (CO/NV)	MOQI (MO)	NY-RAH (NY)	OPTIMISTIC (IN)	RAVEN (PA)	Clinical + Payment	Payment-Only
<i>N</i>	233	40	22	27	74	26	44	118	115
Strongly Agree, %	30.5	30.0	22.7	18.5	41.9	23.1	27.3	19.5	41.7
Agree, %	54.5	62.5	59.1	51.9	50.0	57.7	52.3	57.6	51.3
Disagree, %	13.7	7.5	18.2	22.2	8.1	19.2	18.2	21.2	6.1
Strongly Disagree, %	1.3	0.0	0.0	7.4	0.0	0.0	2.3	1.7	0.9

**Table I-69**

**I am confident that <FACILITY\_NAME> clinical staff are able to assess and treat residents on-site for the six qualifying conditions for the Initiative during nights/weekends.**

Responses	Overall	By ECCP (All Clinical + Payment and Payment-Only facilities)						By intervention group (All ECCP facilities)	
		AQAF (AL)	ATOP2 (CO/NV)	MOQI (MO)	NY-RAH (NY)	OPTIMISTIC (IN)	RAVEN (PA)	Clinical + Payment	Payment-Only
<i>N</i>	233	40	22	27	74	26	44	118	115
Strongly Agree, %	27.9	30.0	22.7	11.1	37.8	19.2	27.3	17.8	38.3
Agree, %	52.4	60.0	54.5	55.6	48.6	61.5	43.2	55.9	48.7
Disagree, %	17.6	7.5	22.7	25.9	13.5	19.2	25	23.7	11.3
Strongly Disagree, %	2.1	2.5	0.0	7.4	0.0	0.0	4.5	2.5	1.7

**Table I-70**

**When <FACILITY\_NAME> clinical staff contact me by phone or in-person, they are able to communicate the key information I need to make important clinical decisions.**

Responses	Overall	By ECCP (All Clinical + Payment and Payment-Only facilities)						By intervention group (All ECCP facilities)	
		AQAF (AL)	ATOP2 (CO/NV)	MOQI (MO)	NY-RAH (NY)	OPTIMISTIC (IN)	RAVEN (PA)	Clinical + Payment	Payment-Only
<i>N</i>	233	40	22	27	74	26	44	118	115
Strongly Agree, %	33.5	35.0	36.4	25.9	43.2	19.2	27.3	19.5	47.8
Agree, %	58.8	62.5	54.5	63.0	54.1	73.1	54.5	71.2	46.1
Disagree, %	6.4	0.0	9.1	11.1	1.4	7.7	15.9	7.6	5.2
Strongly Disagree, %	1.3	2.5	0.0	0.0	1.4	0.0	2.3	1.7	0.9

**Table I-71**

**Did you experience any of the following as a challenge related to confirmation for any of the six qualifying conditions (billing code G9685)? *Completing the amount of clinical documentation required***

Responses	Overall	By ECCP (All Clinical + Payment and Payment-Only facilities)						By intervention group (All ECCP facilities)	
		AQAF (AL)	ATOP2 (CO/NV)	MOQI (MO)	NY-RAH (NY)	OPTIMISTIC (IN)	RAVEN (PA)	Clinical + Payment	Payment-Only
<i>N</i>	227	39	19	27	74	26	42	116	111
Yes, a major challenge, %	11.0	15.4	10.5	14.8	9.5	11.5	7.1	15.5	6.3
Yes, somewhat of a challenge, %	40.5	30.8	42.1	40.7	54.1	34.6	28.6	40.5	40.5
Not a challenge, %	48.5	53.8	47.4	44.4	36.5	53.8	64.3	44.0	53.2

**Table I-72**

**Did you experience any of the following as a challenge related to confirmation for any of the six qualifying conditions (billing code G9685)? *Confirming the diagnosis within the required time window***

Responses	Overall	By ECCP (All Clinical + Payment and Payment-Only facilities)						By intervention group (All ECCP facilities)	
		AQAF (AL)	ATOP2 (CO/NV)	MOQI (MO)	NY-RAH (NY)	OPTIMISTIC (IN)	RAVEN (PA)	Clinical + Payment	Payment-Only
<i>N</i>	227	39	19	27	74	26	42	116	111
Yes, a major challenge, %	6.2	2.6	10.5	11.1	6.8	0.0	7.1	9.5	2.7
Yes, somewhat of a challenge, %	46.3	61.5	52.6	44.4	44.6	38.5	38.1	45.7	46.8
Not a challenge, %	47.6	35.9	36.8	44.4	48.6	61.5	54.8	44.8	50.5

**Table I-73**

**Did you experience any of the following as a challenge related to *confirmation* for any of the six qualifying conditions (billing code G9685)? *Inadequacy of payment***

Responses	Overall	By ECCP (All Clinical + Payment and Payment-Only facilities)						By intervention group (All ECCP facilities)	
		AQAF (AL)	ATOP2 (CO/NV)	MOQI (MO)	NY-RAH (NY)	OPTIMISTIC (IN)	RAVEN (PA)	Clinical + Payment	Payment-Only
<i>N</i>	226	38	19	27	74	26	42	115	111
Yes, a major challenge, %	9.3	7.9	26.3	22.2	5.4	3.8	4.8	10.4	8.1
Yes, somewhat of a challenge, %	27.0	31.6	47.4	18.5	36.5	7.7	14.3	27.8	26.1
Not a challenge, %	63.7	60.5	26.3	59.3	58.1	88.5	81	61.7	65.8

**Table I-74**

**Did you experience any of the following as a challenge related to *care coordination* conferences for the Initiative (billing code G9686)? *Fulfilling specific requirements of the care coordination conferences***

Responses	Overall	By ECCP (All Clinical + Payment and Payment-Only facilities)						By intervention group (All ECCP facilities)	
		AQAF (AL)	ATOP2 (CO/NV)	MOQI (MO)	NY-RAH (NY)	OPTIMISTIC (IN)	RAVEN (PA)	Clinical + Payment	Payment-Only
<i>N</i>	225	38	19	27	73	26	42	115	110
Yes, a major challenge, %	18.7	15.8	26.3	14.8	13.7	19.2	28.6	16.5	20.9
Yes, somewhat of a challenge, %	39.6	34.2	52.6	44.4	43.8	30.8	33.3	41.7	37.3
Not a challenge, %	41.8	50.0	21.1	40.7	42.5	50.0	38.1	41.7	41.8

**Table I-75**

**Did you experience any of the following as a challenge related to *care coordination* conferences for the Initiative (billing code G9686)? *Inadequacy of payment***

Responses	Overall	By ECCP (All Clinical + Payment and Payment-Only facilities)						By intervention group (All ECCP facilities)	
		AQAF (AL)	ATOP2 (CO/NV)	MOQI (MO)	NY-RAH (NY)	OPTIMISTIC (IN)	RAVEN (PA)	Clinical + Payment	Payment-Only
<i>N</i>	225	38	19	27	73	26	42	115	110
Yes, a major challenge, %	14.2	7.9	21.1	25.9	9.6	19.2	14.3	17.4	10.9
Yes, somewhat of a challenge, %	27.1	26.3	47.4	25.9	32.9	11.5	19.0	27.8	26.4
Not a challenge, %	58.7	65.8	31.6	48.1	57.5	69.2	66.7	54.8	62.7

**Table I-76**

**Did you experience any of the following as a challenge related to <Initiative>? *Not enough eligible residents***

Responses	Overall	By ECCP (All Clinical + Payment and Payment-Only facilities)						By intervention group (All ECCP facilities)	
		AQAF (AL)	ATOP2 (CO/NV)	MOQI (MO)	NY-RAH (NY)	OPTIMISTIC (IN)	RAVEN (PA)	Clinical + Payment	Payment-Only
<i>N</i>	224	39	19	26	72	26	42	115	109
Yes, a major challenge, %	8.5	5.1	5.3	3.8	16.7	0.0	7.1	10.4	6.4
Yes, somewhat of a challenge, %	21.4	12.8	21.1	26.9	30.6	7.7	19.0	21.7	21.1
Not a challenge, %	70.1	82.1	73.7	69.2	52.8	92.3	73.8	67.8	72.5

**Table I-77**

**Did you experience any of the following as a challenge related to <Initiative>? *Time needed to travel to <FACILITY\_NAME>***

Responses	Overall	By ECCP (All Clinical + Payment and Payment-Only facilities)						By intervention group (All ECCP facilities)	
		AQAF (AL)	ATOP2 (CO/NV)	MOQI (MO)	NY-RAH (NY)	OPTIMISTIC (IN)	RAVEN (PA)	Clinical + Payment	Payment-Only
<i>N</i>	223	39	19	26	72	26	41	115	108
Yes, a major challenge, %	4.9	5.1	10.5	7.7	4.2	0.0	4.9	4.3	5.6
Yes, somewhat of a challenge, %	19.7	20.5	21.1	23.1	26.4	3.8	14.6	18.3	21.3
Not a challenge, %	75.3	74.4	68.4	69.2	69.4	96.2	80.5	77.4	73.1

**Table I-78**

**Did you experience any of the following as a challenge related to <Initiative>? *Medical/legal concerns about treating <ECCP> Initiative residents on site***

Responses	Overall	By ECCP (All Clinical + Payment and Payment-Only facilities)						By intervention group (All ECCP facilities)	
		AQAF (AL)	ATOP2 (CO/NV)	MOQI (MO)	NY-RAH (NY)	OPTIMISTIC (IN)	RAVEN (PA)	Clinical + Payment	Payment-Only
<i>N</i>	224	39	19	26	72	26	42	115	109
Yes, a major challenge, %	8.0	10.3	10.5	7.7	12.5	0.0	2.4	7.8	8.3
Yes, somewhat of a challenge, %	21.4	23.1	21.1	19.2	30.6	15.4	9.5	18.3	24.8
Not a challenge, %	70.5	66.7	68.4	73.1	56.9	84.6	88.1	73.9	67.0



**Table I-79**

**Did you experience any of the following as a challenge related to <Initiative>? *Hearing about other practitioners' reimbursement challenges with the <ECCP> Initiative practitioner billing codes***

Responses	Overall	By ECCP (All Clinical + Payment and Payment-Only facilities)						By intervention group (All ECCP facilities)	
		AQAF (AL)	ATOP2 (CO/NV)	MOQI (MO)	NY-RAH (NY)	OPTIMISTIC (IN)	RAVEN (PA)	Clinical + Payment	Payment-Only
N	223	38	19	26	72	26	42	114	109
Yes, a major challenge, %	8.5	5.3	15.8	11.5	11.1	3.8	4.8	6.1	11.0
Yes, somewhat of a challenge, %	22.4	21.1	36.8	11.5	33.3	3.8	16.7	23.7	21.1
Not a challenge, %	69.1	73.7	47.4	76.9	55.6	92.3	78.6	70.2	67.9

**Table I-80**

**You previously indicated that you had not used or were not sure if you had used the <ECCP> Initiative practitioner billing codes. Are any of the following statements a reason you did not bill? *I would not receive any payments from the <ECCP> Initiative practitioner billing codes***

Responses	Overall	By ECCP (All Clinical + Payment and Payment-Only facilities)						By intervention group (All ECCP facilities)	
		AQAF (AL)	ATOP2 (CO/NV)	MOQI (MO)	NY-RAH (NY)	OPTIMISTIC (IN)	RAVEN (PA)	Clinical + Payment	Payment-Only
N*	78	12	13	15	21	4	13	43	35
Yes, a major reason, %	12.8	0.0	15.4	13.3	23.8	0.0	7.7	9.3	17.1
Yes, somewhat of a reason, %	14.1	8.3	0.0	20.0	23.8	0.0	15.4	16.3	11.4
Not a reason, %	73.1	91.7	84.6	66.7	52.4	100.0	76.9	74.4	71.4

\* = Skip pattern. Respondents indicated they were not or were unsure if they were using billing codes.

**Table I-81**

**Are any of the following statements a reason you did not bill? *My billing staff/service would not use the <ECCP> Initiative practitioner billing codes***

Responses	Overall	By ECCP (All Clinical + Payment and Payment-Only facilities)						By intervention group (All ECCP facilities)	
		AQAF (AL)	ATOP2 (CO/NV)	MOQI (MO)	NY-RAH (NY)	OPTIMISTIC (IN)	RAVEN (PA)	Clinical + Payment	Payment-Only
<i>N</i>	78	12	13	15	21	4	13	43	35
Yes, a major reason, %	16.7	25.0	23.1	20.0	14.3	0.0	7.7	9.3	25.7
Yes, somewhat of a reason, %	16.7	0.0	15.4	26.7	19.0	25.0	15.4	23.3	8.6
Not a reason, %	66.7	75.0	61.5	53.3	66.7	75.0	76.9	67.4	65.7

\* = Skip pattern. Respondents indicated they were not or were unsure if they were using billing codes.

**Table I-82**

**Are any of the following statements a reason you did not bill? *My billing staff/service could not integrate the <ECCP> Initiative practitioner billing codes into our existing processes***

Responses	Overall	By ECCP (All Clinical + Payment and Payment-Only facilities)						By intervention group (All ECCP facilities)	
		AQAF (AL)	ATOP2 (CO/NV)	MOQI (MO)	NY-RAH (NY)	OPTIMISTIC (IN)	RAVEN (PA)	Clinical + Payment	Payment-Only
<i>N*</i>	78	12	13	15	21	4	13	43	35
Yes, a major reason, %	20.5	25.0	23.1	26.7	23.8	0.0	7.7	18.6	22.9
Yes, somewhat of a reason, %	14.1	0.0	15.4	20.0	14.3	25.0	15.4	20.9	5.7
Not a reason, %	65.4	75.0	61.5	53.3	61.9	75.0	76.9	60.5	71.4

\* = Skip pattern. Respondents indicated they were not or were unsure if they were using billing codes.

**Table I-83**

**Are any of the following statements a reason you did not bill? *My medical group would not endorse the use of the <ECCP> Initiative practitioner billing codes***

Responses	Overall	By ECCP (All Clinical + Payment and Payment-Only facilities)						By intervention group (All ECCP facilities)	
		AQAF (AL)	ATOP2 (CO/NV)	MOQI (MO)	NY-RAH (NY)	OPTIMISTIC (IN)	RAVEN (PA)	Clinical + Payment	Payment-Only
N*	25	5	2	8	2	3	5	8	17
Yes, a major reason, %	16.0	40.0	50.0	12.5	0.0	0.0	0.0	12.5	17.6
Yes, somewhat of a reason, %	8.0	0.0	0.0	25.0	0.0	0.0	0.0	25.0	0.0
Not a reason, %	76.0	60.0	50.0	62.5	100.0	100.0	100.0	62.5	82.4

\* = Skip pattern. Respondents indicated they were not or were unsure if they were using billing codes and were also part of a large medical group.

**Table I-84**

**<Initiative> has reduced the number of potentially avoidable hospitalizations among eligible long-stay residents in my facility.**

Responses	Overall	By ECCP (All Clinical + Payment and Payment-Only facilities)						By intervention group (All ECCP facilities)	
		AQAF (AL)	ATOP2 (CO/NV)	MOQI (MO)	NY-RAH (NY)	OPTIMISTIC (IN)	RAVEN (PA)	Clinical + Payment	Payment-Only
N	225	39	19	26	72	26	43	116	109
Strongly Agree, %	31.6	25.6	15.8	26.9	38.9	30.8	34.9	26.7	36.7
Agree, %	54.7	53.8	57.9	57.7	51.4	53.8	58.1	61.2	47.7
Disagree, %	12.9	17.9	21.1	15.4	9.7	15.4	7.0	11.2	14.7
Strongly Disagree, %	0.9	2.6	5.3	0.0	0.0	0.0	0.0	0.9	0.9

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**APPENDIX J**  
**ANALYSIS OF CLAIMS WITH NEW BILLING CODES**

We conducted a descriptive analysis of the new billing code data to help address several questions:

- How extensively did the participating nursing facilities and practitioners use the new billing codes?
- How much did the use of the new billing codes vary across the ECCPs?
- How much did the use of the new billing codes vary within each ECCP?
- How did use of the new billing codes differ between the Clinical + Payment facilities and the Payment-Only facilities?

In this appendix, we explain the technical details of how we conducted this analysis and present some additional results beyond those that appear in *Section 2* of the main report. The Healthcare Common Procedure Coding System (HCPCS) codes corresponding to the six qualifying conditions that we analyzed are listed in *Table J-1* below.

**Table J-1**  
**Listing of new billing codes for use in NFI 2**

HCPCS Code <sup>1</sup>	Service
G9679	On-site acute care treatment of a nursing facility resident with pneumonia
G9680	On-site acute care treatment of a nursing facility resident with congestive heart failure (CHF)
G9681	On-site acute care treatment of a nursing facility resident with chronic obstructive pulmonary disease (COPD)/asthma
G9682	On-site acute care treatment of a nursing facility resident with a skin infection
G9683	On-site acute care treatment of a nursing facility resident with fluid/electrolyte disorder or dehydration
G9684	On-site acute care treatment of a nursing facility resident with a urinary tract infection (UTI)
G9685	Practitioner payment for the confirmation and treatment of conditions on site at nursing facility
G9686	Practitioner payment for care coordination conference

NOTE: NFI = Nursing Facility Initiative; HCPCS = Healthcare Common Procedure Coding System.

<sup>1</sup> The first six codes are for facility use; the last two are for practitioners.

We identified practitioner visits for the confirmation and treatment of conditions and for care coordination conferences from claims in the carrier file (claim type code 71) with HCPCS codes G9685 and G9686, respectively. Each claim line with one of these codes corresponds to a single visit with a practitioner.

We identified nursing facility payments for providing acute care from claims in the outpatient file (claim type code 40, facility type code 2, service classification type code 2 or 3) with HCPCS codes G9679–G9684. Each claim line represents an acute care day—a day that acute care was provided in the nursing facility. Using these claim lines, we created episodes that

consist of consecutive days (each day corresponding to a claim line) with the same HCPCS code billed. Episodes can span multiple claims (claims consist of multiple claim lines).

In our analyses, we considered both acute care days and episodes, as well as practitioner visits. We focused on acute care days, episodes, and visits that we were able to attribute to individuals that met our study inclusion criteria<sup>24</sup> (see *Appendix K* for a description of these criteria), which took place fully within the individual's Initiative-eligible period (see *Appendix K*. Over 90% of episodes met these criteria.<sup>25</sup>

We calculated the rates of episodes, days, and visits, per 1,000 Initiative-eligible person-days.<sup>26</sup> We calculated rates separately for the Clinical + Payment group and Payment-Only group, for each ECCP, and for all ECCPs combined. For nursing facility payments, we calculated these rates for codes G9679–G9684 separately and for all of them combined. The major takeaways from these results are presented in *Section 2* of the main report. Complete results for use of nursing facility new billing codes are presented in *Table J-2* (Clinical + Payment) and *Table J-3* (Payment-Only) below. For related graphical representations, see *Figures 2-1* and *2-4*. Complete results for use of practitioner new billing codes are presented in *Table J-4* below, with related graphic *Figure 2-7*.

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<sup>24</sup> Examples of where the criteria were not met include instances where the resident could not be matched to the file of Initiative-eligible residents that we created from the MDS, because the resident did not meet the FFS requirement, or had not yet met the 101-day requirement before the first day that acute nursing facility treatment was billed (though they may have met it for a subsequent day), or was associated with a facility that was not included in the RTI quantitative evaluation as an intervention facility.

<sup>25</sup> For nursing facility payments for providing acute care, we began with 58,010 claim lines, which includes duplicates where the same person met the 101-day requirement for two different facilities. After eliminating claim lines for residents in non-participating facilities (these are typically but not always the duplicates referenced above) and for those who did not match to the file of Initiative-eligible residents that we created from the MDS, there were 55,600 claim lines that we used to create 8,443 episodes. After eliminating episodes that were not fully within the resident's Initiative-eligible exposure period, or where the resident did not meet the eligibility criteria (such as the FFS requirement), we were left with 8,175 episodes that were used in the analysis. For practitioner visits (G9685), we began with 4,883 claim lines and after applying similar exclusions as with nursing facility payments, had a total of 4,438 visits in the analysis.

<sup>26</sup> For each group, the numerator is the number of episodes (or days or visits) among all residents in the group. The denominator is the number of Initiative-eligible days among all eligible residents in the group divided by 1,000. It includes eligible days in October and/or November in states where the NFI 2 payment intervention did not begin until November 1 or December 1. Thus, the FY 2017 results may include 1-2 months without actual billing of new NFI 2 codes before the payment reform intervention took effect.

**Table J-2**  
**Clinical + Payment: Use of nursing facility billing codes, number of events reported per**  
**1,000 Initiative-eligible person-days, FY 2017**

Nursing facility billing codes (G9679–G9684)	All ECCPs (all states)	AQAF (AL)	ATOP2 (NV)	MOQI (MO)	NY-RAH (NY)	OPTIMISTIC (IN)	RAVEN (PA)
Number of residents meeting eligibility criteria	13,012	2,450	1,936	1,587	1,207	4,142	1,690
Mean exposure period (days)	246.73	256.39	233.93	254.65	244.85	234.53	271.20
<b>On-site acute treatment for any of the six qualifying conditions, combined (days)</b>	9.46	7.93	9.25	12.57	10.83	8.58	10.02
On-site acute treatment for each of the six qualifying conditions, separately							
Pneumonia (G9679)	2.50	2.45	2.81	3.58	2.31	2.03	2.41
CHF (G9680)	0.45	0.23	0.67	1.03	0.12	0.30	0.53
COPD/Asthma (G9681)	0.40	0.40	0.46	0.25	0.31	0.37	0.59
Skin infection (G9682)	2.48	1.49	1.94	3.17	4.05	2.65	2.40
Dehydration (G9683)	0.44	0.20	0.38	0.41	0.45	0.54	0.64
UTI (G9684)	3.19	3.16	2.99	4.13	3.60	2.68	3.45
<b>On-site acute treatment for any of the six qualifying conditions, combined (episodes)</b>	1.43	1.21	1.45	1.93	1.54	1.24	1.57
On-site acute treatment for each of the six qualifying conditions, separately							
Pneumonia (G9679)	0.37	0.36	0.43	0.54	0.31	0.29	0.37
CHF (G9680)	0.07	0.04	0.11	0.16	0.02	0.05	0.09
COPD/Asthma (G9681)	0.06	0.06	0.08	0.03	0.05	0.06	0.09
Skin infection (G9682)	0.34	0.21	0.30	0.46	0.51	0.35	0.35
Dehydration (G9683)	0.10	0.04	0.09	0.09	0.12	0.11	0.15
UTI (G9684)	0.48	0.51	0.44	0.65	0.53	0.38	0.53

CHF = congestive heart failure; COPD = chronic obstructive pulmonary disease; UTI = urinary tract infection.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 08; csaur\output\pah2\_ms08\_4).

NOTES: ATOP2 consists of a Clinical + Payment group in Nevada and Payment-Only group in Colorado.

Each individual resident contributes their count of events to the aggregated numerator and their count of Initiative-eligible days to the aggregated denominator.

**Table J-3**  
**Payment-Only: Use of nursing facility billing codes, number of events reported per**  
**1,000 Initiative-eligible person-days, FY 2017**

Nursing facility billing codes (G9679–G9684)	All ECCPs (all states)	AQAF (AL)	ATOP2 (CO)	MOQI (MO)	NY-RAH (NY)	OPTIMISTI C (IN)	RAVEN (PA)
Number of residents meeting eligibility criteria	14,413	1,938	2,268	2,058	1,745	4,564	1,840
Mean exposure period (days)	249.06	259.22	237.04	260.40	237.31	250.14	248.96
<b>On-site acute treatment for any of the six qualifying conditions, combined (days)</b>	6.53	5.20	7.70	6.09	5.97	6.78	7.01
<b>On-site acute treatment for each of the six qualifying conditions, separately</b>							
Pneumonia (G9679)	1.80	1.47	2.52	1.61	1.48	1.67	2.15
CHF (G9680)	0.44	0.24	0.85	0.37	0.30	0.41	0.42
COPD/asthma (G9681)	0.43	0.31	0.26	.40	0.50	0.50	0.52
Skin infection (G9682)	1.55	1.28	1.04	1.54	1.38	1.94	1.61
Dehydration (G9683)	0.19	0.11	0.21	0.11	0.14	0.29	0.15
UTI (G9684)	2.13	1.79	2.81	2.05	2.16	1.96	2.16
<b>On-site acute treatment for any of the six qualifying conditions, combined (episodes)</b>	1.00	.93	1.16	.93	.84	1.00	1.13
<b>On-site acute treatment for each of the six qualifying conditions, separately</b>							
Pneumonia (G9679)	0.27	0.26	0.37	0.23	0.21	0.24	0.35
CHF (G9680)	0.06	0.04	0.12	0.06	0.05	0.06	0.07
COPD/asthma (G9681)	0.06	0.04	0.04	0.06	0.07	0.07	0.09
Skin infection (G9682)	0.23	0.24	0.15	0.24	0.16	0.27	0.25
Dehydration (G9683)	0.05	0.03	0.05	0.02	0.03	0.07	0.03
UTI (G9684)	0.33	0.32	0.43	0.32	0.32	0.29	0.34

CHF = congestive heart failure; COPD = chronic obstructive pulmonary disease; UTI = urinary tract infection.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 08; csaur\output\pah2\_ms08\_4).

NOTES: ATOP2 consists of a Clinical + Payment group in Nevada and Payment-Only group in Colorado.

Each individual resident contributes their count of events to the aggregated numerator and their count of Initiative-eligible days to the aggregated denominator.



**Table J-4**  
**Use of practitioner billing codes: Number of events reported per 1,000 Initiative-eligible person-days, FY 2017**

Practitioner billing codes (G9685–G9686)	Practitioner services: confirmation and treatment of conditions (G9685)	Practitioner services: care coordination conference (G9686)
All ECCPs (6 states) - Clinical + Payment	0.70	0.01
All ECCPs (6 states) - Payment-Only	0.61	0.04
AQAF (Alabama) - Clinical + Payment	1.24	0.01
AQAF (Alabama) - Payment-Only	0.83	0.00
ATOP2 (Nevada) - Clinical + Payment	0.17	0.00
ATOP2 (Colorado) - Payment-Only	0.22	0.00
MOQI (Missouri) - Clinical + Payment	0.26	0.01
MOQI (Missouri) - Payment-Only	0.40	0.00
NY-RAH (New York) - Clinical + Payment	0.97	0.01
NY-RAH (New York) - Payment-Only	0.51	0.03
OPTIMISTIC (Indiana) - Clinical + Payment	0.63	0.00
OPTIMISTIC (Indiana) - Payment-Only	0.80	0.09
RAVEN (Pennsylvania) - Clinical + Payment	0.13	0.01
RAVEN (Pennsylvania) - Payment-Only	1.02	0.11

SOURCE: RTI analysis of Medicare claims data (RTI program MS 08; csaur\output\pah2\_ms08\_4).

NOTES: ATOP2 consists of a Clinical + Payment group in Nevada and Payment-Only group in Colorado.

Each individual resident contributes their count of events to the aggregated numerator and their count of Initiative-eligible days to the aggregated denominator.

In **Table J-5** (Clinical + Payment) and **Table J-6** (Payment-Only) below, we present results of a facility-level analysis for codes G9679–G9684 combined. Instead of calculating rates at the aggregate group level as we report in **Table J-3**, for **Tables J-4** and **J-5** we calculate rates at the facility level and present the distribution of these rates across facilities. This allows us to see to what extent the use of the new billing codes varies across facilities within the same states. In fact, there is substantial within-state variation. With all states combined, the facility-level rate of billing, for providing acute care for any of the qualifying conditions, is nearly four times greater at the 75th percentile than at the 25th percentile in the Clinical + Payment facilities (2.16 episodes per 1,000 Initiative-eligible days vs. 0.56 episodes per 1,000 Initiative-eligible days). It is more than six times greater (1.37 vs. 0.22) in the Payment-Only facilities.

**Table J-5**  
**Clinical + Payment: Facility-level distribution of total nursing facility acute care events (all six qualifying conditions combined) per 1,000 Initiative-eligible person-days**

Nursing facility billing codes (G9679-G9684 combined)	Number of Facilities	Mean	SD	Min	5th percentile	10th percentile	25th percentile	50th percentile	75th percentile	90th percentile	95th percentile	Max
<b>All ECCPs (6 states), days</b>	112	9.31	6.81	0.00	0.00	0.66	3.90	8.59	13.55	19.20	21.48	27.69
AQAF (Alabama)	23	7.31	7.15	0.00	0.00	0.00	0.00	7.11	11.16	19.20	20.44	22.58
ATOP2 (Nevada)	14	10.30	6.64	0.14	0.14	2.02	5.56	8.60	17.91	19.26	20.73	20.73
MOQI (Missouri)	16	12.26	6.42	2.16	2.16	2.44	8.58	12.48	16.21	20.76	25.89	25.89
NY-RAH (New York)	25	8.88	7.38	0.00	2.13	2.56	3.80	6.94	11.25	20.26	26.90	27.69
OPTIMISTIC (Indiana)	19	8.48	6.02	0.00	0.00	0.00	3.28	8.74	13.38	16.90	18.55	18.55
RAVEN (Pennsylvania)	15	10.05	6.52	1.48	1.48	2.92	5.69	8.97	13.53	21.48	24.70	24.70
<b>All ECCPs (6 states), episodes</b>	112	1.41	1.02	0.00	0.00	0.11	0.56	1.25	2.16	2.84	3.40	4.03
AQAF (Alabama)	23	1.13	1.11	0.00	0.00	0.00	0.00	1.02	1.78	2.71	3.42	3.43
ATOP2 (Nevada)	14	1.49	0.94	0.14	0.14	0.32	0.77	1.42	2.37	2.75	2.92	2.92
MOQI (Missouri)	16	1.90	0.99	0.32	0.32	0.49	1.34	1.94	2.47	3.21	4.03	4.03
NY-RAH (New York)	25	1.27	1.04	0.00	0.31	0.33	0.55	0.98	1.57	3.27	3.40	3.98
OPTIMISTIC (Indiana)	19	1.32	0.95	0.00	0.00	0.00	0.55	1.37	2.17	2.84	2.87	2.87
RAVEN (Pennsylvania)	15	1.56	0.92	0.23	0.23	0.51	0.91	1.29	2.21	3.00	3.53	3.53

SOURCE: RTI analysis of Medicare claims data (RTI program MS 08; csaur\output\pah2\_ms08\_4).

NOTES: ATOP2 consists of a Clinical + Payment group in Nevada and Payment-Only group in Colorado.

Each individual resident contributes their count of events to the aggregated numerator and their count of Initiative-eligible days to the aggregated denominator.

**Table J-6**  
**Payment-Only: Facility-level distribution of total nursing facility acute care events (all six qualifying conditions combined) per 1,000 Initiative-eligible person-days**

Nursing facility billing codes (G9679-G9684 combined)	Number of Facilities	Mean	SD	Min	5th percentile	10th percentile	25th percentile	50th percentile	75th percentile	90th percentile	95th percentile	Max
<b>All ECCPs (6 states), days</b>	148	6.59	7.25	0.00	0.00	0.00	1.32	4.53	9.65	15.17	19.49	53.61
AQAF (Alabama)	22	5.28	6.12	0	0	0.36	1.25	3.1	7.71	12.34	18.52	21.98
ATOP2 (Nevada)	24	4.86	5.97	0.00	0.00	0.00	0.00	2.38	9.71	14.67	15.98	18.43
MOQI (Missouri)	24	6.47	4.54	0.24	0.85	1.02	2.43	6.37	8.71	13.34	13.64	15.19
NY-RAH (New York)	33	7.54	6.15	0.00	0.00	0.53	3.45	6.04	10.41	15.17	19.10	27.12
OPTIMISTIC (Indiana)	25	7.97	12.15	0.00	0.00	0.00	0.22	2.74	10.17	22.00	27.63	53.61
RAVEN (Pennsylvania)	20	6.96	6.05	0.00	0.35	1.40	3.42	4.53	9.76	15.81	22.05	23.20
<b>All ECCPs (6 states), episodes</b>	148	1.01	1.08	0.00	0.00	0.00	0.22	0.75	1.37	2.25	3.21	7.69
AQAF (Alabama)	22	0.93	1.09	0.00	0.00	0.05	0.18	0.58	1.30	1.99	3.31	4.12
ATOP2 (Nevada)	24	0.68	0.84	0.00	0.00	0.00	0.00	0.33	1.24	1.85	2.25	2.83
MOQI (Missouri)	24	0.99	0.67	0.03	0.14	0.17	0.41	0.95	1.31	2.03	2.13	2.22
NY-RAH (New York)	33	1.11	0.90	0.00	0.00	0.08	0.47	0.95	1.46	2.36	2.72	3.82
OPTIMISTIC (Indiana)	25	1.20	1.78	0.00	0.00	0.00	0.16	0.43	1.54	3.45	4.05	7.69
RAVEN (Pennsylvania)	20	1.11	0.92	0.00	0.06	0.25	0.54	0.85	1.43	2.50	3.41	3.62

SOURCE: RTI analysis of Medicare claims data (RTI program MS 08; csaur\output\pah2\_ms08\_4).

NOTES: ATOP2 consists of a Clinical + Payment group in Nevada and Payment-Only group in Colorado.

Each individual resident contributes their count of events to the aggregated numerator and their count of Initiative-eligible days to the aggregated denominator.

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## APPENDIX K DATA AND METHODS FOR DIFFERENCE-IN-DIFFERENCES ANALYSES

### K.1 Introduction

In this second annual report we present results from multivariate regression models that enable us to estimate the Initiative effect. More specifically, we use difference-in-differences models, risk-adjusted for resident-level and facility-level characteristics, to calculate the effect of the payment component in the Clinical + Payment and Payment-Only interventions on participating nursing facility residents, relative to comparison group residents. The key resident-level outcomes evaluated include utilization of hospital-related Medicare-covered services and associated expenditures. This report covers a 4-year period from 2014 to 2017 (all years are Medicare fiscal years, from October 1 of the prior calendar year through September 30 of the named calendar year). Data for 2014–2016 are used as baseline years.

In this technical appendix, we first provide an overview of our quantitative approach to annual evaluation analyses (*Section K.2*) and a description of secondary data sources, which are necessary for defining both the Initiative-eligible population as well as the outcome measures (*Section K.3*). We then document our approach to identifying the population of Initiative-eligible nursing facility residents in each year who are included in the evaluation analyses (*Section K.4*) and detail our approach to selecting a comparison group (*Section K.5*). Subsequent sections describe how the outcome measures are operationalized annually (*Sections K.6* and *K.7*), the selection of covariates (i.e., independent or control variables) associated with the outcome measures (*Section K.8*), the specification of statistical models used to perform multivariate regression analyses and calculation of marginal effects (*Section K.9*), and some future planned refinements (*Section K.10*).

Descriptive statistics on the final set of model covariates, including percentages for categorical variables and means and standard deviations for continuous variables, are presented in *Appendix L*. Descriptive results on the outcome measures are presented in *Appendix M* (utilization, measured as percentage of individuals using a given type of service), *Appendix N* (utilization, measured as utilization rate per 1,000 Initiative-eligible person-days), and *Appendix O* (expenditures, by type of service, measured in dollars per Initiative-eligible resident-year). The key multivariate results are presented in *Section 4* of the main report and full multivariate results are presented in *Appendix P*.

### K.2 Analytic Approach to Annual Evaluation: Overview

Regression-based models were used to estimate the effects of the ECCP interventions (see *Section K.9*, for specifications). We used one general model form to provide the framework for the evaluation of all outcomes defined at the resident level. The model follows a difference-in-differences design with multiple annual observation periods before the intervention (2014–2016) and one post-intervention observation period (in future annual reports, we plan to report findings based on multiple post-intervention periods). The model includes indicator variables for a facility being in the intervention (either Payment-Only or Clinical + Payment) or comparison group for periods during the intervention and marks those same facilities during the pre-intervention years.

Several caveats should be noted on the quantitative analyses presented in the current report:

1. Only FFS Medicare enrollees who meet eligibility criteria for participation in the Initiative or those in the comparison group who would be eligible for the Initiative are included in the multivariate analyses (see **Section K.4** for detailed criteria and procedures used to identify Initiative-eligible residents). The majority are dually eligible for Medicare and Medicaid.
2. Relatedly, only Medicare utilization and expenditures are analyzed and reported in the multivariate analyses. Because the measures of interest are mainly reflected in Medicare claims, the limitation is not substantive. However, we will include analyses of Medicaid utilization and expenditures once the new versions of the T-MSIS Analytic Files (TAF) are available.
3. There are additional outcomes of interest for evaluation that are not included in this report. These include MDS-based quality measures and end-of-life related measures of patient experience. Analyses of these outcomes will be conducted and included in future reports.

### **K.3 Secondary Data Used in Quantitative Analyses**

Secondary data are data used to administer CMS programs; these data play a central role in this analysis. These data are used for identifying Initiative-eligible residents, selecting the comparison group, measuring the outcomes, and defining covariates for inclusion in multivariate analysis as risk-adjusters.

RTI obtained Medicare data (eligibility, enrollment, claims, and assessments) from the CMS Integrated Data Repository (IDR). We expect to obtain Medicaid data in the TAF form in the future. Resident assessment data come from the MDS 3.0. The following paragraphs briefly describe these files and additional data sources used in our analyses.

#### **K.3.1 Resident Assessment Data—Minimum Data Set 3.0**

RTI uses MDS 3.0 as the data source for identifying Initiative-eligible residents and Initiative-related exposure periods; defining the resident-level, MDS-based quality outcomes; and identifying some of the resident-level characteristics (used in comparison group selection and multivariate modeling) associated with these outcomes. We use a 6-week runout time for MDS data; that is, we request MDS data through about 6 weeks after the end of each observation period (fiscal year) so that almost all data for the observation period have been submitted.

Examining the MDS data stream for each resident allows the identification of the resident's time residing in or out of the facility. All Medicare- and Medicaid-certified nursing facilities are required to collect and submit MDS data to CMS for every resident in a certified bed (regardless of payment sources) on admission, quarterly, and annually, as well as upon a significant change in resident status, and to submit any significant corrections to prior comprehensive or quarterly assessments. In addition, facilities are required to submit

assessments when residents are discharged from the facility, regardless of plan for returning. The data collection and submission requirements are intended to encourage facilities to base a given resident's care planning on a comprehensive set of health and functional information. In addition, providers must complete and submit assessments for Medicare FFS beneficiaries who receive Medicare Part A–covered post-acute care. These assessments are completed at 5, 14, 30, 60, and 90 days of the Medicare Part A stay and upon readmission or return to the facility.

MDS items measure each resident's demographic characteristics, physical health (e.g., chronic diseases, infections, and skin conditions), mental health (e.g., mood and psychological status), and functional and cognitive status (e.g., activities of daily living [ADL] and cognitive performance) and give a multidimensional view of his/her health and functional status. MDS 3.0 has excellent to very good reliability, or reproducibility of measurement, when assessments by research nurses are compared to assessments by facility nurses (Saliba and Buchanan, 2008).

### **K.3.2 Medicare Claims and Eligibility**

RTI uses Medicare claims, through the CMS IDR system, as the data source for tracking outcomes on service utilization (e.g., hospitalizations, emergency department [ED] visits) and expenditures. With data updated on a weekly (or at least monthly) basis, the IDR provides timely and complete data that meet CMS's timeline for our reports. The IDR also provides up-to-date indicators for dual-eligible status, which we use to identify dual-eligible residents in our analyses, and for FFS status, which we use to exclude those who were enrolled in Medicare Advantage.

RTI creates Medicare utilization and expenditure measures per beneficiary in each observation period (fiscal year). We allow 3 months for claims runout from the end of the observation period. A longer runout period would allow more time for late submissions or adjustments; however, it would leave inadequate time for processing and analyzing those claims for our reports.

In addition to using Medicare data to track outcomes (utilization events and expenditures), we use Medicare data to capture resident-level health characteristics for use in multivariate modeling. For this purpose, we use Medicare Hierarchical Condition Categories (HCCs), which are updated by CMS annually and are derived from ICD-9-CM and ICD-10-CM codes on principal hospital inpatient, secondary hospital inpatient, hospital outpatient, physician, and clinically trained non-physician claims. HCCs are clinically meaningful groupings of ICD-9 or ICD-10 diagnosis codes maintained by CMS to risk adjust capitation payments to MA insurance plans. HCCs are binary variables: a given Medicare beneficiary is designated as having or not having a condition or diagnosis contained in a given HCC cluster. HCCs have been used to predict readmissions and mortality in the Medicare hospital quality models used for Hospital Compare. They are also used in the CMS readmissions models for SNFs, inpatient rehabilitation facilities (IRFs), and long-term care hospitals (LTCHs). CMS first implemented the RTI-designed HCC model for capitation in 2004.

### **K.3.3 Nursing Facility Data**

We use data from the CMS CASPER (Certification and Survey Provider Enhanced Reports) system, and Nursing Home Compare (NHC), to identify facility characteristics. These characteristics, including inspection survey-based measures of quality and staffing levels, are then used for selecting comparison groups. Selected characteristics are also included in multivariate analyses of individual-level outcomes.

CASPER (formerly known as OSCAR, or Online Survey Certification and Reporting) is a data system maintained by CMS in cooperation with the state long-term care survey agencies. CASPER includes a compilation of data collected by surveyors during the on-site inspection surveys conducted at nursing facilities for certification and continued participation in the Medicare and Medicaid programs. CASPER is the most comprehensive source of facility-level information on the operations, patient census, and regulatory compliance of nursing facilities.

Staffing data from CASPER are considered to be less than accurate, with the potential for gaming staffing schedules by facilities. There is an alternative source, the new Payroll-Based Journal (PBJ) system, which is designed to be more precise and to feed from payroll systems. PBJ staffing data were not used in the comparison group selection analysis because these data were unavailable or incomplete for the base period and for the first Initiative year. Depending on compatibility of data elements, we will compare information from these early PBJ files with data from CASPER as a first-level check of credibility and robustness; this can be the topic of a special study.

NHC, which is part of public reporting, provides quality of resident care and staffing information for more than 15,000 Medicare- and Medicaid-certified nursing facilities across the country. It includes a compilation of nursing facility inspection results, staffing levels, federal penalties, and quality ratings in specific areas of care. The star rating feature gives each facility a rating between one and five stars, from poor to excellent, based on health inspection, staffing, and quality of resident care measures. Each facility receives a star rating for each of the three domains along with an overall star rating. Data about staffing, penalties, nursing facility characteristics, and health deficiencies are reported from CMS's health inspection database. Some of these variables were used in the propensity score models for comparison group selection.

### **K.3.4 MDM Data**

Of interest to CMS is the potential for unrelated initiatives and interventions to mask or otherwise distort the estimated effects of this Initiative. RTI's survey of comparison facilities in NFI 1 indicated that a majority of responding facilities had introduced Initiative-analogous practices to reduce potentially avoidable hospitalizations among their long-stay residents. Another potential source of confounding is participation in other CMS initiatives and demonstration projects. To control for overlapping enrollment, RTI utilizes the MDM to identify enrollment in selected CMS initiatives in each year. The MDM, however, does not provide information on enrollment in all CMS initiatives that can alter utilization of health services. MDM enrollment information is often lagged due to designated periods during the year when demonstrations are able to enter beneficiary and provider information.



In our analysis, we control for enrollment in the following CMS demonstrations from information obtained from the MDM:

- Community Based Care Transition Program (CCTP),
- Comprehensive ESRD Care (CEC),
- Comprehensive Primary Care Initiative (CPCI),
- Comprehensive Primary Care Plus (CPC+), non-Shared Saving Program (SSP) Participants,
- Comprehensive Primary Care Plus (CPC+), SSP participants,
- Financial Alignment Initiative ,
- Multi-Payer Advanced Primary Care Practice (MAPCP),
- Next Generation Accountable Care Organization (NGACO),
- Pioneer Accountable Care Organization, and
- Medicare Shared Savings Program.

Due to the lack of information on other CMS demonstrations in the MDM including Bundled Payment Care Initiatives (BPCI) and SIM, we are unable to control for the potential impacts of these programs on NFI 2 in our models. While we account for enrollment in the above national demonstrations systematically through the MDM, we are unable to account for impacts of other changes to usual care that may take place at the state or facility level.

#### **K.4 Identification of Initiative-Eligible Residents and Initiative-Related Exposure Periods**

Here we describe how we identified Initiative-eligible residents using both facility-level and resident-level characteristics. At the individual level, the same eligibility criteria were applied to residents in Payment-Only facilities, Clinical + Payment facilities, and comparison facilities in each year. We selected the Initiative-eligible residents, and defined their Initiative-eligible exposure period, for each year (including the baseline years 2014–2016).

Please note that throughout this report, we use the terms “Initiative-eligible period,” “Initiative-eligible exposure period,” “Initiative-eligible days,” “Initiative-eligible person-days,” and “exposure period” interchangeably. All refer to the period of time during which the resident has satisfied the eligibility criteria. In some cases, it includes short periods of time when the individual is not in the nursing facility as described below.

Initially, there were 263 facilities in the Initiative—148 in the Payment-Only model and 115 facilities in the Clinical + Payment model. There were CMS-imposed requirements for the facilities to be able to participate in the Initiative, including that facilities could not be on the list of Special Focus Facilities (SFFs) and must be Medicare and Medicaid certified. For the newly recruited facilities that form the Payment-Only group, there were additional requirements

including that facilities must have an average daily census of 80 residents with greater than 40 percent of the facility residents defined as long-stay and enrolled in traditional FFS Medicare, have no survey deficiencies for immediate jeopardy to resident health or safety within the last 12 months, and have at least a three-star overall rating on NHC.

In general, based on an intent-to-treat approach, all facilities that participated in the Initiative were included in our quantitative evaluation even if they dropped out of the Initiative.<sup>27</sup> However, certain categories of facilities (and all their residents) were excluded.<sup>28</sup> These included veterans homes, because we do not have the ability to track utilization in the Veteran’s Administration system, and facilities that focus on HIV/AIDS patients, because the population is so different from the population in other facilities. For the difference-in-differences analyses presented in this report, 260 intervention facilities, including 148 facilities in the Payment-Only group, and 112 facilities in the Clinical + Payment group, were included.

Next, in *Table K-1*, we present the individual-level eligibility criteria for NFI 2 that were prescribed by CMS and then describe how we implemented these criteria in our secondary data analysis. *Table K-1* also compares these criteria with those applied to NFI 1: whether they were the same, different, or new to NFI 2.

**Table K-1**  
**Comparison of NFI 2 and NFI 1 resident eligibility criteria**

NFI 2 criteria	Comparison to NFI 1 criteria
<ul style="list-style-type: none"> <li>• <u>Not</u> enrolled in a Medicare managed care (Medicare Advantage) plan</li> </ul>	<ul style="list-style-type: none"> <li>• Same criteria</li> </ul>
<ul style="list-style-type: none"> <li>• Have resided in the long-term care (LTC) facility for 101 cumulative days or more starting from the resident’s date of admission to the LTC facility</li> </ul>	<ul style="list-style-type: none"> <li>• Different—in NFI 1 only, could also be eligible by not having an active discharge plan</li> </ul>
<ul style="list-style-type: none"> <li>• Enrolled in Medicare (Part A and Part B fee-for-service [FFS]) and Medicaid, or Medicare (Part A and Part B FFS) only</li> </ul>	<ul style="list-style-type: none"> <li>• Different—in NFI 1 only, also included Medicaid only and Medicare (Part A or Part B FFS)</li> </ul>
<ul style="list-style-type: none"> <li>• <u>Not</u> receiving Medicare through Railroad Retirement Board</li> </ul>	<ul style="list-style-type: none"> <li>• New—NFI 2 criterion only</li> </ul>
<ul style="list-style-type: none"> <li>• Have <u>not</u> elected Medicare Hospice</li> <li>• Days spent in hospice are <u>not</u> counted toward 101 cumulative days or more for eligibility (exception if patient discontinues hospice, can reaccumulate 101 days for eligibility)</li> </ul>	<ul style="list-style-type: none"> <li>• New—NFI 2 criteria only</li> </ul>

<sup>27</sup> Note that facilities that withdrew prior to September 30, 2017, were excluded from primary data collection activities even though they were included in the difference-in-differences analyses. Note also that there were some facilities that were in the Initiative in NFI 1 but did not continue in NFI 2, and these were excluded from all analyses. Finally, one of the facilities withdrew before the Initiative even began and was excluded from all analyses.

<sup>28</sup> Note that these facility-level exclusions were made for quantitative data analysis. These facilities were included for primary data collection activities.

To be eligible, residents must have Medicare Part A and Part B FFS status throughout their Initiative-related exposure periods during a reporting period (fiscal year, from October to September, for annual evaluation). We identified Initiative-eligible residents in Medicare enrollment data to determine their MA and FFS status. Residents in Medicaid managed care were included if they are also enrolled in FFS Medicare (Part A and Part B) and meet all other Initiative eligibility criteria.

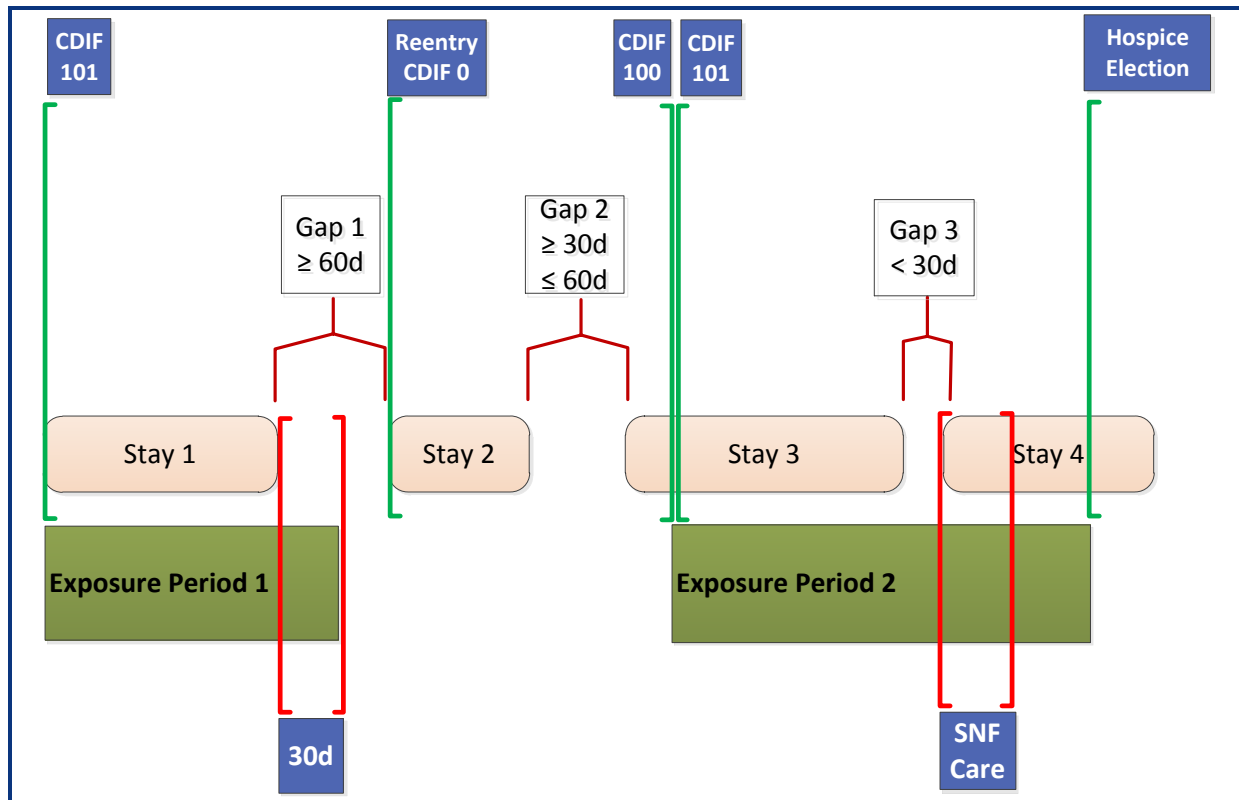
Residents were eligible for the Initiative only if they have resided in the nursing facility for 101 cumulative days or more starting from their date of admission to the facility. We used MDS assessments and Medicare enrollment and claims data to identify Initiative-eligible residents and Initiative-related exposure periods. This allows a uniform approach to determine the periods during which a resident would be eligible for the clinical and/or payment interventions, whether in a participating facility or in a comparison facility. The diagram in *Figure 3-1* shows a hypothetical resident's nursing facility use that can be depicted using the resident's MDS data stream. We use this hypothetical resident to illustrate the 101 days Initiative eligibility criteria. Elements of the diagram are defined below:

- A stay is a period between a resident's entry (either admission or re-entry) into a nursing facility and either a discharge (with or without anticipation of return) or death. During a stay, a resident is physically in the nursing facility.
- A gap is a period between two stays. During a gap, a resident is temporarily out of the nursing facility.

The exposure period starts on the 101st day and may span across stays and brief gaps (shorter than 30 days) between them. The resident's health care utilization, events, spending, and quality outcomes are measured for the evaluation only if they occur during the exposure periods. For a gap that is 30 days or longer and adjacent to a stay in the exposure period, the exposure period also contains the first 30 days in the gap (illustrated by Exposure Period 1 in *Figure K-1*). Thus, the inclusion of brief gaps and the first 30 days in longer gaps ensures that the hospitalizations or ED visits that trigger these gaps are captured in the evaluation analysis. A resident may have multiple Initiative-related nursing facility exposure periods if they have one or more gaps 30 days or longer.

Note that a gap of 60 days or longer breaks the continuity of the exposure period. If a former resident is readmitted 60 days or longer after discharge from a previous stay, the resident will not be eligible until an additional 101 days of residence are reached (i.e., the resident would become eligible again on the 101st cumulative day, as illustrated by Exposure Period 2 in *Figure K-1*).

**Figure K-1**  
**A hypothetical resident's nursing facility use and Initiative-related exposure periods**



CDIF=cumulative day in facility; SNF=skilled nursing facility.

NOTE: A stay is a period between a resident's entry (either admission or re-entry) into a facility and either a discharge (with or without anticipation of return) or death. During a stay, a resident is physically in the nursing facility. A gap is a period between two stays. During a gap, a resident is temporarily out of the nursing facility.

Finally, an eligible resident who elects the Medicare hospice benefit is no longer eligible for NFI 2. Thus, the Initiative-related exposure period ends with hospice enrollment (illustrated by Exposure Period 2 in **Figure K-1**). If the resident opts out of hospice status or is discharged alive from hospice, the hospice enrollment period is treated as a gap. In that case, the number of days spent under hospice care plays a key role in determining the re-eligibility of the resident for NFI 2.

- If the resident opts out of hospice within 60 days of enrollment, the time spent in hospice will be considered as a *short gap* and the resident will be eligible for NFI 2 from the day after the discharge from hospice.
- If the resident opts out after spending 60 days or longer under hospice care, the time spent under hospice care was considered as a *long gap* and the resident has to reaccumulate 101 days in the nursing facility to be eligible again for NFI 2.

A narrative of the hypothetical resident's nursing facility use and Initiative-related exposure periods illustrated in **Figure K-1** further clarifies our approach. It shows how exposure

periods are defined for a resident with different types of gaps in residency. With cumulative days in facility reaching 101, an exposure period starts (which overlaps with Stay 1). Stay 1 ends when the resident leaves the facility. The resident later returns to the facility, but because the gap is longer than 60 days, the gap will reset the cumulative day counter to zero. For our evaluation of the Initiative, we consider the exposure period includes Stay 1, plus the 30 days following, to capture any utilization related to the facility.

Upon return to the facility the cumulative day counter starts anew for Stay 2. The resident has not been in the facility for 101 cumulative days when there is another gap, of fewer than 60 days, which ends Stay 2. The day counter is frozen while the resident is absent fewer than 60 days and resumes when the resident returns for Stay 3. Because the reset counter has not reached 101 days, this period of absence is not part of an exposure period. During Stay 3 the counter reaches 101 cumulative days and a new period of eligibility for the Initiative starts, as does a second exposure period. Stay 3 ends when the resident again leaves the facility, for fewer than 30 days this time. The 30-day gap is included in Exposure Period 2, so we can capture hospitalizations or other utilization that may occur during this short gap. The resident returns for Stay 4, still in Exposure Period 2. This stay continues, but the exposure period is terminated when the resident elects Medicare hospice care while remaining a resident.

Two additional considerations are worth noting:

1. A resident may have Initiative-related exposure periods in more than one nursing facility; the Initiative-related exposure in each nursing facility was determined as previously mentioned. When a resident transfers from one nursing facility directly to another (i.e., both the end of the Initiative-related exposure period in the first facility and the start of the Initiative-related exposure period in the second facility fall on the day of transfer), we count utilization, events, and spending starting on the day of transfer against the first facility, because it is more likely to be responsible for these occurrences. This would include the entire cost of a hospital stay with an admission on that day.
2. By including stays and brief gaps, the exposure periods may contain SNF care episodes following hospitalizations that are covered under Medicare Part A (illustrated by the SNF care period in Exposure Period 2 in **Figure K-1**). Although nursing facilities are not eligible for the Initiative-related payment during these SNF episodes because they are already paid at the higher SNF rate (compared to the Medicaid or private pay nursing facility rate), practitioners participating in the Initiative are eligible for the higher Initiative-related payment and in some Clinical + Payment facilities, the resident would remain subject to the clinical interventions. Thus, there are Initiative-related incentives, albeit smaller than the rest of the exposure period, to reduce hospitalizations during these SNF episodes.

Identifying Initiative-eligible residents and their Initiative-related exposure periods was the first step to forming the analytic sample and preparing analytic files to support both comparison group selection and data analyses. We then extracted key covariates capturing demographics, functional status, diagnosis, and enrollment in other federal initiatives or demonstrations from the data sources described in **Section K.3**. The final analytic files included

initiative-eligible residents who were successfully linked with Medicare enrollment and claims data, MDM, and who had non-missing values for all the covariates.

## K.5 Identification of Comparison Groups

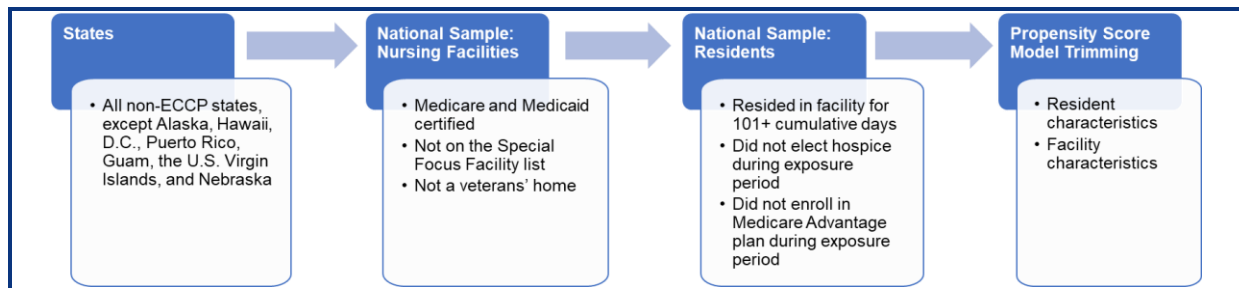
As described in *Section 3* in the main report, to address the spillover concerns, we created a uniform national comparison group for all ECCPs. The national comparison group was selected from the national sample of residents in non-ECCP states. In this section, we describe how the comparison group was constructed.

We first defined a base period for the evaluation. To identify the appropriate baseline years to include in the analysis, we examined trends over time for utilization and Medicare expenditures. Based on these trends, and in consultation with CMS, it was determined to use FY 2014–FY 2016 as the baseline years. These years reflect changes that occurred during NFI 1 for the Clinical + Payment group. This is discussed in much greater detail in *Section K.10*.

## K.6 National Comparison Group Selection

*Figure K-2* depicts our analytic approach to selecting comparison group residents, nationally. To construct a national comparison group, we first selected states from which the national sample frame was drawn. The national sample was selected from all non-ECCP states, with a few exceptions. Facilities and residents in Alaska, Hawaii, Washington, D.C., Puerto Rico, Guam, and the U.S. Virgin Islands were excluded from the national sample, because of differences in their patient populations compared to residents in facilities in the 48 contiguous states. We also excluded Nebraska from the national sample, because Nebraska had participated in NFI 1 and did not continue into NFI 2.

**Figure K-2**  
Analytic approach to selecting national comparison group residents



The national sample was drawn in each year for FY 2014–FY 2016 (three baseline years) and for FY 2017 (Initiative Year 1) for evaluation analyses in the current report. From all the states included in the national sample in each year, we then selected facilities using the following criteria:

- Medicare and Medicaid certified
- not an SFF, and

- not a veterans home.

After identifying all facilities meeting the inclusion criteria above, we next selected residents in those facilities who would meet the following criteria for inclusion in the national sample frame, consistent with the NFI 2 eligibility criteria for residents in participating facilities:

- resided in the nursing facility for 101 cumulative days or longer starting from the resident's date of admission to the nursing facility,
- did not receive benefits through Railway Retirement Board,
- enrolled in Medicare (Part A and Part B) FFS and Medicaid, or Medicare (Part A and Part B) FFS only,
- did not elect the Medicare hospice benefit, and
- did not enroll in a Medicare Advantage plan.

Residents meeting these criteria during each year comprise the national sample frame from which the final national comparison group of residents was constructed using propensity score models.

***National Comparison Group Construction—Propensity Score Models.*** In each year, we combined all eligible residents of the intervention group facilities (both Clinical + Payment and Payment-Only) into one single intervention group. For each of the pre-intervention years (FY 2014–FY 2016), we selected residents of the intervention group based on the intervention eligibility requirements (even though obviously the intervention had not begun at that time). Then, using a combined file that included all residents from the single intervention group and all residents from the national sample frame, separately for each year, we ran a propensity score model to predict the probability of a resident being in the intervention group as opposed to being in the national sample frame. From this model, propensity scores were computed for all intervention group residents and for all residents in the national sample frame.

We then selected a subset of residents from the national sample frame whose propensity scores fall within the range of propensity scores for residents in the intervention group. In other words, we used the propensity scores only to eliminate residents in the national sample frame whose propensity scores were not in the range of scores of those in the intervention group. This trimmed national sample frame for each year constitutes the single national comparison group for each year. Overall, 93.8 percent–95.7 percent of residents in the national sample for each year were kept in the trimmed national comparison groups. ***Table K-2*** shows the distribution of the propensity scores for all residents in the national sample, by year.

**Table K-2**  
**Distribution of propensity scores for the national sample**

Propensity score	2014		2015		2016		2017	
	N	%	N	%	N	%	N	%
Missing	32,032	4.1	32,052	4.2	30,562	4.2	42,173	5.9
Within range*	751,941	95.4	724,964	94.0	699,161	95.7	670,003	93.8
Below range*	4,253	0.5	13,912	1.8	705	0.1	1,793	0.3
Above range*	6	0.0	27	0.0	4	0.0	144	0.0
Total	788,232		770,955		730,432		714,113	

\* Range of propensity scores for residents in the combined intervention group.

SOURCE: RTI analysis of MDS 3.0 and CASPER data (RTI program: EV26).

Our use of propensity scores to trim outliers from a national comparison group of would-be eligible nursing facility residents, rather than to match specific individuals (or facilities), is different from the typical comparison group selection methods used in some other CMS evaluations. The principal approach used here to control for differences in residents in the intervention and comparison groups is the use of extensive risk adjustment in the modeling. We included an extensive list of resident characteristics (demographics and health characteristics measured by HCCs) as risk adjusters in all regression models of outcomes. We believe this approach is appropriate and serves our analytic purposes well. The “light-touch” approach to trimming cases with out-of-range propensity scores helped to identify and retain a large-sized national comparison group that ensures stable and robust parameter estimates from difference-in-differences regressions models for impact analysis.

Both resident- and facility-level characteristics were included in a logistic regression model to calculate the propensity score, which is the predicted probability of being in the intervention group. For the most part, the variables included in the propensity score models were the same as those included in the difference-in-differences analytical models. The main differences were that the analytical models included a few additional health conditions, and the propensity score model included additional facility-level variables, such as several of the facility’s rating variables from NHC<sup>29</sup>.

***Within-State Reference Groups.*** To capture possible changes in state policies and local market conditions, we created a within-state reference group (WSRG) to use in a sensitivity analysis. For each year, the WSRG includes all would-be eligible residents from all non-participating facilities within current ECCP states meeting the facility inclusion criteria (e.g.,

<sup>29</sup> The complete list of variables included in the difference-in-differences models, along with descriptive statistics, is in *Appendix L*. Propensity models did not include neurogenic bladder, obstructive uropathy, or ESRD post-transplant status. Difference-in-differences models did not include staffing rating, star rating, survey rating (all from Nursing Home Compare), or presence of an on-site clinical lab or x-ray. There were slight differences between the two models in how profit status and rurality were measured.



never an SFF, always Medicare and Medicaid certified). Facilities that were active participants at any point in NFI 1 but are no longer participating in NFI 2 were excluded from the WSRG.

## K.7 Defining Outcome Measures

The outcome measures we consider in this report fall into the following broad categories: service utilization<sup>30</sup> and Medicare expenditures. These include both resident-level outcome variables that are used in multivariate regression analyses and aggregated outcome variables used for descriptive analyses. Besides outcome measures defined in this section and included in this report, outcomes of interest also include MDS-based quality outcomes (such as antipsychotic medication use and pressure ulcers stage II or higher) and end-of-life care outcomes (such as mortality and site of death), which will be analyzed in future reports.

- Unless otherwise specified, measures are calculated per reporting period, which is a fiscal year.
- All measures are based on the portion of the reporting period during which the individual is Initiative eligible (Initiative-eligible exposure period<sup>31</sup>) so that events which occurred (or dollars that were spent) are only counted if they occurred during this period.
- We account for the length of the individual’s Initiative-eligible exposure period in several ways, with differences between the measures, as detailed below. Techniques include annualizing the outcome variable, incorporating exposure as a covariate in the regression modeling, and using weights in the regression modeling, as explained in *Section K.9*.
- Descriptive results, calculated at the aggregate level, are presented for the following groups of nursing facility residents (see *Appendices M–O*):
  - National comparison group residents
  - WSRG residents, all states combined
  - WSRG residents, each state separately
  - Payment-Only group residents, all ECCPs combined
  - Payment-Only group residents, each ECCP separately
  - Clinical + Payment group residents, all ECCPs combined
  - Clinical + Payment group residents, each ECCP separately

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<sup>30</sup> This includes hospitalizations, ED visits, and acute care transitions (which includes hospitalizations, ED visits, and observation stays).

<sup>31</sup> The Initiative-eligible exposure period could be the entire reporting period or some portion thereof.

### K.7.1 Medicare Utilization

As described in *Table K-3* below, we track the utilization of Medicare-covered services and report the following descriptive measures in each year:

- the percentage of residents who experienced an event during their Initiative-eligible exposure period.
- the rate of events (e.g., hospitalizations) per 1,000 Initiative-eligible person-days.

These measures are calculated at the aggregate level, for each of the groups of residents defined above. They are reported in tables of descriptive statistics (in *Appendices M* and *N*) that are not adjusted for resident characteristics.

For multivariate regression analyses, we define a series of individual resident-level utilization measures two ways, as either a probability or a count, as described in *Table K-3* below.

- For the probability model, a dichotomous (1/0) variable indicates whether a resident experienced an event over her/his Initiative-eligible period in each year.
- For the count model, we use the count of events during the resident’s Initiative-eligible period in each year.

Complete multivariate results are shown in *Appendix P*.

**Table K-3**  
**Utilization measures used for descriptive and multivariate analyses**

Outcome Measure	Specifications	Descriptive / Multivariate
Aggregate level: Percentage of residents who experienced an event <sup>1</sup>	Sum (residents who experienced the event) / Sum (all residents), per reporting period. Only events which occur during the Initiative-eligible exposure period are counted. This measure does not account for length of exposure period.	Descriptive
Aggregate level: Rate of events <sup>1</sup> per 1,000 person-days	Sum (events)*1,000 / Sum (Initiative-eligible person-days), per reporting period. Only events which occur during the Initiative-eligible exposure period are counted. Each individual resident contributes their count of events to the aggregated numerator and their count of Initiative-eligible days to the aggregated denominator.	Descriptive
Individual level: whether an event <sup>1</sup> occurred	Dichotomous (1/0) variable indicating whether a resident experienced an event during their Initiative-eligible exposure period.	Multivariate <sup>2</sup>
Individual level: count of events <sup>1</sup>	Number of events experienced by the individual during reporting period. Only events which occur during the Initiative-eligible exposure period are counted.	Multivariate <sup>2</sup>

<sup>1</sup> Includes each of the types of hospital-related events (hospitalizations, ED visits, observation stays, and any of these acute care transitions), whether all-cause, potentially avoidable, potentially avoidable due to any of the six qualifying conditions, or potentially avoidable due to each of the six qualifying conditions separately.

<sup>2</sup> Potentially avoidable utilization due to each of the six qualifying conditions separately are not included in multivariate analyses because of the relatively low frequency of events related to each individual condition.

The utilization measures of Medicare-covered services referred to above include hospitalizations, ED visits, observation stays, and any of these acute care transitions, all defined using Medicare claims. These hospital-related events are described further in *Table K-4*.

**Table K-4**  
**Identifying types of hospital-related outcome events in claims**

Outcome	Specifications	Data source
Hospitalizations	Hospitalizations are identified based on FFS inpatient bills.	Medicare inpatient claims
ED visits	Includes ED visits that did not result in inpatient admission identified from institutional outpatient claims, as Revenue Center Code (RCC) = 045X or 0981 or CPT code = 99281–99285.	Medicare hospital outpatient (institutional) claims
Acute care transitions	Includes hospitalizations, ED visits, or observation stays. Hospitalizations and ED visits identified as above. Observation stays are identified in the outpatient claims as RCC = 0760 or 0762 and HCPCS = G0378 or G0379. In general, outpatient visits that result in inpatient admissions are billed only as inpatient claims so there will be no double counting. We count just once those claims that would be considered both ED visits and observation stays. Note that because of the unique billing practices of critical access hospitals (CAH), there could be some double counting of events in CAH. This occurrence is rare.	Medicare inpatient claims; Medicare hospital outpatient (institutional) claims

For the hospital-related events just described, we examine all-cause events, potentially avoidable events, potentially avoidable events due to any of the six qualifying conditions, and potentially avoidable events due to each of the six qualifying conditions separately, described in further detail in *Table K-5*. Note that events due to each of the six conditions separately are not included in multivariate analysis—only descriptive results are presented. The classification of these events as all-cause, potentially avoidable, etc., is determined by the diagnoses on the hospital claim, in most cases the principal diagnosis. We provide additional details on identifying potentially avoidable events and potentially avoidable events due to the six conditions in *Section K.7* of this appendix.

**Table K-5**  
**Types of hospital-related utilization events**

Outcome	Specifications
All-cause event <sup>1</sup>	Event is counted regardless of primary discharge diagnosis.
Potentially avoidable event <sup>1</sup>	We started from the definition of potentially avoidable hospitalization diagnoses as developed by Walsh et al. (2010; 2012) in their study of high-cost dually eligible populations. <sup>2</sup> The list was converted from ICD-9 to ICD-10 for use with data beginning Oct 1, 2015, and refinements were made because of the increased specificity of ICD-10. Events were considered as potentially avoidable if the primary discharge diagnosis had any of the ICD-9/ICD-10 codes considered potentially avoidable or if the event had one of a group of specified combinations of primary and secondary ICD-10 diagnoses (the list of primary diagnoses and combinations is lengthy and is available upon request).

(continued)

**Table K-5 (continued)**  
**Types of hospital-related utilization events**

Outcome	Specifications
Potentially avoidable event <sup>1</sup> due to <b>any</b> of the six qualifying conditions as a group	An event is considered attributable to any of the six qualifying conditions if its primary discharge diagnosis had any of the ICD-9/ICD-10 codes deemed to be associated with these conditions, or if the event had one of a group of specified ICD-10 combinations of primary and secondary diagnoses, which indicate these six qualifying conditions (list available upon request).
Potentially avoidable event <sup>1</sup> due to <b>each</b> of the six qualifying conditions <sup>3</sup>	An event is considered attributable to one of the six qualifying conditions if its primary discharge diagnosis had any of the ICD-9/ICD-10 codes associated with this condition, or if the event had one of a group of specified ICD-10 combinations of primary and secondary diagnoses, which indicate this condition (list available upon request). Note that this measure is calculated separately for each condition.

<sup>1</sup> Applies to hospitalizations, ED visits, observation stays, or any of these acute care transitions.

<sup>2</sup> Walsh et al. (2010, 2012).

<sup>3</sup> Events due to each of the six qualifying conditions separately are not included in multivariate analyses.

### **K.7.2 Medicare Expenditures**

Expenditures are reported both as a total and for select service categories. Total expenditure is the sum of Medicare paid amounts including the following types of Medicare claims: inpatient, outpatient (institutional), SNF, hospice, home health, durable medical equipment, carrier file services (e.g., professional, lab) and total payments for Part D drugs. For reporting expenditures for specific categories, we closely mirrored the categories we used for utilization measures, described above. We annualized the measures used for multivariate analyses based on the length of each resident’s Initiative-eligible exposure period (weights related to exposure time were also applied as was the case with the multivariate analyses for utilization measures as well). All expenditures are counted only if the service dates on the claim fall within a resident’s Initiative-eligible exposure period.

Measures are calculated per beneficiary per year. We calculated measures at the aggregate level to display descriptive results, and at the individual level for use in multivariate models, as we describe in *Table K-6*.

**Table K-6**  
**Expenditure measures used for descriptive and multivariate analyses**

Outcome Measure	Specifications	Descriptive / Multivariate
Aggregate level: Total Medicare expenditures per resident-year	Sum (Medicare-paid dollar amount for all covered services) * 365 / Sum (Initiative-eligible days), per reporting period. The numerator counts Medicare payments for all services included in the following types of Medicare claims: inpatient, outpatient (institutional), SNF, hospice, home health, durable medical equipment (DME), Carrier file, and Part D drugs. Only payments that are incurred during the Initiative-eligible exposure period are counted. Each individual resident contributes their count of dollars to the aggregated numerator and their count of Initiative-eligible days to the aggregated denominator.	Descriptive
Aggregate level: Medicare expenditures per resident-year for a specific expenditure category <sup>1</sup>	Sum (Medicare-paid dollar amount for a specific category of service) * 365 / Sum (Initiative-eligible days), per reporting period. Only payments that are incurred during the Initiative-eligible exposure period are counted. Each individual resident contributes their count of dollars to the aggregated numerator and their count of Initiative-eligible days to the aggregated denominator.	Descriptive
Individual level: Total Medicare expenditures per resident-year	(Medicare-paid dollar amount for all covered services * 365) / Count (Initiative-eligible days <sup>2</sup> ), per reporting period. Medicare payments for all services included in the following types of Medicare claims: inpatient, outpatient (institutional), SNF, hospice, home health, DME, Carrier file, and Part D drugs. Only payments that are incurred during the Initiative-eligible exposure period are counted.	Multivariate <sup>3</sup>
Individual level: Medicare expenditures per resident-year for a specific expenditure category <sup>1</sup>	(Medicare-paid dollar amount for a specific category of service) * 365 / Count (Initiative-eligible days <sup>2</sup> ), per reporting period. Only payments that are incurred during the Initiative-eligible exposure period are counted.	Multivariate <sup>3</sup>

<sup>1</sup> Includes each of the types of hospital-related events (hospitalizations, ED visits, observation stays, and any of these acute care transitions), whether all-cause, potentially avoidable, potentially avoidable due to any of the six qualifying conditions, or potentially avoidable due to each of the six qualifying conditions separately.

<sup>2</sup> If the count of Initiative-eligible days was < 30, the denominator was equal to 30.

<sup>3</sup> Events due to each of the six qualifying conditions separately are not included in multivariate analyses.

### **K.8 Definition of Potentially Avoidable Hospitalizations and Identification of Six Qualifying Conditions**

Our starting point for defining potentially avoidable hospitalization (same applies to defining potentially avoidable ED visits and potentially avoidable acute care transitions) was the list of potentially avoidable hospitalization conditions and corresponding ICD-9-CM diagnosis codes developed by Walsh et al. (2010, 2012) in their study of high-cost Medicare-Medicaid dually eligible populations. We have updated this initial list to reflect subsequent updates to the code system and ongoing evaluation of codes clinically appropriate for inclusion in the list. Also, as previously explained, under NFI 2, the payment incentives are specifically targeted for the in-house treatment of acute changes in six qualifying conditions that are a subset of conditions deemed potentially avoidable for hospital admissions. We thus developed a shorter list of ICD-9-

CM codes, a subset of the original list for all potentially avoidable conditions, to capture hospitalizations for the six qualifying conditions.

### **K.8.1 Sets of Potentially Avoidable Hospitalizations (ICD-9-CM and ICD-10-CM)**

Initial lists of potentially avoidable hospitalization conditions have undergone a series of revisions since the beginning of NFI 1. The transition to ICD-10-CM diagnosis codes effective October 1, 2015, necessitated mapping previously identified ICD-9-CM codes for potentially avoidable hospitalization conditions to the new code system. One-to-many relationships were identified by mapping ICD-9-CM codes to ICD-10-CM codes, as well as by mapping ICD-10-CM codes to ICD-9-CM codes.

An updated list of ICD-9-CM codes reflecting potentially avoidable hospitalizations was created in spring 2018 to capture additional ICD-9-CM codes identified in

- ICD-9-CM code files, updated for FY 2014, available on the CMS website;
- one-to-many relationships of ICD-10-CM codes to ICD-9-CM (e.g., the ICD-10 code for Essential (primary) hypertension (I10) maps to ICD-9 codes for Malignant essential hypertension (401.0) and Benign essential hypertension [401.1]); and
- ongoing evaluation for codes clinically appropriate for inclusion in the potentially avoidable hospitalization list (e.g., addition to the list of ICD-9-CM code for Methicillin-susceptible *Staphylococcus aureus* in conditions classified elsewhere and of unspecified site [041.11]). RTI clinicians, including physician Dr. Christopher Beadles, provided clinical input and decisional support on appropriateness of codes.

Listings of ICD-10-CM codes for potentially avoidable hospitalizations were created/updated in spring 2018 to reflect the following:

- Mapping of ICD-9-CM potentially avoidable hospitalization codes to ICD-10-CM code files for FY 2016. Files are available on the CMS website.
- Mapping of ICD-9-CM potentially avoidable hospitalization codes to ICD-10-CM annual update code files for FY 2017. Files are available on the CMS website. The mapping captures codes added, deleted, and modified in FY 2017 ICD-10-CM code files, as well as the clinical appropriateness of including such changes in the list of potentially avoidable hospitalization conditions.
- One-to-many relationships of ICD-9-CM codes to ICD-10-CM (e.g., the ICD-9-CM code for Closed fracture of acetabulum (808.0) maps to 54 unique ICD-10-CM codes that describe closed fractures of the acetabulum in terms such as anatomy of the acetabulum, displaced/non-displaced, and laterality).
- Ongoing evaluation for codes clinically appropriate for inclusion in the potentially avoidable hospitalization conditions list (e.g., addition to the list of ICD-10-CM code for Periorbital cellulitis [L03.213]). RTI clinicians, including physician

Dr. Beadles, provided clinical input and decisional support on appropriateness of codes. All clinical concepts identified as additional potentially avoidable hospitalization conditions were incorporated into ICD-10-CM lists for FY 2016 and FY 2017 as well as the ICD-9-CM lists.

Several overarching considerations have been applied across the ICD-9-CM and ICD-10-CM lists of potentially avoidable hospitalization conditions, including the following:

- Only valid ICD-9-CM and ICD-10-CM code numbers are included on the lists. Header codes are not included.
- ICD-10-CM “subsequent encounter” and “sequela” codes have been determined to be inappropriate for the lists. ICD-9-CM “late effect” codes were in the original list of potentially avoidable hospitalization conditions developed by Walsh et al. (2010, 2012). Because there is no specified lookback period for late effect (sequela) codes, these are not good indicators of the recency of the incident conditions and they do not specify the nature of the sequela. Based on clinical review and consultant recommendations, we did not include ICD-10-CM “subsequent encounter” or “sequela” codes for any conditions (including those that are mapped to ICD-9-CM “late effect” codes). We did include any ICD-10-CM “initial encounter” codes related to conditions for which an ICD-9-CM “late effect” was originally listed.
- Certain conditions requiring more than one ICD-9 or ICD-10 code have special treatment. Coding manuals provide instructions such as “code first” and “code also.” In addition, RTI clinical experts have advised that certain combinations of codes are indicative of potentially avoidable hospitalization conditions (e.g., non-chronic pressure ulcer code in combination with cellulitis code). Examples include:
  - For certain codes related to fractures that are identified as the principal diagnosis in the ICD-9-CM list of potentially avoidable conditions, the ICD-10-CM instructions for the parallel codes are to *code first* any spinal cord injury—including injury of nerves and spinal cord at neck level or at thorax level, and injury of lumbar and sacral spinal cord and nerves at abdomen, lower back, or pelvis level—if it occurred. To properly identify these codes, it is necessary to detect the spinal cord lesion in the principal diagnosis (e.g., S14.XXXX, S24.XXXX, S34.XXXX) *and* detect one of the fracture codes in the secondary diagnosis (e.g., S12.XXXX, S22.XXXX, S32.XXXX). We added such combinations of codes to our updated ICD-10-CM list of potentially avoidable hospitalization conditions. The fractures may also occur as a principal diagnosis if there is no spinal cord lesion.
  - Certain electrolyte disorder codes reflect dehydration if they appear in combination with codes indicating volume depletion. To identify these codes, it is necessary to detect the electrolyte disorder in the principal diagnosis (e.g., E87.X) *and* detect one of the codes for volume depletion in secondary diagnosis (e.g., E86.X). We added such combinations of codes to our updated ICD-10-CM list of

potentially avoidable hospitalization conditions. The volume depletion may also occur as a principal diagnosis.

The finalized set of **ICD-9-CM** codes for potentially avoidable hospitalization conditions, applicable for claims services during FY 2013, FY 2014, and FY 2015, contains a total of 1,930 standalone principal diagnosis codes. An additional 29 principal diagnosis codes, each to be identified in conjunction with one appropriate secondary diagnosis code, are also included in the set. The full list of these ICD-9-CM codes can be provided upon request (not included in this report for reasons of space).

The finalized set of **FY 2016 ICD-10-CM** codes for potentially avoidable hospitalization conditions—with codes updated through September 2016—contains a total of 11,408 standalone principal diagnosis codes and 104 additional principal diagnosis codes each to be identified in conjunction with one appropriate secondary diagnosis code. The full list of these FY 2016 ICD-10-CM codes can be provided upon request (not included in this report for reasons of space).

The finalized set of **FY 2017 ICD-10-CM** codes for potentially avoidable hospitalization conditions—with codes updated through September 2017—contains a total of 11,584 standalone principal diagnosis codes and 104 additional principal diagnosis codes each to be identified in conjunction with one appropriate secondary diagnosis code. The full list of these FY 2017 ICD-10-CM codes can be provided upon request (not included in this report for reasons of space).

Because of the transition from ICD-9-CM to ICD-10-CM, there could be a potential issue with comparability of the codes for potentially avoidable conditions between the two coding systems. We exercised diligence in the mapping process, including clinicians, to ensure both completeness and accuracy in the code sets across all years. This was for the transition to ICD-10 and the updates that followed. All longitudinal studies must accommodate coding system revisions. We did not observe any unusual fluctuations or irregularities in the rates of potentially avoidable hospitalizations before and after the transition to ICD-10-CM.

### **K.8.2 Identifying Subsets of ICD-10-CM Codes Specific to the Six Qualifying Conditions**

Each of the six conditions has qualifying criteria defining the clinical or diagnostic conditions of a beneficiary that could trigger the benefit. Although CMS specified the clinical criteria for each of the six qualifying conditions, as described in *Section 1*, it has provided no guidance on which specific ICD-10-CM codes should be used to identify those conditions. Although the final list of potentially avoidable hospitalization conditions identified by the RTI team contains subsets of ICD-10-CM codes that generally match each of the six broadly categorized qualifying conditions—pneumonia, CHF, COPD/Asthma, skin infection, dehydration, and UTI—there is not always exact correspondence between those codes, the categorization of each condition, and the clinical criteria for each condition as specified by CMS. The symptoms of acute change in each condition, as described in the clinical criteria, are observable to the clinicians who treat a resident in the facility and may be in the medical record; they are not available in the claims. With clinical guidance from our consultant, Dr. Beadles, the RTI team has identified, reviewed, and finalized a subset of ICD-10-CM codes for potentially avoidable hospitalization conditions that for practical purposes matches the CMS-specified



clinical criteria for each qualifying condition, briefly summarized below. Details are available upon request.

- *Pneumonia*: The symptomatic and treatment guidance specified by CMS suggests that bacterial pneumonia is the focus here, not viral pneumonia. Thus, we removed any ICD-10-CM codes for viral pneumonia.
- *CHF*: The qualifying diagnosis, symptoms, and treatment guidance, as specified by CMS, are not limiting to a type of CHF.
- *COPD/Asthma*: The qualifying diagnosis, symptoms, and treatment guidance, as specified by CMS, are not limiting in the type of asthma.
- *Skin Infection*: The qualifying diagnosis, as specified by CMS, focuses on “new onset of painful, warm and/or swollen/indurated skin infection requiring oral or parenteral antibiotic or antiviral therapy.” It further clarifies that “if associated with a skin ulcer or wound there is an acute change in condition with signs of infection such as purulence, exudate, fever, new onset of pain, and/or induration.” Therefore, the presence of skin ulcers alone but without infection does not meet the clinical criteria for the qualifying condition. We identified cellulitis, acute lymphadenitis, and other specified local infections of the skin that meet the qualifying criteria. However, certain skin ulcer codes reflect infection if they appear in combination with codes indicating cellulitis, acute lymphadenitis, and other specified local infections of the skin. These codes are identified by the presence of skin ulcers in the principal diagnosis in conjunction with a secondary diagnosis code for cellulitis, acute lymphadenitis, or other specified skin infections.
- *Dehydration*: The qualifying diagnosis and treatment guidance, as specified by CMS, pertain to fluid or electrolyte disorder or dehydration, and the focus is on dehydration or volume depletion. As noted earlier, certain electrolyte disorder codes reflect dehydration if they appear in combination with codes indicating volume depletion. These codes are identified by the presence of electrolyte disorder in the principal diagnosis *and* presence of volume depletion in the secondary diagnosis.
- *UTI*: The symptomatic and treatment guidance provided by CMS focuses on dysuria, frequency, new incontinence, altered mental status, hematuria, and costovertebral angle tenderness. As with the other conditions, all the possible signs and symptoms related to the diagnosis of the condition are not observed in the codes.

## **K.9 Independent Variables**

The selection of covariates (i.e., independent or control variables) as risk adjusters in our final regression models is guided by literature review and is also shaped by limitations of the administrative data used in our analyses. Descriptive statistics on the final set of model

covariates, including percentages for categorical variables and means and standard deviations for continuous variables, are summarized in *Appendix L*.

***Resident-Level Characteristics.*** Selected covariates at the individual level include residents' demographic characteristics, and health and functional status derived from the MDS and Medicare claims. Age and sex are combined to create groupings by 5-year age brackets (except for the under-65 group and 95-or-older group) for both sexes. Resident race/ethnicity is coded in five categories, including non-Hispanic White (reference category), non-Hispanic Black, non-Hispanic Asian, Hispanic, and all other racial/ethnic groups. In all models, we included an indicator for Medicare-Medicaid dual eligible status (any episode month), and whether their original Medicare eligibility was due to disability.

Comorbidities are included as clustered by the CMS HCCs as described in *Section K.2*. In a few cases, we aggregated HCC groups that were clinically related because one of the groups has a very small number of residents with that characteristic. Combining clinically related HCC groups when some groups have very few residents makes these groups more stable. We also excluded a few HCC categories from the model where the prediction was counterintuitive, and we felt the relationship may be spurious. Finally, we excluded variables in a model if the number of residents with the characteristic is zero or very small and aggregation with another variable was not appropriate.

We included several additional diagnoses documented in the MDS: anemia (which is one of the potentially avoidable conditions for hospitalization), dementia (Alzheimer's or other types), neurogenic bladder, and obstructive neuropathy. There are a few additional MDS-based covariates, including a 4-level categorical variable for degree of ADL dependence, a 4-level categorical variable for body mass index (BMI), a 4-level Cognitive Function Scale (Thomas, Dosa, Wysocki, & Mor, 2017) capturing cognitive function, and depression status measured by Patient Health Questionnaire (PHQ)-9 (either self-report or staff assessment scores), that are included as risk adjusters. We included flags for patients with end-stage renal disease (ESRD) with dialysis and ESRD after receiving a transplant, both derived from the IDR.

It is important to note that all resident-level covariates from the MDS are based on the first MDS assessment (limiting to certain types such as admission, quarterly, annual, discharge and PPS) starting from middle of the year *prior* to the one containing a resident's Initiative-eligible episode. This way, we use lagged individual-level risk factors to predict current outcome variables in each year, thereby mitigating potential endogeneity in the relationship between them. In a similar way, we ideally would use HCCs that are defined using diagnoses documented in Medicare claims from the *previous* year. In fact, HCC data for beneficiaries for a given year represent information from claims submitted during the prior year.

***Facility-Level Characteristics.*** In addition to resident-level risk factors specified above, we further control for two facility-level variables that may have an impact on hospital use and the quality of care provided nursing facility residents: the profit status of the facility and whether the facility was hospital based. For the propensity score analysis that we performed to aid the selection of national comparison group residents, we included additional facility-level variables, as described in *Section K.5*. For risk adjustment purposes in our regression models of resident

outcomes, facility-level factors are less important than individual-level characteristics specified above.

## **K.10 Statistical Methods for Multivariate Analyses**

A regression-based model was used to assess the effects of the Payment-Only and the Clinical + Payment interventions separately. The main outcome variables of interest, including hospital-related utilization and Medicare expenditures, have been described in *Section K.6*. The study population included in these regression models, including both the Initiative eligible residents and the comparison group residents, have been described in *Sections K.4* and *K.5*. The covariates included in the models have been described in *Section K.8*.

We first present a general form of the model, followed by specifications suitable for each of the types of outcome variables. It is a difference-in-differences design with multiple observation periods before the NFI 2 Initiative began (2014–2016) and one observation period (2017) after<sup>32</sup>.

Note that in the models we describe, adjustments to standard errors are made to account for correlations among observations from each facility. We account for the “clustering” effect, as specified in more detail below. In addition, residents may differ greatly in their exposure times to the Initiative, especially because of the day counting requirements described in *Section K.4*. Differences between residents in their exposure times within a reporting period were dealt with in several ways. First, we modified the outcome variable where appropriate. For expenditure outcomes, as indicated in *Section K.6*, measures were annualized. This assumes the expenditure patterns would be the same for the full 365-day period as they were for the shorter period during which residents were observed. Second, in the probability and count models, exposure time was used as a control variable. Because non-linearity was observed in the relationship between exposure and hospitalization,<sup>33</sup> we used categories of exposure time. Third, we used weights in the regression models, weighting observations based on exposure time (with a floor of 30 days so even individuals with less than 30 days of exposure time were considered to have 30 days), so that residents with longer exposure times exerted greater impact on the coefficient estimates. Finally, we included indicator variables for each of the states in the national comparison group (California was left as the reference group and there were no dummies for the individual ECCP states in the model combining all the ECCPs together) but did not include any interactions with these state dummies. Thus, the changes we are capturing over time that we use to estimate the effect of the Initiative is based on an average of all the residents in the national comparison group regardless of state.

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<sup>32</sup> We acknowledge that although the Initiative began in October 2017, there are ECCPs that could not bill until a month or two later. Thus, our first Initiative year includes this “transition” time.

<sup>33</sup> Increasing exposure time was associated with increased hospitalizations (both proportion of residents with a hospitalization and number of hospitalizations per resident) for those with less than a full year of exposure time. However, those with a full year of exposure time had reduced hospitalizations compared to those in several of the categories with less than a year of exposure time.

### K.10.1 Multivariate Regression Model: General Specification

We begin with a simplified model and then explain how we adapted the simplified model to specific analytic considerations. The simplest difference-in-differences model we could use for each payment model would be the following:

$$Y_{ijt} = \beta_0 + \beta_x * X_{ijt} + \beta_z * Z_{jt} + \beta_{IG} * IG + \beta_p * Post + \beta_{IG,p} * (IG * Post) + \varepsilon_{ijt}$$

In this model,  $Y_{ijt}$  represents an outcome variable measured for individual  $i$  in facility  $j$  for year  $t$ . The  $X_{ijt}$  are resident characteristics, such as age, sex, clinical characteristics, and participation in other initiatives that may impact the outcome.  $Z_{jt}$  are selected facility characteristics (e.g., for-profit status). The term  $\beta_{IG} * IG$  accounts for baseline differences between the intervention group (IG) and comparison group (i.e., the trimmed national sample) that are based on the average differences during the entire base period, consisting of multiple years (2014–2016). The term  $\beta_p * Post$  is used to account for changes over time common to all groups and not due to the intervention.

We need to make several assumptions with this statistical model. First, there is no systematic change over time in the mean of the outcome within either the pre-intervention period or post-intervention period and that fluctuations in the outcome variable in the pre-intervention period and post-intervention period<sup>34</sup> are fluctuations around this mean in each period, respectively. Rather, there is assumed to be one change in the mean of the outcome between the pre-intervention period and post-intervention period. The second assumption is that in the absence of the intervention, the difference between the adjusted means of the intervention and comparison groups remain the same over time (the “parallel trends” assumption). In other words, the effect on the outcome variable of being in the intervention group as opposed to the comparison group, absent the intervention itself, would not change over time. Given these two assumptions, the effect of the intervention itself is captured by  $\beta_{IG,p} * (IG * Post)$ , which is the difference between the change in the intervention group relative to its baseline and the change in the national sample relative to its baseline. The last term  $\varepsilon_{ijt}$  in the equation is a resident-level residual term that represents error in the prediction.

### K.10.2 Adjusting for Baseline Trends

Concerns with the simple form of the difference-in-differences model described above include whether it is realistic to assume that there would be no systematic change in the mean of the outcome during the pre- and post-intervention periods and whether absent the intervention, the comparison group (in this case the national comparison group) and each of the intervention groups would in fact follow parallel trends. In this work we test for and allow for trend differences. A priori, we may expect different trends for the Clinical + Payment group given the impact of the NFI 1 clinical and educational interventions on hospitalization rates.

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<sup>34</sup> Note that the post period could be a particular year (and there could even be multiple post terms if there are multiple years in the post period) or a multiple-year period.

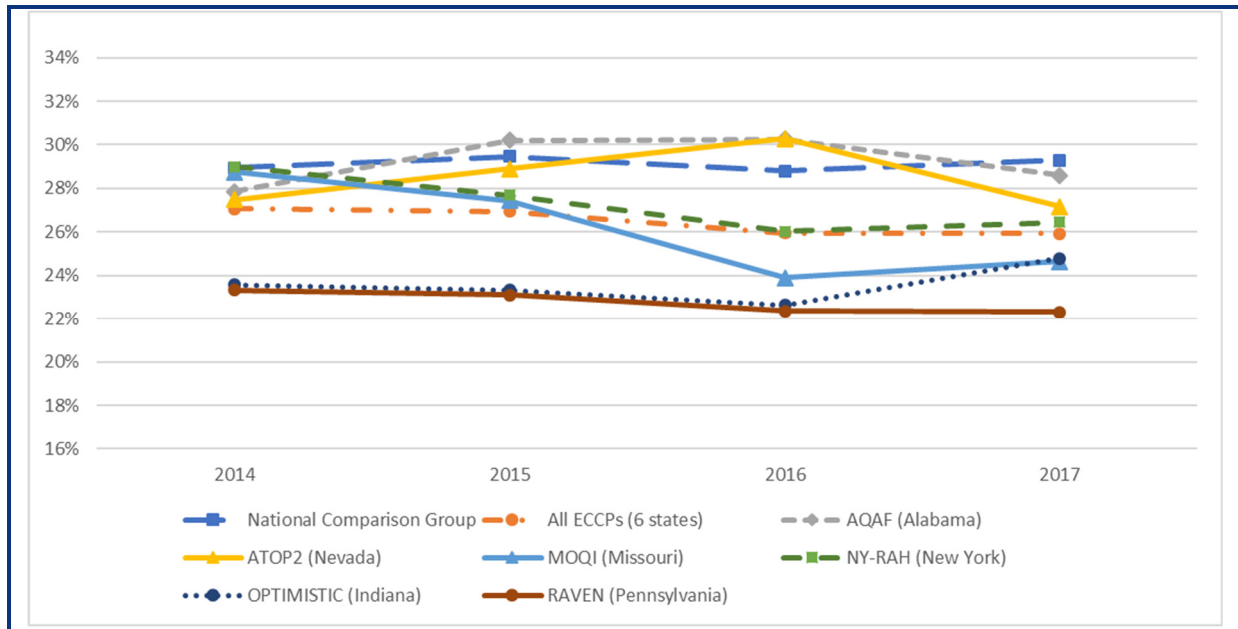
An approach to dealing with these concerns is to explicitly allow for the possibility that there could be different linear trends in the intervention group and in the comparison group. We could use multiple years in the pre-intervention period with the following model:

$$Y_{ijt} = \beta_0 + \beta_x * X_{ijt} + \beta_z * Z_{jt} + \beta_{IG} * IG + \beta_t * YC_t + \beta_{t\_IG} * YC_t * IG + \beta_p * Post + \beta_{IG,p} * (IG * Post) + \epsilon_{ijt}$$

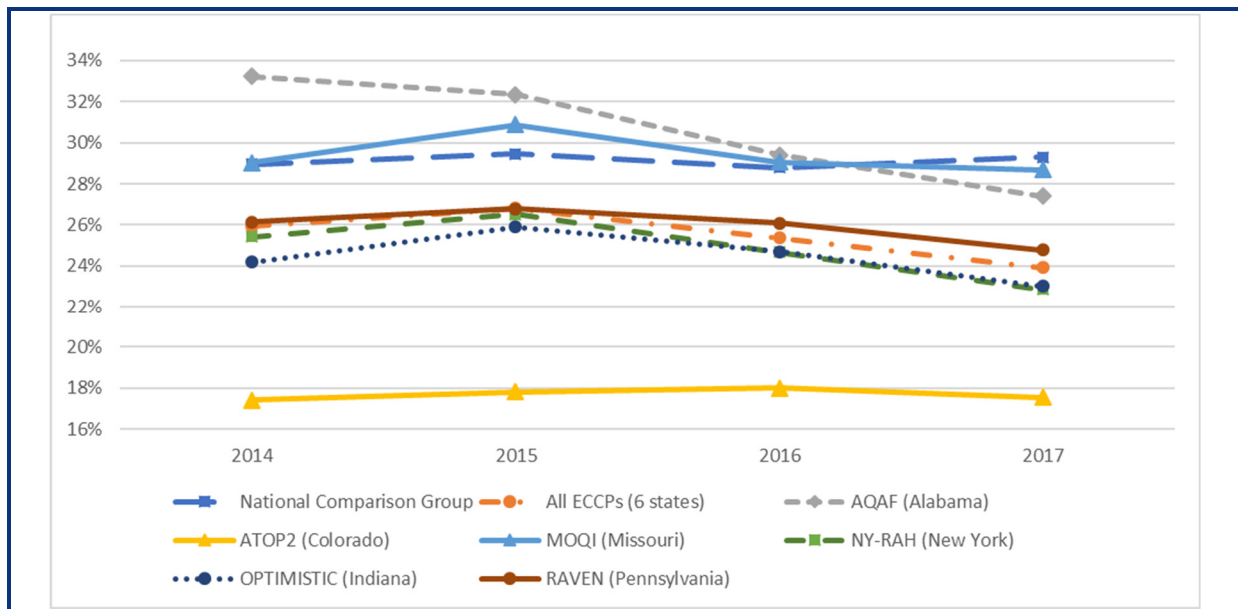
The variable YC is a count of the years since the first year that we incorporate in our analysis (thus if we begin with 2014, then YC = 0 for 2014, YC = 1 for 2015, etc.). The term  $\beta_t * YC_t$  represents the linear trend in the comparison group and the term  $\beta_{t\_IG} * YC_t * IG$  allows for a different baseline trend in the intervention group. In this approach, the term  $\beta_{IG,p} * (IG * Post)$  estimates the difference in the outcome from its expected value, where the expected value is not based simply on the change in the comparison group but is based on the different pre-intervention trends in the intervention group and in the comparison group. The Clinical + Payment group, which was in NFI 1, could be expected to have trends related to the specifics of each ECCP intervention.

To inform our choice of whether to use a model that allows for different linear trends, we empirically assessed the reasonableness of the parallel trends assumption by examining trends in the baseline period. This is illustrated by **Figure K-3** for the Clinical + Payment group and **Figure K-4** for the Payment-Only group, which depict the percentage of residents with an all-cause hospitalization (this is an example—we could make similar diagrams for the other outcomes) over the years 2014–2017 in the intervention groups and in the national comparison group. There are clear differences, most notably in MOQI and NY-RAH in the Clinical + Payment group and AQAF in the Payment-Only group, with the percentage hospitalizations decreasing in the intervention groups relative to the national comparison group.

**Figure K-3**  
**Clinical + Payment: Percentage of residents with an all-cause hospitalization, FY 2014–2017**



**Figure K-4**  
**Payment-Only: Percentage of residents with an all-cause hospitalization, FY 2014–2017**



We pursued a more systematic approach to measure baseline trend differences. *Table K-7* – *Table K-11* show coefficient estimates for the term in the regression models (the term

$\beta_{t\_IG} * YC_t * IG$  in the model above), which represents the difference in linear trends over the years 2014–2016 between the national comparison group and each respective intervention group. Examining these terms allows us to statistically test whether there are different linear trends after adjusting for resident characteristics. These coefficients are mostly negative in the Clinical + Payment group and often statistically significant, again indicating a decline in the intervention groups relative to the national comparison group. This is particularly apparent in three ECCPs: MOQI, RAVEN, and NY-RAH.

These findings led us to adopt the structure of the model above for our primary analysis, with 3 years (2014–2016) of baseline data and different linear trends in the intervention and comparison groups. However, as noted in **Section 3**, this model also requires an assumption that the intervention and comparison groups would continue to change by the amount indicated by their own baseline trends. One reason to challenge this assumption is that the impact of the NFI 1 interventions could have plateaued in 2015 or 2016, in which case the trends from the baseline period would differ going forward. Another related reason is a possible “floor” effect where rates had declined to a point where further reductions would be difficult. Therefore, we conducted a sensitivity analysis, shown in **Appendix P**, with 2016 alone used as the baseline period and parallel trends assumed. We consider the analysis with three baseline years and a linear trend to be primary since the assumption is plausible and this approach is more conservative. For analysis of the next Initiative data years, we plan to revisit this issue. We would not assume the base period trend, particularly for the Clinical + Payment groups, would continue indefinitely.

**Table K-7**  
**Probability Models (Clinical + Payment): Slope of term representing the difference in baseline trends between the intervention group and national comparison group**

Event	All Six States		AQAF (AL)		ATOP2 (NV)		MOQI (MO)		NY-RAH (NY)		OPTIMISTIC (IN)		RAVEN (PA)	
	Slope	p-value	Slope	p-value	Slope	p-value	Slope	p-value	Slope	p-value	Slope	p-value	Slope	p-value
<b>Any hospitalization (all-cause)</b>	-0.031	0.200	<b>0.086</b>	<b>0.037</b>	0.048	0.358	<b>-0.147</b>	<b>0.015</b>	<b>-0.107</b>	<b>0.042</b>	-0.004	0.949	-0.020	0.633
Any potentially avoidable hospitalizations	-0.045	0.152	0.009	0.855	<b>-0.102</b>	<b>0.068</b>	<b>-0.153</b>	<b>0.069</b>	-0.069	0.374	0.047	0.485	-0.060	0.344
Any potentially avoidable hospitalizations (all six qualifying conditions)	<b>-0.058</b>	<b>0.085</b>	-0.065	0.300	-0.077	0.374	-0.128	0.178	-0.017	0.793	0.072	0.440	<b>-0.208</b>	<b>0.002</b>
<b>Any ED visit (all-cause)</b>	<b>-0.074</b>	<b>0.001</b>	<b>-0.066</b>	<b>0.058</b>	-0.029	0.674	<b>-0.193</b>	<b>0.000</b>	<b>-0.075</b>	<b>0.099</b>	-0.020	0.760	-0.076	0.172
Any potentially avoidable ED visits	-0.040	0.112	0.010	0.855	-0.074	0.321	<b>-0.139</b>	<b>0.023</b>	-0.031	0.560	-0.036	0.573	-0.057	0.300
Any potentially avoidable ED visits (all six qualifying conditions)	-0.001	0.983	0.102	0.187	0.176	0.325	-0.158	0.303	-0.056	0.536	-0.131	0.171	-0.017	0.887
<b>Any acute care transition (all-cause)</b>	<b>-0.050</b>	<b>0.030</b>	0.012	0.752	0.029	0.631	<b>-0.175</b>	<b>0.000</b>	<b>-0.105</b>	<b>0.037</b>	0.018	0.754	-0.034	0.515
Any potentially avoidable acute care transition	<b>-0.045</b>	<b>0.067</b>	0.010	0.824	-0.070	0.186	<b>-0.161</b>	<b>0.012</b>	-0.062	0.289	0.017	0.741	-0.061	0.216
Any potentially avoidable acute care transition (all six qualifying conditions)	-0.039	0.191	0.000	0.999	-0.002	0.988	<b>-0.162</b>	<b>0.054</b>	-0.032	0.614	0.042	0.582	<b>-0.139</b>	<b>0.029</b>

ED = emergency department.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 10).

NOTE: Bold text indicates values are significantly different from zero based on a p-value cutoff of 0.1.



**Table K-8**  
**Probability Models (Payment-Only): Slope of term representing the difference in baseline trends between the intervention group and national comparison group**

Event	All Six States		AQAF (AL)		ATOP2 (CO)		MOQI (MO)		NY-RAH (NY)		OPTIMISTIC (IN)		RAVEN (PA)	
	Slope	p-value	Slope	p-value	Slope	p-value	Slope	p-value	Slope	p-value	Slope	p-value	Slope	p-value
<b>Any hospitalization (all-cause)</b>	-0.007	0.727	-0.039	0.387	-0.011	0.816	-0.004	0.924	-0.026	0.541	0.004	0.913	0.014	0.800
Any potentially avoidable hospitalizations	-0.027	0.205	<b>-0.113</b>	<b>0.018</b>	-0.012	0.884	0.021	0.640	<b>-0.074</b>	<b>0.093</b>	-0.011	0.799	0.045	0.462
Any potentially avoidable hospitalizations (all six qualifying conditions)	-0.031	0.286	-0.108	0.143	-0.014	0.877	0.047	0.341	-0.092	0.122	0.018	0.772	-0.003	0.974
<b>Any ED visit (all-cause)</b>	-0.022	0.231	-0.020	0.613	-0.019	0.723	-0.046	0.211	-0.025	0.487	-0.035	0.467	0.033	0.509
Any potentially avoidable ED visits	0.001	0.979	0.019	0.727	-0.016	0.792	-0.043	0.389	0.013	0.710	0.027	0.558	-0.007	0.919
Any potentially avoidable ED visits (all six qualifying conditions)	-0.034	0.347	0.044	0.659	0.077	0.305	-0.109	0.137	-0.030	0.658	-0.133	0.184	0.013	0.915
<b>Any acute care transition (all-cause)</b>	-0.007	0.693	-0.020	0.602	-0.018	0.715	-0.033	0.360	-0.024	0.495	0.009	0.808	0.039	0.390
Any potentially avoidable acute care transition	-0.011	0.539	-0.037	0.375	-0.012	0.849	-0.032	0.471	-0.034	0.358	0.015	0.634	0.041	0.483
Any potentially avoidable acute care transition (all six qualifying conditions)	-0.039	0.111	-0.072	0.280	0.024	0.739	-0.032	0.540	<b>-0.088</b>	<b>0.069</b>	-0.044	0.405	0.023	0.776

ED = emergency department.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 10).

NOTE: Bold text indicates values are significantly different from zero based on a p-value cutoff of 0.1.

**Table K-9**  
**Count Models (Clinical + Payment): Slope of term representing the difference in baseline trends between the intervention group and national comparison group**

Event	All Six States		AQAF (AL)		ATOP2 (NV)		MOQI (MO)		NY-RAH (NY)		OPTIMISTIC (IN)		RAVEN (PA)	
	Slope	p-value	Slope	p-value	Slope	p-value	Slope	p-value	Slope	p-value	Slope	p-value	Slope	p-value
<b>Any hospitalization (all-cause)</b>	-0.029	0.183	0.046	0.158	<b>0.049</b>	<b>0.092</b>	<b>-0.131</b>	<b>0.009</b>	-0.067	0.176	-0.012	0.825	-0.035	0.458
Any potentially avoidable hospitalizations	-0.050	0.114	0.009	0.860	-0.088	0.125	<b>-0.155</b>	<b>0.063</b>	-0.062	0.417	-0.007	0.924	-0.069	0.275
Any potentially avoidable hospitalizations (all six qualifying conditions)	<b>-0.057</b>	<b>0.084</b>	-0.067	0.227	-0.047	0.555	-0.107	0.233	-0.008	0.905	0.026	0.802	<b>-0.220</b>	<b>0.002</b>
<b>Any ED visit (all-cause)</b>	<b>-0.057</b>	<b>0.006</b>	-0.035	0.330	0.006	0.914	<b>-0.138</b>	<b>0.001</b>	-0.067	0.174	-0.046	0.338	-0.063	0.269
Any potentially avoidable ED visits	<b>-0.052</b>	<b>0.032</b>	-0.015	0.772	-0.076	0.289	<b>-0.142</b>	<b>0.014</b>	-0.037	0.446	-0.057	0.308	-0.060	0.349
Any potentially avoidable ED visits (all six qualifying conditions)	-0.008	0.862	0.071	0.386	0.153	0.348	-0.187	0.197	-0.018	0.841	-0.130	0.147	-0.019	0.869
<b>Any acute care transition (all-cause)</b>	<b>-0.045</b>	<b>0.013</b>	0.007	0.819	0.036	0.231	<b>-0.140</b>	<b>0.000</b>	<b>-0.074</b>	<b>0.074</b>	-0.028	0.495	-0.052	0.283
Any potentially avoidable acute care transition	<b>-0.053</b>	<b>0.017</b>	-0.004	0.925	-0.072	0.206	<b>-0.152</b>	<b>0.007</b>	-0.062	0.240	-0.029	0.556	-0.065	0.231
Any potentially avoidable acute care transition (all six qualifying conditions)	<b>-0.051</b>	<b>0.073</b>	-0.027	0.544	0.006	0.940	-0.131	0.107	-0.023	0.716	-0.027	0.731	<b>-0.159</b>	<b>0.014</b>

ED = emergency department.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 10).

NOTE: Bold text indicates values are significantly different from zero based on a p-value cutoff of 0.1.

**Table K-10**  
**Count Models (Payment-Only): Slope of term representing the difference in baseline trends between the intervention group and national comparison group**

Event	All Six States		AQAF (AL)		ATOP2 (CO)		MOQ1 (MO)		NY-RAH (NY)		OPTIMISTIC (IN)		RAVEN (PA)	
	Slope	p-value	Slope	p-value	Slope	p-value	Slope	p-value	Slope	p-value	Slope	p-value	Slope	p-value
<b>Any hospitalization (all-cause)</b>	-0.016	0.349	<b>-0.060</b>	<b>0.087</b>	-0.015	0.757	0.001	0.982	-0.047	0.210	-0.008	0.814	0.046	0.353
Any potentially avoidable hospitalizations	-0.029	0.165	<b>-0.133</b>	<b>0.006</b>	0.001	0.985	0.002	0.958	-0.066	0.145	0.002	0.965	0.053	0.371
Any potentially avoidable hospitalizations (all six qualifying conditions)	-0.041	0.135	<b>-0.138</b>	<b>0.041</b>	-0.013	0.878	0.045	0.349	<b>-0.106</b>	<b>0.052</b>	0.021	0.690	-0.005	0.963
<b>Any ED visit (all-cause)</b>	<b>-0.030</b>	<b>0.069</b>	-0.057	0.161	-0.004	0.927	<b>-0.056</b>	<b>0.070</b>	-0.016	0.645	-0.038	0.362	0.005	0.911
Any potentially avoidable ED visits	-0.003	0.898	-0.004	0.935	0.024	0.645	-0.034	0.441	0.010	0.765	0.033	0.451	-0.054	0.470
Any potentially avoidable ED visits (all six qualifying conditions)	-0.027	0.439	0.054	0.555	0.093	0.190	-0.079	0.237	-0.052	0.452	-0.111	0.270	0.007	0.953
<b>Any acute care transition (all-cause)</b>	-0.023	0.102	-0.056	0.101	-0.006	0.865	-0.029	0.267	-0.038	0.198	-0.020	0.554	0.029	0.473
Any potentially avoidable acute care transition	-0.016	0.332	-0.071	0.115	0.019	0.679	-0.017	0.630	-0.032	0.327	0.019	0.547	0.002	0.974
Any potentially avoidable acute care transition (all six qualifying conditions)	-0.038	0.109	-0.027	0.544	0.049	0.437	0.001	0.986	<b>-0.102</b>	<b>0.022</b>	-0.028	0.562	-0.006	0.942

ED = emergency department.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 10).

NOTE: Bold text indicates values are significantly different from zero based on a p-value cutoff of 0.1.

**Table K-11**  
**Total Expenditure Model: Slope of term representing the difference in baseline trends between the intervention group and national comparison group**

Event	All Six States		AQAF (AL)		ATOP2 (CO/NV)		MOQI (MO)		NY-RAH (NY)		OPTIMISTIC (IN)		RAVEN (PA)	
	Slope	p-value	Slope	p-value	Slope	p-value	Slope	p-value	Slope	p-value	Slope	p-value	Slope	p-value
Total Expenditures (Clinical + Payment)	-0.0164	0.567	0.0276	0.218	-0.0337	0.487	-0.0371	0.130	—	—	-0.0187	0.443	-0.0357	0.303
Total Expenditures (Payment-Only)	0.0347	0.132	-0.0093	0.668	—	—	-0.0108	0.570	0.0044	0.868	0.0033	0.858	-0.0200	0.375

ED = emergency department.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 10).

NOTE: Bold text indicates values are significantly different from zero based on a p-value cutoff of 0.1.

### K.10.3 Incorporating a Within-State Reference Group

As explained in *Section 3* of the main report, a disadvantage of using a national sample as a comparison group is that we will not be able to account for possible changes in state-specific policies that may impact our outcomes of interest—such as concurrent within-state efforts (which are unrelated to NFI) to reduce hospitalizations. This concern can be addressed with the use of a WSRG. We distinguish this reference group from the within-state comparison group of matched facilities used in NFI 1. This group would be larger and less subject to random fluctuation. It would include all the potentially eligible residents in eligible non-participating facilities in a state. One way to incorporate a WSRG, consisting of would-be eligible residents in non-intervention group facilities in the seven states, is to use this model:

$$Y_{ijt} = \beta_0 + \beta_x * X_{ijt} + \beta_z * Z_{jt} + \beta_{state} * state + \beta_{IG} * IG + \beta_t * YC_t + \beta_{t\_state} * YC_t * state + \beta_{t\_IG} * YC_t * IG + \beta_p * Post + \beta_{state,p} * (state * Post) + \beta_{IG,p} * (IG * Post) + \varepsilon_{ijt}$$

The indicator variable, *state*, equals 1 for all eligible and would-be eligible residents in the given Initiative-participating state, whether they reside in an intervention facility or in a WSRG facility. The term  $\beta_t * YC_t$  represents the linear trend in the national comparison group and the terms  $\beta_{t\_state} * YC_t * state$  and  $\beta_{t\_IG} * YC_t * IG$  allow for different baseline trends in the state and in the intervention group, respectively. The term  $\beta_{state,p} * (state * Post)$  would indicate if following the intervention there was a change in the state relative to the national sample, due to state specific factors, including possible concurrent within-state efforts, unrelated to NFI, to reduce hospitalizations. The term  $\beta_{IG,p} * (IG * Post)$  captures the effect of the NFI intervention above and beyond the effect of other state specific factors. It is the Initiative effect relative to the WSRG.

However, another possible reason we may find that following the intervention there was a change within the state relative to the national sample is if there is a spillover effect from NFI that leads to reductions in hospitalizations of nursing home residents within the same state where the ECCP is operating. Based on this reasoning, it would not make sense to try to capture the effect of the NFI intervention above and beyond the effect of being in the specific state, which is the goal of the above formulation. To allow for this possibility, we will additionally estimate a second model<sup>35</sup>:

$$Y_{ijt} = \beta_0 + \beta_x * X_{ijt} + \beta_z * Z_{jt} + \beta_{WSRG} * WSRG + \beta_{IG} * IG + \beta_t * YC_t + \beta_{t\_WSRG} * YC_t * WSRG + \beta_{t\_IG} * YC_t * IG + \beta_p * Post + \beta_{WSRG,p} * (WSRG * Post) + \beta_{IG,p} * (IG * Post) + \varepsilon_{ijt}$$

This model is analogous to the prior model except that an indicator for WSRG instead of an indicator for the whole state is used. The indicator variable, *WSRG*, equals 1 for would-be eligible residents in non-intervention group facilities in an Initiative-participating state and *WSRG* = 0 both for residents in intervention group facilities and residents in other states (from the national comparison group). Here,  $\beta_{IG,p} * (IG * Post)$  functions like a standard difference-in-differences coefficient, identifying the effect of the intervention as the difference between change in the intervention group relative to its baseline and the change in the national

<sup>35</sup> In theory, we could use the above model and simply add the terms  $\beta_{IG,p} + \beta_{state,p}$

comparison group relative to its baseline, and not accounting for the effect of being in the specific state. It is the effect relative to the national sample. In the appendix, we present both the effect relative to the national sample and relative to the WSRG as a sensitivity analysis. In the main report, we present only the effect relative to the national sample, the main comparison group.

#### **K.10.4 Utilization Probability Models**

For the probability of discrete events, such as the probability of a hospitalization, we used the general equation above to fit a logistic regression model that predicts the probability of the event. We estimated robust standard errors that accounted for clustering at the nursing facility level.

As a sensitivity analysis, we ran two other models that addressed the clustering issue differently:

- We employed a Generalized Estimating Equation model approach, with the binomial distribution and the logit link function specified. An exchangeable working correlation structure was further specified, which allowed us to obtain parameter estimates and standard errors that account for within-facility correlation of observations. Robust standard errors were estimated, which are valid even if the correlation structure is not exactly as specified. This approach corrects the standard errors of the coefficients in the models and impacts the parameter estimates themselves.
- A model with nursing facility level random effects.

With these models, weighting the observations based on exposure time was not possible. Since results were similar in these sensitivity analyses to the original model, we used the original model.

#### **K.10.5 Utilization Count Models**

To account for the fact that some residents used a given type of service more than once during their Initiative-eligible period in a year, we also estimated a parallel set of models whereby the dependent variable was defined as the count of utilization events. We considered both a Poisson model and a negative binomial model. Since preliminary analysis suggested that the simple Poisson models were inadequate, given the overdispersion of the data—that is, greater variability in the data set than would be expected from a Poisson model—we ultimately used negative binomial models. We estimated robust standard errors that accounted for clustering at the nursing facility level.

#### **K.10.6 Medicare Expenditure Models**

For total Medicare expenditures, the values exceed zero in virtually all cases. To predict total Medicare spending, we employed a Generalized Linear Model (GLM) with the log link function and Gamma distribution specified, which is a widely used approach to modeling

expenditure data that tend to be highly skewed. We estimated robust standard errors that accounted for clustering at the nursing facility level.

For specific subcategories of service utilization such as all-cause hospitalizations, many residents have zero utilization and expenditure for these services. To overcome this issue, we employed a two-part model rather than a simple GLM model. The first part predicted the probability of service utilization, whereby the outcome equals 1 if a resident had any positive expenditure and zero otherwise. The second part was conditional on having any positive expenditure and incorporates a GLM model (log link function and Gamma distribution) for service users only that predicts their expected spending. For both parts of the model, we adjusted the standard errors to account for facility-level clustering. Then, using predicted values obtained from these two models, the predicted expenditure per resident was calculated by multiplying the probability of having any positive expenditure (from the part-one model) by the expected amount of expenditure (from the part-two model). At the end of this process, the two-part model yielded a predicted amount of spending for all residents included in the first part of the model, including both actual users and nonusers.

### **K.10.7 Estimation of Initiative Effects**

For presentation of multivariate regression model results, we calculated and reported the Initiative effect, or the marginal effect of the intervention, on each outcome in meaningful units, such as dollars or percentage points. (The estimated values of coefficients in the models were often not in easily interpretable units). Conceptually, the marginal effect is the effect of a change in a given predictor variable on the conditional mean of the dependent variable. In a linear regression model, the marginal effect for a given covariate equals the slope coefficient for that covariate (or an incremental change if a binary 1/0 variable is used). In the difference-in-differences context with a linear model, the intervention effect is equal to the slope of the IG\*Post term. However, for non-linear models, such as those in our analyses, it is not as straightforward to obtain the marginal effects in useful units; this form of an effect can be different for each observed case (Karaca-Mandic et al., 2012).

Various methods exist to calculate the average marginal effects; we followed a widely adopted method. We compute the predicted outcome and the marginal effect for each observation in the treatment group in the post period with respect to a predictor variable of primary interest (which in our case is IG\*Post). More specifically, we follow these steps, using Medicare expenditure as an example outcome:

1. For each observation with IG = 1 and Post = 1, we forced the term IG\*Post to equal zero, leaving the values for all other independent variables as is, and we used the inverse link function to compute the predicted expenditure. This is the expected expenditure in the absence of the intervention.
2. For the same observation, we repeated everything in the first step, except resetting IG\*Post to 1, to compute the predicted amount of expenditure after accounting for the intervention.

3. We took the difference between the two predicted expenditure amounts obtained in steps 1 and 2. This is the marginal effect for that observation.
4. We repeated the two steps above for all observations with  $IG = 1$  and  $Post = 1$ .
5. We computed the average of all the marginal effects, which was the average marginal effect related to  $IG*Post$ . We are comparing two populations that have the same values on all the independent variables in the model except  $IG*Post$ . Because the only difference between them was whether the intervention effect was included in the prediction, the difference in their expected expenditure amounts can be attributed to the effect of the intervention.
6. Going back to step 1, we computed the average of all the predicted values for all observations with  $IG = 1$  and  $Post = 1$  to obtain the group-level average predicted expenditure.
7. We divide the marginal effect by the predicted mean to obtain the relative effect. Thus, if the predicted mean expenditure in the absence of the intervention was \$10,000 and the marginal effect was a reduction in expenditure of \$1000, the relative effect would be a 10 percent reduction in expenditure.

#### **K.10.8 Interpreting the Initiative Effects**

The marginal effect for the interaction term  $IG*Post$  indicates the average effect of the intervention on the outcome. For a dichotomous utilization outcome, the marginal effect is the difference in the predicted probabilities of the outcome event with and without the intervention. It represents the average effect of the Initiative on the probability of the event occurring during the resident's Initiative-eligible period, which on average is less than 365 days (about 250 days).

For count outcomes, the Intervention effect represents the average effect of the Initiative on the count of events per resident during their Initiative-eligible period.

For expenditure outcomes, the Intervention effect represents the average effect of the Initiative on expenditures per resident-year. This is the anticipated effect of the Initiative if all residents were eligible for all 365 days in FY 2017 (and assuming their expenditure patterns would be the same for the 365 days as they were for the shorter period during which we observed them).

For the presentation of multivariate regression results in Appendix P, we reported the average marginal effect of the ECCP intervention on each outcome as well as its 90% confidence interval and the p-value (obtained using the delta method). For comparison purposes, we also reported the 80% confidence intervals, as instructed by CMS; standard practice is to use 90% or higher confidence intervals to determine statistical significance.

Furthermore, we divided the average marginal effect for each outcome by its overall predicted mean value for the intervention group in the post period (FY 2017) so that the



magnitude of the effect can be interpreted as a percent change from the mean value, which also facilitates comparison of effect sizes across outcomes and states.

### **K.11 Future Planned Refinements**

We will continue to interview key state administrators and other stakeholders to develop an understanding of the local policy environment and any other potentially competing initiatives (see *Appendix H*). These interviews will also keep RTI up to date on changes in Medicare rulemaking, the MA program, other initiatives sponsored by CMS, and/or changes in individual Medicaid state plans and programs. The presence of these federal- and state-level programs will likely affect both the Initiative and the comparison groups, but perhaps not to the same degree. We have also added questions to our site visit protocol to assess the impact of managed care, particularly I-SNP penetration, as well as other activities that may have overlapping effects with the Initiative, including interventions to reduce hospital readmissions during post-acute periods that coincide with SNF coverage.

To further track and explore the impact of MA/I-SNP penetration over time, we plan to use Medicare MA enrollment data. We could then incorporate this information into our analyses including possibly using the information as a covariate and/or including this information in subgroup analyses.

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## **APPENDIX L**

### **DESCRIPTIVE STATISTICS OF VARIABLES USED AS REGRESSION COVARIATES**

*Appendix L* presents descriptive statistics on the final set of resident- and facility-level model covariates, including annual percentages for categorical variables and means and standard deviations for continuous variables, from FY 2014–2017. These descriptive statistics are summarized separately for each of the following groups:

- *Table L-1*: The national comparison group
- *Table L-2*: The WSRG, combining all states with NFI 2-participating facilities
- *Table L-3*: The Clinical + Payment group, combining all ECCPs
- *Table L-4*: The Payment-Only group, combining all ECCPs

**Table L-1**

**Resident and facility characteristics: Annual percentages (categorical variables) or means and standard deviations (continuous variables), FY 2014–2017, national comparison group**

Characteristic	2014	2015	2016	2017
<b>Resident-level characteristics:</b>				
<b>Basic information</b>				
Residents meeting eligibility criteria	759,371	732,526	706,064	688,820
Mean exposure (days)	248.91 (131.77)	246.14 (132.08)	248.46 (132.01)	245.92 (131.82)
Exposure days 1–89	19.71	19.97	19.64	19.87
Exposure days 90–179	14.09	14.96	14.43	15.03
Exposure days 179–269	10.66	10.62	10.81	10.84
Exposure days 270–364	9.60	9.47	9.74	9.68
Exposure days 365/366	45.94	44.99	45.38	44.59
Male, < 65	5.81	5.91	6.04	6.17
Male, 65–69	3.46	3.64	3.90	4.22
Male, 70–74	4.08	4.22	4.33	4.51
Male, 75–79	4.62	4.69	4.75	4.83
Male, 80–84	5.09	5.04	5.06	5.08
Male, 85–89	4.87	4.87	4.79	4.73
Male, 90–94	2.88	2.90	2.92	2.88
Male, 95+	0.87	0.89	0.94	0.95
Female, < 65	4.85	4.94	5.02	5.09
Female, 65–69	3.81	3.98	4.23	4.43
Female, 70–74	5.36	5.59	5.75	5.88
Female, 75–79	7.92	7.91	7.85	7.90
Female, 80–84	11.99	11.59	11.33	11.12
Female, 85–89	15.63	15.12	14.61	14.03
Female, 90–94	12.61	12.55	12.30	11.98
Female, 95+	6.13	6.16	6.17	6.21
White, non-Hispanic	77.33	76.80	76.93	76.44
Black, non-Hispanic	13.15	13.31	13.31	13.50
Asian	1.67	1.70	1.77	1.85
Hispanic	5.21	5.28	5.15	5.35
Other race/ethnicity	2.64	2.90	2.83	2.86
Full Dual Eligibility	80.99	81.07	81.44	81.69
Original eligibility due to disability	16.14	16.66	17.30	18.06
<b>Health Status</b>				
Dementia	53.76	53.40	52.84	52.95
Anemia	30.26	30.32	29.81	29.60
BMI <18.5	6.97	6.99	6.98	6.90
BMI = 18.5–24.9	37.90	37.61	37.44	36.94
BMI = 25–29.9	28.52	28.31	28.13	28.11
BMI ≥ 30	26.61	27.09	27.45	28.04
ADL score= 0–7	12.37	11.82	11.63	11.66
ADL score= 8–14	17.18	16.91	16.93	17.11
ADL score= 15–21	50.46	52.32	53.48	54.32
ADL score= 22–28	19.99	18.95	17.96	16.91

(continued)

**Table L-1 (continued)****Resident and facility characteristics: Annual percentages (categorical variables) or means and standard deviations (continuous variables), FY 2014–2017, national comparison group**

Characteristic	2014	2015	2016	2017
Resident's mood assessment (PHQ)	2.57 (3.64)	2.46 (3.57)	2.30 (3.43)	2.15 (3.33)
CFS= 3 (Cognitively intact)	11.06	10.62	10.23	9.81
CFS= 2 (Mildly impaired)	34.80	34.31	33.59	33.19
CFS= 1 (Moderately impaired)	22.80	22.97	23.26	23.17
CFS= 0 (The highest level of impairment)	31.33	32.10	32.92	33.83
Neurogenic Bladder	2.40	2.48	2.69	3.05
Obstructive Uropathy	0.78	0.84	0.99	1.28
ESRD patient with dialysis status	2.48	2.57	2.65	2.70
ESRD patients after transplant who are not on dialysis after transplant	0.09	0.09	0.10	0.10
<b>Hierarchical Condition Categories</b>				
HIV/AIDS (HCC 1)	0.28	0.30	0.31	0.35
Septicemia, Sepsis, Systemic Inflammatory Response Syndrome/Shock (HCC 2)	12.20	12.97	14.17	14.48
Opportunistic Infections (HCC 6)	0.56	0.53	0.59	0.64
Metastatic Cancer and Acute Leukemia (HCC 8)	0.98	0.96	1.00	1.00
Lung and Other Severe Cancers (HCC 9)	1.14	1.13	1.19	1.13
Lymphoma and Other Cancers (HCC 10)	1.22	1.22	1.25	1.16
Colorectal, Bladder, and Other Cancers (HCC 11)	1.74	1.74	1.78	1.69
Breast, Prostate, and Other Cancers and Tumors (HCC 12)	3.80	3.77	3.85	3.72
Diabetes with Acute Complications (HCC 17)	1.11	1.10	1.29	1.28
Diabetes with Chronic Complications (HCC 18)	21.35	22.05	25.48	28.92
Diabetes without Complication (HCC 19)	17.78	17.57	14.49	11.33
Protein-Calorie Malnutrition (HCC 21)	10.63	10.66	11.04	11.29
Other Significant Endocrine and Metabolic Disorders (HCC 23)	4.54	4.62	5.10	5.42
End-Stage Liver Disease (HCC 27)	0.80	0.83	0.88	0.88
Cirrhosis of Liver (HCC 28)	0.73	0.78	0.81	0.83
Chronic Hepatitis (HCC 29)	0.42	0.46	0.52	0.59
Intestinal Obstruction/Perforation (HCC 33)	4.24	4.21	4.24	4.18
Chronic Pancreatitis (HCC 34)	0.31	0.32	0.33	0.33
Inflammatory Bowel Disease (HCC 35)	0.85	0.85	0.91	0.92
Bone/Joint/Muscle Infections/Necrosis (HCC 39)	3.12	3.23	3.38	3.32
Rheumatoid Arthritis and Inflammatory Connective Tissue Disease (HCC 40)	4.90	5.05	5.29	5.53
Severe Hematological Disorders (HCC 46)	0.89	0.79	0.84	0.86
Disorders of Immunity (HCC 47)	1.62	1.63	1.80	1.79
Coagulation Defects and Other Specified Hematological Disorders (HCC 48)	8.57	8.41	8.75	8.93
Drug/Alcohol Psychosis (HCC 54)	1.65	1.68	1.54	0.86
Drug/Alcohol Dependence (HCC 55)	1.78	1.98	2.57	3.55

(continued)

**Table L-1 (continued)**  
**Resident and facility characteristics: Annual percentages (categorical variables) or means and standard deviations (continuous variables), FY 2014–2017, national comparison group**

Characteristic	2014	2015	2016	2017
Schizophrenia (HCC 57)	7.23	7.47	8.05	8.70
Major Depressive, Bipolar, and Paranoid Disorders (HCC 58)	18.07	18.71	22.11	27.35
Quadriplegia (HCC 70)	1.38	1.61	1.90	2.11
Paraplegia (HCC 71)	1.08	1.14	1.19	1.22
Spinal Cord Disorders/Injuries (HCC 72)	1.29	1.29	1.30	1.10
Amyotrophic Lateral Sclerosis and Other Motor Neuron Disease (HCC 73)	0.18	0.18	0.18	0.17
Cerebral Palsy (HCC 74)	0.88	0.91	0.99	1.08
Myasthenia Gravis/Myoneural Disorders and Guillain-Barre Syndrome/Inflammatory and Toxic Neuropathy (HCC 75)	1.25	1.29	1.40	1.38
Muscular Dystrophy (HCC 76)	0.14	0.14	0.17	0.16
Multiple Sclerosis (HCC 77)	1.61	1.64	1.69	1.70
Parkinson's and Huntington's Diseases (HCC 78)	7.50	7.46	7.59	7.78
Seizure Disorders and Convulsions (HCC 79)	12.01	12.33	12.51	12.60
Coma, Brain Compression/Anoxic Damage (HCC 80)	1.30	1.34	1.48	1.69
Respiratory Arrest (HCC 83)	0.18	0.17	0.15	0.15
Cardio-Respiratory Failure and Shock (HCC 84)	9.92	10.43	11.32	11.89
Congestive Heart Failure (HCC 85)	31.84	31.74	32.18	31.98
Acute Myocardial Infarction (HCC 86)	3.04	3.00	3.42	4.33
Unstable Angina and Other Acute Ischemic Heart Disease (HCC 87)	2.66	2.65	2.56	1.88
Angina Pectoris (HCC 88)	1.94	1.87	2.26	2.90
Specified Heart Arrhythmias (HCC 96)	26.50	26.71	27.42	27.41
Cerebral Hemorrhage (HCC 99)	2.33	2.39	2.58	2.54
Ischemic or Unspecified Stroke (HCC 100)	14.76	14.67	14.57	12.38
Hemiplegia/Hemiparesis (HCC 103)	8.50	8.63	9.45	10.60
Monoplegia, Other Paralytic Syndromes (HCC 104)	0.48	0.46	0.48	0.42
Atherosclerosis of the Extremities with Ulceration or Gangrene (HCC 106)	2.79	2.81	3.01	3.19
Vascular Disease with Complications (HCC 107)	3.99	4.02	4.19	4.22
Vascular Disease (HCC 108)	44.45	44.99	46.11	44.51
Cystic Fibrosis or Chronic Obstructive Pulmonary Disease (HCC 110 or HCC 111)	25.85	25.81	26.18	26.28
Fibrosis of Lung and Other Chronic Lung Disorders (HCC 112)	0.82	0.77	0.82	0.72
Aspiration and Specified Bacterial Pneumonias (HCC 114)	6.93	6.76	7.12	7.12
Pneumococcal Pneumonia, Empyema, Lung Abscess (HCC 115)	0.72	0.63	0.78	1.21
Proliferative Diabetic Retinopathy and Vitreous Hemorrhage (HCC 122)	1.21	1.24	1.27	1.26
Exudative Macular Degeneration (HCC 124)	2.00	2.04	2.17	2.24
Acute Renal Failure (HCC 135)	15.34	16.03	16.94	17.48
Chronic Kidney Disease, Stage 5 (HCC 136)	0.88	0.85	0.76	0.67
Chronic Kidney Disease, Severe (Stage 4) (HCC 137)	1.07	1.10	1.21	1.35

(continued)

**Table L-1 (continued)****Resident and facility characteristics: Annual percentages (categorical variables) or means and standard deviations (continuous variables), FY 2014–2017, national comparison group**

Characteristic	2014	2015	2016	2017
Pressure Ulcer of Skin with Necrosis Through to Muscle, Tendon, or Bone (HCC 157)	1.75	1.83	2.14	2.49
Pressure Ulcer of Skin with Full Thickness Skin Loss (HCC 158)	3.37	3.54	4.18	4.83
Chronic Ulcer of Skin, Except Pressure (HCC 161)	6.71	6.67	6.56	6.09
Severe Head Injury or Major Head Injury (HCC 166 or HCC 167)	2.46	2.53	2.60	2.45
Vertebral Fractures without Spinal Cord Injury (HCC 169)	2.98	3.04	3.08	2.82
Hip Fracture/Dislocation (HCC 170)	6.75	6.74	6.75	5.79
Complications of Specified Implanted Device or Graft (HCC 176)	4.67	4.83	5.51	5.89
Artificial Openings for Feeding or Elimination (HCC 188)	5.81	5.86	6.05	6.17
Amputation Status, Lower Limb/Amputation Complications (HCC 189)	1.45	1.51	1.65	1.77
<b>Participation in Other Initiatives</b>				
Community Based Care Transition Program (CCTP)	0.69	0.86	0.69	0.25
Comprehensive ESRD Care (CEC)	0.00	0.00	0.08	0.23
Comprehensive Primary Care Initiative (CPCI)	0.31	0.28	0.21	0.10
Comprehensive Primary Care Plus (CPC+), non-SSP Participants	0.00	0.00	0.00	0.57
Comprehensive Primary Care Plus (CPC+), SSP Participants	0.00	0.00	0.00	0.64
MMCO Financial Alignment Demonstration (Duals) (DEMME)	0.26	0.35	0.40	0.58
Multi-Payer Advanced Primary Care Practice (MAPCP) Demonstration	0.00	0.00	0.00	0.00
Next Generation Accountable Care Organization (NGACO)	0.00	0.00	1.39	3.20
Pioneer Accountable Care Organization Model	3.02	2.49	1.97	0.54
Medicare Shared Savings Program	15.67	19.63	22.62	22.46
<b>Facility Level</b>				
Nursing home facility in the hospital	2.03	1.25	2.41	2.11
For profit nursing homes	76.60	76.31	75.62	76.05
Metropolitan	74.20	74.49	73.23	73.33
Urban Non-Metropolitan	22.73	22.47	23.61	23.48
Rural	3.07	3.04	3.16	3.18
N (Facilities)	10,917	10,906	11,005	11,040

ECCP = Enhanced Care and Coordination Providers; BMI = body mass index; ADL = activities of daily living; ESRD = end-stage renal disease; CFS = cognitive function scale; PHQ = Patient Health Questionnaire.

SOURCE: RTI analysis of MDS 3.0, Medicare claims data, and CASPER data (RTI program: MS14).

NOTES: Number in parentheses are standard deviations for continuous variables.

**Table L-2**  
**Resident and facility characteristics: Annual percentages (categorical variables) or means and standard deviations (continuous variables), FY 2014–2017, within-state reference group**

Characteristic	2014	2015	2016	2017
<b>Resident-level characteristics:</b>				
<b>Basic information</b>				
Residents meeting eligibility criteria	185,028	183,163	175,604	169,799
Mean exposure (days)	254.27 (130.29)	249.37 (130.99)	252.26 (130.77)	250.25 (130.57)
Exposure days 1–89	18.57	19.10	18.62	18.80
Exposure days 90–179	13.58	14.84	14.29	14.78
Exposure days 179–269	10.43	10.60	10.75	10.72
Exposure days 270–364	9.45	9.27	9.67	9.53
Exposure days 365/366	47.98	46.19	46.66	46.16
Male, < 65	5.37	5.60	5.89	6.01
Male, 65–69	3.18	3.41	3.62	3.87
Male, 70–74	3.72	3.85	4.06	4.24
Male, 75–79	4.37	4.44	4.56	4.62
Male, 80–84	5.03	4.90	4.91	4.89
Male, 85–89	4.98	4.95	4.89	4.78
Male, 90–94	2.84	2.98	2.97	2.95
Male, 95+	0.94	0.95	0.96	0.98
Female, < 65	4.56	4.68	4.86	4.93
Female, 65–69	3.56	3.68	3.97	4.25
Female, 70–74	5.07	5.28	5.35	5.57
Female, 75–79	7.52	7.49	7.56	7.63
Female, 80–84	11.99	11.55	11.22	10.91
Female, 85–89	16.46	15.89	15.14	14.67
Female, 90–94	13.69	13.64	13.30	12.90
Female, 95+	6.73	6.72	6.72	6.80
White, non-Hispanic	83.06	82.51	82.07	81.81
Black, non-Hispanic	11.50	11.54	11.77	11.91
Asian	0.82	0.89	0.90	0.93
Hispanic	2.98	2.95	3.01	3.08
Other race/ethnicity	1.64	2.11	2.26	2.27
Full Dual Eligibility	82.09	82.37	83.31	83.22
Original eligibility due to disability	15.67	16.16	16.74	17.29
<b>Health Status</b>				
Dementia	54.95	54.37	53.58	53.26
Anemia	27.66	27.84	27.63	27.70
BMI <18.5	6.61	6.59	6.65	6.56
BMI = 18.5–24.9	37.36	36.76	36.55	36.10
BMI = 25–29.9	28.56	28.56	28.24	28.05
BMI ≥ 30	27.48	28.09	28.55	29.29
ADL score= 0–7	12.28	12.08	12.18	12.29
ADL score= 8–14	16.52	16.43	16.50	16.75
ADL score= 15–21	51.79	53.24	54.22	54.85
ADL score= 22–28	19.41	18.24	17.10	16.10

(continued)



**Table L-2 (continued)**  
**Resident and facility characteristics: Annual percentages (categorical variables) or means and standard deviations (continuous variables), FY 2014–2017, within-state reference group**

Characteristic	2014	2015	2016	2017
Resident's mood assessment (PHQ)	2.61 (3.64)	2.51 (3.55)	2.44 (3.51)	2.33 (3.40)
CFS= 3 (Cognitively intact)	11.44	11.09	10.61	10.32
CFS= 2 (Mildly impaired)	34.25	33.57	33.28	32.58
CFS= 1 (Moderately impaired)	22.53	22.49	22.82	22.81
CFS= 0 (The highest level of impairment)	31.78	32.86	33.29	34.29
Neurogenic Bladder	2.29	2.45	2.69	3.01
Obstructive Uropathy	0.72	0.79	0.91	1.20
ESRD patient with dialysis status	2.08	2.22	2.38	2.51
ESRD patients after transplant who are not on dialysis after transplant	0.07	0.09	0.08	0.09
<b>Hierarchical Condition Categories</b>				
HIV/AIDS (HCC 1)	0.27	0.30	0.34	0.37
Septicemia, Sepsis, Systemic Inflammatory Response Syndrome/Shock (HCC 2)	12.02	12.71	13.78	13.94
Opportunistic Infections (HCC 6)	0.45	0.43	0.50	0.54
Metastatic Cancer and Acute Leukemia (HCC 8)	1.05	1.05	1.12	1.08
Lung and Other Severe Cancers (HCC 9)	1.23	1.25	1.31	1.21
Lymphoma and Other Cancers (HCC 10)	1.28	1.28	1.26	1.18
Colorectal, Bladder, and Other Cancers (HCC 11)	1.96	1.97	1.92	1.83
Breast, Prostate, and Other Cancers and Tumors (HCC 12)	4.17	4.13	4.09	4.00
Diabetes with Acute Complications (HCC 17)	1.05	1.06	1.19	1.22
Diabetes with Chronic Complications (HCC 18)	19.24	19.78	23.25	26.85
Diabetes without Complication (HCC 19)	18.82	18.56	15.72	12.14
Protein-Calorie Malnutrition (HCC 21)	8.14	8.41	8.86	9.16
Other Significant Endocrine and Metabolic Disorders (HCC 23)	4.02	4.21	4.73	5.22
End-Stage Liver Disease (HCC 27)	0.69	0.72	0.78	0.80
Cirrhosis of Liver (HCC 28)	0.65	0.64	0.72	0.73
Chronic Hepatitis (HCC 29)	0.39	0.45	0.52	0.60
Intestinal Obstruction/Perforation (HCC 33)	4.03	4.06	4.10	3.97
Chronic Pancreatitis (HCC 34)	0.30	0.29	0.32	0.34
Inflammatory Bowel Disease (HCC 35)	0.94	0.86	1.00	1.05
Bone/Joint/Muscle Infections/Necrosis (HCC 39)	3.15	3.34	3.42	3.30
Rheumatoid Arthritis and Inflammatory Connective Tissue Disease (HCC 40)	4.73	4.78	5.12	5.26
Severe Hematological Disorders (HCC 46)	0.88	0.84	0.86	0.86
Disorders of Immunity (HCC 47)	1.45	1.49	1.63	1.66
Coagulation Defects and Other Specified Hematological Disorders (HCC 48)	8.90	7.73	8.15	8.19
Drug/Alcohol Psychosis (HCC 54)	1.50	1.48	1.48	0.81
Drug/Alcohol Dependence (HCC 55)	1.33	1.56	2.04	3.04

(continued)

**Table L-2 (continued)**  
**Resident and facility characteristics: Annual percentages (categorical variables) or means and standard deviations (continuous variables), FY 2014–2017, within-state reference group**

Characteristic	2014	2015	2016	2017
Schizophrenia (HCC 57)	7.31	7.39	8.13	8.78
Major Depressive, Bipolar, and Paranoid Disorders (HCC 58)	16.87	17.74	21.53	26.74
Quadriplegia (HCC 70)	1.43	1.58	1.84	2.01
Paraplegia (HCC 71)	0.90	0.95	0.97	1.05
Spinal Cord Disorders/Injuries (HCC 72)	1.35	1.36	1.35	1.10
Amyotrophic Lateral Sclerosis and Other Motor Neuron Disease (HCC 73)	0.21	0.18	0.19	0.17
Cerebral Palsy (HCC 74)	1.11	1.10	1.17	1.24
Myasthenia Gravis/Myoneural Disorders and Guillain-Barre Syndrome/Inflammatory and Toxic Neuropathy (HCC 75)	1.10	1.13	1.26	1.13
Muscular Dystrophy (HCC 76)	0.12	0.13	0.16	0.15
Multiple Sclerosis (HCC 77)	1.71	1.70	1.77	1.80
Parkinson's and Huntington's Diseases (HCC 78)	8.31	8.03	8.33	8.67
Seizure Disorders and Convulsions (HCC 79)	12.05	12.04	12.46	12.47
Coma, Brain Compression/Anoxic Damage (HCC 80)	1.18	1.27	1.37	1.61
Respiratory Arrest (HCC 83)	0.21	0.16	0.16	0.15
Cardio-Respiratory Failure and Shock (HCC 84)	9.26	9.84	10.71	11.26
Congestive Heart Failure (HCC 85)	31.84	31.58	32.11	31.90
Acute Myocardial Infarction (HCC 86)	2.93	2.86	3.47	4.48
Unstable Angina and Other Acute Ischemic Heart Disease (HCC 87)	2.93	2.98	2.83	2.13
Angina Pectoris (HCC 88)	1.70	1.65	2.12	2.56
Specified Heart Arrhythmias (HCC 96)	27.35	27.55	28.11	27.61
Cerebral Hemorrhage (HCC 99)	2.16	2.34	2.49	2.47
Ischemic or Unspecified Stroke (HCC 100)	14.29	13.84	13.90	11.56
Hemiplegia/Hemiparesis (HCC 103)	7.51	7.65	8.45	9.32
Monoplegia, Other Paralytic Syndromes (HCC 104)	0.41	0.39	0.40	0.35
Atherosclerosis of the Extremities with Ulceration or Gangrene (HCC 106)	2.83	2.77	3.17	3.18
Vascular Disease with Complications (HCC 107)	4.07	4.15	4.47	4.40
Vascular Disease (HCC 108)	50.50	50.80	51.20	50.33
Cystic Fibrosis or Chronic Obstructive Pulmonary Disease (HCC 110 or HCC 111)	26.07	25.63	26.20	26.55
Fibrosis of Lung and Other Chronic Lung Disorders (HCC 112)	0.73	0.81	0.77	0.70
Aspiration and Specified Bacterial Pneumonias (HCC 114)	6.03	6.12	6.47	6.47
Pneumococcal Pneumonia, Empyema, Lung Abscess (HCC 115)	0.72	0.62	0.77	1.19
Proliferative Diabetic Retinopathy and Vitreous Hemorrhage (HCC 122)	1.12	1.29	1.32	1.09
Exudative Macular Degeneration (HCC 124)	2.11	2.27	2.31	2.42
Acute Renal Failure (HCC 135)	13.94	14.68	15.83	16.39
Chronic Kidney Disease, Stage 5 (HCC 136)	0.84	0.79	0.72	0.71
Chronic Kidney Disease, Severe (Stage 4) (HCC 137)	1.03	1.14	1.21	1.39

(continued)

**Table L-2 (continued)**  
**Resident and facility characteristics: Annual percentages (categorical variables) or means and standard deviations (continuous variables), FY 2014–2017, within-state reference group**

Characteristic	2014	2015	2016	2017
Pressure Ulcer of Skin with Necrosis Through to Muscle, Tendon, or Bone (HCC 157)	1.64	1.66	2.01	2.34
Pressure Ulcer of Skin with Full Thickness Skin Loss (HCC 158)	3.21	3.40	4.24	5.11
Chronic Ulcer of Skin, Except Pressure (HCC 161)	7.41	7.40	6.69	5.71
Severe Head Injury or Major Head Injury (HCC 166 or HCC 167)	2.51	2.62	2.65	2.37
Vertebral Fractures without Spinal Cord Injury (HCC 169)	2.90	2.90	2.95	2.76
Hip Fracture/Dislocation (HCC 170)	6.36	6.28	6.43	5.45
Complications of Specified Implanted Device or Graft (HCC 176)	4.25	4.54	5.20	5.65
Artificial Openings for Feeding or Elimination (HCC 188)	5.05	5.17	5.31	5.47
Amputation Status, Lower Limb/Amputation Complications (HCC 189)	1.20	1.36	1.49	1.60
<b>Participation in Other Initiatives</b>				
Community Based Care Transition Program (CCTP)	0.39	0.64	0.72	0.24
Comprehensive ESRD Care (CEC)	0.00	0.00	0.11	0.31
Comprehensive Primary Care Initiative (CPCI)	0.40	0.42	0.31	0.11
Comprehensive Primary Care Plus (CPC+), non-SSP Participants	0.00	0.00	0.00	0.77
Comprehensive Primary Care Plus (CPC+), SSP Participants	0.00	0.00	0.00	0.47
MMCO Financial Alignment Demonstration (Duals) (DEMME)	0.10	1.05	1.60	1.69
Multi-Payer Advanced Primary Care Practice (MAPCP) Demonstration	0.26	0.11	0.00	0.00
Next Generation Accountable Care Organization (NGACO)	0.00	0.00	1.24	1.99
Pioneer Accountable Care Organization Model	2.74	1.43	1.46	0.78
Medicare Shared Savings Program	10.98	18.40	22.65	22.14
<b>Facility Level</b>				
Nursing home facility in the hospital	3.52	3.50	3.30	3.19
For profit nursing homes	61.28	60.43	60.36	60.07
Metropolitan	77.13	76.78	76.64	76.32
Urban Non-Metropolitan	20.75	21.07	21.20	21.44
Rural	2.12	2.15	2.16	2.24
N (Facilities)	2,290	2,306	2,315	2,327

ECCP = Enhanced Care and Coordination Providers; BMI = body mass index; ADL = activities of daily living; ESRD = end-stage renal disease; CFS = cognitive function scale; PHQ = Patient Health Questionnaire.

SOURCE: RTI analysis of MDS 3.0, Medicare claims data, and CASPER data (RTI program: MS14).

NOTES: Number in parentheses are standard deviations for continuous variables.

**Table L-3**  
**Resident and facility characteristics: Annual percentages (categorical variables) or means and standard deviations (continuous variables), FY 2014–2017, Clinical + Payment**

Characteristic	2014	2015	2016	2017
<b>Resident-level characteristics:</b>				
<b>Basic information</b>				
Residents meeting eligibility criteria	13,483	13,201	12,861	12,556
Mean exposure (days)	252.24 (131.30)	248.57 (132.24)	251.76 (131.48)	248.05 (131.50)
Exposure days 1–89	19.37	19.71	18.87	19.66
Exposure days 90–179	13.22	14.77	14.30	14.60
Exposure days 179–269	10.38	10.17	10.36	10.82
Exposure days 270–364	9.78	8.71	9.49	9.14
Exposure days 365/366	47.26	46.64	46.97	45.79
Male, < 65	5.97	6.34	6.41	6.66
Male, 65–69	3.50	3.55	4.14	4.72
Male, 70–74	4.30	4.54	4.46	4.40
Male, 75–79	4.86	4.86	4.53	5.03
Male, 80–84	4.76	5.17	4.93	4.99
Male, 85–89	4.58	4.75	4.57	4.40
Male, 90–94	2.28	2.32	2.40	2.25
Male, 95+	0.70	0.76	0.71	0.79
Female, < 65	4.90	5.06	5.38	5.38
Female, 65–69	3.91	4.11	4.11	4.44
Female, 70–74	5.80	6.07	5.94	5.98
Female, 75–79	8.54	8.29	8.19	8.03
Female, 80–84	12.19	11.78	11.90	11.13
Female, 85–89	15.52	14.79	14.38	13.86
Female, 90–94	12.45	11.98	12.04	11.85
Female, 95+	5.74	5.64	5.89	6.10
White, non-Hispanic	72.88	72.65	71.99	71.47
Black, non-Hispanic	18.74	18.54	19.10	19.23
Asian	1.33	1.53	1.83	2.08
Hispanic	5.23	4.64	4.65	4.71
Other race/ethnicity	1.82	2.63	2.43	2.52
Full Dual Eligibility	85.77	85.83	86.27	86.43
Original eligibility due to disability	16.86	17.31	17.23	18.69
<b>Health Status</b>				
Dementia	55.17	54.81	54.06	53.44
Anemia	30.79	32.73	31.87	30.98
BMI <18.5	7.20	6.70	7.63	7.93
BMI = 18.5–24.9	39.03	38.44	37.63	37.52
BMI = 25–29.9	28.03	28.32	28.08	27.33

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**Table L-3 (continued)**  
**Resident and facility characteristics: Annual percentages (categorical variables) or means and standard deviations (continuous variables), FY 2014–2017, Clinical + Payment**

Characteristic	2014	2015	2016	2017
BMI >= 30	25.74	26.54	26.66	27.22
ADL score= 0–7	9.43	9.68	10.03	9.70
ADL score= 8–14	15.17	14.85	14.23	14.85
ADL score= 15–21	51.36	53.25	54.32	54.88
ADL score= 22–28	24.03	22.23	21.42	20.57
Resident's mood assessment (PHQ)	2.31 (3.41)	2.45 (3.50)	2.59 (3.65)	2.58 (3.63)
CFS= 3 (Cognitively intact)	12.22	11.57	10.74	10.45
CFS= 2 (Mildly impaired)	32.31	32.20	33.25	32.42
CFS= 1 (Moderately impaired)	22.21	22.36	22.22	22.52
CFS= 0 (The highest level of impairment)	33.26	33.87	33.79	34.60
Neurogenic Bladder	2.46	2.69	2.78	2.82
Obstructive Uropathy	0.70	0.92	1.10	1.43
ESRD patient with dialysis status	3.28	3.28	3.48	3.46
ESRD patients after transplant who are not on dialysis after transplant	0.12	0.11	0.15	0.17
<b>Hierarchical Condition Categories</b>				
HIV/AIDS (HCC 1)	0.64	0.68	0.74	0.78
Septicemia, Sepsis, Systemic Inflammatory Response Syndrome/Shock (HCC 2)	13.63	13.67	14.36	15.32
Opportunistic Infections (HCC 6)	0.57	0.52	0.62	0.60
Metastatic Cancer and Acute Leukemia (HCC 8)	1.06	1.05	1.21	1.21
Lung and Other Severe Cancers (HCC 9)	1.29	1.37	1.25	1.26
Lymphoma and Other Cancers (HCC 10)	1.34	1.39	1.31	1.19
Colorectal, Bladder, and Other Cancers (HCC 11)	1.77	1.81	1.89	1.78
Breast, Prostate, and Other Cancers and Tumors (HCC 12)	4.05	4.23	4.11	3.88
Diabetes with Acute Complications (HCC 17)	1.22	1.12	1.56	1.59
Diabetes with Chronic Complications (HCC 18)	19.89	20.70	23.83	27.96
Diabetes without Complication (HCC 19)	20.02	19.27	17.38	12.81
Protein-Calorie Malnutrition (HCC 21)	11.37	11.32	11.23	10.98
Other Significant Endocrine and Metabolic Disorders (HCC 23)	4.93	4.47	5.12	5.93
End-Stage Liver Disease (HCC 27)	0.85	0.64	0.75	0.78
Cirrhosis of Liver (HCC 28)	0.73	0.64	0.72	0.70
Chronic Hepatitis (HCC 29)	0.50	0.58	0.65	0.72
Intestinal Obstruction/Perforation (HCC 33)	4.77	4.48	4.42	4.69
Chronic Pancreatitis (HCC 34)	0.29	0.33	0.34	0.39
Inflammatory Bowel Disease (HCC 35)	1.17	0.80	1.01	1.06
Bone/Joint/Muscle Infections/Necrosis (HCC 39)	3.78	3.77	3.95	3.73
Rheumatoid Arthritis and Inflammatory Connective Tissue Disease (HCC 40)	4.61	4.76	5.22	4.76
Severe Hematological Disorders (HCC 46)	1.02	0.89	0.78	0.90

(continued)

**Table L-3 (continued)**  
**Resident and facility characteristics: Annual percentages (categorical variables) or means and standard deviations (continuous variables), FY 2014–2017, Clinical + Payment**

Characteristic	2014	2015	2016	2017
Disorders of Immunity (HCC 47)	1.68	1.54	1.83	1.66
Coagulation Defects and Other Specified Hematological Disorders (HCC 48)	10.27	9.70	10.01	10.11
Drug/Alcohol Psychosis (HCC 54)	1.62	1.80	1.77	1.11
Drug/Alcohol Dependence (HCC 55)	1.72	1.95	2.30	3.21
Schizophrenia (HCC 57)	6.23	6.67	6.83	8.28
Major Depressive, Bipolar, and Paranoid Disorders (HCC 58)	17.58	19.70	24.17	27.42
Quadriplegia (HCC 70)	1.82	2.18	2.15	2.50
Paraplegia (HCC 71)	1.05	1.16	1.01	1.45
Spinal Cord Disorders/Injuries (HCC 72)	1.56	1.63	1.28	1.03
Amyotrophic Lateral Sclerosis and Other Motor Neuron Disease (HCC 73)	0.17	0.23	0.26	0.22
Cerebral Palsy (HCC 74)	1.15	1.17	1.19	1.30
Myasthenia Gravis/Myoneural Disorders and Guillain-Barre Syndrome/Inflammatory and Toxic Neuropathy (HCC 75)	1.48	1.55	1.60	1.57
Muscular Dystrophy (HCC 76)	0.21	0.18	0.17	0.18
Multiple Sclerosis (HCC 77)	1.99	2.08	2.30	2.34
Parkinson's and Huntington's Diseases (HCC 78)	7.27	7.83	7.59	7.89
Seizure Disorders and Convulsions (HCC 79)	14.25	14.45	14.52	14.38
Coma, Brain Compression/Anoxic Damage (HCC 80)	1.44	1.62	1.56	1.82
Respiratory Arrest (HCC 83)	0.23	0.22	0.18	0.11
Cardio-Respiratory Failure and Shock (HCC 84)	9.90	10.90	11.04	11.99
Congestive Heart Failure (HCC 85)	33.81	33.68	34.46	34.45
Acute Myocardial Infarction (HCC 86)	3.49	3.02	3.58	4.56
Unstable Angina and Other Acute Ischemic Heart Disease (HCC 87)	3.17	3.41	3.24	2.20
Angina Pectoris (HCC 88)	1.54	1.61	2.24	3.10
Specified Heart Arrhythmias (HCC 96)	26.25	26.88	27.21	26.70
Cerebral Hemorrhage (HCC 99)	2.54	2.83	2.89	2.89
Ischemic or Unspecified Stroke (HCC 100)	16.15	15.39	15.28	12.77
Hemiplegia/Hemiparesis (HCC 103)	9.49	9.84	10.21	10.33
Monoplegia, Other Paralytic Syndromes (HCC 104)	0.60	0.42	0.38	0.40
Atherosclerosis of the Extremities with Ulceration or Gangrene (HCC 106)	2.99	3.24	3.76	3.85
Vascular Disease with Complications (HCC 107)	4.64	4.03	4.13	4.24
Vascular Disease (HCC 108)	46.18	44.90	44.54	46.77
Cystic Fibrosis or Chronic Obstructive Pulmonary Disease (HCC 110 or HCC 111)	25.97	25.86	26.69	26.73
Fibrosis of Lung and Other Chronic Lung Disorders (HCC 112)	0.79	0.80	0.72	0.72
Aspiration and Specified Bacterial Pneumonias (HCC 114)	6.98	7.01	7.09	6.94
Pneumococcal Pneumonia, Empyema, Lung Abscess (HCC 115)	0.85	0.67	0.79	1.08
Proliferative Diabetic Retinopathy and Vitreous Hemorrhage (HCC 122)	1.22	1.27	1.32	1.17

(continued)

**Table L-3 (continued)**  
**Resident and facility characteristics: Annual percentages (categorical variables) or means and standard deviations (continuous variables), FY 2014–2017, Clinical + Payment**

Characteristic	2014	2015	2016	2017
Exudative Macular Degeneration (HCC 124)	1.61	1.74	1.69	1.82
Acute Renal Failure (HCC 135)	15.80	16.66	16.90	17.48
Chronic Kidney Disease, Stage 5 (HCC 136)	1.16	1.14	0.89	0.95
Chronic Kidney Disease, Severe (Stage 4) (HCC 137)	0.90	1.00	1.08	1.39
Pressure Ulcer of Skin with Necrosis Through to Muscle, Tendon, or Bone (HCC 157)	2.43	2.33	2.69	3.31
Pressure Ulcer of Skin with Full Thickness Skin Loss (HCC 158)	3.98	4.55	5.51	6.86
Chronic Ulcer of Skin, Except Pressure (HCC 161)	8.12	7.97	7.53	5.75
Severe Head Injury or Major Head Injury (HCC 166 or HCC 167)	2.40	2.39	2.29	2.41
Vertebral Fractures without Spinal Cord Injury (HCC 169)	2.38	2.46	2.73	2.26
Hip Fracture/Dislocation (HCC 170)	6.30	6.29	6.20	5.69
Complications of Specified Implanted Device or Graft (HCC 176)	4.90	5.21	5.80	6.06
Artificial Openings for Feeding or Elimination (HCC 188)	7.07	7.11	6.52	6.73
Amputation Status, Lower Limb/Amputation Complications (HCC 189)	1.42	1.60	1.43	1.66
<b>Participation in Other Initiatives</b>				
Community Based Care Transition Program (CCTP)	0.28	0.48	0.67	0.29
Comprehensive ESRD Care (CEC)	0.00	0.00	0.02	0.41
Comprehensive Primary Care Initiative (CPCI)	0.03	0.02	0.00	0.00
Comprehensive Primary Care Plus (CPC+), non-SSP Participants	0.00	0.00	0.00	0.02
Comprehensive Primary Care Plus (CPC+), SSP Participants	0.00	0.00	0.00	0.03
MMCO Financial Alignment Demonstration (Duals) (DEMME)	0.05	0.00	0.00	0.00
Multi-Payer Advanced Primary Care Practice (MAPCP) Demonstration	0.01	0.00	0.00	0.00
Next Generation Accountable Care Organization (NGACO)	0.00	0.00	0.02	1.69
Pioneer Accountable Care Organization Model	5.10	1.89	1.64	0.75
Medicare Shared Savings Program	8.68	13.98	18.44	17.86
<b>Facility Level</b>				
Nursing home facility in the hospital	0.93	0.90	0.90	0.83
For profit nursing homes	67.22	63.73	62.62	64.47
Metropolitan	89.55	89.58	89.41	89.49
Urban Non-Metropolitan	9.73	9.65	9.80	9.72
Rural	0.72	0.77	0.79	0.79
N (Facilities)	112	112	112	112

ECCP = Enhanced Care and Coordination Providers; BMI = body mass index; ADL = activities of daily living; ESRD = end-stage renal disease; CFS = cognitive function scale; PHQ = Patient Health Questionnaire.

SOURCE: RTI analysis of MDS 3.0, Medicare claims data, and CASPER data (RTI program: MS14).

NOTES: Number in parentheses are standard deviations for continuous variables.

**Table L-4**  
**Resident and facility characteristics: Annual percentages (categorical variables) or means and standard deviations (continuous variables), FY 2014–2017, Payment-Only**

Characteristic	2014	2015	2016	2017
<b>Resident-level characteristics:</b>				
<b>Basic information</b>				
Residents meeting eligibility criteria	15,223	14,868	14,391	13,907
Mean exposure (days)	250.45 (131.38)	248.00 (131.15)	253.66 (130.54)	250.00 (131.29)
Exposure days 1–89	19.33	19.00	18.59	19.16
Exposure days 90–179	14.07	15.62	13.80	14.65
Exposure days 179–269	10.78	10.40	10.80	10.40
Exposure days 270–364	8.85	9.44	9.68	9.36
Exposure days 365/366	46.97	45.55	47.13	46.44
Male, < 65	4.70	4.70	4.99	4.93
Male, 65–69	3.07	3.28	3.51	3.53
Male, 70–74	3.61	3.56	3.66	4.05
Male, 75–79	4.51	4.65	4.42	4.34
Male, 80–84	5.12	5.11	5.13	5.11
Male, 85–89	5.04	5.05	5.14	5.04
Male, 90–94	3.05	3.11	3.13	3.40
Male, 95+	0.99	1.02	0.97	1.06
Female, < 65	3.85	3.87	3.90	4.23
Female, 65–69	2.97	3.28	3.59	3.54
Female, 70–74	5.21	5.04	5.20	5.29
Female, 75–79	7.79	7.82	7.73	7.77
Female, 80–84	12.44	12.19	11.83	11.29
Female, 85–89	16.44	16.05	15.47	15.14
Female, 90–94	14.22	14.08	14.20	13.96
Female, 95+	7.00	7.19	7.14	7.31
White, non-Hispanic	81.34	81.81	81.44	81.21
Black, non-Hispanic	12.07	11.76	12.36	12.44
Asian	0.72	0.86	1.02	1.18
Hispanic	3.61	3.50	3.37	3.44
Other race/ethnicity	2.25	2.06	1.81	1.73
Full Dual Eligibility	81.86	82.43	83.30	83.12
Original eligibility due to disability	15.73	15.91	16.04	16.59
<b>Health Status</b>				
Dementia	56.15	56.30	56.45	55.50
Anemia	28.14	28.78	29.28	28.12
BMI <18.5	6.84	6.98	6.64	6.26
BMI = 18.5–24.9	37.98	38.25	37.80	37.36
BMI = 25–29.9	29.36	28.34	28.64	28.09

(continued)



**Table L-4 (continued)**  
**Resident and facility characteristics: Annual percentages (categorical variables) or means and standard deviations (continuous variables), FY 2014–2017, Payment-Only**

Characteristic	2014	2015	2016	2017
BMI >= 30	25.82	26.43	26.92	28.29
ADL score= 0–7	10.01	10.27	10.49	10.89
ADL score= 8–14	14.77	15.04	15.09	15.29
ADL score= 15–21	56.61	58.23	59.13	58.71
ADL score= 22–28	18.61	16.46	15.29	15.11
Resident's mood assessment (PHQ)	2.81 (3.89)	2.80 (3.96)	2.74 (3.97)	2.45 (3.64)
CFS= 3 (Cognitively intact)	11.31	11.00	10.72	10.46
CFS= 2 (Mildly impaired)	34.64	34.19	34.17	34.04
CFS= 1 (Moderately impaired)	23.01	22.53	22.56	22.79
CFS= 0 (The highest level of impairment)	31.04	32.28	32.55	32.71
Neurogenic Bladder	2.06	2.23	2.45	2.52
Obstructive Uropathy	1.10	1.20	1.24	1.50
ESRD patient with dialysis status	2.15	2.33	2.52	2.68
ESRD patients after transplant who are not on dialysis after transplant	0.05	0.09	0.15	0.13
<b>Hierarchical Condition Categories</b>				
HIV/AIDS (HCC 1)	0.23	0.22	0.30	0.27
Septicemia, Sepsis, Systemic Inflammatory Response Syndrome/Shock (HCC 2)	11.62	11.39	13.44	13.09
Opportunistic Infections (HCC 6)	0.44	0.37	0.49	0.57
Metastatic Cancer and Acute Leukemia (HCC 8)	0.91	1.06	1.11	1.04
Lung and Other Severe Cancers (HCC 9)	1.46	1.30	1.13	1.14
Lymphoma and Other Cancers (HCC 10)	1.35	1.23	1.38	1.49
Colorectal, Bladder, and Other Cancers (HCC 11)	1.69	1.55	1.70	1.62
Breast, Prostate, and Other Cancers and Tumors (HCC 12)	3.95	3.85	4.11	3.73
Diabetes with Acute Complications (HCC 17)	1.10	0.93	1.27	1.13
Diabetes with Chronic Complications (HCC 18)	19.08	18.86	21.85	25.89
Diabetes without Complication (HCC 19)	18.28	19.12	15.55	12.50
Protein-Calorie Malnutrition (HCC 21)	8.01	8.60	9.12	8.92
Other Significant Endocrine and Metabolic Disorders (HCC 23)	4.05	4.17	4.91	5.03
End-Stage Liver Disease (HCC 27)	0.64	0.73	0.69	0.65
Cirrhosis of Liver (HCC 28)	0.56	0.51	0.56	0.73
Chronic Hepatitis (HCC 29)	0.35	0.41	0.52	0.53
Intestinal Obstruction/Perforation (HCC 33)	3.88	4.00	4.15	3.65
Chronic Pancreatitis (HCC 34)	0.28	0.28	0.24	0.29
Inflammatory Bowel Disease (HCC 35)	1.14	0.93	1.01	0.97
Bone/Joint/Muscle Infections/Necrosis (HCC 39)	3.06	3.20	3.34	3.05

(continued)

**Table L-4 (continued)**  
**Resident and facility characteristics: Annual percentages (categorical variables) or means and standard deviations (continuous variables), FY 2014–2017, Payment-Only**

Characteristic	2014	2015	2016	2017
Rheumatoid Arthritis and Inflammatory Connective Tissue Disease (HCC 40)	4.83	4.98	5.23	5.61
Severe Hematological Disorders (HCC 46)	0.74	0.77	0.73	0.87
Disorders of Immunity (HCC 47)	1.41	1.45	1.63	1.44
Coagulation Defects and Other Specified Hematological Disorders (HCC 48)	8.86	8.01	8.75	8.51
Drug/Alcohol Psychosis (HCC 54)	1.51	1.64	1.48	0.60
Drug/Alcohol Dependence (HCC 55)	1.08	1.46	1.80	2.57
Schizophrenia (HCC 57)	6.51	6.48	7.09	7.45
Major Depressive, Bipolar, and Paranoid Disorders (HCC 58)	14.59	14.92	19.39	24.30
Quadriplegia (HCC 70)	0.98	1.19	1.46	1.80
Paraplegia (HCC 71)	0.74	0.95	0.99	0.77
Spinal Cord Disorders/Injuries (HCC 72)	1.48	1.32	1.29	1.01
Amyotrophic Lateral Sclerosis and Other Motor Neuron Disease (HCC 73)	0.19	0.16	0.19	0.14
Cerebral Palsy (HCC 74)	1.06	1.09	1.13	1.24
Myasthenia Gravis/Myoneural Disorders and Guillain-Barre Syndrome/Inflammatory and Toxic Neuropathy (HCC 75)	1.14	1.39	1.54	1.03
Muscular Dystrophy (HCC 76)	0.13	0.10	0.17	0.12
Multiple Sclerosis (HCC 77)	1.55	1.59	1.52	1.56
Parkinson's and Huntington's Diseases (HCC 78)	8.07	7.82	8.53	8.48
Seizure Disorders and Convulsions (HCC 79)	11.31	11.82	12.00	12.07
Coma, Brain Compression/Anoxic Damage (HCC 80)	1.04	1.15	1.24	1.48
Respiratory Arrest (HCC 83)	0.22	0.19	0.16	0.22
Cardio-Respiratory Failure and Shock (HCC 84)	10.04	10.12	11.27	11.63
Congestive Heart Failure (HCC 85)	32.37	32.38	32.87	31.80
Acute Myocardial Infarction (HCC 86)	2.88	2.68	3.35	4.42
Unstable Angina and Other Acute Ischemic Heart Disease (HCC 87)	2.75	2.75	2.73	2.32
Angina Pectoris (HCC 88)	1.53	1.49	1.92	2.34
Specified Heart Arrhythmias (HCC 96)	26.78	26.84	27.98	27.50
Cerebral Hemorrhage (HCC 99)	2.19	2.15	2.28	2.36
Ischemic or Unspecified Stroke (HCC 100)	14.28	14.33	13.33	11.46
Hemiplegia/Hemiparesis (HCC 103)	7.82	8.06	8.71	9.12
Monoplegia, Other Paralytic Syndromes (HCC 104)	0.46	0.41	0.39	0.32
Atherosclerosis of the Extremities with Ulceration or Gangrene (HCC 106)	2.82	2.52	2.70	2.92
Vascular Disease with Complications (HCC 107)	4.39	3.92	4.30	4.26
Vascular Disease (HCC 108)	48.53	49.27	47.42	45.83
Cystic Fibrosis or Chronic Obstructive Pulmonary Disease (HCC 110 or HCC 111)	26.18	25.83	25.88	25.81
Fibrosis of Lung and Other Chronic Lung Disorders (HCC 112)	0.73	0.65	0.66	0.74

(continued)

**Table L-4 (continued)**  
**Resident and facility characteristics: Annual percentages (categorical variables) or means and standard deviations (continuous variables), FY 2014–2017, Payment-Only**

Characteristic	2014	2015	2016	2017
Aspiration and Specified Bacterial Pneumonias (HCC 114)	6.16	5.76	6.06	6.05
Pneumococcal Pneumonia, Empyema, Lung Abscess (HCC 115)	0.74	0.61	0.84	1.04
Proliferative Diabetic Retinopathy and Vitreous Hemorrhage (HCC 122)	1.07	1.11	1.24	1.19
Exudative Macular Degeneration (HCC 124)	2.22	2.20	2.40	2.50
Acute Renal Failure (HCC 135)	14.17	14.09	15.55	15.91
Chronic Kidney Disease, Stage 5 (HCC 136)	0.64	0.61	0.74	0.81
Chronic Kidney Disease, Severe (Stage 4) (HCC 137)	1.12	1.20	1.21	1.38
Pressure Ulcer of Skin with Necrosis Through to Muscle, Tendon, or Bone (HCC 157)	1.60	1.45	1.74	1.97
Pressure Ulcer of Skin with Full Thickness Skin Loss (HCC 158)	3.46	2.99	3.68	4.87
Chronic Ulcer of Skin, Except Pressure (HCC 161)	7.11	6.62	6.40	5.92
Severe Head Injury or Major Head Injury (HCC 166 or HCC 167)	2.40	2.68	2.60	2.24
Vertebral Fractures without Spinal Cord Injury (HCC 169)	2.84	3.13	3.45	2.75
Hip Fracture/Dislocation (HCC 170)	6.47	6.23	6.43	5.93
Complications of Specified Implanted Device or Graft (HCC 176)	4.31	4.17	5.23	5.70
Artificial Openings for Feeding or Elimination (HCC 188)	5.01	4.60	5.04	5.09
Amputation Status, Lower Limb/Amputation Complications (HCC 189)	1.29	1.16	1.38	1.62
<b>Participation in Other Initiatives</b>				
Community Based Care Transition Program (CCTP)	0.15	0.34	0.51	0.31
Comprehensive ESRD Care (CEC)	0.00	0.00	0.08	0.37
Comprehensive Primary Care Initiative (CPCI)	1.37	1.35	0.91	0.32
Comprehensive Primary Care Plus (CPC+), non-SSP Participants	0.00	0.00	0.00	1.38
Comprehensive Primary Care Plus (CPC+), SSP Participants	0.00	0.00	0.00	0.90
MMCO Financial Alignment Demonstration (Duals) (DEMME)	0.07	3.01	4.55	5.13
Multi-Payer Advanced Primary Care Practice (MAPCP) Demonstration	0.11	0.02	0.00	0.00
Next Generation Accountable Care Organization (NGACO)	0.00	0.00	0.03	1.59
Pioneer Accountable Care Organization Model	1.01	0.55	1.12	0.63
Medicare Shared Savings Program	10.89	15.46	18.58	18.51
<b>Facility Level</b>				
Nursing home facility in the hospital	0.00	0.00	0.00	0.81
For profit nursing homes	64.01	64.48	64.39	66.83
Metropolitan	74.05	73.27	73.24	73.18
Urban Non-Metropolitan	23.71	24.33	24.35	24.35
Rural	2.24	2.39	2.41	2.47
N (Facilities)	148	148	148	148

ECCP = Enhanced Care and Coordination Providers; BMI = body mass index; ADL = activities of daily living; ESRD = end-stage renal disease; CFS = cognitive function scale; PHQ = Patient Health Questionnaire.

SOURCE: RTI analysis of MDS 3.0, Medicare claims data, and CASPER data (RTI program: MS14).

NOTES: Number in parentheses are standard deviations for continuous variables.

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**APPENDIX M**  
**DESCRIPTIVE ANALYSIS OF UTILIZATION (PERCENTAGE)**

In this section, we present summary results from a descriptive analysis of utilization measures, reporting the annual percentage of residents who were hospitalized, visited the ED, or experienced an acute care transition, for all-cause, potentially avoidable, and the six qualifying conditions aggregated and separately. *Table M-1* presents the results from the national comparison group. *Tables M-2* through *M-15* present the combined results across all ECCPs, for each intervention group (Clinical + Payment and Payment-Only) and respective WSRG, and then separately for each ECCP.

**Table M-1**  
**Annual percentage of residents who used each type of service, FY 2014-2017,**  
**national comparison group**

Event	National comparison group			
	2014	2015	2016	2017
Number of residents meeting eligibility criteria	783,973	757,016	729,723	712,176
Mean exposure (days)	247.44	244.68	246.98	244.59
<b>Any hospitalization (all-cause)</b>	28.94	29.46	28.80	29.29
Any potentially avoidable hospitalization	14.68	14.47	13.91	13.95
Any potentially avoidable hospitalization (all six qualifying conditions)	9.41	9.17	8.69	8.66
Any hospitalization (pneumonia)	4.26	4.14	3.67	3.11
Any hospitalization (CHF)	1.73	1.73	1.69	1.87
Any hospitalization (COPD/Asthma)	0.92	0.90	0.80	1.26
Any hospitalization (skin infection)	0.71	0.68	0.60	0.57
Any hospitalization (dehydration)	0.29	0.24	0.43	0.43
Any hospitalization (UTI)	2.36	2.30	2.26	2.16
<b>Any ED visit (all-cause)</b>	24.94	25.37	25.83	25.92
Any potentially avoidable ED visit	14.05	14.43	14.61	14.60
Any potentially avoidable ED visit (all six qualifying conditions)	4.78	5.08	5.04	5.16
Any ED visit (pneumonia)	0.96	1.07	0.98	0.97
Any ED visit (CHF)	0.47	0.48	0.49	0.53
Any ED visit (COPD/Asthma)	0.54	0.57	0.57	0.58
Any ED visit (skin infection)	0.46	0.45	0.37	0.37
Any ED visit (dehydration)	0.48	0.48	0.51	0.53
Any ED visit (UTI)	2.19	2.35	2.46	2.53
<b>Any acute care transition (all-cause)</b>	42.18	42.73	42.46	42.83
Any potentially avoidable acute care transition	24.66	24.74	24.42	24.42
Any potentially avoidable acute care transition (all six qualifying conditions)	12.69	12.67	12.22	12.29
Any acute care transition (pneumonia)	4.80	4.76	4.25	3.72
Any acute care transition (CHF)	2.05	2.05	2.02	2.22
Any acute care transition (COPD/Asthma)	1.35	1.35	1.26	1.70
Any acute care transition (skin infection)	1.12	1.08	0.91	0.90
Any acute care transition (dehydration)	0.75	0.71	0.91	0.92
Any acute care transition (UTI)	4.27	4.35	4.41	4.40

CHF = congestive heart failure; COPD = chronic obstructive pulmonary disease; ED = emergency department; UTI = urinary tract infection.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 09).

NOTES: Percentages are based on counting each individual once without regard to the length of their exposure period. Acute care transitions include hospitalizations, ED visits, and observation stays.

**Table M-2**

**Clinical + Payment: Annual percentage of residents who used each type of service, FY 2014–2017, all ECCPs (6 states)**

Event	Intervention group				Within-state reference group			
	2014	2015	2016	2017	2014	2015	2016	2017
Number of residents meeting eligibility criteria	13,989	13,710	13,347	13,012	190,787	189,211	181,565	175,956
Mean exposure (days)	251.44	247.75	250.41	246.73	253.28	248.43	251.24	249.27
<b>Any hospitalization (all-cause)</b>	27.06	26.94	25.95	25.92	27.05	27.53	26.54	27.00
Any potentially avoidable hospitalization	12.11	11.68	10.75	10.87	13.23	13.02	12.32	12.35
Any potentially avoidable hospitalization (all six qualifying conditions)	6.93	6.49	5.87	5.89	8.16	7.91	7.39	7.29
Any hospitalization (pneumonia)	3.10	2.81	2.24	2.05	3.59	3.57	3.11	2.58
Any hospitalization (CHF)	1.31	1.27	1.14	1.40	1.63	1.61	1.54	1.68
Any hospitalization (COPD/Asthma)	0.58	0.55	0.44	0.74	0.80	0.81	0.68	1.11
Any hospitalization (skin infection)	0.49	0.50	0.40	0.33	0.61	0.54	0.51	0.47
Any hospitalization (dehydration)	0.15	0.20	0.37	0.33	0.21	0.22	0.34	0.33
Any hospitalization (UTI)	1.77	1.66	1.55	1.42	1.99	1.83	1.78	1.69
<b>Any ED visit (all-cause)</b>	18.14	17.88	17.16	17.51	21.73	21.85	21.81	22.10
Any potentially avoidable ED visit	9.04	9.25	8.98	8.89	11.80	11.95	11.88	12.06
Any potentially avoidable ED visit (all six qualifying conditions)	2.21	2.24	2.24	2.09	3.76	3.94	3.73	3.88
Any ED visit (pneumonia)	0.34	0.33	0.27	0.36	0.72	0.80	0.71	0.70
Any ED visit (CHF)	0.17	0.24	0.16	0.19	0.34	0.38	0.34	0.38
Any ED visit (COPD/Asthma)	0.21	0.22	0.25	0.19	0.41	0.43	0.39	0.43
Any ED visit (skin infection)	0.26	0.20	0.18	0.16	0.37	0.38	0.33	0.29
Any ED visit (dehydration)	0.15	0.16	0.25	0.16	0.36	0.34	0.35	0.34
Any ED visit (UTI)	1.12	1.14	1.19	1.08	1.77	1.84	1.82	1.93
<b>Any acute care transition (all-cause)</b>	36.81	36.90	35.54	35.76	38.98	39.36	38.38	38.87
Any potentially avoidable acute care transition	18.99	18.88	17.86	17.82	21.88	21.77	21.13	21.30
Any potentially avoidable acute care transition (all six qualifying conditions)	8.57	8.26	7.69	7.51	10.84	10.76	10.11	10.13
Any acute care transition (pneumonia)	3.34	3.06	2.44	2.32	4.03	4.05	3.57	3.06
Any acute care transition (CHF)	1.41	1.48	1.28	1.54	1.87	1.88	1.77	1.93
Any acute care transition (COPD/Asthma)	0.74	0.74	0.67	0.89	1.13	1.15	1.00	1.44
Any acute care transition (skin infection)	0.73	0.68	0.58	0.49	0.93	0.88	0.79	0.73
Any acute care transition (dehydration)	0.29	0.36	0.61	0.49	0.56	0.55	0.67	0.67
Any acute care transition (UTI)	2.74	2.68	2.67	2.41	3.56	3.48	3.41	3.42

CHF = congestive heart failure; COPD = chronic obstructive pulmonary disease; ED = emergency department; UTI = urinary tract infection.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 09).

NOTES: Percentages are based on counting each individual once without regard to the length of their exposure period. Acute care transitions include hospitalizations, ED visits, and observation stays.

**Table M-3**  
**Payment-Only: Annual percentage of residents who used each type of service, FY 2014–2017, all ECCPs (6 states)**

Event	Intervention group				Within-state reference group			
	2014	2015	2016	2017	2014	2015	2016	2017
Number of residents meeting eligibility criteria	15,650	15,347	14,830	14,413	190,787	189,211	181,565	175,956
Mean exposure (days)	249.55	247.05	252.89	249.06	253.28	248.43	251.24	249.27
<b>Any hospitalization (all-cause)</b>	25.92	26.81	25.36	23.92	27.05	27.53	26.54	27.00
Any potentially avoidable hospitalization	12.66	12.61	11.47	10.50	13.23	13.02	12.32	12.35
Any potentially avoidable hospitalization (all six qualifying conditions)	7.67	7.77	6.80	6.06	8.16	7.91	7.39	7.29
Any hospitalization (pneumonia)	3.44	3.67	2.81	1.98	3.59	3.57	3.11	2.58
Any hospitalization (CHF)	1.75	1.62	1.53	1.57	1.63	1.61	1.54	1.68
Any hospitalization (COPD/Asthma)	0.74	0.63	0.59	0.83	0.80	0.81	0.68	1.11
Any hospitalization (skin infection)	0.46	0.57	0.38	0.31	0.61	0.54	0.51	0.47
Any hospitalization (dehydration)	0.23	0.21	0.38	0.28	0.21	0.22	0.34	0.33
Any hospitalization (UTI)	1.63	1.62	1.52	1.35	1.99	1.83	1.78	1.69
<b>Any ED visit (all-cause)</b>	20.91	21.86	20.99	20.08	21.73	21.85	21.81	22.10
Any potentially avoidable ED visit	11.19	12.19	11.82	10.74	11.80	11.95	11.88	12.06
Any potentially avoidable ED visit (all six qualifying conditions)	3.40	3.64	3.44	3.03	3.76	3.94	3.73	3.88
Any ED visit (pneumonia)	0.55	0.68	0.57	0.52	0.72	0.80	0.71	0.70
Any ED visit (CHF)	0.32	0.28	0.37	0.32	0.34	0.38	0.34	0.38
Any ED visit (COPD/Asthma)	0.47	0.40	0.40	0.34	0.41	0.43	0.39	0.43
Any ED visit (skin infection)	0.36	0.32	0.30	0.18	0.37	0.38	0.33	0.29
Any ED visit (dehydration)	0.32	0.40	0.30	0.29	0.36	0.34	0.35	0.34
Any ED visit (UTI)	1.55	1.69	1.69	1.48	1.77	1.84	1.82	1.93
<b>Any acute care transition (all-cause)</b>	37.39	39.08	37.19	35.72	38.98	39.36	38.38	38.87
Any potentially avoidable acute care transition	20.94	21.78	20.45	18.80	21.88	21.77	21.13	21.30
Any potentially avoidable acute care transition (all six qualifying conditions)	10.26	10.49	9.41	8.47	10.84	10.76	10.11	10.13
Any acute care transition (pneumonia)	3.80	4.12	3.26	2.32	4.03	4.05	3.57	3.06
Any acute care transition (CHF)	1.98	1.77	1.78	1.83	1.87	1.88	1.77	1.93
Any acute care transition (COPD/Asthma)	1.16	0.96	0.90	1.14	1.13	1.15	1.00	1.44
Any acute care transition (skin infection)	0.80	0.85	0.64	0.46	0.93	0.88	0.79	0.73
Any acute care transition (dehydration)	0.54	0.61	0.67	0.57	0.56	0.55	0.67	0.67
Any acute care transition (UTI)	3.06	3.19	3.11	2.75	3.56	3.48	3.41	3.42

CHF = congestive heart failure; COPD = chronic obstructive pulmonary disease; ED = emergency department; UTI = urinary tract infection.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 09).

NOTES: Percentages are based on counting each individual once without regard to the length of their exposure period. Acute care transitions include hospitalizations, ED visits, and observation stays.



**Table M-4**  
**Clinical + Payment: Annual percentage of residents who used each type of service, FY 2014–2017, AQA (Alabama)**

Event	Intervention group				Within-state reference group			
	2014	2015	2016	2017	2014	2015	2016	2017
Number of residents meeting eligibility criteria	2,497	2,526	2,531	2,450	15,172	15,135	14,636	13,976
Mean exposure (days)	265.15	258.64	262.35	256.39	261.17	256.42	259.68	259.17
<b>Any hospitalization (all-cause)</b>	27.87	30.21	30.26	28.61	29.53	30.70	30.16	29.82
Any potentially avoidable hospitalization	13.98	15.08	13.59	13.06	15.46	16.26	15.60	14.68
(all six qualifying conditions)	8.45	8.83	7.27	6.90	9.60	10.25	9.65	8.83
Any hospitalization (pneumonia)	3.96	4.08	2.69	2.29	4.34	4.87	3.98	2.96
Any hospitalization (CHF)	1.64	2.02	1.26	1.76	1.73	1.90	1.94	1.92
Any hospitalization (COPD/Asthma)	0.80	0.87	0.71	0.94	0.95	1.18	1.11	1.48
Any hospitalization (skin infection)	0.48	0.36	0.32	0.29	0.48	0.45	0.35	0.35
Any hospitalization (dehydration)	0.20	0.44	0.43	0.41	0.22	0.24	0.46	0.34
Any hospitalization (UTI)	2.04	1.70	2.25	1.88	2.58	2.58	2.62	2.56
<b>Any ED visit (all-cause)</b>	22.79	23.12	22.09	20.69	23.87	24.96	25.12	25.23
Any potentially avoidable ED visit	11.69	13.26	12.52	11.18	13.55	14.11	14.35	14.38
(all six qualifying conditions)	3.08	3.80	3.95	2.53	4.57	4.54	4.45	4.58
Any ED visit (pneumonia)	0.40	0.36	0.47	0.37	0.60	0.74	0.71	0.62
Any ED visit (CHF)	0.40	0.67	0.40	0.29	0.44	0.44	0.38	0.55
Any ED visit (COPD/Asthma)	0.20	0.40	0.40	0.41	0.69	0.65	0.61	0.54
Any ED visit (skin infection)	0.20	0.44	0.16	0.12	0.39	0.37	0.20	0.22
Any ED visit (dehydration)	0.12	0.36	0.51	0.29	0.44	0.28	0.38	0.52
Any ED visit (UTI)	1.80	1.70	2.13	1.22	2.19	2.23	2.34	2.32
<b>Any acute care transition (all-cause)</b>	40.45	42.16	41.29	39.10	42.26	44.28	43.46	43.29
Any potentially avoidable acute care transition	22.79	24.58	23.03	21.22	25.20	26.30	26.02	25.22
(all six qualifying conditions)	10.77	11.68	10.51	8.94	12.96	13.72	13.05	12.41
Any acute care transition (pneumonia)	4.25	4.32	3.04	2.65	4.73	5.35	4.48	3.47
Any acute care transition (CHF)	1.84	2.65	1.58	1.96	2.07	2.23	2.23	2.37
Any acute care transition (COPD/Asthma)	0.92	1.19	1.07	1.31	1.55	1.75	1.58	1.95
Any acute care transition (skin infection)	0.68	0.79	0.47	0.41	0.84	0.82	0.55	0.57
Any acute care transition (dehydration)	0.32	0.79	0.95	0.69	0.65	0.55	0.83	0.83
Any acute care transition (UTI)	3.64	3.21	4.07	2.98	4.59	4.63	4.74	4.65

CHF = congestive heart failure; COPD = chronic obstructive pulmonary disease; ED = emergency department; UTI = urinary tract infection.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 09).

NOTES: Percentages are based on counting each individual once without regard to the length of their exposure period. Acute care transitions include hospitalizations, ED visits, and observation stays.

**Table M-5**  
**Payment-Only: Annual percentage of residents who used each type of service, FY 2014–017, AQAF (Alabama)**

Event	Intervention group				Within-state reference group			
	2014	2015	2016	2017	2014	2015	2016	2017
Number of residents meeting eligibility criteria	2,128	2,062	2,016	1,938	15,172	15,135	14,636	13,976
Mean exposure (days)	253.25	258.23	258.25	259.22	261.17	256.42	259.68	259.17
<b>Any hospitalization (all-cause)</b>	33.22	32.35	29.41	27.40	29.53	30.70	30.16	29.82
Any potentially avoidable hospitalization	18.23	16.49	13.44	12.85	15.46	16.26	15.60	14.68
Any potentially avoidable hospitalization (all six qualifying conditions)	11.94	10.86	8.38	7.48	9.60	10.25	9.65	8.83
Any hospitalization (pneumonia)	5.69	5.38	3.08	2.68	4.34	4.87	3.98	2.96
Any hospitalization (CHF)	2.49	1.79	1.74	1.44	1.73	1.90	1.94	1.92
Any hospitalization (COPD/Asthma)	1.17	0.87	0.84	1.34	0.95	1.18	1.11	1.48
Any hospitalization (skin infection)	0.75	0.68	0.40	0.41	0.48	0.45	0.35	0.35
Any hospitalization (dehydration)	0.56	0.29	0.40	0.15	0.22	0.24	0.46	0.34
Any hospitalization (UTI)	2.58	2.67	2.23	1.96	2.58	2.58	2.62	2.56
<b>Any ED visit (all-cause)</b>	25.38	26.33	24.80	22.81	23.87	24.96	25.12	25.23
Any potentially avoidable ED visit	13.58	13.92	14.19	11.76	13.55	14.11	14.35	14.38
Any potentially avoidable ED visit (all six qualifying conditions)	3.85	3.93	4.32	3.10	4.57	4.54	4.45	4.58
Any ED visit (pneumonia)	0.19	0.48	0.45	0.52	0.60	0.74	0.71	0.62
Any ED visit (CHF)	0.56	0.39	0.55	0.36	0.44	0.44	0.38	0.55
Any ED visit (COPD/Asthma)	0.80	0.39	0.64	0.46	0.69	0.65	0.61	0.54
Any ED visit (skin infection)	0.42	0.29	0.35	0.10	0.39	0.37	0.20	0.22
Any ED visit (dehydration)	0.47	0.34	0.20	0.15	0.44	0.28	0.38	0.52
Any ED visit (UTI)	1.50	2.09	2.33	1.50	2.19	2.23	2.34	2.32
<b>Any acute care transition (all-cause)</b>	45.91	46.94	43.06	40.20	42.26	44.28	43.46	43.29
Any potentially avoidable acute care transition	27.68	26.38	24.40	21.57	25.20	26.30	26.02	25.22
Any potentially avoidable acute care transition (all six qualifying conditions)	14.80	14.02	11.56	10.06	12.96	13.72	13.05	12.41
Any acute care transition (pneumonia)	5.83	5.67	3.47	2.99	4.73	5.35	4.48	3.47
Any acute care transition (CHF)	2.87	1.99	2.18	1.75	2.07	2.23	2.23	2.37
Any acute care transition (COPD/Asthma)	1.93	1.21	1.34	1.75	1.55	1.75	1.58	1.95
Any acute care transition (skin infection)	1.17	0.92	0.69	0.46	0.84	0.82	0.55	0.57
Any acute care transition (dehydration)	1.03	0.63	0.60	0.31	0.65	0.55	0.83	0.83
Any acute care transition (UTI)	3.99	4.66	4.46	3.41	4.59	4.63	4.74	4.65

CHF = congestive heart failure; COPD = chronic obstructive pulmonary disease; ED = emergency department; UTI = urinary tract infection.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 09).

NOTES: Percentages are based on counting each individual once without regard to the length of their exposure period. Acute care transitions include hospitalizations, ED visits, and observation stays.

**Table M-6**  
**Clinical + Payment: Annual percentage of residents who used each type of service, FY 2014–2017, ATOP2 (Nevada)**

Event	Intervention group				Within-state reference group			
	2014	2015	2016	2017	2014	2015	2016	2017
Number of residents meeting eligibility criteria	1,258	1,253	1,205	1,207	1,112	1,073	1,030	1,003
Mean exposure (days)	228.07	239.54	245.59	244.85	233.90	233.66	240.44	243.07
<b>Any hospitalization (all-cause)</b>	27.50	28.89	30.29	27.17	31.47	31.22	32.14	33.10
Any potentially avoidable hospitalization	12.40	11.65	10.37	9.69	14.03	12.49	12.91	12.96
Any potentially avoidable hospitalization (all six qualifying conditions)	6.68	5.99	4.90	4.97	7.73	6.06	6.12	6.58
Any hospitalization (pneumonia)	3.26	3.27	1.99	2.07	3.96	2.89	3.59	2.59
Any hospitalization (CHF)	0.56	0.24	0.58	0.91	0.63	0.75	1.07	1.69
Any hospitalization (COPD/Asthma)	0.40	0.32	0.33	0.50	1.17	0.75	0.58	0.90
Any hospitalization (skin infection)	0.56	0.24	0.75	0.25	0.36	0.47	0.49	0.60
Any hospitalization (dehydration)	0	0.16	0.17	0.25	0.36	0	0.10	0.20
Any hospitalization (UTI)	1.99	2.08	1.24	1.49	1.80	1.49	0.68	1.00
<b>Any ED visit (all-cause)</b>	17.01	19.63	17.18	20.38	20.59	18.45	21.55	17.85
Any potentially avoidable ED visit	8.98	10.14	8.80	10.36	9.53	10.07	10.58	9.37
Any potentially avoidable ED visit (all six qualifying conditions)	1.99	2.15	2.32	2.57	2.43	2.05	2.91	2.79
Any ED visit (pneumonia)	0.64	0.16	0.17	0.33	0.54	0.37	0.39	0.90
Any ED visit (CHF)	0.08	0.24	0	0.25	0.45	0.09	0.29	0.30
Any ED visit (COPD/Asthma)	0.08	0.40	0.25	0	0.09	0.09	0.29	0
Any ED visit (skin infection)	0.16	0.24	0.41	0.25	0.36	0.56	0.58	0.20
Any ED visit (dehydration)	0.08	0.16	0.17	0.17	0.36	0.09	0.19	0.40
Any ED visit (UTI)	0.95	1.04	1.33	1.57	0.63	1.03	1.17	1.00
<b>Any acute care transition (all-cause)</b>	37.20	40.30	40.00	39.11	43.71	41.66	43.30	42.17
Any potentially avoidable acute care transition	18.76	20.19	17.68	18.06	21.13	20.13	20.39	19.74
Any potentially avoidable acute care transition (all six qualifying conditions)	8.19	7.66	6.97	6.88	9.80	7.83	8.64	9.07
Any acute care transition (pneumonia)	3.74	3.43	2.07	2.24	4.41	3.17	3.98	3.39
Any acute care transition (CHF)	0.64	0.48	0.58	1.16	0.99	0.84	1.26	1.99
Any acute care transition (COPD/Asthma)	0.48	0.72	0.58	0.50	1.26	0.75	0.87	0.90
Any acute care transition (skin infection)	0.72	0.40	1.16	0.50	0.63	1.03	0.97	0.80
Any acute care transition (dehydration)	0.08	0.32	0.33	0.41	0.72	0.09	0.29	0.60
Any acute care transition (UTI)	2.78	3.03	2.57	2.90	2.43	2.52	1.75	1.99

CHF = congestive heart failure; COPD = chronic obstructive pulmonary disease; ED = emergency department; UTI = urinary tract infection.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 09).

NOTES: Percentages are based on counting each individual once without regard to the length of their exposure period. Acute care transitions include hospitalizations, ED visits, and observation stays.

**Table M-7**

**Payment-Only: Annual percentage of residents who used each type of service, FY 2014–2017, ATOP2 (Colorado)**

Event	Intervention group				Within-state reference group			
	2014	2015	2016	2017	2014	2015	2016	2017
Number of residents meeting eligibility criteria	1,923	1,884	1,749	1,745	6,830	6,939	6,731	6,549
Mean exposure (days)	246.86	233.85	240.91	237.31	245.24	238.29	240.64	239.52
<b>Any hospitalization (all-cause)</b>	17.42	17.83	18.01	17.54	19.37	20.45	19.28	20.57
Any potentially avoidable hospitalization	7.80	7.70	7.66	7.51	9.66	9.41	8.68	8.69
Any potentially avoidable hospitalization (all six qualifying conditions)	4.73	4.41	4.46	4.13	5.75	5.26	4.69	4.84
Any hospitalization (pneumonia)	2.13	2.07	2.17	1.72	2.90	2.85	2.08	1.47
Any hospitalization (CHF)	1.09	0.74	0.69	1.15	0.85	0.75	0.82	1.13
Any hospitalization (COPD/Asthma)	0.57	0.53	0.11	0.57	0.34	0.36	0.53	0.66
Any hospitalization (skin infection)	0.36	0.37	0.29	0.11	0.54	0.40	0.37	0.52
Any hospitalization (dehydration)	0.05	0.11	0.57	0.23	0.09	0.12	0.21	0.15
Any hospitalization (UTI)	0.68	0.90	0.80	0.52	1.30	1.07	0.94	1.15
<b>Any ED visit (all-cause)</b>	19.86	19.80	21.10	19.66	22.66	22.64	22.82	24.57
Any potentially avoidable ED visit	10.71	11.62	11.61	10.26	12.43	12.58	12.58	13.21
Any potentially avoidable ED visit (all six qualifying conditions)	3.80	4.14	4.86	3.78	4.61	4.84	4.19	5.04
Any ED visit (pneumonia)	0.94	1.01	0.86	1.15	1.24	1.25	1.03	1.19
Any ED visit (CHF)	0.36	0.27	0.34	0.57	0.38	0.40	0.19	0.50
Any ED visit (COPD/Asthma)	0.36	0.48	0.51	0.29	0.38	0.49	0.52	0.60
Any ED visit (skin infection)	0.62	0.69	0.51	0.29	0.57	0.48	0.61	0.49
Any ED visit (dehydration)	0.16	0.21	0.69	0.23	0.42	0.37	0.40	0.49
Any ED visit (UTI)	1.46	1.70	2.34	1.55	2.02	2.20	1.69	2.24
<b>Any acute care transition (all-cause)</b>	30.68	31.37	31.85	30.72	33.46	34.05	33.41	35.18
Any potentially avoidable acute care transition	16.64	17.30	17.27	15.76	18.93	19.11	18.33	18.55
Any potentially avoidable acute care transition (all six qualifying conditions)	7.85	7.75	8.46	7.16	9.00	8.81	7.73	8.49
Any acute care transition (pneumonia)	2.81	2.71	2.74	2.46	3.62	3.60	2.67	2.31
Any acute care transition (CHF)	1.46	0.90	0.91	1.66	1.13	1.04	0.95	1.39
Any acute care transition (COPD/Asthma)	0.83	0.90	0.63	0.80	0.63	0.78	0.98	1.10
Any acute care transition (skin infection)	0.99	1.01	0.80	0.34	1.01	0.76	0.91	0.92
Any acute care transition (dehydration)	0.21	0.32	1.14	0.46	0.50	0.48	0.59	0.60
Any acute care transition (UTI)	2.08	2.65	3.09	2.06	3.13	3.00	2.51	3.15

CHF = congestive heart failure; COPD = chronic obstructive pulmonary disease; ED = emergency department; UTI = urinary tract infection.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 09).

NOTES: Percentages are based on counting each individual once without regard to the length of their exposure period. Acute care transitions include hospitalizations, ED visits, and observation stays.

**Table M-8**

**Clinical + Payment: Annual percentage of residents who used each type of service, FY 2014–2017, MOQI (Missouri)**

Event	Intervention group				Within-state reference group			
	2014	2015	2016	2017	2014	2015	2016	2017
Number of residents meeting eligibility criteria	1,653	1,701	1,662	1,587	26,466	26,829	26,137	25,661
Mean exposure (days)	261.09	248.47	259.78	254.65	252.84	248.22	250.32	248.37
<b>Any hospitalization (all-cause)</b>	28.74	27.45	23.89	24.64	29.83	31.51	29.70	30.75
Any potentially avoidable hospitalization	13.31	13.40	10.35	10.96	15.79	16.21	14.83	15.51
Any potentially avoidable hospitalization (all six qualifying conditions)	7.38	7.70	6.32	6.36	10.03	10.19	9.45	9.42
Any hospitalization (pneumonia)	2.96	3.59	2.65	2.08	4.88	4.89	4.23	3.40
Any hospitalization (CHF)	1.69	2.06	1.81	1.89	1.79	2.04	1.82	2.14
Any hospitalization (COPD/Asthma)	0.54	0.29	0.36	0.44	0.86	0.92	0.72	1.41
Any hospitalization (skin infection)	0.67	0.88	0.54	0.50	0.78	0.79	0.70	0.65
Any hospitalization (dehydration)	0.24	0.12	0.12	0.32	0.30	0.32	0.36	0.46
Any hospitalization (UTI)	1.63	1.29	1.32	1.39	2.20	2.24	2.40	2.20
<b>Any ED visit (all-cause)</b>	20.99	15.81	16.43	16.76	27.82	28.94	28.30	28.97
Any potentially avoidable ED visit	10.59	7.47	8.84	8.57	16.21	17.15	16.53	17.31
Any potentially avoidable ED visit (all six qualifying conditions)	2.18	1.65	1.93	1.83	5.81	6.53	6.01	6.35
Any ED visit (pneumonia)	0.24	0.41	0.24	0.38	1.42	1.63	1.47	1.35
Any ED visit (CHF)	0.18	0	0.06	0.06	0.60	0.70	0.65	0.71
Any ED visit (COPD/Asthma)	0.24	0.24	0.30	0.06	0.72	0.77	0.64	0.74
Any ED visit (skin infection)	0.36	0.18	0.24	0.19	0.52	0.56	0.48	0.48
Any ED visit (dehydration)	0.06	0.18	0.24	0.19	0.51	0.58	0.57	0.57
Any ED visit (UTI)	1.21	0.76	0.90	1.01	2.46	2.78	2.68	2.95
<b>Any acute care transition (all-cause)</b>	40.05	36.27	33.57	34.59	44.01	45.82	44.01	45.25
Any potentially avoidable acute care transition	21.29	19.34	17.33	17.52	26.70	27.72	26.38	27.55
Any potentially avoidable acute care transition (all six qualifying conditions)	8.95	8.99	7.64	7.69	13.64	14.36	13.35	13.65
Any acute care transition (pneumonia)	3.15	3.88	2.83	2.39	5.59	5.75	5.03	4.21
Any acute care transition (CHF)	1.81	2.06	1.87	1.95	2.14	2.47	2.25	2.61
Any acute care transition (COPD/Asthma)	0.79	0.53	0.66	0.50	1.47	1.53	1.25	1.97
Any acute care transition (skin infection)	1.03	1.06	0.72	0.69	1.20	1.26	1.07	1.03
Any acute care transition (dehydration)	0.24	0.29	0.36	0.50	0.77	0.85	0.90	0.99
Any acute care transition (UTI)	2.72	2.00	2.23	2.33	4.29	4.59	4.67	4.70

CHF = congestive heart failure; COPD = chronic obstructive pulmonary disease; ED = emergency department; UTI = urinary tract infection.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 09).

NOTES: Percentages are based on counting each individual once without regard to the length of their exposure period. Acute care transitions include hospitalizations, ED visits, and observation stays.

**Table M-9**  
**Payment-Only: Annual percentage of residents who used each type of service, FY 2014–2017, MOQI (Missouri)**

Event	Intervention group				Within-state reference group			
	2014	2015	2016	2017	2014	2015	2016	2017
Number of residents meeting eligibility criteria	2,271	2,264	2,148	2,058	26,466	26,829	26,137	25,661
Mean exposure (days)	252.91	247.53	261.46	260.40	252.84	248.22	250.32	248.37
<b>Any hospitalization (all-cause)</b>	29.02	30.87	29.05	28.67	29.83	31.51	29.70	30.75
Any potentially avoidable hospitalization	15.02	15.90	14.43	14.53	15.79	16.21	14.83	15.51
Any potentially avoidable hospitalization (all six qualifying conditions)	8.94	10.03	8.94	8.99	10.03	10.19	9.45	9.42
Any hospitalization (pneumonia)	4.49	5.48	4.00	2.87	4.88	4.89	4.23	3.40
Any hospitalization (CHF)	1.81	1.90	2.00	2.58	1.79	2.04	1.82	2.14
Any hospitalization (COPD/Asthma)	0.53	0.71	0.88	0.97	0.86	0.92	0.72	1.41
Any hospitalization (skin infection)	0.35	0.88	0.61	0.44	0.78	0.79	0.70	0.65
Any hospitalization (dehydration)	0.26	0.31	0.37	0.34	0.30	0.32	0.36	0.46
Any hospitalization (UTI)	2.11	1.50	2.00	2.19	2.20	2.24	2.40	2.20
<b>Any ED visit (all-cause)</b>	27.30	26.33	26.35	26.58	27.82	28.94	28.30	28.97
Any potentially avoidable ED visit	16.25	16.25	15.83	16.42	16.21	17.15	16.53	17.31
Any potentially avoidable ED visit (all six qualifying conditions)	5.59	5.17	4.80	5.93	5.81	6.53	6.01	6.35
Any ED visit (pneumonia)	1.23	1.02	1.02	1.26	1.42	1.63	1.47	1.35
Any ED visit (CHF)	0.48	0.44	0.65	0.53	0.60	0.70	0.65	0.71
Any ED visit (COPD/Asthma)	1.01	0.75	0.56	0.78	0.72	0.77	0.64	0.74
Any ED visit (skin infection)	0.31	0.31	0.61	0.19	0.52	0.56	0.48	0.48
Any ED visit (dehydration)	0.44	0.62	0.37	0.87	0.51	0.58	0.57	0.57
Any ED visit (UTI)	2.64	2.39	2.05	2.62	2.46	2.78	2.68	2.95
<b>Any acute care transition (all-cause)</b>	43.81	44.88	42.83	43.73	44.01	45.82	44.01	45.25
Any potentially avoidable acute care transition	26.86	27.78	25.47	26.77	26.70	27.72	26.38	27.55
Any potentially avoidable acute care transition (all six qualifying conditions)	13.21	13.78	12.24	13.51	13.64	14.36	13.35	13.65
Any acute care transition (pneumonia)	5.20	6.27	4.84	3.60	5.59	5.75	5.03	4.21
Any acute care transition (CHF)	2.11	2.12	2.47	3.06	2.14	2.47	2.25	2.61
Any acute care transition (COPD/Asthma)	1.41	1.33	1.26	1.65	1.47	1.53	1.25	1.97
Any acute care transition (skin infection)	0.66	1.15	1.02	0.63	1.20	1.26	1.07	1.03
Any acute care transition (dehydration)	0.66	0.93	0.74	1.17	0.77	0.85	0.90	0.99
Any acute care transition (UTI)	4.49	3.67	3.72	4.47	4.29	4.59	4.67	4.70

CHF = congestive heart failure; COPD = chronic obstructive pulmonary disease; ED = emergency department; UTI = urinary tract infection.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 09).

NOTES: Percentages are based on counting each individual once without regard to the length of their exposure period. Acute care transitions include hospitalizations, ED visits, and observation stays.

**Table M-10**

**Clinical + Payment: Annual percentage of residents who used each type of service, FY 2014–2017, NY-RAH (New York)**

Event	Intervention group				Within-state reference group			
	2014	2015	2016	2017	2014	2015	2016	2017
Number of residents meeting eligibility criteria	4,581	4,278	4,181	4,142	61,036	59,591	56,627	55,219
Mean exposure (days)	249.19	245.12	242.18	234.53	256.09	250.02	250.91	246.31
<b>Any hospitalization (all-cause)</b>	29.01	27.68	26.02	26.46	26.92	26.95	25.92	25.95
Any potentially avoidable hospitalization	12.09	10.57	10.12	10.07	11.88	11.57	11.01	10.95
Any potentially avoidable hospitalization (all six qualifying conditions)	6.85	5.98	5.93	5.70	7.17	6.85	6.49	6.28
Any hospitalization (pneumonia)	2.60	2.24	2.18	1.91	2.91	2.87	2.58	2.21
Any hospitalization (CHF)	1.48	1.01	1.27	1.26	1.42	1.40	1.38	1.48
Any hospitalization (COPD/Asthma)	0.63	0.70	0.36	0.77	0.81	0.80	0.64	0.93
Any hospitalization (skin infection)	0.65	0.68	0.38	0.29	0.58	0.50	0.51	0.46
Any hospitalization (dehydration)	0.22	0.12	0.43	0.46	0.19	0.19	0.35	0.33
Any hospitalization (UTI)	1.79	1.61	1.55	1.30	1.82	1.62	1.52	1.38
<b>Any ED visit (all-cause)</b>	14.78	15.59	13.90	15.14	18.85	18.89	18.57	18.25
Any potentially avoidable ED visit	6.59	7.27	6.51	7.15	9.94	9.93	9.64	9.45
Any potentially avoidable ED visit (all six qualifying conditions)	1.40	1.26	1.24	1.26	2.50	2.55	2.33	2.21
Any ED visit (pneumonia)	0.13	0.14	0.07	0.19	0.37	0.38	0.30	0.27
Any ED visit (CHF)	0.02	0.09	0.02	0	0.17	0.20	0.17	0.17
Any ED visit (COPD/Asthma)	0.15	0.09	0.10	0.10	0.21	0.27	0.22	0.24
Any ED visit (skin infection)	0.24	0.09	0.12	0.12	0.28	0.29	0.23	0.20
Any ED visit (dehydration)	0.17	0.14	0.19	0.07	0.28	0.25	0.23	0.20
Any ED visit (UTI)	0.68	0.72	0.77	0.77	1.27	1.27	1.28	1.19
<b>Any acute care transition (all-cause)</b>	36.39	36.47	33.65	35.13	37.57	37.56	36.40	36.28
Any potentially avoidable acute care transition	17.25	16.60	15.45	15.91	19.62	19.25	18.54	18.39
Any potentially avoidable acute care transition (all six qualifying conditions)	7.90	7.08	6.86	6.76	9.11	8.88	8.32	8.03
Any acute care transition (pneumonia)	2.73	2.38	2.22	2.05	3.19	3.16	2.81	2.43
Any acute care transition (CHF)	1.51	1.08	1.27	1.26	1.56	1.55	1.50	1.60
Any acute care transition (COPD/Asthma)	0.76	0.79	0.43	0.85	0.99	1.02	0.82	1.12
Any acute care transition (skin infection)	0.85	0.77	0.50	0.41	0.84	0.76	0.72	0.65
Any acute care transition (dehydration)	0.39	0.26	0.62	0.53	0.47	0.43	0.57	0.52
Any acute care transition (UTI)	2.38	2.24	2.30	2.05	2.97	2.80	2.69	2.48

CHF = congestive heart failure; COPD = chronic obstructive pulmonary disease; ED = emergency department; UTI = urinary tract infection.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 09).

NOTES: Percentages are based on counting each individual once without regard to the length of their exposure period. Acute care transitions include hospitalizations, ED visits, and observation stays.

**Table M-11**  
**Payment-Only: Annual percentage of residents who used each type of service, FY 2014–2017, NY-RAH (New York)**

Event	Intervention group				Within-state reference group			
	2014	2015	2016	2017	2014	2015	2016	2017
Number of residents meeting eligibility criteria	5,025	4,827	4,671	4,564	61,036	59,591	56,627	55,219
Mean exposure (days)	251.35	249.25	255.52	250.14	256.09	250.02	250.91	246.31
<b>Any hospitalization (all-cause)</b>	25.43	26.52	24.68	22.85	26.92	26.95	25.92	25.95
Any potentially avoidable hospitalization	11.06	11.33	9.53	8.65	11.88	11.57	11.01	10.95
Any potentially avoidable hospitalization (all six qualifying conditions)	6.79	6.84	5.76	4.84	7.17	6.85	6.49	6.28
Any hospitalization (pneumonia)	2.61	2.78	2.27	1.51	2.91	2.87	2.58	2.21
Any hospitalization (CHF)	1.77	1.47	1.37	1.31	1.42	1.40	1.38	1.48
Any hospitalization (COPD/Asthma)	0.72	0.56	0.36	0.53	0.81	0.80	0.64	0.93
Any hospitalization (skin infection)	0.44	0.56	0.39	0.33	0.58	0.50	0.51	0.46
Any hospitalization (dehydration)	0.22	0.23	0.39	0.31	0.19	0.19	0.35	0.33
Any hospitalization (UTI)	1.41	1.62	1.28	1.07	1.82	1.62	1.52	1.38
<b>Any ED visit (all-cause)</b>	17.43	19.87	17.38	16.24	18.85	18.89	18.57	18.25
Any potentially avoidable ED visit	8.54	10.75	9.51	8.41	9.94	9.93	9.64	9.45
Any potentially avoidable ED visit (all six qualifying conditions)	1.99	2.44	2.01	1.80	2.50	2.55	2.33	2.21
Any ED visit (pneumonia)	0.26	0.50	0.24	0.13	0.37	0.38	0.30	0.27
Any ED visit (CHF)	0.20	0.10	0.13	0.13	0.17	0.20	0.17	0.17
Any ED visit (COPD/Asthma)	0.20	0.19	0.19	0.18	0.21	0.27	0.22	0.24
Any ED visit (skin infection)	0.22	0.23	0.11	0.20	0.28	0.29	0.23	0.20
Any ED visit (dehydration)	0.18	0.41	0.24	0.13	0.28	0.25	0.23	0.20
Any ED visit (UTI)	1.01	1.06	1.11	1.03	1.27	1.27	1.28	1.19
<b>Any acute care transition (all-cause)</b>	35.08	37.85	34.60	32.60	37.57	37.56	36.40	36.28
Any potentially avoidable acute care transition	17.67	19.72	17.13	15.75	19.62	19.25	18.54	18.39
Any potentially avoidable acute care transition (all six qualifying conditions)	8.36	8.74	7.36	6.40	9.11	8.88	8.32	8.03
Any acute care transition (pneumonia)	2.81	3.17	2.50	1.62	3.19	3.16	2.81	2.43
Any acute care transition (CHF)	1.93	1.53	1.48	1.45	1.56	1.55	1.50	1.60
Any acute care transition (COPD/Asthma)	0.90	0.70	0.49	0.70	0.99	1.02	0.82	1.12
Any acute care transition (skin infection)	0.62	0.75	0.47	0.50	0.84	0.76	0.72	0.65
Any acute care transition (dehydration)	0.38	0.64	0.62	0.44	0.47	0.43	0.57	0.52
Any acute care transition (UTI)	2.37	2.51	2.33	2.06	2.97	2.80	2.69	2.48

CHF = congestive heart failure; COPD = chronic obstructive pulmonary disease; ED = emergency department; UTI = urinary tract infection.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 09).

NOTES: Percentages are based on counting each individual once without regard to the length of their exposure period. Acute care transitions include hospitalizations, ED visits, and observation stays.



**Table M-12**

**Clinical + Payment: Annual percentage of residents who used each type of service, FY 2014–2017, OPTIMISTIC (Indiana)**

Event	Intervention group				Within-state reference group			
	2014	2015	2016	2017	2014	2015	2016	2017
Number of residents meeting eligibility criteria	2,170	2,153	2,028	1,936	29,687	29,643	28,524	27,698
Mean exposure (days)	236.50	228.04	229.61	233.93	241.35	237.42	241.68	240.86
<b>Any hospitalization (all-cause)</b>	23.59	23.32	22.63	24.79	26.72	27.98	27.42	28.27
Any potentially avoidable hospitalization	10.00	9.89	10.55	11.57	13.79	14.00	13.39	13.63
Any potentially avoidable hospitalization (all six qualifying conditions)	4.98	4.78	5.28	5.89	8.45	8.41	7.78	7.91
Any hospitalization (pneumonia)	2.35	1.86	1.97	2.07	3.71	3.83	3.30	2.72
Any hospitalization (CHF)	0.83	1.02	1.04	1.29	1.83	1.67	1.69	1.86
Any hospitalization (COPD/Asthma)	0.41	0.28	0.30	0.93	0.82	0.84	0.72	1.42
Any hospitalization (skin infection)	0.23	0.33	0.30	0.41	0.60	0.55	0.56	0.41
Any hospitalization (dehydration)	0.05	0.23	0.39	0.15	0.21	0.26	0.31	0.33
Any hospitalization (UTI)	1.34	1.58	1.33	1.34	2.02	1.97	1.85	1.75
<b>Any ED visit (all-cause)</b>	18.29	17.37	19.08	16.32	25.11	25.28	25.78	26.93
Any potentially avoidable ED visit	10.32	9.80	10.06	8.47	14.30	14.71	15.04	15.48
Any potentially avoidable ED visit (all six qualifying conditions)	2.72	2.51	2.22	2.22	5.37	5.63	5.53	5.78
Any ED visit (pneumonia)	0.37	0.42	0.30	0.46	1.36	1.38	1.21	1.33
Any ED visit (CHF)	0.09	0.19	0.25	0.21	0.53	0.60	0.57	0.65
Any ED visit (COPD/Asthma)	0.37	0.09	0.25	0.31	0.60	0.65	0.61	0.66
Any ED visit (skin infection)	0.32	0.14	0.10	0.10	0.50	0.51	0.49	0.43
Any ED visit (dehydration)	0.09	0.05	0.15	0.21	0.44	0.49	0.47	0.46
Any ED visit (UTI)	1.52	1.63	1.23	1.03	2.35	2.38	2.52	2.64
<b>Any acute care transition (all-cause)</b>	34.19	33.58	35.01	34.40	40.38	41.17	40.99	42.21
Any potentially avoidable acute care transition	18.29	17.56	18.84	18.54	23.98	24.29	23.99	24.70
Any potentially avoidable acute care transition (all six qualifying conditions)	7.10	6.83	7.35	7.70	12.08	12.20	11.58	11.93
Any acute care transition (pneumonia)	2.58	2.23	2.27	2.48	4.50	4.52	4.08	3.56
Any acute care transition (CHF)	0.88	1.21	1.28	1.45	2.15	2.07	2.06	2.26
Any acute care transition (COPD/Asthma)	0.60	0.33	0.54	1.08	1.28	1.36	1.20	1.92
Any acute care transition (skin infection)	0.51	0.46	0.39	0.52	1.01	1.00	0.97	0.80
Any acute care transition (dehydration)	0.14	0.28	0.54	0.36	0.66	0.74	0.74	0.79
Any acute care transition (UTI)	2.67	3.02	2.51	2.27	4.03	4.05	4.05	4.07

CHF = congestive heart failure; COPD = chronic obstructive pulmonary disease; ED = emergency department; UTI = urinary tract infection.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 09).

NOTES: Percentages are based on counting each individual once without regard to the length of their exposure period. Acute care transitions include hospitalizations, ED visits, and observation stays.

M-13

**Table M-13**

**Payment-Only: Annual percentage of residents who used each type of service, FY 2014–2017, OPTIMISTIC (Indiana)**

Event	Intervention group				Within-state reference group			
	2014	2015	2016	2017	2014	2015	2016	2017
Number of residents meeting eligibility criteria	2,378	2,390	2,296	2,268	29,687	29,643	28,524	27,698
Mean exposure (days)	239.35	237.93	244.86	237.04	241.35	237.42	241.68	240.86
<b>Any hospitalization (all-cause)</b>	24.18	25.90	24.70	23.02	26.72	27.98	27.42	28.27
Any potentially avoidable hospitalization	12.45	12.80	12.37	10.71	13.79	14.00	13.39	13.63
Any potentially avoidable hospitalization (all six qualifying conditions)	6.64	7.24	7.01	5.82	8.45	8.41	7.78	7.91
Any hospitalization (pneumonia)	3.15	3.64	2.79	1.68	3.71	3.83	3.30	2.72
Any hospitalization (CHF)	1.51	1.63	1.70	1.59	1.83	1.67	1.69	1.86
Any hospitalization (COPD/Asthma)	0.59	0.59	1.00	1.01	0.82	0.84	0.72	1.42
Any hospitalization (skin infection)	0.29	0.46	0.22	0.26	0.60	0.55	0.56	0.41
Any hospitalization (dehydration)	0.08	0.13	0.17	0.26	0.21	0.26	0.31	0.33
Any hospitalization (UTI)	1.39	1.42	1.52	1.32	2.02	1.97	1.85	1.75
<b>Any ED visit (all-cause)</b>	22.33	21.30	22.56	21.83	25.11	25.28	25.78	26.93
Any potentially avoidable ED visit	12.36	12.13	13.46	11.77	14.30	14.71	15.04	15.48
Any potentially avoidable ED visit (all six qualifying conditions)	4.46	4.18	3.96	2.78	5.37	5.63	5.53	5.78
Any ED visit (pneumonia)	0.88	0.88	0.78	0.31	1.36	1.38	1.21	1.33
Any ED visit (CHF)	0.34	0.54	0.65	0.31	0.53	0.60	0.57	0.65
Any ED visit (COPD/Asthma)	0.50	0.59	0.57	0.18	0.60	0.65	0.61	0.66
Any ED visit (skin infection)	0.55	0.33	0.39	0.22	0.50	0.51	0.49	0.43
Any ED visit (dehydration)	0.50	0.33	0.30	0.31	0.44	0.49	0.47	0.46
Any ED visit (UTI)	1.89	1.67	1.57	1.46	2.35	2.38	2.52	2.64
<b>Any acute care transition (all-cause)</b>	36.16	37.07	37.15	35.49	40.38	41.17	40.99	42.21
Any potentially avoidable acute care transition	21.36	21.30	22.13	19.22	23.98	24.29	23.99	24.70
Any potentially avoidable acute care transition (all six qualifying conditions)	9.97	9.83	9.80	7.98	12.08	12.20	11.58	11.93
Any acute care transition (pneumonia)	3.70	4.02	3.27	1.85	4.50	4.52	4.08	3.56
Any acute care transition (CHF)	1.68	1.92	2.05	1.76	2.15	2.07	2.06	2.26
Any acute care transition (COPD/Asthma)	1.09	1.05	1.44	1.15	1.28	1.36	1.20	1.92
Any acute care transition (skin infection)	0.80	0.71	0.61	0.44	1.01	1.00	0.97	0.80
Any acute care transition (dehydration)	0.59	0.46	0.48	0.57	0.66	0.74	0.74	0.79
Any acute care transition (UTI)	3.20	3.01	3.01	2.78	4.03	4.05	4.05	4.07

CHF = congestive heart failure; COPD = chronic obstructive pulmonary disease; ED = emergency department; UTI = urinary tract infection.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 09).

NOTES: Percentages are based on counting each individual once without regard to the length of their exposure period. Acute care transitions include hospitalizations, ED visits, and observation stays.

M-14

**Table M-14**

**Clinical + Payment: Annual percentage of residents who used each type of service, FY 2014–2017, RAVEN (Pennsylvania)**

Event	Intervention group				Within-state reference group			
	2014	2015	2016	2017	2014	2015	2016	2017
Number of residents meeting eligibility criteria	1,830	1,799	1,740	1,690	50,484	50,001	47,880	45,850
Mean exposure (days)	263.43	267.32	271.46	271.20	256.27	252.48	256.96	256.93
<b>Any hospitalization (all-cause)</b>	23.33	23.12	22.36	22.31	26.14	25.76	24.81	25.34
Any potentially avoidable hospitalization	10.82	10.06	9.02	9.64	12.99	11.97	11.38	11.30
Any potentially avoidable hospitalization (all six qualifying conditions)	7.16	5.67	4.66	5.09	8.11	7.34	6.83	6.82
Any hospitalization (pneumonia)	4.04	2.45	1.84	2.01	3.51	3.26	2.88	2.53
Any hospitalization (CHF)	1.15	1.11	0.52	1.24	1.78	1.66	1.48	1.54
Any hospitalization (COPD/Asthma)	0.49	0.44	0.57	0.59	0.75	0.68	0.57	0.91
Any hospitalization (skin infection)	0.22	0.28	0.34	0.30	0.60	0.50	0.46	0.44
Any hospitalization (dehydration)	0.05	0.11	0.52	0.18	0.17	0.18	0.32	0.30
Any hospitalization (UTI)	1.80	1.89	1.21	1.12	2.00	1.66	1.60	1.56
<b>Any ED visit (all-cause)</b>	18.20	17.34	16.32	18.76	19.27	18.58	18.59	18.78
Any potentially avoidable ED visit	8.63	8.73	8.74	9.59	9.70	9.23	9.29	9.40
Any potentially avoidable ED visit (all six qualifying conditions)	2.62	2.67	2.41	3.25	2.93	2.94	2.79	3.01
Any ED visit (pneumonia)	0.66	0.67	0.52	0.65	0.36	0.47	0.43	0.43
Any ED visit (CHF)	0.38	0.28	0.29	0.59	0.25	0.26	0.24	0.22
Any ED visit (COPD/Asthma)	0.27	0.28	0.34	0.24	0.30	0.22	0.23	0.32
Any ED visit (skin infection)	0.27	0.22	0.23	0.30	0.30	0.29	0.25	0.20
Any ED visit (dehydration)	0.33	0.06	0.23	0.12	0.29	0.26	0.29	0.26
Any ED visit (UTI)	0.82	1.17	0.98	1.42	1.52	1.54	1.45	1.68
<b>Any acute care transition (all-cause)</b>	32.79	32.74	31.09	32.72	36.89	36.15	35.15	35.51
Any potentially avoidable acute care transition	17.05	16.56	15.63	16.86	20.28	19.11	18.54	18.48
Any potentially avoidable acute care transition (all six qualifying conditions)	8.91	7.67	6.55	7.34	10.39	9.67	9.04	9.15
Any acute care transition (pneumonia)	4.43	2.89	2.13	2.31	3.79	3.63	3.20	2.85
Any acute care transition (CHF)	1.37	1.28	0.80	1.66	1.98	1.86	1.65	1.70
Any acute care transition (COPD/Asthma)	0.71	0.72	0.86	0.83	0.98	0.86	0.77	1.16
Any acute care transition (skin infection)	0.49	0.39	0.57	0.59	0.88	0.77	0.69	0.63
Any acute care transition (dehydration)	0.38	0.17	0.63	0.30	0.46	0.43	0.60	0.56
Any acute care transition (UTI)	2.46	3.00	2.18	2.37	3.38	3.09	2.94	3.12

CHF = congestive heart failure; COPD = chronic obstructive pulmonary disease; ED = emergency department; UTI = urinary tract infection.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 09).

NOTES: Percentages are based on counting each individual once without regard to the length of their exposure period. Acute care transitions include hospitalizations, ED visits, and observation stays.

**Table M-15**

**Payment-Only: Annual percentage of residents who used each type of service, FY 2014–2017, RAVEN (Pennsylvania)**

Event	Intervention group				Within-state reference group			
	2014	2015	2016	2017	2014	2015	2016	2017
Number of residents meeting eligibility criteria	1,925	1,920	1,950	1,840	50,484	50,001	47,880	45,850
Mean exposure (days)	252.09	253.24	251.78	248.96	256.27	252.48	256.96	256.93
<b>Any hospitalization (all-cause)</b>	26.13	26.77	26.10	24.78	26.14	25.76	24.81	25.34
Any potentially avoidable hospitalization	12.99	12.40	13.18	10.65	12.99	11.97	11.38	11.30
Any potentially avoidable hospitalization (all six qualifying conditions)	7.95	8.07	7.13	6.41	8.11	7.34	6.83	6.82
Any hospitalization (pneumonia)	3.53	3.54	3.13	2.07	3.51	3.26	2.88	2.53
Any hospitalization (CHF)	1.77	2.34	1.74	1.58	1.78	1.66	1.48	1.54
Any hospitalization (COPD/Asthma)	0.94	0.63	0.51	0.92	0.75	0.68	0.57	0.91
Any hospitalization (skin infection)	0.62	0.47	0.36	0.27	0.60	0.50	0.46	0.44
Any hospitalization (dehydration)	0.21	0.16	0.46	0.38	0.17	0.18	0.32	0.30
Any hospitalization (UTI)	1.82	1.61	1.49	1.30	2.00	1.66	1.60	1.56
<b>Any ED visit (all-cause)</b>	16.83	19.53	17.85	17.72	19.27	18.58	18.59	18.78
Any potentially avoidable ED visit	8.57	9.79	8.77	8.26	9.70	9.23	9.29	9.40
Any potentially avoidable ED visit (all six qualifying conditions)	2.29	3.39	2.56	2.34	2.93	2.94	2.79	3.01
Any ED visit (pneumonia)	0.10	0.42	0.46	0.33	0.36	0.47	0.43	0.43
Any ED visit (CHF)	0.10	0.10	0.15	0.27	0.25	0.26	0.24	0.22
Any ED visit (COPD/Asthma)	0.26	0.26	0.15	0.38	0.30	0.22	0.23	0.32
Any ED visit (skin infection)	0.26	0.21	0.10	0.05	0.30	0.29	0.25	0.20
Any ED visit (dehydration)	0.31	0.47	0.15	0.22	0.29	0.26	0.29	0.26
Any ED visit (UTI)	1.35	2.03	1.59	1.25	1.52	1.54	1.45	1.68
<b>Any acute care transition (all-cause)</b>	34.65	36.98	36.00	34.78	36.89	36.15	35.15	35.51
Any potentially avoidable acute care transition	18.81	19.95	19.64	16.90	20.28	19.11	18.54	18.48
Any potentially avoidable acute care transition (all six qualifying conditions)	9.51	10.73	9.33	8.15	10.39	9.67	9.04	9.15
Any acute care transition (pneumonia)	3.58	3.85	3.54	2.34	3.79	3.63	3.20	2.85
Any acute care transition (CHF)	1.87	2.34	1.79	1.74	1.98	1.86	1.65	1.70
Any acute care transition (COPD/Asthma)	1.14	0.89	0.67	1.30	0.98	0.86	0.77	1.16
Any acute care transition (skin infection)	0.83	0.68	0.46	0.33	0.88	0.77	0.69	0.63
Any acute care transition (dehydration)	0.52	0.57	0.62	0.60	0.46	0.43	0.60	0.56
Any acute care transition (UTI)	2.96	3.54	3.03	2.50	3.38	3.09	2.94	3.12

CHF = congestive heart failure; COPD = chronic obstructive pulmonary disease; ED = emergency department; UTI = urinary tract infection.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 09).

NOTES: Percentages are based on counting each individual once without regard to the length of their exposure period. Acute care transitions include hospitalizations, ED visits, and observation stays.

**APPENDIX N**  
**DESCRIPTIVE ANALYSIS OF UTILIZATION (RATE)**

In this section, we present summary results from a descriptive analysis of utilization rates, reporting the number of events per 1,000 Initiative-eligible person-days, including hospitalizations, ED visits, and acute care transitions, for all-cause, potentially avoidable, and the six qualifying conditions aggregated and separately. *Table N-1* presents the results from the national comparison group. *Tables N-2* through *N-15* present the combined results across all ECCPs, for each intervention group and respective WSRG, and then separately for each ECCP.

**Table N-1**  
**Number of events per 1,000 Initiative-eligible person-days, FY 2014–FY 2017,**  
**national comparison group**

Event	National comparison group			
	2014	2015	2016	2017
Number of residents meeting eligibility criteria	783,973	757,016	729,723	712,176
Mean exposure (days)	247.440	244.682	246.976	244.585
<b>Hospitalizations (all-cause)</b>	1.848	1.901	1.841	1.893
Potentially avoidable hospitalizations	0.758	0.750	0.708	0.715
Potentially avoidable hospitalizations (all six qualifying conditions)	0.467	0.458	0.427	0.427
Hospitalizations (pneumonia)	0.196	0.191	0.166	0.140
Hospitalizations (CHF)	0.082	0.082	0.081	0.090
Hospitalizations (COPD/Asthma)	0.043	0.042	0.037	0.058
Hospitalizations (skin infection)	0.031	0.030	0.026	0.025
Hospitalizations (dehydration)	0.012	0.010	0.018	0.018
Hospitalizations (UTI)	0.103	0.102	0.099	0.095
<b>ED visits (all-cause)</b>	1.564	1.634	1.663	1.695
Potentially avoidable ED visits	0.732	0.765	0.771	0.777
Potentially avoidable ED visits (all six qualifying conditions)	0.225	0.240	0.237	0.245
ED visits (pneumonia)	0.042	0.048	0.043	0.043
ED visits (CHF)	0.021	0.021	0.022	0.024
ED visits (COPD/Asthma)	0.025	0.026	0.026	0.027
ED visits (skin infection)	0.019	0.020	0.016	0.016
ED visits (dehydration)	0.020	0.020	0.021	0.022
ED visits (UTI)	0.098	0.105	0.109	0.113
<b>Acute care transitions (all-cause)</b>	3.435	3.555	3.526	3.609
Potentially avoidable acute care transitions	1.497	1.522	1.485	1.499
Potentially avoidable acute care transitions (all six qualifying conditions)	0.693	0.700	0.666	0.674
Acute care transitions (pneumonia)	0.238	0.239	0.210	0.183
Acute care transitions (CHF)	0.103	0.104	0.103	0.114
Acute care transitions (COPD/Asthma)	0.067	0.069	0.063	0.086
Acute care transitions (skin infection)	0.051	0.051	0.042	0.042
Acute care transitions (dehydration)	0.032	0.031	0.040	0.040
Acute care transitions (UTI)	0.202	0.207	0.209	0.209

CHF = congestive heart failure; COPD = chronic obstructive pulmonary disease; ED = emergency department; UTI = urinary tract infection.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 09).

NOTES: Each individual resident contributes their count of events to the aggregated numerator and their count of Initiative-eligible days to the aggregated denominator. Acute care transitions include hospitalizations, ED visits, and observation stays.

**Table N-2**

**Clinical + Payment: Number of events per 1,000 Initiative-eligible person-days, FY 2014–FY 2017, all ECCPs (6 states)**

Event	Intervention group				Within-state reference group			
	2014	2015	2016	2017	2014	2015	2016	2017
Number of residents meeting eligibility criteria	13,989	13,710	13,347	13,012	190,787	189,211	181,565	175,956
Mean exposure (days)	251.439	247.749	250.412	246.731	253.279	248.430	251.239	249.270
<b>Hospitalizations (all-cause)</b>	1.678	1.641	1.565	1.594	1.640	1.698	1.622	1.659
Potentially avoidable hospitalizations	0.596	0.569	0.518	0.519	0.649	0.648	0.602	0.609
Potentially avoidable hospitalizations (all six qualifying conditions)	0.321	0.306	0.269	0.270	0.386	0.380	0.349	0.348
Hospitalizations (pneumonia)	0.136	0.126	0.100	0.087	0.158	0.159	0.136	0.112
Hospitalizations (CHF)	0.059	0.057	0.053	0.063	0.074	0.074	0.071	0.079
Hospitalizations (COPD/Asthma)	0.025	0.024	0.019	0.033	0.036	0.036	0.031	0.050
Hospitalizations (skin infection)	0.021	0.021	0.017	0.014	0.026	0.023	0.022	0.021
Hospitalizations (dehydration)	0.006	0.008	0.015	0.013	0.008	0.009	0.014	0.014
Hospitalizations (UTI)	0.074	0.069	0.065	0.060	0.084	0.079	0.075	0.072
<b>ED visits (all-cause)</b>	0.996	0.990	0.972	1.000	1.269	1.319	1.306	1.339
Potentially avoidable ED visits	0.431	0.445	0.420	0.428	0.575	0.602	0.586	0.603
Potentially avoidable ED visits (all six qualifying conditions)	0.095	0.095	0.095	0.093	0.168	0.181	0.167	0.177
ED visits (pneumonia)	0.014	0.013	0.011	0.015	0.030	0.035	0.030	0.030
ED visits (CHF)	0.007	0.010	0.007	0.008	0.015	0.016	0.014	0.017
ED visits (COPD/Asthma)	0.009	0.009	0.010	0.008	0.018	0.020	0.017	0.020
ED visits (skin infection)	0.011	0.008	0.007	0.007	0.016	0.016	0.013	0.012
ED visits (dehydration)	0.006	0.006	0.010	0.007	0.014	0.014	0.014	0.014
ED visits (UTI)	0.048	0.048	0.049	0.048	0.075	0.080	0.078	0.084
<b>Acute care transitions (all-cause)</b>	2.688	2.647	2.553	2.604	2.923	3.030	2.942	3.011
Potentially avoidable acute care transitions	1.031	1.021	0.944	0.949	1.228	1.255	1.192	1.216
Potentially avoidable acute care transitions (all six qualifying conditions)	0.417	0.402	0.364	0.363	0.555	0.562	0.517	0.525
Acute care transitions (pneumonia)	0.150	0.139	0.111	0.102	0.188	0.194	0.166	0.143
Acute care transitions (CHF)	0.066	0.067	0.060	0.071	0.089	0.090	0.086	0.096
Acute care transitions (COPD/Asthma)	0.034	0.034	0.030	0.041	0.054	0.056	0.048	0.070
Acute care transitions (skin infection)	0.031	0.029	0.024	0.021	0.042	0.039	0.035	0.033
Acute care transitions (dehydration)	0.012	0.015	0.026	0.021	0.023	0.023	0.028	0.028
Acute care transitions (UTI)	0.123	0.118	0.114	0.107	0.159	0.159	0.153	0.156

CHF = congestive heart failure; COPD = chronic obstructive pulmonary disease; ED = emergency department; UTI = urinary tract infection.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 09).

NOTES: Each individual resident contributes their count of events to the aggregated numerator and their count of Initiative-eligible days to the aggregated denominator. Acute care transitions include hospitalizations, ED visits, and observation stays.

**Table N-3**  
**Payment-Only: Number of events per 1,000 Initiative-eligible person-days, FY 2014–FY 2017, all ECCPs (6 states)**

Event	Intervention group				Within-state reference group			
	2014	2015	2016	2017	2014	2015	2016	2017
Number of residents meeting eligibility criteria	15,650	15,347	14,830	14,413	190,787	189,211	181,565	175,956
Mean exposure (days)	249.552	247.049	252.887	249.062	253.279	248.430	251.239	249.270
<b>Hospitalizations (all-cause)</b>	1.575	1.639	1.475	1.429	1.640	1.698	1.622	1.659
Potentially avoidable hospitalizations	0.625	0.629	0.543	0.510	0.649	0.648	0.602	0.609
Potentially avoidable hospitalizations (all six qualifying conditions)	0.364	0.372	0.306	0.276	0.386	0.380	0.349	0.348
Hospitalizations (pneumonia)	0.153	0.165	0.120	0.086	0.158	0.159	0.136	0.112
Hospitalizations (CHF)	0.080	0.076	0.066	0.070	0.074	0.074	0.071	0.079
Hospitalizations (COPD/Asthma)	0.033	0.029	0.025	0.038	0.036	0.036	0.031	0.050
Hospitalizations (skin infection)	0.020	0.024	0.015	0.013	0.026	0.023	0.022	0.021
Hospitalizations (dehydration)	0.009	0.009	0.015	0.012	0.008	0.009	0.014	0.014
Hospitalizations (UTI)	0.069	0.069	0.063	0.057	0.084	0.079	0.075	0.072
<b>ED visits (all-cause)</b>	1.216	1.302	1.212	1.175	1.269	1.319	1.306	1.339
Potentially avoidable ED visits	0.552	0.608	0.576	0.526	0.575	0.602	0.586	0.603
Potentially avoidable ED visits (all six qualifying conditions)	0.152	0.164	0.153	0.132	0.168	0.181	0.167	0.177
ED visits (pneumonia)	0.024	0.030	0.023	0.022	0.030	0.035	0.030	0.030
ED visits (CHF)	0.013	0.011	0.016	0.013	0.015	0.016	0.014	0.017
ED visits (COPD/Asthma)	0.020	0.021	0.017	0.014	0.018	0.020	0.017	0.020
ED visits (skin infection)	0.016	0.013	0.013	0.008	0.016	0.016	0.013	0.012
ED visits (dehydration)	0.013	0.017	0.012	0.012	0.014	0.014	0.014	0.014
ED visits (UTI)	0.066	0.073	0.071	0.063	0.075	0.080	0.078	0.084
<b>Acute care transitions (all-cause)</b>	2.805	2.952	2.699	2.615	2.923	3.030	2.942	3.011
Potentially avoidable acute care transitions	1.181	1.241	1.119	1.039	1.228	1.255	1.192	1.216
Potentially avoidable acute care transitions (all six qualifying conditions)	0.517	0.538	0.459	0.408	0.555	0.562	0.517	0.525
Acute care transitions (pneumonia)	0.177	0.194	0.143	0.107	0.188	0.194	0.166	0.143
Acute care transitions (CHF)	0.094	0.088	0.083	0.084	0.089	0.090	0.086	0.096
Acute care transitions (COPD/Asthma)	0.054	0.050	0.042	0.052	0.054	0.056	0.048	0.070
Acute care transitions (skin infection)	0.036	0.038	0.028	0.021	0.042	0.039	0.035	0.033
Acute care transitions (dehydration)	0.022	0.026	0.027	0.023	0.023	0.023	0.028	0.028
Acute care transitions (UTI)	0.134	0.142	0.135	0.121	0.159	0.159	0.153	0.156

CHF = congestive heart failure; COPD = chronic obstructive pulmonary disease; ED = emergency department; UTI = urinary tract infection.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 09).

NOTES: Each individual resident contributes their count of events to the aggregated numerator and their count of Initiative-eligible days to the aggregated denominator. Acute care transitions include hospitalizations, ED visits, and observation stays.



**Table N-4**

**Clinical + Payment: Number of events per 1,000 Initiative-eligible person-days, FY 2014–FY 2017, AQAF (Alabama)**

Event	Intervention group				Within-state reference group			
	2014	2015	2016	2017	2014	2015	2016	2017
Number of residents meeting eligibility criteria	2,497	2,526	2,531	2,450	15,172	15,135	14,636	13,976
Mean exposure (days)	265.148	258.644	262.347	256.389	261.174	256.419	259.675	259.171
<b>Hospitalizations (all-cause)</b>	1.621	1.711	1.720	1.729	1.719	1.819	1.780	1.766
Potentially avoidable hospitalizations	0.678	0.716	0.655	0.618	0.738	0.796	0.744	0.707
Potentially avoidable hospitalizations (all six qualifying conditions)	0.376	0.399	0.313	0.318	0.434	0.480	0.440	0.407
Hospitalizations (pneumonia)	0.162	0.178	0.114	0.091	0.187	0.212	0.170	0.125
Hospitalizations (CHF)	0.077	0.083	0.053	0.075	0.073	0.086	0.083	0.084
Hospitalizations (COPD/Asthma)	0.033	0.037	0.027	0.045	0.039	0.049	0.049	0.062
Hospitalizations (skin infection)	0.018	0.014	0.012	0.011	0.020	0.019	0.014	0.015
Hospitalizations (dehydration)	0.008	0.018	0.018	0.016	0.009	0.010	0.018	0.013
Hospitalizations (UTI)	0.079	0.070	0.089	0.081	0.106	0.106	0.106	0.108
<b>ED visits (all-cause)</b>	1.195	1.228	1.224	1.110	1.339	1.440	1.417	1.434
Potentially avoidable ED visits	0.544	0.606	0.572	0.501	0.652	0.687	0.691	0.688
Potentially avoidable ED visits (all six qualifying conditions)	0.127	0.155	0.158	0.113	0.193	0.193	0.189	0.196
ED visits (pneumonia)	0.015	0.014	0.018	0.014	0.024	0.030	0.028	0.024
ED visits (CHF)	0.015	0.028	0.017	0.013	0.017	0.018	0.016	0.024
ED visits (COPD/Asthma)	0.011	0.015	0.015	0.018	0.029	0.027	0.026	0.023
ED visits (skin infection)	0.008	0.017	0.006	0.005	0.015	0.015	0.008	0.009
ED visits (dehydration)	0.005	0.014	0.020	0.013	0.017	0.011	0.014	0.020
ED visits (UTI)	0.074	0.067	0.083	0.051	0.091	0.091	0.096	0.096
<b>Acute care transitions (all-cause)</b>	2.859	2.986	2.991	2.846	3.080	3.281	3.217	3.215
Potentially avoidable acute care transitions	1.242	1.352	1.253	1.119	1.394	1.492	1.443	1.404
Potentially avoidable acute care transitions (all six qualifying conditions)	0.504	0.557	0.471	0.431	0.627	0.676	0.629	0.604
Acute care transitions (pneumonia)	0.178	0.191	0.133	0.105	0.210	0.242	0.198	0.150
Acute care transitions (CHF)	0.092	0.112	0.069	0.088	0.090	0.105	0.099	0.107
Acute care transitions (COPD/Asthma)	0.044	0.054	0.042	0.062	0.069	0.076	0.075	0.085
Acute care transitions (skin infection)	0.026	0.031	0.018	0.016	0.035	0.035	0.022	0.024
Acute care transitions (dehydration)	0.012	0.032	0.038	0.029	0.025	0.022	0.032	0.034
Acute care transitions (UTI)	0.153	0.138	0.172	0.132	0.197	0.197	0.202	0.204

CHF = congestive heart failure; COPD = chronic obstructive pulmonary disease; ED = emergency department; UTI = urinary tract infection.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 09).

NOTES: Each individual resident contributes their count of events to the aggregated numerator and their count of Initiative-eligible days to the aggregated denominator. Acute care transitions include hospitalizations, ED visits, and observation stays.

**Table N-5**

**Payment-Only: Number of events per 1,000 Initiative-eligible person-days, FY 2014–FY 2017, AQAF (Alabama)**

Event	Intervention group				Within-state reference group			
	2014	2015	2016	2017	2014	2015	2016	2017
Number of residents meeting eligibility criteria	2,128	2,062	2,016	1,938	15,172	15,135	14,636	13,976
Mean exposure (days)	253.249	258.226	258.254	259.216	261.174	256.419	259.675	259.171
<b>Hospitalizations (all-cause)</b>	2.026	1.854	1.677	1.616	1.719	1.819	1.780	1.766
Potentially avoidable hospitalizations	0.915	0.802	0.609	0.613	0.738	0.796	0.744	0.707
Potentially avoidable hospitalizations (all six qualifying conditions)	0.577	0.507	0.359	0.330	0.434	0.480	0.440	0.407
Hospitalizations (pneumonia)	0.258	0.235	0.136	0.109	0.187	0.212	0.170	0.125
Hospitalizations (CHF)	0.109	0.083	0.067	0.062	0.073	0.086	0.083	0.084
Hospitalizations (COPD/Asthma)	0.046	0.041	0.036	0.058	0.039	0.049	0.049	0.062
Hospitalizations (skin infection)	0.035	0.026	0.015	0.016	0.020	0.019	0.014	0.015
Hospitalizations (dehydration)	0.022	0.011	0.015	0.006	0.009	0.010	0.018	0.013
Hospitalizations (UTI)	0.106	0.111	0.088	0.080	0.106	0.106	0.106	0.108
<b>ED visits (all-cause)</b>	1.499	1.525	1.346	1.244	1.339	1.440	1.417	1.434
Potentially avoidable ED visits	0.664	0.667	0.653	0.547	0.652	0.687	0.691	0.688
Potentially avoidable ED visits (all six qualifying conditions)	0.165	0.167	0.182	0.123	0.193	0.193	0.189	0.196
ED visits (pneumonia)	0.007	0.021	0.017	0.020	0.024	0.030	0.028	0.024
ED visits (CHF)	0.022	0.015	0.021	0.016	0.017	0.018	0.016	0.024
ED visits (COPD/Asthma)	0.033	0.021	0.027	0.018	0.029	0.027	0.026	0.023
ED visits (skin infection)	0.017	0.011	0.015	0.004	0.015	0.015	0.008	0.009
ED visits (dehydration)	0.019	0.013	0.008	0.006	0.017	0.011	0.014	0.020
ED visits (UTI)	0.067	0.086	0.094	0.060	0.091	0.091	0.096	0.096
<b>Acute care transitions (all-cause)</b>	3.553	3.396	3.040	2.872	3.080	3.281	3.217	3.215
Potentially avoidable acute care transitions	1.587	1.472	1.264	1.165	1.394	1.492	1.443	1.404
Potentially avoidable acute care transitions (all six qualifying conditions)	0.744	0.676	0.544	0.456	0.627	0.676	0.629	0.604
Acute care transitions (pneumonia)	0.265	0.255	0.154	0.129	0.210	0.242	0.198	0.150
Acute care transitions (CHF)	0.134	0.098	0.090	0.078	0.090	0.105	0.099	0.107
Acute care transitions (COPD/Asthma)	0.080	0.062	0.063	0.076	0.069	0.076	0.075	0.085
Acute care transitions (skin infection)	0.052	0.038	0.031	0.020	0.035	0.035	0.022	0.024
Acute care transitions (dehydration)	0.041	0.026	0.023	0.012	0.025	0.022	0.032	0.034
Acute care transitions (UTI)	0.173	0.197	0.182	0.141	0.197	0.197	0.202	0.204

CHF = congestive heart failure; COPD = chronic obstructive pulmonary disease; ED = emergency department; UTI = urinary tract infection.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 09).

NOTES: Each individual resident contributes their count of events to the aggregated numerator and their count of Initiative-eligible days to the aggregated denominator. Acute care transitions include hospitalizations, ED visits, and observation stays.

**Table N-6**

**Clinical + Payment: Number of events per 1,000 Initiative-eligible person-days, FY 2014–FY 2017, ATOP2 (Nevada)**

Event	Intervention group				Within-state reference group			
	2014	2015	2016	2017	2014	2015	2016	2017
Number of residents meeting eligibility criteria	1,258	1,253	1,205	1,207	1,112	1,073	1,030	1,003
Mean exposure (days)	228.067	239.539	245.591	244.848	233.903	233.664	240.445	243.066
<b>Hospitalizations (all-cause)</b>	1.861	1.949	1.943	1.814	2.199	2.301	2.370	2.359
Potentially avoidable hospitalizations	0.613	0.590	0.500	0.467	0.738	0.634	0.662	0.644
Potentially avoidable hospitalizations (all six qualifying conditions)	0.307	0.287	0.220	0.223	0.377	0.279	0.303	0.324
Hospitalizations (pneumonia)	0.146	0.153	0.088	0.085	0.185	0.128	0.162	0.135
Hospitalizations (CHF)	0.024	0.010	0.027	0.037	0.027	0.032	0.048	0.074
Hospitalizations (COPD/Asthma)	0.021	0.017	0.014	0.020	0.054	0.032	0.028	0.037
Hospitalizations (skin infection)	0.028	0.010	0.034	0.010	0.015	0.024	0.020	0.029
Hospitalizations (dehydration)	0.000	0.007	0.007	0.010	0.015	0.000	0.004	0.008
Hospitalizations (UTI)	0.087	0.090	0.051	0.061	0.081	0.064	0.040	0.041
<b>ED visits (all-cause)</b>	1.070	1.246	1.058	1.164	1.346	1.097	1.345	1.128
Potentially avoidable ED visits	0.509	0.543	0.453	0.504	0.515	0.534	0.541	0.443
Potentially avoidable ED visits (all six qualifying conditions)	0.094	0.100	0.101	0.115	0.111	0.104	0.137	0.131
ED visits (pneumonia)	0.028	0.007	0.007	0.017	0.023	0.016	0.016	0.049
ED visits (CHF)	0.003	0.010	0.000	0.010	0.019	0.004	0.012	0.016
ED visits (COPD/Asthma)	0.007	0.017	0.014	0.000	0.004	0.004	0.012	0.000
ED visits (skin infection)	0.010	0.010	0.017	0.010	0.015	0.024	0.024	0.008
ED visits (dehydration)	0.003	0.007	0.010	0.007	0.015	0.004	0.016	0.016
ED visits (UTI)	0.042	0.050	0.054	0.071	0.035	0.052	0.057	0.041
<b>Acute care transitions (all-cause)</b>	2.945	3.218	3.024	2.988	3.560	3.410	3.719	3.499
Potentially avoidable acute care transitions	1.122	1.139	0.963	0.971	1.253	1.169	1.203	1.095
Potentially avoidable acute care transitions (all six qualifying conditions)	0.401	0.386	0.321	0.338	0.488	0.383	0.440	0.455
Acute care transitions (pneumonia)	0.174	0.160	0.095	0.102	0.208	0.144	0.178	0.185
Acute care transitions (CHF)	0.028	0.020	0.027	0.047	0.046	0.036	0.061	0.090
Acute care transitions (COPD/Asthma)	0.028	0.033	0.027	0.020	0.058	0.036	0.040	0.037
Acute care transitions (skin infection)	0.038	0.020	0.051	0.020	0.031	0.048	0.044	0.037
Acute care transitions (dehydration)	0.003	0.013	0.017	0.017	0.031	0.004	0.020	0.025
Acute care transitions (UTI)	0.129	0.140	0.105	0.132	0.115	0.116	0.097	0.082

CHF = congestive heart failure; COPD = chronic obstructive pulmonary disease; ED = emergency department; UTI = urinary tract infection.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 09).

NOTES: Each individual resident contributes their count of events to the aggregated numerator and their count of Initiative-eligible days to the aggregated denominator. Acute care transitions include hospitalizations, ED visits, and observation stays.

**Table N-7**  
**Payment-Only: Number of events per 1,000 Initiative-eligible person-days, FY 2014–FY 2017, ATOP2 (Colorado)**

Event	Intervention group				Within-state reference group			
	2014	2015	2016	2017	2014	2015	2016	2017
Number of residents meeting eligibility criteria	1,923	1,884	1,749	1,745	6,830	6,939	6,731	6,549
Mean exposure (days)	246.864	233.846	240.913	237.315	245.243	238.285	240.637	239.517
<b>Hospitalizations (all-cause)</b>	0.988	1.021	1.006	1.084	1.122	1.203	1.147	1.238
Potentially avoidable hospitalizations	0.364	0.386	0.368	0.372	0.466	0.460	0.427	0.432
Potentially avoidable hospitalizations (all six qualifying conditions)	0.213	0.222	0.199	0.200	0.269	0.251	0.225	0.233
Hospitalizations (pneumonia)	0.093	0.098	0.095	0.080	0.130	0.134	0.094	0.068
Hospitalizations (CHF)	0.048	0.036	0.028	0.058	0.040	0.033	0.040	0.050
Hospitalizations (COPD/Asthma)	0.023	0.025	0.005	0.027	0.014	0.015	0.023	0.031
Hospitalizations (skin infection)	0.019	0.016	0.014	0.005	0.025	0.018	0.017	0.024
Hospitalizations (dehydration)	0.002	0.005	0.024	0.010	0.004	0.005	0.009	0.006
Hospitalizations (UTI)	0.027	0.043	0.033	0.022	0.056	0.047	0.042	0.054
<b>ED visits (all-cause)</b>	1.125	1.153	1.291	1.248	1.398	1.439	1.450	1.707
Potentially avoidable ED visits	0.512	0.574	0.627	0.526	0.637	0.666	0.653	0.731
Potentially avoidable ED visits (all six qualifying conditions)	0.173	0.191	0.233	0.176	0.229	0.243	0.203	0.264
ED visits (pneumonia)	0.046	0.043	0.038	0.048	0.055	0.061	0.044	0.054
ED visits (CHF)	0.015	0.011	0.021	0.024	0.017	0.018	0.009	0.023
ED visits (COPD/Asthma)	0.015	0.020	0.024	0.012	0.023	0.024	0.026	0.032
ED visits (skin infection)	0.029	0.032	0.021	0.012	0.026	0.022	0.027	0.021
ED visits (dehydration)	0.006	0.009	0.028	0.010	0.018	0.016	0.017	0.022
ED visits (UTI)	0.061	0.075	0.100	0.070	0.090	0.103	0.080	0.112
<b>Acute care transitions (all-cause)</b>	2.136	2.190	2.319	2.359	2.535	2.653	2.616	2.968
Potentially avoidable acute care transitions	0.881	0.969	0.994	0.903	1.106	1.129	1.084	1.172
Potentially avoidable acute care transitions (all six qualifying conditions)	0.388	0.415	0.432	0.377	0.498	0.495	0.430	0.502
Acute care transitions (pneumonia)	0.139	0.141	0.133	0.128	0.185	0.195	0.138	0.122
Acute care transitions (CHF)	0.065	0.048	0.050	0.082	0.057	0.051	0.049	0.075
Acute care transitions (COPD/Asthma)	0.038	0.045	0.028	0.039	0.037	0.039	0.049	0.064
Acute care transitions (skin infection)	0.048	0.048	0.036	0.017	0.052	0.039	0.045	0.045
Acute care transitions (dehydration)	0.008	0.014	0.052	0.019	0.021	0.021	0.027	0.029
Acute care transitions (UTI)	0.088	0.120	0.133	0.092	0.146	0.149	0.122	0.168

CHF = congestive heart failure; COPD = chronic obstructive pulmonary disease; ED = emergency department; UTI = urinary tract infection.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 09).

NOTES: Each individual resident contributes their count of events to the aggregated numerator and their count of Initiative-eligible days to the aggregated denominator. Acute care transitions include hospitalizations, ED visits, and observation stays.

**Table N-8**

**Clinical + Payment: Number of events per 1,000 Initiative-eligible person-days, FY 2014–FY 2017, MOQI (Missouri)**

Event	Intervention group				Within-state reference group			
	2014	2015	2016	2017	2014	2015	2016	2017
Number of residents meeting eligibility criteria	1,653	1,701	1,662	1,587	26,466	26,829	26,137	25,661
Mean exposure (days)	261.095	248.471	259.785	254.648	252.837	248.224	250.316	248.374
<b>Hospitalizations (all-cause)</b>	1.710	1.656	1.392	1.403	1.805	1.967	1.815	1.922
Potentially avoidable hospitalizations	0.649	0.653	0.503	0.497	0.782	0.829	0.737	0.789
Potentially avoidable hospitalizations (all six qualifying conditions)	0.329	0.367	0.292	0.270	0.475	0.503	0.453	0.462
Hospitalizations (pneumonia)	0.132	0.156	0.113	0.084	0.216	0.221	0.188	0.150
Hospitalizations (CHF)	0.072	0.102	0.086	0.082	0.082	0.094	0.084	0.104
Hospitalizations (COPD/Asthma)	0.025	0.014	0.014	0.017	0.039	0.043	0.033	0.064
Hospitalizations (skin infection)	0.025	0.038	0.021	0.020	0.034	0.034	0.031	0.029
Hospitalizations (dehydration)	0.009	0.005	0.005	0.012	0.012	0.013	0.014	0.019
Hospitalizations (UTI)	0.065	0.052	0.053	0.054	0.092	0.098	0.102	0.096
<b>ED visits (all-cause)</b>	1.059	0.797	0.896	0.881	1.687	1.844	1.791	1.825
Potentially avoidable ED visits	0.466	0.348	0.378	0.381	0.826	0.916	0.874	0.905
Potentially avoidable ED visits (all six qualifying conditions)	0.093	0.073	0.076	0.077	0.268	0.311	0.282	0.294
ED visits (pneumonia)	0.012	0.017	0.009	0.015	0.061	0.071	0.067	0.059
ED visits (CHF)	0.007	0.000	0.002	0.002	0.027	0.032	0.028	0.030
ED visits (COPD/Asthma)	0.009	0.009	0.012	0.002	0.031	0.037	0.028	0.034
ED visits (skin infection)	0.014	0.007	0.009	0.007	0.022	0.023	0.020	0.020
ED visits (dehydration)	0.002	0.007	0.009	0.007	0.020	0.024	0.024	0.023
ED visits (UTI)	0.049	0.033	0.035	0.042	0.107	0.125	0.115	0.129
<b>Acute care transitions (all-cause)</b>	2.787	2.463	2.300	2.316	3.515	3.837	3.630	3.772
Potentially avoidable acute care transitions	1.117	1.003	0.882	0.883	1.617	1.754	1.618	1.699
Potentially avoidable acute care transitions (all six qualifying conditions)	0.422	0.442	0.368	0.346	0.744	0.816	0.737	0.758
Acute care transitions (pneumonia)	0.144	0.173	0.123	0.099	0.277	0.292	0.255	0.209
Acute care transitions (CHF)	0.079	0.102	0.088	0.084	0.109	0.126	0.112	0.135
Acute care transitions (COPD/Asthma)	0.035	0.026	0.025	0.020	0.070	0.080	0.062	0.099
Acute care transitions (skin infection)	0.039	0.045	0.030	0.027	0.056	0.057	0.051	0.049
Acute care transitions (dehydration)	0.012	0.012	0.014	0.020	0.033	0.037	0.038	0.043
Acute care transitions (UTI)	0.114	0.085	0.088	0.097	0.199	0.224	0.219	0.224

CHF = congestive heart failure; COPD = chronic obstructive pulmonary disease; ED = emergency department; UTI = urinary tract infection.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 09).

NOTES: Each individual resident contributes their count of events to the aggregated numerator and their count of Initiative-eligible days to the aggregated denominator. Acute care transitions include hospitalizations, ED visits, and observation stays.

**Table N-9**  
**Payment-Only: Number of events per 1,000 Initiative-eligible person-days, FY 2014–FY 2017, MOQI (Missouri)**

Event	Intervention group				Within-state reference group			
	2014	2015	2016	2017	2014	2015	2016	2017
Number of residents meeting eligibility criteria	2,271	2,264	2,148	2,058	26,466	26,829	26,137	25,661
Mean exposure (days)	252.911	247.532	261.459	260.401	252.837	248.224	250.316	248.374
<b>Hospitalizations (all-cause)</b>	1.718	1.895	1.633	1.666	1.805	1.967	1.815	1.922
Potentially avoidable hospitalizations	0.747	0.773	0.666	0.690	0.782	0.829	0.737	0.789
Potentially avoidable hospitalizations (all six qualifying conditions)	0.420	0.475	0.408	0.394	0.475	0.503	0.453	0.462
Hospitalizations (pneumonia)	0.207	0.243	0.166	0.123	0.216	0.221	0.188	0.150
Hospitalizations (CHF)	0.080	0.089	0.084	0.110	0.082	0.094	0.084	0.104
Hospitalizations (COPD/Asthma)	0.023	0.030	0.037	0.039	0.039	0.043	0.033	0.064
Hospitalizations (skin infection)	0.014	0.037	0.023	0.021	0.034	0.034	0.031	0.029
Hospitalizations (dehydration)	0.010	0.012	0.014	0.013	0.012	0.013	0.014	0.019
Hospitalizations (UTI)	0.085	0.062	0.084	0.088	0.092	0.098	0.102	0.096
<b>ED visits (all-cause)</b>	1.694	1.659	1.567	1.679	1.687	1.844	1.791	1.825
Potentially avoidable ED visits	0.869	0.860	0.816	0.838	0.826	0.916	0.874	0.905
Potentially avoidable ED visits (all six qualifying conditions)	0.263	0.250	0.219	0.263	0.268	0.311	0.282	0.294
ED visits (pneumonia)	0.056	0.045	0.043	0.054	0.061	0.071	0.067	0.059
ED visits (CHF)	0.021	0.018	0.025	0.022	0.027	0.032	0.028	0.030
ED visits (COPD/Asthma)	0.044	0.045	0.021	0.034	0.031	0.037	0.028	0.034
ED visits (skin infection)	0.012	0.012	0.025	0.007	0.022	0.023	0.020	0.020
ED visits (dehydration)	0.017	0.027	0.014	0.034	0.020	0.024	0.024	0.023
ED visits (UTI)	0.113	0.103	0.091	0.112	0.107	0.125	0.115	0.129
<b>Acute care transitions (all-cause)</b>	3.432	3.565	3.218	3.372	3.515	3.837	3.630	3.772
Potentially avoidable acute care transitions	1.624	1.635	1.483	1.536	1.617	1.754	1.618	1.699
Potentially avoidable acute care transitions (all six qualifying conditions)	0.682	0.726	0.627	0.661	0.744	0.816	0.737	0.758
Acute care transitions (pneumonia)	0.263	0.287	0.208	0.177	0.277	0.292	0.255	0.209
Acute care transitions (CHF)	0.101	0.107	0.109	0.134	0.109	0.126	0.112	0.135
Acute care transitions (COPD/Asthma)	0.066	0.075	0.059	0.073	0.070	0.080	0.062	0.099
Acute care transitions (skin infection)	0.026	0.052	0.048	0.028	0.056	0.057	0.051	0.049
Acute care transitions (dehydration)	0.028	0.039	0.028	0.047	0.033	0.037	0.038	0.043
Acute care transitions (UTI)	0.198	0.166	0.174	0.202	0.199	0.224	0.219	0.224

CHF = congestive heart failure; COPD = chronic obstructive pulmonary disease; ED = emergency department; UTI = urinary tract infection.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 09).

NOTES: Each individual resident contributes their count of events to the aggregated numerator and their count of Initiative-eligible days to the aggregated denominator. Acute care transitions include hospitalizations, ED visits, and observation stays.

**Table N-10**

**Clinical + Payment: Number of events per 1,000 Initiative-eligible person-days, FY 2014–FY 2017, NY-RAH (New York)**

Event	Intervention group				Within-state reference group			
	2014	2015	2016	2017	2014	2015	2016	2017
Number of residents meeting eligibility criteria	4,581	4,278	4,181	4,142	61,036	59,591	56,627	55,219
Mean exposure (days)	249.188	245.123	242.179	234.532	256.089	250.018	250.913	246.311
<b>Hospitalizations (all-cause)</b>	1.880	1.732	1.666	1.712	1.627	1.660	1.617	1.615
Potentially avoidable hospitalizations	0.600	0.517	0.496	0.499	0.573	0.565	0.535	0.541
Potentially avoidable hospitalizations (all six qualifying conditions)	0.326	0.282	0.286	0.270	0.336	0.326	0.306	0.302
Hospitalizations (pneumonia)	0.116	0.100	0.101	0.086	0.125	0.126	0.112	0.096
Hospitalizations (CHF)	0.067	0.048	0.062	0.060	0.065	0.065	0.065	0.070
Hospitalizations (COPD/Asthma)	0.025	0.032	0.020	0.035	0.037	0.037	0.029	0.043
Hospitalizations (skin infection)	0.028	0.029	0.017	0.012	0.025	0.022	0.022	0.020
Hospitalizations (dehydration)	0.009	0.005	0.018	0.020	0.008	0.008	0.014	0.014
Hospitalizations (UTI)	0.081	0.069	0.069	0.057	0.076	0.069	0.064	0.059
<b>ED visits (all-cause)</b>	0.810	0.860	0.791	0.935	1.098	1.143	1.112	1.106
Potentially avoidable ED visits	0.307	0.350	0.308	0.382	0.474	0.489	0.466	0.466
Potentially avoidable ED visits (all six qualifying conditions)	0.056	0.052	0.054	0.059	0.107	0.114	0.102	0.099
ED visits (pneumonia)	0.005	0.006	0.003	0.008	0.015	0.016	0.013	0.011
ED visits (CHF)	0.001	0.004	0.001	0.000	0.007	0.008	0.007	0.007
ED visits (COPD/Asthma)	0.006	0.004	0.005	0.004	0.009	0.012	0.009	0.012
ED visits (skin infection)	0.010	0.004	0.005	0.005	0.011	0.012	0.009	0.009
ED visits (dehydration)	0.007	0.006	0.008	0.003	0.011	0.010	0.009	0.008
ED visits (UTI)	0.027	0.030	0.033	0.038	0.053	0.055	0.055	0.052
<b>Acute care transitions (all-cause)</b>	2.690	2.592	2.459	2.648	2.729	2.806	2.733	2.724
Potentially avoidable acute care transitions	0.907	0.867	0.804	0.881	1.047	1.056	1.001	1.008
Potentially avoidable acute care transitions (all six qualifying conditions)	0.382	0.335	0.341	0.328	0.443	0.440	0.409	0.401
Acute care transitions (pneumonia)	0.121	0.106	0.104	0.095	0.140	0.142	0.125	0.107
Acute care transitions (CHF)	0.068	0.051	0.063	0.060	0.072	0.073	0.072	0.078
Acute care transitions (COPD/Asthma)	0.032	0.036	0.025	0.039	0.046	0.049	0.039	0.055
Acute care transitions (skin infection)	0.038	0.032	0.022	0.017	0.036	0.035	0.031	0.028
Acute care transitions (dehydration)	0.016	0.010	0.026	0.023	0.019	0.018	0.023	0.022
Acute care transitions (UTI)	0.108	0.098	0.102	0.095	0.129	0.124	0.119	0.111

CHF = congestive heart failure; COPD = chronic obstructive pulmonary disease; ED = emergency department; UTI = urinary tract infection.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 09).

NOTES: Each individual resident contributes their count of events to the aggregated numerator and their count of Initiative-eligible days to the aggregated denominator. Acute care transitions include hospitalizations, ED visits, and observation stays.

**Table N-11**

**Payment-Only: Number of events per 1,000 Initiative-eligible person-days, FY 2014–FY 2017, NY-RAH (New York)**

Event	Intervention group				Within-state reference group			
	2014	2015	2016	2017	2014	2015	2016	2017
Number of residents meeting eligibility criteria	5,025	4,827	4,671	4,564	61,036	59,591	56,627	55,219
Mean exposure (days)	251.353	249.253	255.520	250.142	256.089	250.018	250.913	246.311
<b>Hospitalizations (all-cause)</b>	1.599	1.652	1.430	1.361	1.627	1.660	1.617	1.615
Potentially avoidable hospitalizations	0.544	0.558	0.452	0.410	0.573	0.565	0.535	0.541
Potentially avoidable hospitalizations (all six qualifying conditions)	0.319	0.319	0.250	0.216	0.336	0.326	0.306	0.302
Hospitalizations (pneumonia)	0.113	0.122	0.095	0.062	0.125	0.126	0.112	0.096
Hospitalizations (CHF)	0.085	0.071	0.059	0.059	0.065	0.065	0.065	0.070
Hospitalizations (COPD/Asthma)	0.034	0.026	0.015	0.025	0.037	0.037	0.029	0.043
Hospitalizations (skin infection)	0.019	0.023	0.015	0.014	0.025	0.022	0.022	0.020
Hospitalizations (dehydration)	0.010	0.009	0.015	0.012	0.008	0.008	0.014	0.014
Hospitalizations (UTI)	0.059	0.068	0.051	0.045	0.076	0.069	0.064	0.059
<b>ED visits (all-cause)</b>	0.971	1.149	0.997	0.902	1.098	1.143	1.112	1.106
Potentially avoidable ED visits	0.402	0.532	0.440	0.399	0.474	0.489	0.466	0.466
Potentially avoidable ED visits (all six qualifying conditions)	0.086	0.102	0.082	0.074	0.107	0.114	0.102	0.099
ED visits (pneumonia)	0.010	0.020	0.009	0.005	0.015	0.016	0.013	0.011
ED visits (CHF)	0.008	0.004	0.006	0.005	0.007	0.008	0.007	0.007
ED visits (COPD/Asthma)	0.009	0.008	0.008	0.007	0.009	0.012	0.009	0.012
ED visits (skin infection)	0.010	0.009	0.004	0.008	0.011	0.012	0.009	0.009
ED visits (dehydration)	0.007	0.017	0.009	0.005	0.011	0.010	0.009	0.008
ED visits (UTI)	0.043	0.044	0.046	0.043	0.053	0.055	0.055	0.052
<b>Acute care transitions (all-cause)</b>	2.572	2.803	2.429	2.265	2.729	2.806	2.733	2.724
Potentially avoidable acute care transitions	0.948	1.091	0.892	0.809	1.047	1.056	1.001	1.008
Potentially avoidable acute care transitions (all six qualifying conditions)	0.405	0.421	0.332	0.290	0.443	0.440	0.409	0.401
Acute care transitions (pneumonia)	0.124	0.142	0.104	0.067	0.140	0.142	0.125	0.107
Acute care transitions (CHF)	0.093	0.075	0.065	0.064	0.072	0.073	0.072	0.078
Acute care transitions (COPD/Asthma)	0.043	0.034	0.023	0.032	0.046	0.049	0.039	0.055
Acute care transitions (skin infection)	0.029	0.032	0.019	0.022	0.036	0.035	0.031	0.028
Acute care transitions (dehydration)	0.017	0.026	0.024	0.018	0.019	0.018	0.023	0.022
Acute care transitions (UTI)	0.101	0.112	0.097	0.088	0.129	0.124	0.119	0.111

CHF = congestive heart failure; COPD = chronic obstructive pulmonary disease; ED = emergency department; UTI = urinary tract infection.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 09).

NOTES: Each individual resident contributes their count of events to the aggregated numerator and their count of Initiative-eligible days to the aggregated denominator. Acute care transitions include hospitalizations, ED visits, and observation stays.



**Table N-12**

**Clinical + Payment: Number of events per 1,000 Initiative-eligible person-days, FY 2014–FY 2017, OPTIMISTIC (Indiana)**

Event	Intervention group				Within-state reference group			
	2014	2015	2016	2017	2014	2015	2016	2017
Number of residents meeting eligibility criteria	2,170	2,153	2,028	1,936	29,687	29,643	28,524	27,698
Mean exposure (days)	236.499	228.039	229.610	233.932	241.355	237.420	241.685	240.861
<b>Hospitalizations (all-cause)</b>	1.411	1.424	1.349	1.495	1.670	1.770	1.723	1.777
Potentially avoidable hospitalizations	0.512	0.507	0.513	0.570	0.710	0.726	0.679	0.699
Potentially avoidable hospitalizations (all six qualifying conditions)	0.244	0.246	0.253	0.285	0.421	0.421	0.379	0.390
Hospitalizations (pneumonia)	0.115	0.094	0.099	0.091	0.171	0.177	0.149	0.122
Hospitalizations (CHF)	0.037	0.045	0.049	0.062	0.086	0.079	0.078	0.090
Hospitalizations (COPD/Asthma)	0.021	0.012	0.015	0.044	0.038	0.039	0.033	0.067
Hospitalizations (skin infection)	0.012	0.014	0.013	0.022	0.027	0.025	0.024	0.020
Hospitalizations (dehydration)	0.002	0.010	0.017	0.007	0.009	0.011	0.013	0.014
Hospitalizations (UTI)	0.057	0.071	0.060	0.060	0.089	0.089	0.081	0.077
<b>ED visits (all-cause)</b>	1.120	1.059	1.164	1.022	1.539	1.603	1.631	1.727
Potentially avoidable ED visits	0.528	0.513	0.507	0.448	0.743	0.787	0.775	0.824
Potentially avoidable ED visits (all six qualifying conditions)	0.127	0.116	0.101	0.106	0.261	0.275	0.261	0.280
ED visits (pneumonia)	0.016	0.018	0.013	0.020	0.060	0.065	0.052	0.060
ED visits (CHF)	0.004	0.010	0.011	0.009	0.025	0.027	0.025	0.031
ED visits (COPD/Asthma)	0.016	0.004	0.011	0.015	0.028	0.032	0.030	0.032
ED visits (skin infection)	0.014	0.006	0.004	0.004	0.022	0.022	0.021	0.019
ED visits (dehydration)	0.004	0.002	0.006	0.009	0.019	0.021	0.020	0.020
ED visits (UTI)	0.074	0.075	0.056	0.049	0.107	0.109	0.113	0.119
<b>Acute care transitions (all-cause)</b>	2.539	2.503	2.526	2.530	3.246	3.402	3.382	3.534
Potentially avoidable acute care transitions	1.041	1.027	1.020	1.025	1.465	1.523	1.461	1.531
Potentially avoidable acute care transitions (all six qualifying conditions)	0.370	0.363	0.354	0.391	0.684	0.698	0.641	0.672
Acute care transitions (pneumonia)	0.131	0.112	0.112	0.110	0.232	0.242	0.202	0.182
Acute care transitions (CHF)	0.041	0.055	0.060	0.071	0.112	0.106	0.103	0.121
Acute care transitions (COPD/Asthma)	0.037	0.016	0.026	0.060	0.066	0.071	0.063	0.099
Acute care transitions (skin infection)	0.025	0.020	0.017	0.026	0.050	0.048	0.045	0.039
Acute care transitions (dehydration)	0.006	0.012	0.024	0.015	0.028	0.032	0.034	0.034
Acute care transitions (UTI)	0.131	0.147	0.116	0.108	0.197	0.199	0.194	0.197

CHF = congestive heart failure; COPD = chronic obstructive pulmonary disease; ED = emergency department; UTI = urinary tract infection.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 09).

NOTES: Each individual resident contributes their count of events to the aggregated numerator and their count of Initiative-eligible days to the aggregated denominator. Acute care transitions include hospitalizations, ED visits, and observation stays.

**Table N-13**

**Payment-Only: Number of events per 1,000 Initiative-eligible person-days, FY 2014–FY 2017, OPTIMISTIC (Indiana)**

Event	Intervention group				Within-state reference group			
	2014	2015	2016	2017	2014	2015	2016	2017
Number of residents meeting eligibility criteria	2,378	2,390	2,296	2,268	29,687	29,643	28,524	27,698
Mean exposure (days)	239.347	237.932	244.858	237.041	241.355	237.420	241.685	240.861
<b>Hospitalizations (all-cause)</b>	1.478	1.623	1.446	1.401	1.670	1.770	1.723	1.777
Potentially avoidable hospitalizations	0.620	0.666	0.601	0.556	0.710	0.726	0.679	0.699
Potentially avoidable hospitalizations (all six qualifying conditions)	0.325	0.373	0.329	0.286	0.421	0.421	0.379	0.390
Hospitalizations (pneumonia)	0.144	0.178	0.119	0.080	0.171	0.177	0.149	0.122
Hospitalizations (CHF)	0.069	0.077	0.084	0.073	0.086	0.079	0.078	0.090
Hospitalizations (COPD/Asthma)	0.030	0.032	0.043	0.052	0.038	0.039	0.033	0.067
Hospitalizations (skin infection)	0.012	0.019	0.009	0.011	0.027	0.025	0.024	0.020
Hospitalizations (dehydration)	0.004	0.005	0.007	0.011	0.009	0.011	0.013	0.014
Hospitalizations (UTI)	0.067	0.062	0.068	0.060	0.089	0.089	0.081	0.077
<b>ED visits (all-cause)</b>	1.319	1.338	1.309	1.285	1.539	1.603	1.631	1.727
Potentially avoidable ED visits	0.613	0.630	0.674	0.586	0.743	0.787	0.775	0.824
Potentially avoidable ED visits (all six qualifying conditions)	0.204	0.199	0.187	0.121	0.261	0.275	0.261	0.280
ED visits (pneumonia)	0.039	0.042	0.034	0.013	0.060	0.065	0.052	0.060
ED visits (CHF)	0.016	0.023	0.030	0.013	0.025	0.027	0.025	0.031
ED visits (COPD/Asthma)	0.023	0.028	0.027	0.007	0.028	0.032	0.030	0.032
ED visits (skin infection)	0.023	0.016	0.016	0.011	0.022	0.022	0.021	0.019
ED visits (dehydration)	0.021	0.014	0.012	0.013	0.019	0.021	0.020	0.020
ED visits (UTI)	0.083	0.076	0.068	0.063	0.107	0.109	0.113	0.119
<b>Acute care transitions (all-cause)</b>	2.813	2.993	2.777	2.695	3.246	3.402	3.382	3.534
Potentially avoidable acute care transitions	1.237	1.303	1.275	1.142	1.465	1.523	1.461	1.531
Potentially avoidable acute care transitions (all six qualifying conditions)	0.529	0.573	0.516	0.407	0.684	0.698	0.641	0.672
Acute care transitions (pneumonia)	0.183	0.220	0.153	0.093	0.232	0.242	0.202	0.182
Acute care transitions (CHF)	0.084	0.100	0.114	0.086	0.112	0.106	0.103	0.121
Acute care transitions (COPD/Asthma)	0.053	0.060	0.069	0.060	0.066	0.071	0.063	0.099
Acute care transitions (skin infection)	0.035	0.037	0.025	0.022	0.050	0.048	0.045	0.039
Acute care transitions (dehydration)	0.025	0.019	0.020	0.024	0.028	0.032	0.034	0.034
Acute care transitions (UTI)	0.149	0.137	0.135	0.123	0.197	0.199	0.194	0.197

CHF = congestive heart failure; COPD = chronic obstructive pulmonary disease; ED = emergency department; UTI = urinary tract infection.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 09).

NOTES: Each individual resident contributes their count of events to the aggregated numerator and their count of Initiative-eligible days to the aggregated denominator. Acute care transitions include hospitalizations, ED visits, and observation stays.

**Table N-14**

**Clinical + Payment: Number of events per 1,000 Initiative-eligible person-days, FY 2014–FY 2017, RAVEN (Pennsylvania)**

Event	Intervention group				Within-state reference group			
	2014	2015	2016	2017	2014	2015	2016	2017
Number of residents meeting eligibility criteria	1,830	1,799	1,740	1,690	50,484	50,001	47,880	45,850
Mean exposure (days)	263.426	267.316	271.465	271.202	256.266	252.481	256.964	256.928
<b>Hospitalizations (all-cause)</b>	1.427	1.362	1.264	1.287	1.584	1.577	1.469	1.509
Potentially avoidable hospitalizations	0.506	0.457	0.400	0.430	0.635	0.586	0.542	0.533
Potentially avoidable hospitalizations (all six qualifying conditions)	0.319	0.247	0.195	0.223	0.382	0.346	0.314	0.311
Hospitalizations (pneumonia)	0.170	0.102	0.074	0.085	0.154	0.144	0.124	0.107
Hospitalizations (CHF)	0.046	0.044	0.023	0.055	0.080	0.074	0.068	0.071
Hospitalizations (COPD/Asthma)	0.019	0.017	0.021	0.022	0.033	0.030	0.024	0.040
Hospitalizations (skin infection)	0.008	0.010	0.013	0.013	0.025	0.020	0.019	0.018
Hospitalizations (dehydration)	0.002	0.004	0.019	0.007	0.007	0.007	0.013	0.012
Hospitalizations (UTI)	0.075	0.071	0.044	0.041	0.083	0.071	0.066	0.064
<b>ED visits (all-cause)</b>	0.927	0.886	0.832	0.962	1.069	1.043	1.036	1.051
Potentially avoidable ED visits	0.390	0.385	0.377	0.399	0.443	0.435	0.426	0.431
Potentially avoidable ED visits (all six qualifying conditions)	0.114	0.104	0.102	0.124	0.124	0.127	0.117	0.127
ED visits (pneumonia)	0.025	0.025	0.019	0.024	0.014	0.019	0.017	0.018
ED visits (CHF)	0.017	0.010	0.011	0.022	0.011	0.011	0.010	0.009
ED visits (COPD/Asthma)	0.010	0.010	0.013	0.009	0.013	0.010	0.009	0.013
ED visits (skin infection)	0.010	0.008	0.008	0.011	0.012	0.012	0.010	0.008
ED visits (dehydration)	0.015	0.002	0.008	0.007	0.012	0.011	0.011	0.010
ED visits (UTI)	0.037	0.048	0.042	0.052	0.063	0.065	0.059	0.070
<b>Acute care transitions (all-cause)</b>	2.365	2.256	2.102	2.256	2.661	2.626	2.513	2.569
Potentially avoidable acute care transitions	0.896	0.844	0.779	0.829	1.080	1.022	0.971	0.966
Potentially avoidable acute care transitions (all six qualifying conditions)	0.434	0.351	0.296	0.347	0.506	0.474	0.432	0.439
Acute care transitions (pneumonia)	0.195	0.127	0.093	0.109	0.168	0.163	0.141	0.125
Acute care transitions (CHF)	0.062	0.054	0.034	0.076	0.091	0.085	0.078	0.080
Acute care transitions (COPD/Asthma)	0.029	0.027	0.034	0.031	0.046	0.039	0.034	0.053
Acute care transitions (skin infection)	0.019	0.019	0.021	0.024	0.037	0.032	0.029	0.026
Acute care transitions (dehydration)	0.017	0.006	0.028	0.013	0.018	0.018	0.024	0.022
Acute care transitions (UTI)	0.112	0.119	0.087	0.094	0.146	0.136	0.126	0.133

CHF = congestive heart failure; COPD = chronic obstructive pulmonary disease; ED = emergency department; UTI = urinary tract infection.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 09).

NOTES: Each individual resident contributes their count of events to the aggregated numerator and their count of Initiative-eligible days to the aggregated denominator. Acute care transitions include hospitalizations, ED visits, and observation stays.

**Table N-15**

**Payment-Only: Number of events per 1,000 Initiative-eligible person-days, FY 2014–FY 2017, RAVEN (Pennsylvania)**

Event	Intervention group				Within-state reference group			
	2014	2015	2016	2017	2014	2015	2016	2017
Number of residents meeting eligibility criteria	1,925	1,920	1,950	1,840	50,484	50,001	47,880	45,850
Mean exposure (days)	252.090	253.240	251.779	248.963	256.266	252.481	256.964	256.928
<b>Hospitalizations (all-cause)</b>	1.533	1.654	1.623	1.463	1.584	1.577	1.469	1.509
Potentially avoidable hospitalizations	0.629	0.627	0.633	0.504	0.635	0.586	0.542	0.533
Potentially avoidable hospitalizations (all six qualifying conditions)	0.375	0.374	0.332	0.282	0.382	0.346	0.314	0.311
Hospitalizations (pneumonia)	0.144	0.150	0.134	0.085	0.154	0.144	0.124	0.107
Hospitalizations (CHF)	0.078	0.105	0.077	0.070	0.080	0.074	0.068	0.071
Hospitalizations (COPD/Asthma)	0.043	0.025	0.020	0.044	0.033	0.030	0.024	0.040
Hospitalizations (skin infection)	0.025	0.021	0.016	0.011	0.025	0.020	0.019	0.018
Hospitalizations (dehydration)	0.008	0.008	0.020	0.017	0.007	0.007	0.013	0.012
Hospitalizations (UTI)	0.076	0.066	0.063	0.055	0.083	0.071	0.066	0.064
<b>ED visits (all-cause)</b>	0.944	1.113	1.010	0.991	1.069	1.043	1.036	1.051
Potentially avoidable ED visits	0.410	0.450	0.395	0.386	0.443	0.435	0.426	0.431
Potentially avoidable ED visits (all six qualifying conditions)	0.097	0.150	0.108	0.105	0.124	0.127	0.117	0.127
ED visits (pneumonia)	0.004	0.019	0.018	0.013	0.014	0.019	0.017	0.018
ED visits (CHF)	0.004	0.004	0.006	0.011	0.011	0.011	0.010	0.009
ED visits (COPD/Asthma)	0.010	0.014	0.006	0.015	0.013	0.010	0.009	0.013
ED visits (skin infection)	0.012	0.008	0.004	0.002	0.012	0.012	0.010	0.008
ED visits (dehydration)	0.012	0.019	0.006	0.009	0.012	0.011	0.011	0.010
ED visits (UTI)	0.054	0.086	0.067	0.055	0.063	0.065	0.059	0.070
<b>Acute care transitions (all-cause)</b>	2.485	2.772	2.640	2.454	2.661	2.626	2.513	2.569
Potentially avoidable acute care transitions	1.041	1.080	1.031	0.891	1.080	1.022	0.971	0.966
Potentially avoidable acute care transitions (all six qualifying conditions)	0.472	0.524	0.442	0.386	0.506	0.474	0.432	0.439
Acute care transitions (pneumonia)	0.148	0.169	0.153	0.098	0.168	0.163	0.141	0.125
Acute care transitions (CHF)	0.082	0.109	0.084	0.081	0.091	0.085	0.078	0.080
Acute care transitions (COPD/Asthma)	0.054	0.039	0.026	0.059	0.046	0.039	0.034	0.053
Acute care transitions (skin infection)	0.037	0.029	0.020	0.013	0.037	0.032	0.029	0.026
Acute care transitions (dehydration)	0.021	0.027	0.026	0.026	0.018	0.018	0.024	0.022
Acute care transitions (UTI)	0.130	0.152	0.132	0.109	0.146	0.136	0.126	0.133

CHF = congestive heart failure; COPD = chronic obstructive pulmonary disease; ED = emergency department; UTI = urinary tract infection.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 09).

NOTES: Each individual resident contributes their count of events to the aggregated numerator and their count of Initiative-eligible days to the aggregated denominator. Acute care transitions include hospitalizations, ED visits, and observation stays.

## **APPENDIX O**

### **DESCRIPTIVE ANALYSIS OF EXPENDITURES**

In this section, we present summary results from a descriptive analysis of Medicare expenditures per resident-year, reporting on total Medicare expenditures and expenditures associated with hospitalizations, ED visits, and acute care transitions, for all-cause, potentially avoidable, and the six qualifying conditions aggregated and separately). *Table O-1* presents the results from the national comparison group. *Tables O-2* through *O-15* present the combined results across all ECCPs, for each intervention group and respective WSRG, and then separately for each ECCP.

**Table O-1**  
**Medicare expenditure (in dollars) per resident-year, FY 2014–2017,**  
**national comparison group**

Measure	National comparison group			
	2014	2015	2016	2017
Number of residents meeting eligibility criteria	783,973	757,016	729,723	712,176
Mean exposure (days)	247.44	244.68	246.98	244.59
<b>Total Medicare expenditures</b>	26,669.51	27,936.28	28,148.10	29,315.90
<b>Hospitalizations (all-cause)</b>	7,795.85	8,022.29	8,034.46	8,234.59
Potentially avoidable hospitalizations	2,537.61	2,494.44	2,404.62	2,416.57
Potentially avoidable hospitalizations (all six qualifying conditions)	1,480.36	1,439.11	1,354.80	1,343.68
Hospitalizations (pneumonia)	732.23	692.52	625.41	523.83
Hospitalizations (CHF)	258.06	265.32	264.15	310.15
Hospitalizations (COPD/Asthma)	117.96	116.71	105.25	170.14
Hospitalizations (skin infection)	106.41	107.89	88.47	80.09
Hospitalizations (dehydration)	25.61	21.59	42.63	43.09
Hospitalizations (UTI)	240.10	235.09	228.90	216.40
<b>ED visits (all-cause)</b>	334.39	356.98	374.86	400.04
Potentially avoidable ED visits	149.66	158.78	164.32	173.05
Potentially avoidable ED visits (all six qualifying conditions)	53.20	57.65	60.32	64.26
ED visits (pneumonia)	11.99	13.73	12.75	13.13
ED visits (CHF)	6.09	6.29	6.71	7.47
ED visits (COPD/Asthma)	6.16	6.38	6.57	7.02
ED visits (skin infection)	2.98	3.28	3.04	3.24
ED visits (dehydration)	5.03	5.14	5.82	6.22
ED visits (UTI)	20.96	22.82	25.42	27.17
<b>Acute care transitions (all-cause)</b>	8,151.60	8,397.99	8,428.66	8,655.85
Potentially avoidable acute care transitions	2,692.26	2,657.83	2,572.62	2,593.72
Potentially avoidable acute care transitions (all six qualifying conditions)	1,534.96	1,497.92	1,416.39	1,409.51
Acute care transitions (pneumonia)	744.39	706.41	638.29	537.15
Acute care transitions (CHF)	264.77	272.07	271.31	318.41
Acute care transitions (COPD/ Asthma)	124.19	123.18	111.95	177.27
Acute care transitions (skin infection)	109.57	111.27	91.65	83.39
Acute care transitions (dehydration)	30.80	26.86	48.61	49.47
Acute care transitions (UTI)	261.26	258.13	254.59	243.82

CHF = congestive heart failure; COPD = chronic obstructive pulmonary disease; ED = emergency department; UTI = urinary tract infection.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 09).

NOTE: Each individual resident contributes their expenditure to the aggregated numerator and their count of Initiative-eligible days to the aggregated denominator. Acute care transitions include hospitalizations, ED visits, and observation stays

**Table O-2**  
**Clinical + Payment: Medicare expenditure (in dollars) per resident-year, FY 2014–2017, all ECCPs (6 states)**

Measure	Intervention group				Within-state reference group			
	2014	2015	2016	2017	2014	2015	2016	2017
Number of residents meeting eligibility criteria	13,989	13,710	13,347	13,012	190,787	189,211	181,565	175,956
Mean exposure (days)	251.44	247.75	250.41	246.73	253.28	248.43	251.24	249.27
<b>Total Medicare expenditures</b>	27,618.04	28,645.86	28,838.86	30,542.28	24,465.92	26,113.86	26,367.75	27,338.96
<b>Hospitalizations (all-cause)</b>	9,078.18	8,679.18	8,756.24	8,900.37	7,282.16	7,592.53	7,597.06	7,740.67
Potentially avoidable hospitalizations	2,352.23	2,157.81	2,157.36	2,085.23	2,236.82	2,193.39	2,103.43	2,166.51
Potentially avoidable hospitalizations (all six qualifying conditions)	1,217.98	1,101.59	1,098.57	1,047.25	1,240.90	1,206.92	1,135.01	1,138.77
Hospitalizations (pneumonia)	587.97	522.55	477.43	438.65	586.34	568.00	517.16	427.88
Hospitalizations (CHF)	220.13	218.55	248.96	242.20	246.08	251.22	243.83	286.48
Hospitalizations (COPD/Asthma)	86.06	82.62	64.79	126.13	108.45	103.21	93.69	152.97
Hospitalizations (skin infection)	90.43	73.26	75.07	49.09	80.63	75.43	65.14	62.35
Hospitalizations (dehydration)	22.70	18.81	46.37	37.47	18.55	19.44	35.52	37.76
Hospitalizations (UTI)	210.68	185.79	185.95	153.70	200.85	189.62	179.67	171.32
<b>ED visits (all-cause)</b>	201.97	214.03	208.34	220.23	257.10	272.66	277.62	299.77
Potentially avoidable ED visits	84.47	87.23	86.42	86.74	113.62	120.00	118.97	129.54
Potentially avoidable ED visits (all six qualifying conditions)	20.99	20.12	20.65	20.85	37.79	41.29	39.86	44.00
ED visits (pneumonia)	3.74	3.06	2.71	3.60	7.96	9.51	8.37	8.73
ED visits (CHF)	2.30	2.95	1.51	2.09	3.94	4.63	4.19	4.86
ED visits (COPD/Asthma)	2.57	1.69	2.69	2.03	4.41	4.66	4.41	4.92
ED visits (skin infection)	1.74	1.64	1.05	1.24	2.47	2.55	2.52	2.37
ED visits (dehydration)	1.23	1.11	2.59	1.65	3.41	3.38	3.52	3.75
ED visits (UTI)	9.40	9.66	10.10	10.24	15.59	16.56	16.86	19.37
<b>Acute care transitions (all-cause)</b>	9,290.86	8,908.26	8,980.37	9,127.52	7,551.59	7,876.55	7,887.37	8,053.26
Potentially avoidable acute care transitions	2,437.93	2,248.70	2,246.08	2,172.47	2,352.91	2,316.72	2,224.26	2,298.93
Potentially avoidable acute care transitions (all six qualifying conditions)	1,238.99	1,121.95	1,119.22	1,068.10	1,279.17	1,248.61	1,175.18	1,183.13
Acute care transitions (pneumonia)	591.74	525.62	480.14	442.25	594.33	577.60	525.58	436.66
Acute care transitions (CHF)	222.43	221.57	250.47	244.30	250.29	255.88	248.08	291.44
Acute care transitions (COPD/ Asthma)	88.63	84.48	67.47	128.16	112.89	107.89	98.11	157.92
Acute care transitions (skin infection)	92.17	74.89	76.12	50.32	83.13	78.03	67.72	64.73
Acute care transitions (dehydration)	23.93	19.93	48.96	39.12	22.00	22.90	39.07	41.57
Acute care transitions (UTI)	220.08	195.46	196.05	163.94	216.53	206.31	196.62	190.81

CHF = congestive heart failure; COPD = chronic obstructive pulmonary disease; ED = emergency department; UTI = urinary tract infection.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 09).

NOTE: Each individual resident contributes their expenditure to the aggregated numerator and their count of Initiative-eligible days to the aggregated denominator. Acute care transitions include hospitalizations, ED visits, and observation stays

**Table O-3**  
**Payment-Only: Medicare expenditure (in dollars) per resident-year, FY 2014–2017, all ECCPs (6 states)**

Measure	Intervention group				Within-state reference group			
	2014	2015	2016	2017	2014	2015	2016	2017
Number of residents meeting eligibility criteria	15,650	15,347	14,830	14,413	190,787	189,211	181,565	175,956
Mean exposure (days)	249.55	247.05	252.89	249.06	253.28	248.43	251.24	249.27
<b>Total Medicare expenditures</b>	24,308.96	26,334.69	25,387.25	26,316.98	24,465.92	26,113.86	26,367.75	27,338.96
<b>Hospitalizations (all-cause)</b>	7,079.34	7,461.77	6,732.43	6,643.48	7,282.16	7,592.53	7,597.06	7,740.67
Potentially avoidable hospitalizations	2,085.88	2,165.34	1,866.46	1,769.50	2,236.82	2,193.39	2,103.43	2,166.51
Potentially avoidable hospitalizations (all six qualifying conditions)	1,128.01	1,197.89	951.59	886.70	1,240.90	1,206.92	1,135.01	1,138.77
Hospitalizations (pneumonia)	527.17	620.80	425.48	309.27	586.34	568.00	517.16	427.88
Hospitalizations (CHF)	271.29	250.20	236.18	281.19	246.08	251.22	243.83	286.48
Hospitalizations (COPD/Asthma)	87.47	78.59	67.68	106.37	108.45	103.21	93.69	152.97
Hospitalizations (skin infection)	58.53	66.70	45.93	36.98	80.63	75.43	65.14	62.35
Hospitalizations (dehydration)	22.30	16.33	37.37	31.01	18.55	19.44	35.52	37.76
Hospitalizations (UTI)	161.24	165.27	138.95	121.88	200.85	189.62	179.67	171.32
<b>ED visits (all-cause)</b>	242.69	257.24	258.81	259.81	257.10	272.66	277.62	299.77
Potentially avoidable ED visits	108.26	114.54	114.61	109.25	113.62	120.00	118.97	129.54
Potentially avoidable ED visits (all six qualifying conditions)	32.66	33.21	35.82	31.37	37.79	41.29	39.86	44.00
ED visits (pneumonia)	5.85	7.19	6.02	5.76	7.96	9.51	8.37	8.73
ED visits (CHF)	3.33	2.51	5.26	3.42	3.94	4.63	4.19	4.86
ED visits (COPD/Asthma)	5.00	4.20	3.91	3.49	4.41	4.66	4.41	4.92
ED visits (skin infection)	2.32	2.06	2.66	1.30	2.47	2.55	2.52	2.37
ED visits (dehydration)	2.79	3.53	3.02	3.20	3.41	3.38	3.52	3.75
ED visits (UTI)	13.37	13.73	14.95	14.20	15.59	16.56	16.86	19.37
<b>Acute care transitions (all-cause)</b>	7,344.45	7,734.97	7,003.37	6,913.98	7,551.59	7,876.55	7,887.37	8,053.26
Potentially avoidable acute care transitions	2,204.82	2,284.27	1,981.34	1,879.66	2,352.91	2,316.72	2,224.26	2,298.93
Potentially avoidable acute care transitions (all six qualifying conditions)	1,165.98	1,231.55	987.59	918.24	1,279.17	1,248.61	1,175.18	1,183.13
Acute care transitions (pneumonia)	533.02	627.99	431.50	315.03	594.33	577.60	525.58	436.66
Acute care transitions (CHF)	279.93	252.71	241.58	284.66	250.29	255.88	248.08	291.44
Acute care transitions (COPD/ Asthma)	92.48	82.79	71.59	109.86	112.89	107.89	98.11	157.92
Acute care transitions (skin infection)	60.85	69.00	48.59	38.28	83.13	78.03	67.72	64.73
Acute care transitions (dehydration)	25.09	20.02	40.38	34.21	22.00	22.90	39.07	41.57
Acute care transitions (UTI)	174.60	179.04	153.94	136.20	216.53	206.31	196.62	190.81

CHF = congestive heart failure; COPD = chronic obstructive pulmonary disease; ED = emergency department; UTI = urinary tract infection.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 09).

NOTE: Each individual resident contributes their expenditure to the aggregated numerator and their count of Initiative-eligible days to the aggregated denominator. Acute care transitions include hospitalizations, ED visits, and observation stays



**Table O-4**  
**Clinical + Payment: Medicare expenditure (in dollars) per resident-year, FY 2014–2017, AQAF (Alabama)**

Measure	Intervention group				Within-state reference group			
	2014	2015	2016	2017	2014	2015	2016	2017
Number of residents meeting eligibility criteria	2,497	2,526	2,531	2,450	15,172	15,135	14,636	13,976
Mean exposure (days)	265.15	258.64	262.35	256.39	261.17	256.42	259.68	259.17
<b>Total Medicare expenditures</b>	21,507.66	23,518.42	24,458.48	25,046.35	21,114.29	22,821.29	22,869.11	23,594.57
<b>Hospitalizations (all-cause)</b>	5,281.10	5,760.47	5,987.30	5,893.09	5,422.10	5,822.57	5,796.08	5,934.56
Potentially avoidable hospitalizations	1,784.63	1,860.23	1,836.51	1,623.76	1,895.75	2,018.12	1,950.80	1,863.12
Potentially avoidable hospitalizations (all six qualifying conditions)	862.51	937.10	722.95	732.91	1,021.41	1,106.29	1,052.66	925.96
Hospitalizations (pneumonia)	427.68	465.50	305.63	249.44	506.87	559.18	480.27	319.02
Hospitalizations (CHF)	191.24	213.37	131.34	201.88	187.34	207.34	198.74	215.87
Hospitalizations (COPD/Asthma)	60.75	83.52	53.58	86.69	78.24	97.54	117.19	138.39
Hospitalizations (skin infection)	37.06	23.80	22.99	15.95	49.13	40.96	42.02	36.57
Hospitalizations (dehydration)	11.43	42.36	55.12	41.71	13.57	13.66	31.60	24.44
Hospitalizations (UTI)	134.35	108.55	154.28	137.24	186.25	187.60	182.84	191.67
<b>ED visits (all-cause)</b>	206.60	211.82	211.75	207.92	212.84	226.53	228.50	242.77
Potentially avoidable ED visits	91.95	97.02	90.18	77.42	99.61	104.48	104.03	110.05
Potentially avoidable ED visits (all six qualifying conditions)	22.58	26.98	24.47	19.11	33.35	33.16	32.74	37.75
ED visits (pneumonia)	2.34	2.19	2.93	2.16	5.04	5.91	5.37	5.43
ED visits (CHF)	5.33	8.28	3.56	2.62	3.33	4.57	3.33	5.24
ED visits (COPD/Asthma)	2.21	2.28	2.17	3.39	5.06	4.94	4.97	3.88
ED visits (skin infection)	0.92	2.01	0.69	1.11	1.83	1.63	1.00	1.01
ED visits (dehydration)	0.57	1.98	3.19	2.33	2.82	1.78	2.60	4.35
ED visits (UTI)	11.20	10.25	11.93	7.50	15.28	14.34	15.47	17.83
<b>Acute care transitions (all-cause)</b>	5,517.48	5,995.21	6,222.46	6,106.07	5,649.80	6,064.90	6,033.17	6,185.09
Potentially avoidable acute care transitions	1,883.03	1,967.89	1,933.21	1,701.18	1,996.76	2,126.64	2,057.53	1,977.20
Potentially avoidable acute care transitions (all six qualifying conditions)	885.25	964.90	747.41	752.03	1,054.80	1,140.06	1,085.53	963.71
Acute care transitions (pneumonia)	430.18	467.68	308.56	251.60	511.91	565.09	485.64	324.46
Acute care transitions (CHF)	196.57	222.05	134.90	204.50	190.67	212.01	202.20	221.11
Acute care transitions (COPD/ Asthma)	62.96	86.23	55.76	90.08	83.34	102.64	122.15	142.27
Acute care transitions (skin infection)	37.98	25.80	23.67	17.06	50.96	42.67	43.02	37.58
Acute care transitions (dehydration)	12.00	44.34	58.32	44.04	16.39	15.70	34.21	28.79
Acute care transitions (UTI)	145.55	118.80	166.21	144.74	201.53	201.95	198.32	209.51

CHF = congestive heart failure; COPD = chronic obstructive pulmonary disease; ED = emergency department; UTI = urinary tract infection.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 09).

NOTE: Each individual resident contributes their expenditure to the aggregated numerator and their count of Initiative-eligible days to the aggregated denominator. Acute care transitions include hospitalizations, ED visits, and observation stays

**Table O-5**  
**Payment-Only: Medicare expenditure (in dollars) per resident-year, FY 2014–2017, AQAF (Alabama)**

Measure	Intervention group				Within-state reference group			
	2014	2015	2016	2017	2014	2015	2016	2017
Number of residents meeting eligibility criteria	2,128	2,062	2,016	1,938	15,172	15,135	14,636	13,976
Mean exposure (days)	253.25	258.23	258.25	259.22	261.17	256.42	259.68	259.17
<b>Total Medicare expenditures</b>	23,772.74	24,293.44	23,648.04	24,882.48	21,114.29	22,821.29	22,869.11	23,594.57
<b>Hospitalizations (all-cause)</b>	6,488.06	6,157.99	5,643.05	5,407.07	5,422.10	5,822.57	5,796.08	5,934.56
Potentially avoidable hospitalizations	2,337.21	2,142.72	1,581.38	1,489.92	1,895.75	2,018.12	1,950.80	1,863.12
Potentially avoidable hospitalizations (all six qualifying conditions)	1,372.83	1,165.21	793.01	734.25	1,021.41	1,106.29	1,052.66	925.96
Hospitalizations (pneumonia)	684.26	591.96	349.90	294.43	506.87	559.18	480.27	319.02
Hospitalizations (CHF)	291.11	236.66	183.73	146.40	187.34	207.34	198.74	215.87
Hospitalizations (COPD/Asthma)	95.07	80.72	71.39	113.74	78.24	97.54	117.19	138.39
Hospitalizations (skin infection)	89.65	52.59	28.28	48.20	49.13	40.96	42.02	36.57
Hospitalizations (dehydration)	34.60	15.76	23.03	9.17	13.57	13.66	31.60	24.44
Hospitalizations (UTI)	178.13	187.53	136.67	122.31	186.25	187.60	182.84	191.67
<b>ED visits (all-cause)</b>	237.78	250.83	224.24	193.16	212.84	226.53	228.50	242.77
Potentially avoidable ED visits	98.20	98.82	96.75	89.27	99.61	104.48	104.03	110.05
Potentially avoidable ED visits (all six qualifying conditions)	28.45	26.99	34.56	23.84	33.35	33.16	32.74	37.75
ED visits (pneumonia)	1.30	4.18	2.36	3.18	5.04	5.91	5.37	5.43
ED visits (CHF)	4.21	2.33	7.10	3.84	3.33	4.57	3.33	5.24
ED visits (COPD/Asthma)	7.16	4.51	4.66	2.55	5.06	4.94	4.97	3.88
ED visits (skin infection)	1.50	1.49	3.29	0.56	1.83	1.63	1.00	1.01
ED visits (dehydration)	3.29	1.84	1.63	1.68	2.82	1.78	2.60	4.35
ED visits (UTI)	11.00	12.65	15.53	12.02	15.28	14.34	15.47	17.83
<b>Acute care transitions (all-cause)</b>	6,754.41	6,415.04	5,871.90	5,609.77	5,649.80	6,064.90	6,033.17	6,185.09
Potentially avoidable acute care transitions	2,456.04	2,242.75	1,679.11	1,581.23	1,996.76	2,126.64	2,057.53	1,977.20
Potentially avoidable acute care transitions (all six qualifying conditions)	1,419.71	1,193.33	828.54	758.89	1,054.80	1,140.06	1,085.53	963.71
Acute care transitions (pneumonia)	685.55	596.13	352.26	297.61	511.91	565.09	485.64	324.46
Acute care transitions (CHF)	313.75	238.99	191.81	150.24	190.67	212.01	202.20	221.11
Acute care transitions (COPD/ Asthma)	102.23	85.23	76.05	116.30	83.34	102.64	122.15	142.27
Acute care transitions (skin infection)	91.15	54.07	31.57	48.76	50.96	42.67	43.02	37.58
Acute care transitions (dehydration)	37.88	18.73	24.66	10.85	16.39	15.70	34.21	28.79
Acute care transitions (UTI)	189.13	200.18	152.19	135.13	201.53	201.95	198.32	209.51

CHF = congestive heart failure; COPD = chronic obstructive pulmonary disease; ED = emergency department; UTI = urinary tract infection.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 09).

NOTE: Each individual resident contributes their expenditure to the aggregated numerator and their count of Initiative-eligible days to the aggregated denominator. Acute care transitions include hospitalizations, ED visits, and observation stays

**Table O-6**  
**Clinical + Payment: Medicare expenditure (in dollars) per resident-year, FY 2014–2017, ATOP2 (Nevada)**

Measure	Intervention group				Within-state reference group			
	2014	2015	2016	2017	2014	2015	2016	2017
Number of residents meeting eligibility criteria	1,258	1,253	1,205	1,207	1,112	1,073	1,030	1,003
Mean exposure (days)	228.07	239.54	245.59	244.85	233.90	233.66	240.44	243.07
<b>Total Medicare expenditures</b>	30,061.80	31,920.65	33,945.13	34,362.12	31,822.61	34,025.30	36,074.58	36,512.93
<b>Hospitalizations (all-cause)</b>	11,693.16	11,645.50	13,899.10	12,154.01	13,758.98	15,719.21	16,395.20	15,918.41
Potentially avoidable hospitalizations	2,388.17	2,251.93	2,445.74	1,768.62	3,019.32	2,883.41	4,238.78	3,328.52
Potentially avoidable hospitalizations (all six qualifying conditions)	1,130.24	1,098.78	1,175.51	732.15	1,429.41	1,127.20	2,280.68	1,905.29
Hospitalizations (pneumonia)	605.30	733.80	450.21	321.36	754.10	619.52	1,821.24	823.60
Hospitalizations (CHF)	62.72	35.66	133.91	118.68	83.47	101.18	211.71	288.45
Hospitalizations (COPD/Asthma)	68.35	46.65	30.38	77.58	244.18	80.24	96.03	422.61
Hospitalizations (skin infection)	184.13	34.12	337.73	55.66	56.49	176.61	62.64	183.34
Hospitalizations (dehydration)	0.00	9.74	13.91	16.78	36.05	0.00	12.25	46.54
Hospitalizations (UTI)	209.73	238.81	209.38	142.08	255.11	149.64	76.81	140.75
<b>ED visits (all-cause)</b>	313.89	394.91	278.46	347.82	392.74	308.36	411.93	313.79
Potentially avoidable ED visits	129.33	133.45	110.25	121.96	124.99	111.10	174.25	126.74
Potentially avoidable ED visits (all six qualifying conditions)	31.79	23.71	23.18	32.09	31.81	21.24	58.68	40.60
ED visits (pneumonia)	12.68	1.04	2.76	3.78	9.26	4.73	5.93	21.81
ED visits (CHF)	2.25	3.70	0.00	2.77	5.22	0.54	7.35	2.24
ED visits (COPD/Asthma)	2.36	3.35	5.51	0.00	0.12	0.81	3.79	0.00
ED visits (skin infection)	2.02	2.87	1.97	3.12	2.30	2.77	12.29	0.70
ED visits (dehydration)	2.23	1.45	2.09	3.26	8.40	1.81	7.09	3.85
ED visits (UTI)	10.25	11.30	10.86	19.15	6.51	10.58	22.23	12.01
<b>Acute care transitions (all-cause)</b>	12,017.03	12,105.33	14,195.18	12,513.18	14,157.05	16,033.12	16,808.83	16,248.02
Potentially avoidable acute care transitions	2,517.50	2,386.54	2,560.67	1,890.58	3,144.30	2,994.51	4,413.03	3,470.50
Potentially avoidable acute care transitions (all six qualifying conditions)	1,162.03	1,122.50	1,198.69	764.24	1,461.21	1,148.44	2,339.36	1,945.89
Acute care transitions (pneumonia)	617.97	734.83	452.96	325.14	763.36	624.24	1,827.18	845.40
Acute care transitions (CHF)	64.98	39.36	133.91	121.45	88.69	101.73	219.06	290.69
Acute care transitions (COPD/ Asthma)	70.71	50.01	35.89	77.58	244.30	81.05	99.81	422.61
Acute care transitions (skin infection)	186.16	37.00	339.70	58.78	58.79	179.39	74.93	184.04
Acute care transitions (dehydration)	2.23	11.19	16.00	20.05	44.45	1.81	19.34	50.40
Acute care transitions (UTI)	219.98	250.11	220.24	161.23	261.62	160.22	99.04	152.76

CHF = congestive heart failure; COPD = chronic obstructive pulmonary disease; ED = emergency department; UTI = urinary tract infection.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 09).

NOTE: Each individual resident contributes their expenditure to the aggregated numerator and their count of Initiative-eligible days to the aggregated denominator. Acute care transitions include hospitalizations, ED visits, and observation stays

**Table O-7**  
**Payment-Only: Medicare expenditure (in dollars) per resident-year, FY 2014–2017, ATOP2 (Colorado)**

Measure	Intervention group				Within-state reference group			
	2014	2015	2016	2017	2014	2015	2016	2017
Number of residents meeting eligibility criteria	1,923	1,884	1,749	1,745	6,830	6,939	6,731	6,549
Mean exposure (days)	246.86	233.85	240.91	237.31	245.24	238.29	240.64	239.52
<b>Total Medicare expenditures</b>	18,088.22	18,363.23	19,689.39	20,766.46	18,669.37	20,033.90	20,496.74	22,571.36
<b>Hospitalizations (all-cause)</b>	4,408.64	4,174.53	4,614.76	4,530.08	4,535.75	4,935.27	4,909.49	5,536.84
Potentially avoidable hospitalizations	1,350.78	1,326.33	1,342.19	1,360.95	1,545.03	1,581.93	1,390.30	1,525.63
Potentially avoidable hospitalizations (all six qualifying conditions)	690.78	704.19	689.92	629.67	792.57	752.66	634.93	718.87
Hospitalizations (pneumonia)	341.84	365.80	377.20	260.21	402.45	431.84	289.03	241.32
Hospitalizations (CHF)	130.78	121.36	79.56	202.30	144.09	109.45	116.46	165.98
Hospitalizations (COPD/Asthma)	78.84	72.10	23.08	83.39	36.20	37.88	68.79	78.93
Hospitalizations (skin infection)	60.02	37.67	59.25	16.15	86.29	52.56	47.96	79.78
Hospitalizations (dehydration)	2.62	8.54	66.74	30.16	6.63	9.56	17.48	20.64
Hospitalizations (UTI)	76.68	98.71	84.08	37.46	116.90	111.36	95.22	132.22
<b>ED visits (all-cause)</b>	257.86	251.88	356.32	342.94	346.31	371.40	359.07	463.92
Potentially avoidable ED visits	109.83	124.00	174.17	145.42	152.74	166.23	161.55	200.79
Potentially avoidable ED visits (all six qualifying conditions)	41.35	41.36	71.82	55.63	61.66	67.84	61.28	78.89
ED visits (pneumonia)	15.00	13.23	12.28	16.64	18.83	23.41	14.59	18.23
ED visits (CHF)	2.99	2.67	7.54	7.36	5.35	6.35	4.37	6.59
ED visits (COPD/Asthma)	4.43	4.05	5.85	4.07	5.05	5.82	10.57	9.06
ED visits (skin infection)	4.75	5.36	7.64	2.30	3.91	3.35	5.85	3.87
ED visits (dehydration)	1.75	1.68	8.19	3.23	6.19	4.67	3.62	9.26
ED visits (UTI)	12.43	14.38	30.32	22.03	22.34	24.23	22.28	31.88
<b>Acute care transitions (all-cause)</b>	4,722.58	4,465.03	5,010.23	4,889.66	4,897.70	5,322.80	5,289.51	6,026.65
Potentially avoidable acute care transitions	1,489.07	1,474.18	1,516.36	1,508.27	1,699.83	1,749.73	1,553.55	1,731.12
Potentially avoidable acute care transitions (all six qualifying conditions)	754.92	745.99	761.74	685.29	854.23	820.71	697.11	800.67
Acute care transitions (pneumonia)	356.83	379.03	389.48	276.86	421.28	455.25	303.62	259.80
Acute care transitions (CHF)	156.57	124.03	87.10	209.66	149.44	115.80	120.83	173.54
Acute care transitions (COPD/ Asthma)	83.27	76.15	28.93	87.46	41.25	43.71	79.36	88.09
Acute care transitions (skin infection)	64.78	43.03	66.89	18.44	90.20	55.91	54.71	83.65
Acute care transitions (dehydration)	4.36	10.21	74.94	33.39	12.82	14.45	21.10	29.90
Acute care transitions (UTI)	89.11	113.53	114.40	59.49	139.24	135.59	117.50	165.69

CHF = congestive heart failure; COPD = chronic obstructive pulmonary disease; ED = emergency department; UTI = urinary tract infection.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 09).

NOTE: Each individual resident contributes their expenditure to the aggregated numerator and their count of Initiative-eligible days to the aggregated denominator. Acute care transitions include hospitalizations, ED visits, and observation stays

**Table O-8**  
**Clinical + Payment: Medicare expenditure (in dollars) per resident-year, FY 2014–2017, MOQI (Missouri)**

Measure	Intervention group				Within-state reference group			
	2014	2015	2016	2017	2014	2015	2016	2017
Number of residents meeting eligibility criteria	1,653	1,701	1,662	1,587	26,466	26,829	26,137	25,661
Mean exposure (days)	261.09	248.47	259.78	254.65	252.84	248.22	250.32	248.37
<b>Total Medicare expenditures</b>	23,475.72	25,008.58	23,861.51	25,243.39	23,501.81	25,577.61	25,363.90	26,617.57
<b>Hospitalizations (all-cause)</b>	6,011.11	6,231.72	5,597.07	5,579.64	6,201.49	6,866.50	6,540.57	6,852.92
Potentially avoidable hospitalizations	1,943.54	2,060.17	1,695.35	1,571.52	2,302.94	2,361.79	2,114.51	2,316.57
Potentially avoidable hospitalizations (all six qualifying conditions)	876.12	1,172.10	942.88	725.62	1,287.23	1,326.18	1,187.86	1,237.06
Hospitalizations (pneumonia)	463.05	594.88	365.46	280.33	672.15	650.59	577.30	454.41
Hospitalizations (CHF)	169.61	299.21	245.34	251.36	226.24	263.73	235.51	308.38
Hospitalizations (COPD/Asthma)	62.55	29.05	68.62	40.80	90.51	97.17	72.78	156.03
Hospitalizations (skin infection)	48.55	130.47	69.42	33.37	93.44	91.46	70.74	75.81
Hospitalizations (dehydration)	15.45	8.41	13.73	18.50	19.77	22.62	26.85	42.77
Hospitalizations (UTI)	116.91	110.07	180.32	101.26	185.11	200.62	204.68	199.66
<b>ED visits (all-cause)</b>	212.54	162.17	217.95	199.87	354.71	396.99	391.19	418.67
Potentially avoidable ED visits	82.97	66.09	82.15	78.01	166.27	187.78	182.02	196.95
Potentially avoidable ED visits (all six qualifying conditions)	19.31	15.38	19.27	13.24	63.43	74.87	70.40	74.91
ED visits (pneumonia)	3.04	5.82	1.49	3.15	16.08	20.04	19.79	18.18
ED visits (CHF)	1.99	0.00	0.30	0.33	7.47	9.28	8.34	9.06
ED visits (COPD/Asthma)	1.94	1.64	2.49	0.60	7.85	8.87	6.85	8.26
ED visits (skin infection)	1.98	0.71	2.00	0.57	3.58	3.61	3.72	3.76
ED visits (dehydration)	0.26	1.12	4.89	1.20	5.39	5.73	5.84	6.15
ED visits (UTI)	10.10	6.10	8.09	7.40	23.05	27.33	25.86	29.51
<b>Acute care transitions (all-cause)</b>	6,244.79	6,407.79	5,834.09	5,795.77	6,574.49	7,285.06	6,958.95	7,298.54
Potentially avoidable acute care transitions	2,026.73	2,126.90	1,780.61	1,651.42	2,473.76	2,558.10	2,300.89	2,521.01
Potentially avoidable acute care transitions (all six qualifying conditions)	895.43	1,188.11	962.15	738.86	1,351.09	1,402.07	1,258.98	1,312.56
Acute care transitions (pneumonia)	466.09	600.70	366.96	283.48	688.29	670.79	597.24	472.73
Acute care transitions (CHF)	171.60	299.21	245.64	251.68	233.77	273.05	243.87	317.65
Acute care transitions (COPD/ Asthma)	64.49	31.32	71.11	41.40	98.51	106.07	79.75	164.30
Acute care transitions (skin infection)	50.53	131.18	71.42	33.94	97.06	95.20	74.56	79.62
Acute care transitions (dehydration)	15.71	9.52	18.62	19.70	25.28	28.61	32.73	49.01
Acute care transitions (UTI)	127.01	116.17	188.41	108.66	208.19	228.36	230.83	229.25

CHF = congestive heart failure; COPD = chronic obstructive pulmonary disease; ED = emergency department; UTI = urinary tract infection.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 09).

NOTE: Each individual resident contributes their expenditure to the aggregated numerator and their count of Initiative-eligible days to the aggregated denominator. Acute care transitions include hospitalizations, ED visits, and observation stays

**Table O-9**  
**Payment-Only: Medicare expenditure (in dollars) per resident-year, FY 2014–2017, MOQI (Missouri)**

Measure	Intervention group				Within-state reference group			
	2014	2015	2016	2017	2014	2015	2016	2017
Number of residents meeting eligibility criteria	2,271	2,264	2,148	2,058	26,466	26,829	26,137	25,661
Mean exposure (days)	252.91	247.53	261.46	260.40	252.84	248.22	250.32	248.37
<b>Total Medicare expenditures</b>	22,024.05	24,385.93	22,422.89	23,569.79	23,501.81	25,577.61	25,363.90	26,617.57
<b>Hospitalizations (all-cause)</b>	5,748.38	6,813.67	5,641.49	5,788.56	6,201.49	6,866.50	6,540.57	6,852.92
Potentially avoidable hospitalizations	2,141.90	2,287.19	1,929.60	2,006.21	2,302.94	2,361.79	2,114.51	2,316.57
Potentially avoidable hospitalizations (all six qualifying conditions)	1,109.84	1,375.80	1,092.22	1,028.61	1,287.23	1,326.18	1,187.86	1,237.06
Hospitalizations (pneumonia)	608.74	841.38	546.00	360.24	672.15	650.59	577.30	454.41
Hospitalizations (CHF)	236.84	227.08	213.68	317.48	226.24	263.73	235.51	308.38
Hospitalizations (COPD/Asthma)	46.43	76.17	84.42	91.39	90.51	97.17	72.78	156.03
Hospitalizations (skin infection)	26.55	90.07	43.96	50.94	93.44	91.46	70.74	75.81
Hospitalizations (dehydration)	25.49	21.73	27.30	25.53	19.77	22.62	26.85	42.77
Hospitalizations (UTI)	165.79	119.38	176.85	183.04	185.11	200.62	204.68	199.66
<b>ED visits (all-cause)</b>	343.02	347.82	330.79	341.17	354.71	396.99	391.19	418.67
Potentially avoidable ED visits	170.20	166.04	152.05	150.91	166.27	187.78	182.02	196.95
Potentially avoidable ED visits (all six qualifying conditions)	56.33	50.24	49.42	55.51	63.43	74.87	70.40	74.91
ED visits (pneumonia)	10.31	10.82	13.30	12.67	16.08	20.04	19.79	18.18
ED visits (CHF)	4.66	4.56	7.96	5.01	7.47	9.28	8.34	9.06
ED visits (COPD/Asthma)	13.41	10.10	3.77	8.01	7.85	8.87	6.85	8.26
ED visits (skin infection)	2.39	1.97	3.38	1.38	3.58	3.61	3.72	3.76
ED visits (dehydration)	2.95	6.61	3.26	9.10	5.39	5.73	5.84	6.15
ED visits (UTI)	22.61	16.19	17.74	19.34	23.05	27.33	25.86	29.51
<b>Acute care transitions (all-cause)</b>	6,133.09	7,166.77	5,993.30	6,157.28	6,574.49	7,285.06	6,958.95	7,298.54
Potentially avoidable acute care transitions	2,331.04	2,454.66	2,082.22	2,158.74	2,473.76	2,558.10	2,300.89	2,521.01
Potentially avoidable acute care transitions (all six qualifying conditions)	1,166.17	1,427.47	1,141.64	1,084.52	1,351.09	1,402.07	1,258.98	1,312.56
Acute care transitions (pneumonia)	619.05	852.20	559.31	372.91	688.29	670.79	597.24	472.73
Acute care transitions (CHF)	241.51	231.64	221.65	322.82	233.77	273.05	243.87	317.65
Acute care transitions (COPD/ Asthma)	59.84	86.26	88.19	99.40	98.51	106.07	79.75	164.30
Acute care transitions (skin infection)	28.94	93.46	47.34	52.32	97.06	95.20	74.56	79.62
Acute care transitions (dehydration)	28.44	28.34	30.56	34.63	25.28	28.61	32.73	49.01
Acute care transitions (UTI)	188.40	135.57	194.59	202.44	208.19	228.36	230.83	229.25

CHF = congestive heart failure; COPD = chronic obstructive pulmonary disease; ED = emergency department; UTI = urinary tract infection.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 09).

NOTE: Each individual resident contributes their expenditure to the aggregated numerator and their count of Initiative-eligible days to the aggregated denominator. Acute care transitions include hospitalizations, ED visits, and observation stays

**Table O-10**

**Clinical + Payment: Medicare expenditure (in dollars) per resident-year, FY 2014–2017, NY-RAH (New York)**

Measure	Intervention group				Within-state reference group			
	2014	2015	2016	2017	2014	2015	2016	2017
Number of residents meeting eligibility criteria	4,581	4,278	4,181	4,142	61,036	59,591	56,627	55,219
Mean exposure (days)	249.19	245.12	242.18	234.53	256.09	250.02	250.91	246.31
<b>Total Medicare expenditures</b>	33,135.92	33,887.59	34,755.46	37,382.71	25,888.19	27,676.03	28,772.86	29,878.41
<b>Hospitalizations (all-cause)</b>	13,775.23	12,799.78	13,045.26	13,754.11	9,598.42	9,773.22	10,235.04	10,257.24
Potentially avoidable hospitalizations	3,284.49	2,780.90	2,952.14	2,982.24	2,529.22	2,434.96	2,461.51	2,527.04
Potentially avoidable hospitalizations (all six qualifying conditions)	1,775.98	1,502.93	1,762.50	1,683.33	1,397.31	1,334.17	1,356.54	1,342.45
Hospitalizations (pneumonia)	721.38	621.84	759.45	748.76	617.75	588.55	584.06	512.03
Hospitalizations (CHF)	372.82	310.83	496.20	340.94	284.52	279.94	305.26	341.75
Hospitalizations (COPD/Asthma)	136.72	157.28	88.20	225.50	149.42	139.27	128.17	173.64
Hospitalizations (skin infection)	171.77	121.27	77.97	65.51	90.70	88.53	81.33	77.90
Hospitalizations (dehydration)	50.42	14.93	73.11	74.09	23.67	22.62	49.27	48.04
Hospitalizations (UTI)	322.86	276.78	267.57	228.53	231.27	215.26	208.46	189.10
<b>ED visits (all-cause)</b>	161.57	196.04	186.85	205.12	207.60	227.96	232.71	246.17
Potentially avoidable ED visits	64.56	81.75	74.68	88.10	91.09	98.19	96.21	103.93
Potentially avoidable ED visits (all six qualifying conditions)	12.78	12.84	13.97	15.44	21.78	25.00	24.06	24.88
ED visits (pneumonia)	0.97	1.58	0.80	2.78	3.50	4.09	3.43	3.13
ED visits (CHF)	0.25	1.19	0.15	0.00	1.71	2.44	2.08	2.35
ED visits (COPD/Asthma)	2.57	0.82	0.94	0.96	2.13	2.71	2.46	3.08
ED visits (skin infection)	1.98	1.51	0.79	1.07	1.85	2.13	1.78	1.91
ED visits (dehydration)	1.10	1.08	2.20	0.49	2.27	2.27	2.31	2.14
ED visits (UTI)	5.91	6.66	9.08	10.14	10.31	11.36	12.01	12.27
<b>Acute care transitions (all-cause)</b>	13,936.80	12,995.82	13,233.00	13,960.30	9,808.34	10,004.03	10,470.67	10,505.82
Potentially avoidable acute care transitions	3,349.05	2,862.65	3,026.82	3,070.34	2,620.69	2,534.14	2,557.78	2,631.31
Potentially avoidable acute care transitions (all six qualifying conditions)	1,788.75	1,515.77	1,776.46	1,698.77	1,419.18	1,359.29	1,380.60	1,367.41
Acute care transitions (pneumonia)	722.35	623.42	760.26	751.54	621.25	592.71	587.49	515.15
Acute care transitions (CHF)	373.08	312.02	496.35	340.94	286.23	282.37	307.33	344.10
Acute care transitions (COPD/ Asthma)	139.29	158.10	89.14	226.46	151.55	141.99	130.62	176.71
Acute care transitions (skin infection)	173.75	122.78	78.76	66.58	92.55	90.66	83.11	79.84
Acute care transitions (dehydration)	51.52	16.01	75.31	74.58	25.97	24.91	51.57	50.18
Acute care transitions (UTI)	328.77	283.44	276.65	238.67	241.64	226.65	220.47	201.42

CHF = congestive heart failure; COPD = chronic obstructive pulmonary disease; ED = emergency department; UTI = urinary tract infection.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 09).

NOTE: Each individual resident contributes their expenditure to the aggregated numerator and their count of Initiative-eligible days to the aggregated denominator. Acute care transitions include hospitalizations, ED visits, and observation stays

**Table O-11**  
**Payment-Only: Medicare expenditure (in dollars) per resident-year, FY 2014–2017, NY-RAH (New York)**

Measure	Intervention group				Within-state reference group			
	2014	2015	2016	2017	2014	2015	2016	2017
Number of residents meeting eligibility criteria	5,025	4,827	4,671	4,564	61,036	59,591	56,627	55,219
Mean exposure (days)	251.35	249.25	255.52	250.14	256.09	250.02	250.91	246.31
<b>Total Medicare expenditures</b>	27,733.18	30,891.87	29,360.48	30,324.61	25,888.19	27,676.03	28,772.86	29,878.41
<b>Hospitalizations (all-cause)</b>	10,010.85	10,519.30	9,100.26	9,260.80	9,598.42	9,773.22	10,235.04	10,257.24
Potentially avoidable hospitalizations	2,376.43	2,528.07	2,019.68	1,928.80	2,529.22	2,434.96	2,461.51	2,527.04
Potentially avoidable hospitalizations (all six qualifying conditions)	1,329.87	1,367.20	1,042.82	1,008.41	1,397.31	1,334.17	1,356.54	1,342.45
Hospitalizations (pneumonia)	544.82	649.68	423.60	323.65	617.75	588.55	584.06	512.03
Hospitalizations (CHF)	390.18	286.76	323.73	360.55	284.52	279.94	305.26	341.75
Hospitalizations (COPD/Asthma)	110.46	96.71	47.50	110.95	149.42	139.27	128.17	173.64
Hospitalizations (skin infection)	56.15	77.41	57.60	40.36	90.70	88.53	81.33	77.90
Hospitalizations (dehydration)	33.46	23.24	43.35	35.83	23.67	22.62	49.27	48.04
Hospitalizations (UTI)	194.78	233.39	147.04	137.06	231.27	215.26	208.46	189.10
<b>ED visits (all-cause)</b>	189.80	228.42	209.31	206.68	207.60	227.96	232.71	246.17
Potentially avoidable ED visits	80.19	106.20	90.43	84.80	91.09	98.19	96.21	103.93
Potentially avoidable ED visits (all six qualifying conditions)	18.06	22.51	20.02	18.12	21.78	25.00	24.06	24.88
ED visits (pneumonia)	3.16	4.75	2.22	1.93	3.50	4.09	3.43	3.13
ED visits (CHF)	1.92	0.94	2.45	1.33	1.71	2.44	2.08	2.35
ED visits (COPD/Asthma)	1.31	1.71	2.85	1.45	2.13	2.71	2.46	3.08
ED visits (skin infection)	1.52	1.32	1.15	1.39	1.85	2.13	1.78	1.91
ED visits (dehydration)	1.55	4.19	2.35	1.56	2.27	2.27	2.31	2.14
ED visits (UTI)	8.60	9.60	9.00	10.46	10.31	11.36	12.01	12.27
<b>Acute care transitions (all-cause)</b>	10,205.00	10,748.32	9,310.63	9,468.09	9,808.34	10,004.03	10,470.67	10,505.82
Potentially avoidable acute care transitions	2,459.96	2,634.86	2,110.11	2,014.12	2,620.69	2,534.14	2,557.78	2,631.31
Potentially avoidable acute care transitions (all six qualifying conditions)	1,347.93	1,389.71	1,062.84	1,026.53	1,419.18	1,359.29	1,380.60	1,367.41
Acute care transitions (pneumonia)	547.98	654.43	425.82	325.58	621.25	592.71	587.49	515.15
Acute care transitions (CHF)	392.10	287.70	326.19	361.88	286.23	282.37	307.33	344.10
Acute care transitions (COPD/ Asthma)	111.77	98.42	50.35	112.41	151.55	141.99	130.62	176.71
Acute care transitions (skin infection)	57.67	78.73	58.75	41.75	92.55	90.66	83.11	79.84
Acute care transitions (dehydration)	35.01	27.43	45.70	37.39	25.97	24.91	51.57	50.18
Acute care transitions (UTI)	203.39	242.98	156.04	147.53	241.64	226.65	220.47	201.42

CHF = congestive heart failure; COPD = chronic obstructive pulmonary disease; ED = emergency department; UTI = urinary tract infection.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 09).

NOTE: Each individual resident contributes their expenditure to the aggregated numerator and their count of Initiative-eligible days to the aggregated denominator. Acute care transitions include hospitalizations, ED visits, and observation stays



**Table O-12**

**Clinical + Payment: Medicare expenditure (in dollars) per resident-year, FY 2014–2017, OPTIMISTIC (Indiana)**

Measure	Intervention group				Within-state reference group			
	2014	2015	2016	2017	2014	2015	2016	2017
Number of residents meeting eligibility criteria	2,170	2,153	2,028	1,936	29,687	29,643	28,524	27,698
Mean exposure (days)	236.50	228.04	229.61	233.93	241.35	237.42	241.68	240.86
<b>Total Medicare expenditures</b>	27,967.62	28,765.04	28,219.99	30,062.59	25,497.36	27,381.12	27,330.29	27,857.80
<b>Hospitalizations (all-cause)</b>	6,882.14	6,396.20	6,378.36	6,943.88	6,040.49	6,514.72	6,645.52	6,667.53
Potentially avoidable hospitalizations	1,847.04	1,921.90	2,062.84	2,018.49	2,078.82	2,143.34	2,072.69	2,154.03
Potentially avoidable hospitalizations (all six qualifying conditions)	817.50	742.72	866.80	915.92	1,145.31	1,161.21	1,046.26	1,056.05
Hospitalizations (pneumonia)	455.25	309.39	471.02	350.26	530.51	538.65	475.03	385.05
Hospitalizations (CHF)	111.31	171.13	146.68	222.04	243.41	252.66	228.92	265.84
Hospitalizations (COPD/Asthma)	62.86	26.59	46.14	152.89	89.15	89.96	90.39	170.16
Hospitalizations (skin infection)	30.61	47.28	36.17	44.34	79.78	73.68	59.59	49.55
Hospitalizations (dehydration)	5.74	20.10	43.27	11.03	17.10	22.02	26.97	29.33
Hospitalizations (UTI)	151.72	168.23	123.51	135.36	185.37	184.24	165.36	156.12
<b>ED visits (all-cause)</b>	229.84	218.85	242.08	211.76	346.68	354.87	365.43	403.47
Potentially avoidable ED visits	98.92	87.27	106.43	83.01	162.48	167.27	164.44	182.46
Potentially avoidable ED visits (all six qualifying conditions)	26.97	23.16	23.77	24.06	68.43	71.26	66.26	76.53
ED visits (pneumonia)	4.78	2.99	4.48	4.48	17.53	19.27	15.00	18.51
ED visits (CHF)	0.86	1.68	1.75	2.57	7.62	7.98	7.60	9.95
ED visits (COPD/Asthma)	3.39	0.87	4.37	3.43	8.10	8.89	8.44	8.99
ED visits (skin infection)	1.92	0.94	0.59	0.70	4.23	3.91	3.91	3.83
ED visits (dehydration)	1.00	0.25	0.93	2.15	5.15	6.09	5.72	5.30
ED visits (UTI)	15.01	16.43	11.65	10.74	25.81	25.13	25.60	29.96
<b>Acute care transitions (all-cause)</b>	7,117.53	6,631.35	6,663.38	7,170.09	6,421.61	6,897.70	7,040.96	7,100.85
Potentially avoidable acute care transitions	1,945.95	2,017.13	2,169.27	2,103.43	2,249.54	2,316.66	2,240.71	2,342.01
Potentially avoidable acute care transitions (all six qualifying conditions)	844.48	765.88	890.57	939.98	1,216.17	1,233.22	1,113.26	1,133.13
Acute care transitions (pneumonia)	460.03	312.38	475.51	354.74	548.17	558.06	490.10	403.66
Acute care transitions (CHF)	112.17	172.81	148.44	224.60	252.68	260.74	236.73	275.81
Acute care transitions (COPD/ Asthma)	66.26	27.46	50.51	156.31	97.24	98.88	98.82	179.20
Acute care transitions (skin infection)	32.54	48.22	36.76	45.04	84.08	77.69	63.54	53.38
Acute care transitions (dehydration)	6.74	20.35	44.19	13.18	22.34	28.13	32.83	34.85
Acute care transitions (UTI)	166.73	184.66	135.16	146.10	211.66	209.72	191.23	186.23

CHF = congestive heart failure; COPD = chronic obstructive pulmonary disease; ED = emergency department; UTI = urinary tract infection.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 09).

NOTE: Each individual resident contributes their expenditure to the aggregated numerator and their count of Initiative-eligible days to the aggregated denominator. Acute care transitions include hospitalizations, ED visits, and observation stays

**Table O-13**  
**Payment-Only: Medicare expenditure (in dollars) per resident-year, FY 2014–2017, OPTIMISTIC (Indiana)**

Measure	Intervention group				Within-state reference group			
	2014	2015	2016	2017	2014	2015	2016	2017
Number of residents meeting eligibility criteria	2,378	2,390	2,296	2,268	29,687	29,643	28,524	27,698
Mean exposure (days)	239.35	237.93	244.86	237.04	241.35	237.42	241.68	240.86
<b>Total Medicare expenditures</b>	24,125.72	26,427.76	25,126.99	26,328.65	25,497.36	27,381.12	27,330.29	27,857.80
<b>Hospitalizations (all-cause)</b>	5,604.49	6,145.31	5,454.53	5,420.90	6,040.49	6,514.72	6,645.52	6,667.53
Potentially avoidable hospitalizations	1,796.82	2,106.05	1,894.25	1,876.23	2,078.82	2,143.34	2,072.69	2,154.03
Potentially avoidable hospitalizations (all six qualifying conditions)	893.37	1,168.89	942.15	833.16	1,145.31	1,161.21	1,046.26	1,056.05
Hospitalizations (pneumonia)	455.52	671.67	420.70	284.91	530.51	538.65	475.03	385.05
Hospitalizations (CHF)	183.77	231.20	246.79	260.96	243.41	252.66	228.92	265.84
Hospitalizations (COPD/Asthma)	67.30	72.27	106.04	137.46	89.15	89.96	90.39	170.16
Hospitalizations (skin infection)	41.52	62.67	19.76	22.92	79.78	73.68	59.59	49.55
Hospitalizations (dehydration)	6.07	6.58	20.85	20.08	17.10	22.02	26.97	29.33
Hospitalizations (UTI)	139.19	124.50	128.02	106.83	185.37	184.24	165.36	156.12
<b>ED visits (all-cause)</b>	284.98	262.88	275.74	286.68	346.68	354.87	365.43	403.47
Potentially avoidable ED visits	133.30	115.30	130.68	129.57	162.48	167.27	164.44	182.46
Potentially avoidable ED visits (all six qualifying conditions)	45.10	41.22	42.32	29.29	68.43	71.26	66.26	76.53
ED visits (pneumonia)	8.37	9.38	8.03	3.87	17.53	19.27	15.00	18.51
ED visits (CHF)	4.87	5.26	8.34	2.70	7.62	7.98	7.60	9.95
ED visits (COPD/Asthma)	5.45	5.09	5.90	2.15	8.10	8.89	8.44	8.99
ED visits (skin infection)	3.54	2.64	2.63	1.84	4.23	3.91	3.91	3.83
ED visits (dehydration)	4.84	2.01	3.22	3.68	5.15	6.09	5.72	5.30
ED visits (UTI)	18.04	16.84	14.20	15.04	25.81	25.13	25.60	29.96
<b>Acute care transitions (all-cause)</b>	5,903.52	6,466.00	5,753.56	5,728.48	6,421.61	6,897.70	7,040.96	7,100.85
Potentially avoidable acute care transitions	1,931.05	2,225.16	2,024.94	2,005.80	2,249.54	2,316.66	2,240.71	2,342.01
Potentially avoidable acute care transitions (all six qualifying conditions)	938.48	1,210.32	984.47	862.45	1,216.17	1,233.22	1,113.26	1,133.13
Acute care transitions (pneumonia)	463.89	681.05	428.73	288.77	548.17	558.06	490.10	403.66
Acute care transitions (CHF)	188.64	236.46	255.13	263.66	252.68	260.74	236.73	275.81
Acute care transitions (COPD/ Asthma)	72.75	77.36	111.93	139.61	97.24	98.88	98.82	179.20
Acute care transitions (skin infection)	45.06	65.52	22.39	24.77	84.08	77.69	63.54	53.38
Acute care transitions (dehydration)	10.91	8.59	24.07	23.76	22.34	28.13	32.83	34.85
Acute care transitions (UTI)	157.23	141.34	142.22	121.87	211.66	209.72	191.23	186.23

CHF = congestive heart failure; COPD = chronic obstructive pulmonary disease; ED = emergency department; UTI = urinary tract infection.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 09).

NOTE: Each individual resident contributes their expenditure to the aggregated numerator and their count of Initiative-eligible days to the aggregated denominator. Acute care transitions include hospitalizations, ED visits, and observation stays

**Table O-14**

**Clinical + Payment: Medicare expenditure (in dollars) per resident-year, FY 2014–2017, RAVEN (Pennsylvania)**

Measure	Intervention group				Within-state reference group			
	2014	2015	2016	2017	2014	2015	2016	2017
Number of residents meeting eligibility criteria	1,830	1,799	1,740	1,690	50,484	50,001	47,880	45,850
Mean exposure (days)	263.43	267.32	271.46	271.20	256.27	252.48	256.96	256.93
<b>Total Medicare expenditures</b>	24,825.75	25,212.98	24,273.93	26,259.46	24,304.14	25,498.04	25,242.99	26,099.75
<b>Hospitalizations (all-cause)</b>	6,697.97	6,289.57	5,464.27	5,497.76	6,525.42	6,733.53	6,378.62	6,602.69
Potentially avoidable hospitalizations	1,806.49	1,471.36	1,239.49	1,539.52	2,115.14	1,967.65	1,799.30	1,830.69
Potentially avoidable hospitalizations (all six qualifying conditions)	1,169.45	756.06	525.95	746.40	1,202.37	1,111.31	969.01	1,002.75
Hospitalizations (pneumonia)	735.04	405.77	240.07	343.27	579.70	536.06	446.72	390.76
Hospitalizations (CHF)	152.98	116.02	60.55	179.69	245.84	244.95	217.02	260.23
Hospitalizations (COPD/Asthma)	57.13	45.36	66.79	49.69	94.80	81.98	62.81	126.50
Hospitalizations (skin infection)	16.54	36.41	21.02	74.01	71.73	64.08	56.02	47.45
Hospitalizations (dehydration)	10.61	8.78	29.97	10.24	15.24	16.02	33.10	34.14
Hospitalizations (UTI)	197.15	143.72	107.55	89.50	195.06	168.22	153.34	143.66
<b>ED visits (all-cause)</b>	185.51	184.02	163.63	213.14	216.07	214.53	221.64	233.97
Potentially avoidable ED visits	80.57	75.56	75.54	85.28	85.52	82.51	84.13	89.22
Potentially avoidable ED visits (all six qualifying conditions)	26.95	25.51	26.19	30.98	25.28	25.53	26.08	28.28
ED visits (pneumonia)	6.40	6.42	5.84	6.70	3.32	4.31	4.43	4.01
ED visits (CHF)	4.85	2.96	3.36	6.45	2.75	2.79	2.68	2.30
ED visits (COPD/Asthma)	2.88	2.66	3.91	3.60	3.16	2.21	2.14	2.82
ED visits (skin infection)	1.74	2.15	1.15	1.67	1.67	1.89	1.78	1.56
ED visits (dehydration)	2.96	0.68	2.39	2.07	2.53	2.30	2.66	2.53
ED visits (UTI)	8.11	10.62	9.54	10.51	11.85	12.03	12.39	15.05
<b>Acute care transitions (all-cause)</b>	6,889.98	6,479.39	5,633.97	5,714.25	6,749.53	6,952.90	6,607.23	6,843.98
Potentially avoidable acute care transitions	1,887.07	1,548.89	1,316.31	1,624.80	2,201.85	2,052.05	1,884.89	1,920.90
Potentially avoidable acute care transitions (all six qualifying conditions)	1,196.39	781.56	552.13	777.38	1,227.77	1,137.02	995.27	1,031.27
Acute care transitions (pneumonia)	741.45	412.19	245.90	349.96	583.02	540.44	451.20	394.79
Acute care transitions (CHF)	157.83	118.98	63.92	186.14	248.64	247.75	219.76	262.65
Acute care transitions (COPD/ Asthma)	60.01	48.02	70.70	53.29	97.97	84.19	64.95	129.36
Acute care transitions (skin infection)	18.28	38.57	22.17	75.67	73.46	66.00	57.84	49.02
Acute care transitions (dehydration)	13.57	9.46	32.36	12.30	17.77	18.32	35.76	36.72
Acute care transitions (UTI)	205.26	154.34	117.08	100.01	206.91	180.32	165.76	158.73

CHF = congestive heart failure; COPD = chronic obstructive pulmonary disease; ED = emergency department; UTI = urinary tract infection.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 09).

NOTE: Each individual resident contributes their expenditure to the aggregated numerator and their count of Initiative-eligible days to the aggregated denominator. Acute care transitions include hospitalizations, ED visits, and observation stays

**Table O-15**  
**Payment-Only: Medicare expenditure (in dollars) per resident-year, FY 2014–2017, RAVEN (Pennsylvania)**

Measure	Intervention group				Within-state reference group			
	2014	2015	2016	2017	2014	2015	2016	2017
Number of residents meeting eligibility criteria	1,925	1,920	1,950	1,840	50,484	50,001	47,880	45,850
Mean exposure (days)	252.09	253.24	251.78	248.96	256.27	252.48	256.96	256.93
<b>Total Medicare expenditures</b>	24,996.81	26,653.65	26,151.68	26,120.15	24,304.14	25,498.04	25,242.99	26,099.75
<b>Hospitalizations (all-cause)</b>	6,023.74	6,588.97	6,660.13	5,821.98	6,525.42	6,733.53	6,378.62	6,602.69
Potentially avoidable hospitalizations	2,042.34	1,981.70	2,142.20	1,646.22	2,115.14	1,967.65	1,799.30	1,830.69
Potentially avoidable hospitalizations (all six qualifying conditions)	1,055.18	1,090.92	972.51	879.76	1,202.37	1,111.31	969.01	1,002.75
Hospitalizations (pneumonia)	475.61	498.23	419.26	303.05	579.70	536.06	446.72	390.76
Hospitalizations (CHF)	220.70	340.16	226.99	283.84	245.84	244.95	217.02	260.23
Hospitalizations (COPD/Asthma)	99.89	47.49	88.03	88.65	94.80	81.98	62.81	126.50
Hospitalizations (skin infection)	86.53	59.72	57.06	35.27	71.73	64.08	56.02	47.45
Hospitalizations (dehydration)	14.09	12.12	43.22	62.94	15.24	16.02	33.10	34.14
Hospitalizations (UTI)	158.36	133.20	137.94	106.01	195.06	168.22	153.34	143.66
<b>ED visits (all-cause)</b>	202.58	229.40	230.40	263.46	216.07	214.53	221.64	233.97
Potentially avoidable ED visits	88.26	83.54	79.98	86.80	85.52	82.51	84.13	89.22
Potentially avoidable ED visits (all six qualifying conditions)	24.20	30.12	21.64	24.89	25.28	25.53	26.08	28.28
ED visits (pneumonia)	0.72	4.31	3.14	2.42	3.32	4.31	4.43	4.01
ED visits (CHF)	2.96	0.83	1.54	3.60	2.75	2.79	2.68	2.30
ED visits (COPD/Asthma)	2.30	2.32	1.92	5.35	3.16	2.21	2.14	2.82
ED visits (skin infection)	1.41	0.95	0.60	0.26	1.67	1.89	1.78	1.56
ED visits (dehydration)	3.93	3.65	1.16	1.48	2.53	2.30	2.66	2.53
ED visits (UTI)	12.87	18.07	13.29	11.79	11.85	12.03	12.39	15.05
<b>Acute care transitions (all-cause)</b>	6,243.00	6,825.83	6,891.40	6,085.45	6,749.53	6,952.90	6,607.23	6,843.98
Potentially avoidable acute care transitions	2,133.61	2,068.97	2,222.53	1,733.01	2,201.85	2,052.05	1,884.89	1,920.90
Potentially avoidable acute care transitions (all six qualifying conditions)	1,079.38	1,121.04	994.49	904.65	1,227.77	1,137.02	995.27	1,031.27
Acute care transitions (pneumonia)	476.33	502.54	422.40	305.46	583.02	540.44	451.20	394.79
Acute care transitions (CHF)	223.66	340.99	228.53	287.44	248.64	247.75	219.76	262.65
Acute care transitions (COPD/ Asthma)	102.20	49.81	89.95	94.00	97.97	84.19	64.95	129.36
Acute care transitions (skin infection)	87.94	60.67	57.65	35.53	73.46	66.00	57.84	49.02
Acute care transitions (dehydration)	18.02	15.76	44.38	64.42	17.77	18.32	35.76	36.72
Acute care transitions (UTI)	171.23	151.27	151.57	117.79	206.91	180.32	165.76	158.73

CHF = congestive heart failure; COPD = chronic obstructive pulmonary disease; ED = emergency department; UTI = urinary tract infection.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 09).

NOTE: Each individual resident contributes their expenditure to the aggregated numerator and their count of Initiative-eligible days to the aggregated denominator. Acute care transitions include hospitalizations, ED visits, and observation stays

## APPENDIX P COMPLETE MULTIVARIATE RESULTS

This appendix expands on the results presented in *Section 4* of the main report and also includes results from two sensitivity analyses described in *Appendix K*. In the main report we present results relative to the national comparison group, and in this appendix, we provide the effect estimates from the sensitivity analysis that we conducted based on the WSRG to capture the potential influence of state-level policy changes. In *Tables P-1* through *P-42*, we provide additional statistical details on the same set of 27 hospital-related utilization and expenditure measures, plus total Medicare expenditures (28 measures in total), as presented in *Section 4*. Within each table, we present the results relative to the national comparison group and relative to the WSRG. The pooled models combining all ECCPs (see *Tables P-1* through *P-6*) are followed by results for each of the six ECCPs separately (see *Tables P-7* through *P-42*), each set of six tables split into the Clinical + Payment and Payment-Only groups, with three tables each for utilization probability, utilization count, and expenditures. We additionally provide results from the sensitivity analysis with only 1 year (2016) as the baseline year (this analysis is relative to the national comparison group). These results are presented in *Tables P-43 – P-49*. Relative effects in the tables were computed from unrounded data values.

### **P.1 Sensitivity Analysis #1 – Within State Reference Group**

In the Clinical + Payment group combining all ECCPs, results were more favorable relative to the WSRG, when compared to results relative to the national comparison group. The pattern of unfavorable increases in utilization and expenditures was weaker, as shown in *Tables P-1* through *P-3*, with 18 instead of 21 increases. The magnitudes of the estimates were very small and there were no longer any statistically significant increases.

For some ECCPs, the switch from the national comparison group to the WSRG made little difference, while for other ECCPs, it made a bigger difference. In RAVEN, relative to the WSRG, when compared to results relative to the national comparison group, the effect estimates, although still indicating mostly increases, were notably smaller in magnitude and fewer of them were statistically significant (three statistically significant unfavorable increases compared to six, see *Tables P-37* through *P-39*).

In contrast to the overall pattern, the results for ATOP2 and AQAF were less favorable relative to the WSRG, compared to the results relative to the national comparison group. In ATOP2, there were seven measures showing statistically significant increases relative to the WSRG, compared to none relative to the national comparison group (see *Tables P-13* through *P-15*). These measures were concentrated on ED visits and reflect large decreases in ED visits in the WSRG in 2017. Given the very small sample size for the WSRG due to the small number of nursing facilities in Nevada, large fluctuations in results when compared to the WSRG are not unexpected. In AQAF, there were 19 favorable reductions relative to the WSRG, compared with 25 reductions relative to the national comparison group, with 4 statistically significant reductions using either comparison group (see *Tables P-7* through *P-9*).

In the Payment-Only group combining all ECCPs, the results were more favorable relative to the WSRG, similar to the Clinical + Payment group. This is predictable because the WSRG is the same for both the Clinical + Payment group and the Payment-Only group. The estimated reductions in hospital-related utilization and expenditure measures tended to be stronger in magnitude, and more likely to be statistically significant, when the intervention group was compared to the WSRG rather than the national comparison group. Relative to the WSRG, 18 of the effects were statistically significant favorable reductions, compared with 8 relative to the national comparison group (all 28 were reductions using either comparison group; see *Table P-4* through *P-6*).

The change of comparison group made the most difference for RAVEN and ATOP2. In RAVEN, there were 14 statistically significant reductions relative to the WSRG, compared with 8 relative to the national comparison group (see *Tables P-40* through *P-42*). This is again predictable because we observed the same pattern for RAVEN with the Clinical + Payment group, and the WSRG is the same for both intervention groups. For ATOP2, the favorable reductions in hospital-related measures in the Payment-Only group were stronger relative to the WSRG in Colorado, with 14 statistically significant reductions, compared with 7 relative to the national comparison group (see *Tables P-16* through *P-18*). Note that this result is unrelated to what we observed for the Clinical + Payment group, because we are dealing with separate states (Colorado vs. Nevada) and thus different WSRGs. In fact, the effect of switching to the WSRG is in the opposite direction (more favorable in Colorado vs. less favorable in Nevada).

## **P.2 Sensitivity Analysis #2 – One Baseline Year (2016)**

In *Tables P-43 – P-49*, we present results from the sensitivity analysis conducted with 2016 as the baseline year (indicator variables were used for 2014 and 2015, including interactions with membership in the intervention group, so that 2016 would function as the baseline). Results are only presented for the probability models. For the model combining all ECCPs, results for the Clinical + Payment group were slightly more favorable, reflecting the baseline trend of decreasing probability of utilization compared to the national comparison group. For example, results using the 3-year baseline showed a 3.4% relative increase in the probability of a potentially avoidable hospitalizations, while results based on the 1-year baseline showed a 0.4% reduction. Results for the Payment-Only group were very similar either way, reflecting a much greater similarity in baseline trends between the Payment-Only group and the national comparison group.

**Table P-1**  
**Clinical + Payment: Initiative effect on probability of hospital-related utilization per resident, FY 2017, all ECCPs (6 states)**

Measure	Predicted probability absent the Initiative (percent)	Absolute Initiative effect (percentage points)	90% CI		80% CI		p-value	Relative effect (percent)
<b>Relative to national comparison group</b>								
<b>Any hospitalization</b>								
All-cause	25.4	-0.3	-1.7	1.1	-1.4	0.7	0.687	-1.3
Potentially avoidable	10.6	0.4	-0.7	1.4	-0.5	1.2	0.581	3.4
Six qualifying conditions	5.6	0.2	-0.5	1.0	-0.4	0.9	0.623	4.3
<b>Any ED visit</b>								
All-cause	<b>17.6</b>	<b>1.5</b>	<b>0.3</b>	<b>2.7</b>	<b>0.5</b>	<b>2.5</b>	<b>0.047</b>	<b>8.5</b>
Potentially avoidable	9.7	0.4	-0.6	1.3	-0.4	1.1	0.525	3.6
Six qualifying conditions	2.5	-0.2	-0.7	0.3	-0.6	0.2	0.450	-9.1
<b>Any cute care transition</b>								
All-cause	35.3	0.7	-1.1	2.4	-0.7	2.0	0.536	1.9
Potentially avoidable	18.3	0.5	-1.0	1.9	-0.7	1.6	0.608	2.5
Six qualifying conditions	7.8	-0.2	-1.1	0.8	-0.9	0.6	0.772	-2.1
<b>Relative to within-state reference group</b>								
<b>Any hospitalization</b>								
All-cause	25.8	-0.7	-2.1	0.8	-1.8	0.4	0.439	-2.6
Potentially avoidable	10.8	0.2	-0.9	1.3	-0.7	1.1	0.745	2.0
Six qualifying conditions	5.7	0.2	-0.6	1.0	-0.5	0.8	0.734	3.0
<b>Any ED visit</b>								
All-cause	18.2	0.9	-0.4	2.2	-0.1	1.9	0.258	4.9
Potentially avoidable	10.1	0.0	-1.0	0.9	-0.8	0.7	0.947	-0.4
Six qualifying conditions	2.6	-0.3	-0.9	0.2	-0.7	0.1	0.301	-12.6
<b>Any acute care transition</b>								
All-cause	35.9	0.0	-1.8	1.8	-1.4	1.4	0.984	0.1
Potentially avoidable	18.8	0.0	-1.5	1.5	-1.2	1.2	0.994	0.1
Six qualifying conditions	7.9	-0.3	-1.2	0.6	-1.0	0.4	0.607	-3.8

ECCP = Enhanced Care and Coordination Provider; ED = emergency department.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 10).

NOTE: The *predicted probability absent the Initiative* is the mean of the predicted probabilities of experiencing the event during their respective exposure period, for the residents in the intervention group, under the scenario that the intervention did not occur. The *Initiative effect* is calculated based on a difference-in-differences regression model with a nationally selected comparison group and adjusted for resident-level and facility-level characteristics. It is the difference between the predicted probabilities of the event with and without the intervention. It is calculated in two ways: (1) relative to a national comparison group of nursing facility residents and (2) after accounting for differences between the national comparison group of nursing facility residents and residents within the same state. The *relative effect* = (absolute Initiative effect) / (predicted probability absent the Initiative). *Acute care transitions* include hospitalizations, ED visits, or observation stays. Bold text indicates values are significantly different from zero based on a p-value cutoff of 0.1.

**Table P-2**  
**Clinical + Payment: Initiative effect on count of hospital-related utilization events per resident, FY 2017, all ECCPs (6 states)**

Measure	Predicted count absent the Initiative (events per year)	Absolute Initiative effect (events per year)	90% CI		80% CI		p-value	Relative effect (percent)
<b>Relative to national comparison group</b>								
<b>Hospitalizations</b>								
All-cause	0.405	-0.001	-0.029	0.027	-0.023	0.020	0.936	-0.3
Potentially avoidable	0.127	0.005	-0.009	0.019	-0.006	0.016	0.539	4.1
Six qualifying conditions	0.064	0.003	-0.007	0.013	-0.005	0.010	0.623	4.5
<b>ED visits</b>								
All-cause	<b>0.255</b>	<b>0.023</b>	<b>0.002</b>	<b>0.043</b>	<b>0.007</b>	<b>0.039</b>	<b>0.072</b>	<b>8.9</b>
Potentially avoidable	0.113	0.008	-0.004	0.021	-0.001	0.018	0.257	7.4
Six qualifying conditions	0.027	-0.001	-0.007	0.004	-0.006	0.003	0.709	-4.9
<b>Acute care transitions</b>								
All-cause	0.656	0.025	-0.016	0.067	-0.007	0.057	0.320	3.8
Potentially avoidable	0.241	0.014	-0.009	0.036	-0.004	0.031	0.314	5.6
Six qualifying conditions	0.091	0.002	-0.010	0.014	-0.007	0.011	0.783	2.2
<b>Relative to within-state reference group</b>								
<b>Hospitalizations</b>								
All-cause	0.413	-0.009	-0.038	0.020	-0.032	0.014	0.611	-2.2
Potentially avoidable	0.130	0.003	-0.012	0.017	-0.009	0.014	0.772	2.0
Six qualifying conditions	0.066	0.001	-0.009	0.011	-0.007	0.009	0.842	1.8
<b>ED visits</b>								
All-cause	0.265	0.013	-0.009	0.035	-0.004	0.030	0.325	4.9
Potentially avoidable	0.118	0.004	-0.009	0.016	-0.007	0.014	0.655	3.0
Six qualifying conditions	0.028	-0.003	-0.008	0.003	-0.007	0.002	0.484	-9.0
<b>Acute care transitions</b>								
All-cause	0.675	0.006	-0.037	0.050	-0.027	0.040	0.809	0.9
Potentially avoidable	0.250	0.005	-0.018	0.029	-0.013	0.023	0.705	2.2
Six qualifying conditions	0.094	-0.001	-0.014	0.011	-0.011	0.009	0.888	-1.2

ECCP = Enhanced Care and Coordination Provider; ED = emergency department.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 12).

NOTE: The *predicted count absent the Initiative* is the mean of the predicted counts of events, for the residents in the intervention group, under the scenario that the intervention did not occur. The *Initiative effect* is calculated based on a difference-in-differences regression model with a nationally selected comparison group and adjusted for resident-level and facility-level characteristics. It is the difference between the predicted counts with and without the intervention. It is the difference between the predicted probabilities of the event with and without the intervention. It is calculated in two ways: (1) relative to a national comparison group of nursing facility residents and (2) after accounting for differences between the national comparison group of nursing facility residents and residents within the same state. The *relative effect* = (absolute Initiative effect) / (predicted count absent the Initiative). *Acute care transitions* include hospitalizations, ED visits, or observation stays. Bold text indicates values are significantly different from zero based on a p-value cutoff of 0.1.



**Table P-3**  
**Clinical + Payment: Initiative effect on Medicare expenditures, FY 2017,**  
**all ECCPs (6 states)**

Measure	Predicted expenditure absent the Initiative (dollars)	Absolute Initiative effect (dollars)	90% CI		80% CI		p-value	Relative effect (percent)
<b>Relative to national comparison group</b>								
<b>Total Medicare expenditures</b>	30,456	974	-296	2,243	-16	1,963	0.207	3.2
<b>Hospitalization expenditures</b>								
All-cause	9,684	151	-572	873	-412	714	0.732	1.6
Potentially avoidable	2,277	104	-186	395	-122	331	0.555	4.6
Six qualifying conditions	1,104	55	-136	247	-94	205	0.634	5.0
<b>ED visit expenditures</b>								
All-cause	232	5	-19	29	-14	24	0.726	2.2
Potentially avoidable	93	0	-12	11	-10	9	0.958	-0.4
Six qualifying conditions	23	-1	-7	6	-5	4	0.893	-2.2
<b>Acute care transition expenditures</b>								
All-cause	10,260	95	-685	876	-513	704	0.841	0.9
Potentially avoidable	2,404	113	-186	413	-120	347	0.534	4.7
Six qualifying conditions	1,132	48	-148	244	-105	201	0.687	4.2
<b>Relative to within-state reference group</b>								
<b>Total Medicare expenditures</b>	30,162	1,268	-19	2,555	265	2,271	0.105	4.2
<b>Hospitalization expenditures</b>								
All-cause	9,694	141	-601	883	-437	720	0.754	1.5
Potentially avoidable	2,347	34	-270	337	-203	270	0.855	1.4
Six qualifying conditions	1,129	31	-167	229	-124	185	0.799	2.7
<b>ED visit expenditures</b>								
All-cause	240	-4	-29	21	-23	16	0.801	-1.6
Potentially avoidable	98	-6	-19	6	-16	4	0.417	-6.4
Six qualifying conditions	24	-2	-9	5	-7	3	0.630	-8.1
<b>Acute care transition expenditures</b>								
All-cause	10,305	50	-751	852	-574	675	0.918	0.5
Potentially avoidable	2,487	30	-283	343	-214	274	0.874	1.2
Six qualifying conditions	1,159	21	-182	223	-137	178	0.867	1.8

ECCP = Enhanced Care and Coordination Provider; ED = emergency department.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 11 and MS 13).

NOTE: The *predicted expenditure absent the Initiative* is the mean of the predicted expenditures, for the residents in the intervention group, under the scenario that the intervention did not occur. Predicted expenditures are based on a resident being eligible for the Initiative for the entire year (365 days). The *Initiative effect* is calculated based on a difference-in-differences regression model with a nationally selected comparison group and adjusted for resident-level and facility-level characteristics. It is the difference between the predicted expenditures with and without the intervention. It is calculated in two ways: (1) relative to a national comparison group of nursing facility residents and (2) after accounting for differences between the national comparison group of nursing facility residents and residents within the same state. The *relative effect* = (absolute Initiative effect) / (predicted expenditure absent the Initiative). *Acute care transitions* include hospitalizations, ED visits, or observation stays.

Bold text indicates values are significantly different from zero based on a p-value cutoff of 0.1.

**Table P-4**  
**Payment-Only: Initiative effect on probability of hospital-related utilization per resident,**  
**FY 2017, all ECCPs (6 states)**

Measure	Predicted probability absent the Initiative (percent)	Absolute Initiative effect (percentage points)	90% CI		80% CI		p-value	Relative effect (percent)
<b>Relative to national comparison group</b>								
<b>Any hospitalization</b>								
All-cause	<b>25.5</b>	-1.9	<b>-3.0</b>	<b>-0.7</b>	<b>-2.8</b>	<b>-1.0</b>	<b>0.007</b>	-7.4
Potentially avoidable	<b>11.5</b>	<b>-0.8</b>	<b>-1.7</b>	<b>0.0</b>	<b>-1.5</b>	<b>-0.2</b>	<b>0.097</b>	-7.2
Six qualifying conditions	6.7	-0.6	-1.3	0.1	-1.2	-0.1	0.141	-9.3
<b>Any ED visit</b>								
All-cause	23.1	-0.9	-2.2	0.4	-1.9	0.1	0.256	-3.8
Potentially avoidable	13.4	-1.0	-2.0	0.0	-1.8	-0.2	0.106	-7.5
Six qualifying conditions	3.8	-0.4	-0.9	0.1	-0.8	0.0	0.224	-10.1
<b>Any acute care transition</b>								
All-cause	<b>38.8</b>	-1.9	<b>-3.4</b>	<b>-0.5</b>	<b>-3.0</b>	<b>-0.8</b>	<b>0.029</b>	-4.9
Potentially avoidable	<b>21.9</b>	<b>-1.5</b>	<b>-2.7</b>	<b>-0.2</b>	<b>-2.4</b>	<b>-0.5</b>	<b>0.052</b>	-6.7
Six qualifying conditions	9.5	-0.7	-1.6	0.1	-1.4	-0.1	0.144	-7.8
<b>Relative to within-state reference group</b>								
<b>Any hospitalization</b>								
All-cause	<b>25.8</b>	-2.2	<b>-3.4</b>	<b>-1.0</b>	<b>-3.1</b>	<b>-1.3</b>	<b>0.002</b>	-8.6
Potentially avoidable	<b>11.6</b>	<b>-1.0</b>	<b>-1.8</b>	<b>-0.1</b>	<b>-1.6</b>	<b>-0.3</b>	<b>0.060</b>	-8.4
Six qualifying conditions	6.7	-0.7	-1.4	0.0	-1.3	-0.1	0.111	-10.4
<b>Any ED visit</b>								
All-cause	<b>23.9</b>	-1.6	<b>-3.0</b>	<b>-0.3</b>	<b>-2.7</b>	<b>-0.6</b>	<b>0.047</b>	-6.8
Potentially avoidable	<b>13.9</b>	<b>-1.5</b>	<b>-2.6</b>	<b>-0.4</b>	<b>-2.4</b>	<b>-0.7</b>	<b>0.021</b>	-10.9
Six qualifying conditions	3.9	-0.5	-1.1	0.0	-1.0	-0.1	0.115	-13.6
<b>Any acute care transition</b>								
All-cause	<b>39.5</b>	-2.6	<b>-4.1</b>	<b>-1.1</b>	<b>-3.8</b>	<b>-1.4</b>	<b>0.005</b>	-6.6
Potentially avoidable	<b>22.4</b>	<b>-2.0</b>	<b>-3.3</b>	<b>-0.7</b>	<b>-3.0</b>	<b>-1.0</b>	<b>0.012</b>	-8.8
Six qualifying conditions	<b>9.7</b>	<b>-0.9</b>	<b>-1.8</b>	<b>0.0</b>	<b>-1.6</b>	<b>-0.2</b>	<b>0.089</b>	-9.3

ECCP = Enhanced Care and Coordination Provider; ED = emergency department.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 10).

NOTE: The *predicted probability absent the Initiative* is the mean of the predicted probabilities of experiencing the event during their respective exposure period, for the residents in the intervention group, under the scenario that the intervention did not occur. The *Initiative effect* is calculated based on a difference-in-differences regression model with a nationally selected comparison group and adjusted for resident-level and facility-level characteristics. It is the difference between the predicted probabilities of the event with and without the intervention. It is calculated in two ways: (1) relative to a national comparison group of nursing facility residents and (2) after accounting for differences between the national comparison group of nursing facility residents and residents within the same state. The *relative effect* = (absolute Initiative effect) / (predicted probability absent the Initiative). *Acute care transitions* include hospitalizations, ED visits, or observation stays. Bold text indicates values are significantly different from zero based on a p-value cutoff of 0.1.

**Table P-5**  
**Payment-Only: Initiative effect on count of hospital-related utilization events per resident,**  
**FY 2017, all ECCPs (6 states)**

Measure	Predicted count absent the Initiative (events per year)	Absolute Initiative effect (events per year)	90% CI		80% CI		p-value	Relative effect (percent)
<b>Relative to national comparison group</b>								
<b>Hospitalizations</b>								
All-cause	<b>0.395</b>	<b>-0.027</b>	<b>-0.051</b>	<b>-0.003</b>	<b>-0.046</b>	<b>-0.009</b>	<b>0.061</b>	<b>-6.9</b>
Potentially avoidable	0.139	-0.008	-0.020	0.003	-0.017	0.000	0.224	-6.0
Six qualifying conditions	0.076	-0.006	-0.015	0.002	-0.013	0.000	0.223	-8.3
<b>ED visits</b>								
All-cause	0.342	-0.010	-0.034	0.013	-0.029	0.008	0.474	-3.0
Potentially avoidable	0.167	-0.014	-0.028	0.000	-0.025	-0.003	0.100	-8.3
Six qualifying conditions	0.042	-0.006	-0.012	0.000	-0.010	-0.001	0.122	-13.2
<b>Acute care transitions</b>								
All-cause	0.740	-0.038	-0.078	0.001	-0.069	-0.008	0.106	-5.2
Potentially avoidable	<b>0.306</b>	<b>-0.022</b>	<b>-0.043</b>	<b>-0.002</b>	<b>-0.038</b>	<b>-0.006</b>	<b>0.077</b>	<b>-7.2</b>
Six qualifying conditions	<b>0.119</b>	<b>-0.012</b>	<b>-0.023</b>	<b>-0.001</b>	<b>-0.021</b>	<b>-0.003</b>	<b>0.080</b>	<b>-10.1</b>
<b>Relative to within-state reference group</b>								
<b>Hospitalizations</b>								
All-cause	<b>0.402</b>	<b>-0.035</b>	<b>-0.060</b>	<b>-0.010</b>	<b>-0.054</b>	<b>-0.015</b>	<b>0.023</b>	<b>-8.6</b>
Potentially avoidable	0.142	-0.011	-0.023	0.001	-0.021	-0.002	0.119	-8.0
Six qualifying conditions	0.078	-0.008	-0.017	0.001	-0.015	-0.001	0.127	-10.6
<b>ED visits</b>								
All-cause	0.355	-0.023	-0.048	0.002	-0.043	-0.003	0.133	-6.5
Potentially avoidable	<b>0.174</b>	<b>-0.021</b>	<b>-0.036</b>	<b>-0.006</b>	<b>-0.033</b>	<b>-0.009</b>	<b>0.020</b>	<b>-12.1</b>
Six qualifying conditions	<b>0.044</b>	<b>-0.008</b>	<b>-0.014</b>	<b>-0.001</b>	<b>-0.013</b>	<b>-0.003</b>	<b>0.053</b>	<b>-17.2</b>
<b>Acute care transitions</b>								
All-cause	<b>0.761</b>	<b>-0.059</b>	<b>-0.101</b>	<b>-0.018</b>	<b>-0.092</b>	<b>-0.027</b>	<b>0.018</b>	<b>-7.8</b>
Potentially avoidable	<b>0.317</b>	<b>-0.033</b>	<b>-0.054</b>	<b>-0.011</b>	<b>-0.050</b>	<b>-0.015</b>	<b>0.014</b>	<b>-10.3</b>
Six qualifying conditions	<b>0.123</b>	<b>-0.016</b>	<b>-0.028</b>	<b>-0.004</b>	<b>-0.025</b>	<b>-0.007</b>	<b>0.028</b>	<b>-13.1</b>

ECCP = Enhanced Care and Coordination Provider; ED = emergency department.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 12).

NOTE: The *predicted count absent the Initiative* is the mean of the predicted counts of events, for the residents in the intervention group, under the scenario that the intervention did not occur. The *Initiative effect* is calculated based on a difference-in-differences regression model with a nationally selected comparison group and adjusted for resident-level and facility-level characteristics. It is the difference between the predicted counts with and without the intervention. It is the difference between the predicted probabilities of the event with and without the intervention. It is calculated in two ways: (1) relative to a national comparison group of nursing facility residents and (2) after accounting for differences between the national comparison group of nursing facility residents and residents within the same state. The *relative effect* = (absolute Initiative effect) / (predicted count absent the Initiative). *Acute care transitions* include hospitalizations, ED visits, or observation stays. Bold text indicates values are significantly different from zero based on a p-value cutoff of 0.1.

**Table P-6**  
**Payment-Only: Initiative effect on Medicare expenditures, FY 2017, all ECCPs (6 states)**

Measure	Predicted expenditure absent the Initiative (dollars)	Absolute Initiative effect (dollars)	90% CI		80% CI		p-value	Relative effect (percent)
<b>Relative to national comparison group</b>								
<b>Total Medicare expenditures</b>	27,629	-500	-1,512	511	-1,289	288	0.416	-1.8
<b>Hospitalization expenditures</b>								
All-cause	7,777	-419	-946	109	-830	-8	0.192	-5.4
Potentially avoidable	2,171	-187	-398	23	-352	-23	0.144	-8.6
Six qualifying conditions	1,115	-130	-284	23	-250	-11	0.161	-11.7
<b>ED visit expenditures</b>								
All-cause	285	-9	-33	15	-28	10	0.546	-3.2
Potentially avoidable	123	-9	-22	4	-19	1	0.246	-7.4
Six qualifying conditions	40	-7	-13	0	-12	-1	0.103	-16.9
<b>Acute care transition expenditures</b>								
All-cause	8,246	-490	-1,054	74	-930	-50	0.153	-5.9
Potentially avoidable	<b>2,357</b>	<b>-235</b>	<b>-456</b>	<b>-14</b>	<b>-408</b>	<b>-62</b>	<b>0.081</b>	<b>-10.0</b>
Six qualifying conditions	1,170	-150	-302	2	-268	-31	0.105	-12.8
<b>Relative to within-state reference group</b>								
<b>Total Medicare expenditures</b>	27,357	-228	-1,265	809	-1,036	580	0.718	-0.8
<b>Hospitalization expenditures</b>								
All-cause	7,785	-427	-972	118	-852	-2	0.198	-5.5
Potentially avoidable	<b>2,238</b>	<b>-254</b>	<b>-478</b>	<b>-31</b>	<b>-428</b>	<b>-80</b>	<b>0.061</b>	<b>-11.4</b>
Six qualifying conditions	1,140	-155	-316	5	-280	-30	0.112	-13.6
<b>ED visit expenditures</b>								
All-cause	295	-19	-45	7	-39	1	0.221	-6.5
Potentially avoidable	<b>131</b>	<b>-17</b>	<b>-31</b>	<b>-3</b>	<b>-28</b>	<b>-6</b>	<b>0.050</b>	<b>-12.8</b>
Six qualifying conditions	<b>42</b>	<b>-9</b>	<b>-17</b>	<b>-2</b>	<b>-15</b>	<b>-3</b>	<b>0.042</b>	<b>-21.9</b>
<b>Acute care transition expenditures</b>								
All-cause	8,278	-522	-1,105	60	-976	-68	0.140	-6.3
Potentially avoidable	<b>2,435</b>	<b>-313</b>	<b>-548</b>	<b>-78</b>	<b>-496</b>	<b>-130</b>	<b>0.028</b>	<b>-12.9</b>
Six qualifying conditions	<b>1,198</b>	<b>-177</b>	<b>-337</b>	<b>-18</b>	<b>-302</b>	<b>-53</b>	<b>0.068</b>	<b>-14.8</b>

ECCP = Enhanced Care and Coordination Provider; ED = emergency department.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 11 and MS 13).

NOTE: The *predicted expenditure absent the Initiative* is the mean of the predicted expenditures, for the residents in the intervention group, under the scenario that the intervention did not occur. Predicted expenditures are based on a resident being eligible for the Initiative for the entire year (365 days). The *Initiative effect* is calculated based on a difference-in-differences regression model with a nationally selected comparison group and adjusted for resident-level and facility-level characteristics. It is the difference between the predicted expenditures with and without the intervention. It is calculated in two ways: (1) relative to a national comparison group of nursing facility residents and (2) after accounting for differences between the national comparison group of nursing facility residents and residents within the same state. The *relative effect* = (absolute Initiative effect) / (predicted expenditure absent the Initiative). *Acute care transitions* include hospitalizations, ED visits, or observation stays. Bold text indicates values are significantly different from zero based on a p-value cutoff of 0.1.

**Table P-7**  
**Clinical + Payment: Initiative effect on probability of hospital-related utilization per resident, FY 2017, AQAF (Alabama)**

Measure	Predicted probability absent the Initiative (percent)	Absolute Initiative effect (percentage points)	90% CI		80% CI		p-value	Relative effect (percent)
<b>Relative to national comparison group</b>								
<b>Any hospitalization</b>								
All-cause	<b>32.6</b>	<b>-4.6</b>	<b>-8.0</b>	<b>-1.2</b>	<b>-7.2</b>	<b>-2.0</b>	<b>0.025</b>	<b>-14.1</b>
Potentially avoidable	14.2	-0.6	-3.3	2.0	-2.7	1.4	0.694	-4.5
Six qualifying conditions	6.9	-0.1	-1.9	1.6	-1.5	1.2	0.894	-2.0
<b>Any ED visit</b>								
All-cause	22.4	-0.3	-2.7	2.1	-2.2	1.6	0.836	-1.3
Potentially avoidable	14.0	-1.9	-4.3	0.5	-3.8	0.0	0.202	-13.4
Six qualifying conditions	<b>4.7</b>	<b>-2.0</b>	<b>-3.4</b>	<b>-0.7</b>	<b>-3.1</b>	<b>-1.0</b>	<b>0.010</b>	<b>-43.5</b>
<b>Any acute care transition</b>								
All-cause	<b>43.1</b>	<b>-3.5</b>	<b>-7.0</b>	<b>0.0</b>	<b>-6.2</b>	<b>-0.8</b>	<b>0.098</b>	<b>-8.1</b>
Potentially avoidable	24.8	-2.5	-6.2	1.1	-5.4	0.3	0.254	-10.2
Six qualifying conditions	10.9	-2.0	-4.1	0.1	-3.7	-0.4	0.109	-18.8
<b>Relative to within-state reference group</b>								
<b>Any hospitalization</b>								
All-cause	<b>31.7</b>	<b>-3.7</b>	<b>-7.3</b>	<b>-0.1</b>	<b>-6.5</b>	<b>-0.9</b>	<b>0.091</b>	<b>-11.6</b>
Potentially avoidable	13.2	0.4	-2.3	3.1	-1.7	2.5	0.804	3.0
Six qualifying conditions	6.1	0.6	-1.1	2.3	-0.7	1.9	0.546	10.1
<b>Any ED visit</b>								
All-cause	22.1	0.0	-2.6	2.7	-2.0	2.1	0.982	0.2
Potentially avoidable	14.3	-2.2	-4.9	0.5	-4.3	-0.1	0.176	-15.3
Six qualifying conditions	<b>5.1</b>	<b>-2.4</b>	<b>-4.0</b>	<b>-0.9</b>	<b>-3.6</b>	<b>-1.2</b>	<b>0.010</b>	<b>-47.6</b>
<b>Any acute care transition</b>								
All-cause	41.8	-2.2	-5.9	1.5	-5.1	0.7	0.324	-5.3
Potentially avoidable	24.1	-1.8	-5.6	2.0	-4.8	1.1	0.429	-7.5
Six qualifying conditions	10.2	-1.4	-3.6	0.7	-3.1	0.2	0.273	-14.0

ECCP = Enhanced Care and Coordination Provider; ED = emergency department.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 10).

NOTE: The *predicted probability absent the Initiative* is the mean of the predicted probabilities of experiencing the event during their respective exposure period, for the residents in the intervention group, under the scenario that the intervention did not occur. The *Initiative effect* is calculated based on a difference-in-differences regression model with a nationally selected comparison group and adjusted for resident-level and facility-level characteristics. It is the difference between the predicted probabilities of the event with and without the intervention. It is calculated in two ways: (1) relative to a national comparison group of nursing facility residents and (2) after accounting for differences between the national comparison group of nursing facility residents and residents within the same state. The *relative effect* = (absolute Initiative effect) / (predicted probability absent the Initiative). *Acute care transitions* include hospitalizations, ED visits, or observation stays. Bold text indicates values are significantly different from zero based on a p-value cutoff of 0.1.

**Table P-8  
Clinical + Payment: Initiative effect on count of hospital-related utilization events per resident, FY 2017, AQAF (Alabama)**

Measure	Predicted count absent the Initiative (events per year)	Absolute Initiative effect (events per year)	90% CI		80% CI		p value	Relative effect (percent)
<b>Relative to national comparison group</b>								
<b>Hospitalizations</b>								
All-cause	0.509	-0.051	-0.120	0.018	-0.104	0.002	0.221	-10.0
Potentially avoidable	0.180	-0.008	-0.038	0.022	-0.031	0.015	0.649	-4.6
Six qualifying conditions	0.078	0.005	-0.015	0.025	-0.011	0.021	0.680	6.5
<b>ED visits</b>								
All-cause	0.338	-0.029	-0.073	0.016	-0.063	0.006	0.292	-8.4
Potentially avoidable	0.163	-0.022	-0.054	0.011	-0.047	0.004	0.271	-13.4
Six qualifying conditions	<b>0.048</b>	<b>-0.017</b>	<b>-0.032</b>	<b>-0.002</b>	<b>-0.028</b>	<b>-0.005</b>	<b>0.068</b>	<b>-34.8</b>
<b>Acute care transitions</b>								
All-cause	0.847	-0.081	-0.180	0.017	-0.158	-0.004	0.174	-9.6
Potentially avoidable	0.349	-0.036	-0.092	0.020	-0.080	0.008	0.289	-10.3
Six qualifying conditions	0.126	-0.011	-0.038	0.016	-0.032	0.010	0.499	-8.9
<b>Relative to within state reference group</b>								
<b>Hospitalizations</b>								
All-cause	0.498	-0.040	-0.113	0.033	-0.097	0.017	0.369	-8.0
Potentially avoidable	0.169	0.003	-0.027	0.034	-0.021	0.027	0.861	1.9
Six qualifying conditions	0.071	0.013	-0.007	0.033	-0.003	0.028	0.297	17.8
<b>ED visits</b>								
All-cause	0.339	-0.030	-0.079	0.019	-0.068	0.009	0.321	-8.8
Potentially avoidable	0.168	-0.027	-0.063	0.009	-0.055	0.001	0.222	-16.0
Six qualifying conditions	<b>0.053</b>	<b>-0.022</b>	<b>-0.040</b>	<b>-0.004</b>	<b>-0.036</b>	<b>-0.008</b>	<b>0.044</b>	<b>-41.3</b>
<b>Acute care transitions</b>								
All-cause	0.838	-0.072	-0.177	0.033	-0.154	0.010	0.260	-8.6
Potentially avoidable	0.344	-0.031	-0.090	0.028	-0.077	0.015	0.387	-9.0
Six qualifying conditions	0.121	-0.007	-0.035	0.021	-0.029	0.015	0.684	-5.7

ECCP = Enhanced Care and Coordination Provider; ED = emergency department.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 12).

NOTE: The *predicted count absent the Initiative* is the mean of the predicted counts of events, for the residents in the intervention group, under the scenario that the intervention did not occur. The *Initiative effect* is calculated based on a difference-in-differences regression model with a nationally selected comparison group and adjusted for resident-level and facility-level characteristics. It is the difference between the predicted counts with and without the intervention. It is the difference between the predicted probabilities of the event with and without the intervention. It is calculated in two ways: (1) relative to a national comparison group of nursing facility residents and (2) after accounting for differences between the national comparison group of nursing facility residents and residents within the same state. The *relative effect* = (absolute Initiative effect) / (predicted count absent the Initiative). *Acute care transitions* include hospitalizations, ED visits, or observation stays. Bold text indicates values are significantly different from zero based on a p-value cutoff of 0.1.

**Table P-9**  
**Clinical + Payment: Initiative effect on Medicare expenditures, FY 2017,**  
**AQAF (Alabama)**

Measure	Predicted expenditure absent the Initiative (dollars)	Absolute Initiative effect (dollars)	90% CI		80% CI		p-value	Relative effect (percent)
<b>Relative to national comparison group</b>								
<b>Total Medicare expenditures</b>	27,801	-1,269	-3,556	1,017	-3,051	513	0.361	-4.6
<b>Hospitalization expenditures</b>								
All-cause	7,790	-738	-1,828	352	-1,588	112	0.266	-9.5
Potentially avoidable	2,111	-174	-647	299	-542	195	0.545	-8.2
Six qualifying conditions	827	47	-200	294	-146	240	0.755	5.7
<b>ED visit expenditures</b>								
All-cause	229	-10	-51	31	-42	22	0.683	-4.5
Potentially avoidable	94	-11	-32	10	-27	5	0.380	-11.9
Six qualifying conditions	30	-9	-19	2	-17	-1	0.173	-29.2
<b>Acute care transition expenditures</b>								
All-cause	8,528	-1,007	-2,095	81	-1,855	-159	0.128	-11.8
Potentially avoidable	2,265	-186	-611	239	-517	145	0.472	-8.2
Six qualifying conditions	842	54	-160	268	-113	221	0.678	6.4
<b>Relative to within-state reference group</b>								
<b>Total Medicare expenditures</b>	27,326	-795	-3,163	1,573	-2,641	1,051	0.581	-2.9
<b>Hospitalization expenditures</b>								
All-cause	7,757	-705	-1,887	478	-1,626	217	0.327	-9.1
Potentially avoidable	1,924	13	-464	490	-358	385	0.964	0.7
Six qualifying conditions	690	185	-49	419	2	367	0.194	26.8
<b>ED visit expenditures</b>								
All-cause	239	-20	-66	26	-56	15	0.467	-8.5
Potentially avoidable	100	-17	-40	7	-35	2	0.246	-16.7
Six qualifying conditions	<b>36</b>	<b>-15</b>	<b>-28</b>	<b>-2</b>	<b>-25</b>	<b>-4</b>	<b>0.065</b>	<b>-41.2</b>
<b>Acute care transition expenditures</b>								
All-cause	8,423	-902	-2,098	293	-1,834	29	0.214	-10.7
Potentially avoidable	2,056	24	-405	452	-310	358	0.927	1.2
Six qualifying conditions	713	183	-23	390	22	344	0.145	25.7

ECCP = Enhanced Care and Coordination Provider; ED = emergency department.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 11 and MS 13).

NOTE: The *predicted expenditure absent the Initiative* is the mean of the predicted expenditures, for the residents in the intervention group, under the scenario that the intervention did not occur. Predicted expenditures are based on a resident being eligible for the Initiative for the entire year (365 days). The *Initiative effect* is calculated based on a difference-in-differences regression model with a nationally selected comparison group and adjusted for resident-level and facility-level characteristics. It is the difference between the predicted expenditures with and without the intervention. It is calculated in two ways: (1) relative to a national comparison group of nursing facility residents and (2) after accounting for differences between the national comparison group of nursing facility residents and residents within the same state. The *relative effect* = (absolute Initiative effect) / (predicted expenditure absent the Initiative). *Acute care transitions* include hospitalizations, ED visits, or observation stays. Bold text indicates values are significantly different from zero based on a p-value cutoff of 0.1.

**Table P-10**  
**Payment-Only: Initiative effect on probability of hospital-related utilization per resident,**  
**FY 2017, AQAF (Alabama)**

Measure	Predicted probability absent the Initiative (percent)	Absolute Initiative effect (percentage points)	90% CI		80% CI		p-value	Relative effect (percent)
<b>Relative to national comparison group</b>								
<b>Any hospitalization</b>								
All-cause	28.6	-1.5	-4.9	1.9	-4.1	1.2	0.469	-5.2
Potentially avoidable	12.5	0.4	-1.9	2.7	-1.4	2.2	0.757	3.4
Six qualifying conditions	7.7	-0.6	-2.6	1.5	-2.2	1.1	0.656	-7.3
<b>Any ED visit</b>								
All-cause	27.1	-3.1	-6.8	0.7	-5.9	-0.2	0.178	-11.3
Potentially avoidable	16.1	-3.0	-6.8	0.7	-6.0	-0.1	0.182	-18.9
Six qualifying conditions	4.8	-1.2	-3.2	0.7	-2.8	0.3	0.297	-25.8
<b>Any acute care transition</b>								
All-cause	44.2	-3.3	-7.5	0.9	-6.6	-0.1	0.194	-7.5
Potentially avoidable	25.2	-2.4	-6.5	1.6	-5.6	0.7	0.323	-9.6
Six qualifying conditions	11.5	-1.3	-4.1	1.6	-3.5	0.9	0.457	-11.3
<b>Relative to within-state reference group</b>								
<b>Any hospitalization</b>								
All-cause	27.7	-0.7	-4.2	2.9	-3.4	2.1	0.759	-2.4
Potentially avoidable	11.6	1.4	-0.9	3.7	-0.4	3.2	0.332	11.8
Six qualifying conditions	6.9	0.3	-1.7	2.2	-1.2	1.8	0.816	3.9
<b>Any ED visit</b>								
All-cause	26.7	-2.7	-6.6	1.2	-5.7	0.4	0.263	-10.0
Potentially avoidable	16.4	-3.4	-7.4	0.6	-6.5	-0.3	0.159	-20.7
Six qualifying conditions	5.2	-1.6	-3.8	0.5	-3.3	0.1	0.218	-31.5
<b>Any acute care transition</b>								
All-cause	42.9	-2.1	-6.4	2.3	-5.5	1.4	0.444	-4.8
Potentially avoidable	24.5	-1.7	-5.9	2.5	-5.0	1.5	0.499	-7.0
Six qualifying conditions	10.8	-0.7	-3.5	2.2	-2.9	1.6	0.705	-6.0

ECCP = Enhanced Care and Coordination Provider; ED = emergency department.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 10).

NOTE: The *predicted probability absent the Initiative* is the mean of the predicted probabilities of experiencing the event during their respective exposure period, for the residents in the intervention group, under the scenario that the intervention did not occur. The *Initiative effect* is calculated based on a difference-in-differences regression model with a nationally selected comparison group and adjusted for resident-level and facility-level characteristics. It is the difference between the predicted probabilities of the event with and without the intervention. It is calculated in two ways: (1) relative to a national comparison group of nursing facility residents and (2) after accounting for differences between the national comparison group of nursing facility residents and residents within the same state. The *relative effect* = (absolute Initiative effect) / (predicted probability absent the Initiative). *Acute care transitions* include hospitalizations, ED visits, or observation stays. Bold text indicates values are significantly different from zero based on a p-value cutoff of 0.1.



**Table P-11**  
**Payment-Only: Initiative effect on count of hospital-related utilization events per resident,**  
**FY 2017, AQAF (Alabama)**

Measure	Predicted count absent the Initiative (events per year)	Absolute Initiative effect (events per year)	90% CI		80% CI		p-value	Relative effect (percent)
<b>Relative to national comparison group</b>								
<b>Hospitalizations</b>								
All-cause	0.430	0.004	-0.066	0.074	-0.051	0.059	0.929	0.9
Potentially avoidable	0.145	0.020	-0.009	0.049	-0.003	0.043	0.268	13.7
Six qualifying conditions	0.085	-0.002	-0.024	0.020	-0.019	0.015	0.879	-2.3
<b>ED visits</b>								
All-cause	0.381	-0.029	-0.094	0.037	-0.080	0.023	0.475	-7.5
Potentially avoidable	0.192	-0.030	-0.081	0.022	-0.070	0.011	0.346	-15.4
Six qualifying conditions	0.055	-0.018	-0.040	0.005	-0.035	0.000	0.208	-32.0
<b>Acute care transitions</b>								
All-cause	0.823	-0.031	-0.156	0.094	-0.128	0.067	0.685	-3.7
Potentially avoidable	0.336	-0.006	-0.078	0.066	-0.062	0.050	0.893	-1.7
Six qualifying conditions	0.140	-0.017	-0.054	0.020	-0.046	0.012	0.454	-12.1
<b>Relative to within-state reference group</b>								
<b>Hospitalizations</b>								
All-cause	0.421	0.013	-0.059	0.086	-0.043	0.070	0.764	3.2
Potentially avoidable	0.136	0.029	0.000	0.058	0.006	0.052	0.100	21.4
Six qualifying conditions	0.077	0.006	-0.014	0.026	-0.010	0.022	0.614	8.0
<b>ED visits</b>								
All-cause	0.382	-0.030	-0.100	0.040	-0.084	0.025	0.482	-7.8
Potentially avoidable	0.198	-0.036	-0.091	0.020	-0.079	0.007	0.289	-18.0
Six qualifying conditions	0.061	-0.024	-0.050	0.003	-0.044	-0.003	0.139	-38.8
<b>Acute care transitions</b>								
All-cause	0.813	-0.022	-0.151	0.108	-0.122	0.079	0.783	-2.7
Potentially avoidable	0.331	-0.001	-0.074	0.073	-0.058	0.056	0.985	-0.2
Six qualifying conditions	0.135	-0.012	-0.049	0.025	-0.041	0.017	0.591	-9.0

ECCP = Enhanced Care and Coordination Provider; ED = emergency department.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 12).

NOTE: The *predicted count absent the Initiative* is the mean of the predicted counts of events, for the residents in the intervention group, under the scenario that the intervention did not occur. The *Initiative effect* is calculated based on a difference-in-differences regression model with a nationally selected comparison group and adjusted for resident-level and facility-level characteristics. It is the difference between the predicted counts with and without the intervention. It is the difference between the predicted probabilities of the event with and without the intervention. It is calculated in two ways: (1) relative to a national comparison group of nursing facility residents and (2) after accounting for differences between the national comparison group of nursing facility residents and residents within the same state. The *relative effect* = (absolute Initiative effect) / (predicted count absent the Initiative). *Acute care transitions* include hospitalizations, ED visits, or observation stays. Bold text indicates values are significantly different from zero based on a p-value cutoff of 0.1.

**Table P-12**  
**Payment-Only: Initiative effect on Medicare expenditures, FY 2017, AQAF (Alabama)**

Measure	Predicted expenditure absent the Initiative (dollars)	Absolute Initiative effect (dollars)	90% CI		80% CI		p-value	Relative effect (percent)
<b>Relative to national comparison group</b>								
<b>Total Medicare expenditures</b>	26,112	-273	-2,691	2,144	-2,157	1,611	0.853	-1.0
<b>Hospitalization expenditures</b>								
All-cause	6,404	-413	-1,417	591	-1,196	369	0.498	-6.5
Potentially avoidable	1,690	-10	-384	365	-301	282	0.966	-0.6
Six qualifying conditions	803	11	-226	248	-174	196	0.939	1.4
<b>ED visit expenditures</b>								
All-cause	<b>253</b>	<b>-51</b>	<b>-97</b>	<b>-4</b>	<b>-87</b>	<b>-14</b>	<b>0.075</b>	<b>-20.0</b>
Potentially avoidable	106	-11	-42	21	-35	14	0.575	-10.0
Six qualifying conditions	44	-18	-40	3	-35	-1	0.165	-42.1
<b>Acute care transition expenditures</b>								
All-cause	6,803	-440	-1,466	586	-1,240	360	0.481	-6.5
Potentially avoidable	1,808	41	-383	466	-290	372	0.873	2.3
Six qualifying conditions	832	10	-226	246	-174	194	0.944	1.2
<b>Relative to within-state reference group</b>								
<b>Total Medicare expenditures</b>	25,666	172	-2,301	2,645	-1,755	2,099	0.909	0.7
<b>Hospitalization expenditures</b>								
All-cause	6,367	-377	-1,452	697	-1,215	460	0.564	-5.9
Potentially avoidable	1,539	142	-233	517	-150	434	0.534	9.2
Six qualifying conditions	671	143	-74	359	-26	311	0.279	21.2
<b>ED visit expenditures</b>								
All-cause	<b>264</b>	<b>-62</b>	<b>-114</b>	<b>-10</b>	<b>-102</b>	<b>-21</b>	<b>0.051</b>	<b>-23.5</b>
Potentially avoidable	112	-17	-51	17	-43	10	0.419	-14.9
Six qualifying conditions	<b>53</b>	<b>-27</b>	<b>-54</b>	<b>-1</b>	<b>-48</b>	<b>-6</b>	<b>0.094</b>	<b>-51.9</b>
<b>Acute care transition expenditures</b>								
All-cause	6,725	-362	-1,459	736	-1,217	494	0.588	-5.4
Potentially avoidable	1,642	208	-214	629	-121	536	0.419	12.6
Six qualifying conditions	706	137	-86	360	-37	311	0.313	19.4

ECCP = Enhanced Care and Coordination Provider; ED = emergency department.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 11 and MS 13).

NOTE: The *predicted expenditure absent the Initiative* is the mean of the predicted expenditures, for the residents in the intervention group, under the scenario that the intervention did not occur. Predicted expenditures are based on a resident being eligible for the Initiative for the entire year (365 days). The *Initiative effect* is calculated based on a difference-in-differences regression model with a nationally selected comparison group and adjusted for resident-level and facility-level characteristics. It is the difference between the predicted expenditures with and without the intervention. It is calculated in two ways: (1) relative to a national comparison group of nursing facility residents and (2) after accounting for differences between the national comparison group of nursing facility residents and residents within the same state. The *relative effect* = (absolute Initiative effect) / (predicted expenditure absent the Initiative). *Acute care transitions* include hospitalizations, ED visits, or observation stays. Bold text indicates values are significantly different from zero based on a p-value cutoff of 0.1.

**Table P-13**  
**Clinical + Payment: Initiative effect on probability of hospital-related utilization per resident, FY 2017, ATOP2 (Nevada)**

Measure	Predicted probability absent the Initiative (percent)	Absolute Initiative effect (percentage points)	90% CI		80% CI		p-value	Relative effect (percent)
<b>Relative to national comparison group</b>								
<b>Any hospitalization</b>								
All-cause	28.5	-3.0	-6.6	0.5	-5.8	-0.2	0.164	-10.7
Potentially avoidable	9.1	1.3	-0.7	3.3	-0.3	2.8	0.297	13.8
Six qualifying conditions	4.9	0.7	-1.1	2.4	-0.7	2.0	0.550	13.3
<b>Any ED visit</b>								
All-cause	18.7	3.1	-1.1	7.3	-0.2	6.3	0.230	16.4
Potentially avoidable	9.3	2.1	-0.9	5.2	-0.3	4.5	0.253	23.0
Six qualifying conditions	3.4	-0.7	-3.6	2.3	-3.0	1.7	0.722	-18.9
<b>Any acute care transition</b>								
All-cause	39.4	-0.6	-5.8	4.7	-4.6	3.5	0.862	-1.4
Potentially avoidable	17.3	2.2	-0.9	5.3	-0.2	4.6	0.243	12.8
Six qualifying conditions	7.7	-0.2	-2.5	2.1	-2.0	1.6	0.894	-2.3
<b>Relative to within-state reference group</b>								
<b>Any hospitalization</b>								
All-cause	25.3	0.2	-5.9	6.3	-4.5	5.0	0.953	0.9
Potentially avoidable	8.8	1.6	-2.6	5.8	-1.7	4.8	0.532	18.0
Six qualifying conditions	6.0	-0.4	-4.6	3.7	-3.7	2.8	0.864	-7.4
<b>Any ED visit</b>								
All-cause	<b>14.5</b>	<b>7.3</b>	<b>1.9</b>	<b>12.6</b>	<b>3.1</b>	<b>11.4</b>	<b>0.026</b>	<b>50.1</b>
Potentially avoidable	<b>6.7</b>	<b>4.7</b>	<b>1.5</b>	<b>7.8</b>	<b>2.2</b>	<b>7.1</b>	<b>0.016</b>	<b>69.1</b>
Six qualifying conditions	2.9	-0.1	-3.4	3.2	-2.7	2.5	0.960	-3.5
<b>Any acute care transition</b>								
All-cause	35.2	3.6	-4.0	11.2	-2.3	9.5	0.437	10.2
Potentially avoidable	15.4	4.1	-1.0	9.2	0.2	8.0	0.181	26.6
Six qualifying conditions	8.6	-1.0	-5.5	3.4	-4.5	2.5	0.708	-11.8

ECCP = Enhanced Care and Coordination Provider; ED = emergency department.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 10).

NOTE: The *predicted probability absent the Initiative* is the mean of the predicted probabilities of experiencing the event during their respective exposure period, for the residents in the intervention group, under the scenario that the intervention did not occur. The *Initiative effect* is calculated based on a difference-in-differences regression model with a nationally selected comparison group and adjusted for resident-level and facility-level characteristics. It is the difference between the predicted probabilities of the event with and without the intervention. It is calculated in two ways: (1) relative to a national comparison group of nursing facility residents and (2) after accounting for differences between the national comparison group of nursing facility residents and residents within the same state. The *relative effect* = (absolute Initiative effect) / (predicted probability absent the Initiative). *Acute care transitions* include hospitalizations, ED visits, or observation stays. Bold text indicates values are significantly different from zero based on a p-value cutoff of 0.1.

**Table P-14**  
**Clinical + Payment: Initiative effect on count of hospital-related utilization events per resident, FY 2017, ATOP2 (Nevada)**

Measure	Predicted count absent the Initiative (events per year)	Absolute Initiative effect (events per year)	90% CI		80% CI		p-value	Relative effect (percent)
<b>Relative to national comparison group</b>								
<b>Hospitalizations</b>								
All-cause	0.500	-0.062	-0.133	0.008	-0.117	-0.007	0.147	-12.5
Potentially avoidable	0.107	0.021	-0.006	0.047	0.000	0.042	0.199	19.4
Six qualifying conditions	0.057	0.006	-0.015	0.027	-0.010	0.022	0.640	10.6
<b>ED visits</b>								
All-cause	0.312	0.014	-0.066	0.095	-0.048	0.077	0.769	4.6
Potentially avoidable	0.119	0.019	-0.024	0.063	-0.015	0.053	0.468	16.2
Six qualifying conditions	0.037	-0.006	-0.041	0.028	-0.034	0.021	0.764	-17.4
<b>Acute care transitions</b>								
All-cause	0.825	-0.050	-0.165	0.064	-0.140	0.039	0.470	-6.1
Potentially avoidable	0.233	0.036	-0.016	0.089	-0.005	0.077	0.256	15.6
Six qualifying conditions	0.092	0.002	-0.029	0.033	-0.022	0.026	0.921	2.1
<b>Relative to within-state reference group</b>								
<b>Hospitalizations</b>								
All-cause	0.373	0.064	-0.057	0.185	-0.030	0.158	0.382	17.2
Potentially avoidable	0.095	0.033	-0.011	0.077	-0.001	0.067	0.218	34.8
Six qualifying conditions	0.065	-0.002	-0.046	0.042	-0.037	0.032	0.932	-3.5
<b>ED visits</b>								
All-cause	0.261	0.066	-0.032	0.164	-0.010	0.142	0.266	25.3
Potentially avoidable	<b>0.085</b>	<b>0.054</b>	<b>0.013</b>	<b>0.095</b>	<b>0.022</b>	<b>0.086</b>	<b>0.032</b>	<b>63.4</b>
Six qualifying conditions	0.033	-0.002	-0.041	0.037	-0.033	0.028	0.922	-7.0
<b>Acute care transitions</b>								
All-cause	0.665	0.109	-0.079	0.298	-0.037	0.256	0.339	16.4
Potentially avoidable	<b>0.189</b>	<b>0.080</b>	<b>0.014</b>	<b>0.145</b>	<b>0.028</b>	<b>0.131</b>	<b>0.046</b>	<b>42.0</b>
Six qualifying conditions	0.097	-0.004	-0.056	0.049	-0.044	0.037	0.910	-3.7

ECCP = Enhanced Care and Coordination Provider; ED = emergency department.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 12).

NOTE: The *predicted count absent the Initiative* is the mean of the predicted counts of events, for the residents in the intervention group, under the scenario that the intervention did not occur. The *Initiative effect* is calculated based on a difference-in-differences regression model with a nationally selected comparison group and adjusted for resident-level and facility-level characteristics. It is the difference between the predicted counts with and without the intervention. It is the difference between the predicted probabilities of the event with and without the intervention. It is calculated in two ways: (1) relative to a national comparison group of nursing facility residents and (2) after accounting for differences between the national comparison group of nursing facility residents and residents within the same state. The *relative effect* = (absolute Initiative effect) / (predicted count absent the Initiative). *Acute care transitions* include hospitalizations, ED visits, or observation stays. Bold text indicates values are significantly different from zero based on a p-value cutoff of 0.1.

**Table P-15**  
**Clinical + Payment: Initiative effect on Medicare expenditures, FY 2017,**  
**ATOP2 (Nevada)**

Measure	Predicted expenditure absent the Initiative (dollars)	Absolute Initiative effect (dollars)	90% CI		80% CI		p-value	Relative effect (percent)
<b>Relative to national comparison group</b>								
<b>Total Medicare expenditures</b>	33,868	560	-3,658	4,778	-2,727	3,848	0.827	1.7
<b>Hospitalization expenditures</b>								
All-cause	15,543	-2,342	-5,451	767	-4,765	81	0.215	-15.1
Potentially avoidable	2,618	-345	-1,142	452	-966	276	0.476	-13.2
Six qualifying conditions	1,384	-439	-975	97	-857	-22	0.177	-31.8
<b>ED visit expenditures</b>								
All-cause	308	78	-27	184	-4	160	0.223	25.4
Potentially avoidable	102	35	-14	84	-3	74	0.243	34.5
Six qualifying conditions	20	21	-5	47	1	41	0.187	105.9
<b>Acute care transition expenditures</b>								
All-cause	16,178	-2,363	-6,564	1,837	-5,637	910	0.355	-14.6
Potentially avoidable	2,806	-256	-1,372	860	-1,126	614	0.706	-9.1
Six qualifying conditions	1,508	-495	-1,355	365	-1,165	175	0.343	-32.8
<b>Relative to within-state reference group</b>								
<b>Total Medicare expenditures</b>	28,676	5,752	-175	11,679	1,133	10,371	0.110	20.1
<b>Hospitalization expenditures</b>								
All-cause	12,808	393	-3,675	4,461	-2,777	3,564	0.874	3.1
Potentially avoidable	2,063	210	-895	1,315	-651	1,071	0.754	10.2
Six qualifying conditions	1,476	-531	-1,701	638	-1,443	380	0.455	-36.0
<b>ED visit expenditures</b>								
All-cause	<b>254</b>	<b>132</b>	<b>5</b>	<b>259</b>	<b>33</b>	<b>231</b>	<b>0.088</b>	<b>51.8</b>
Potentially avoidable	<b>62</b>	<b>75</b>	<b>28</b>	<b>122</b>	<b>38</b>	<b>111</b>	<b>0.009</b>	<b>120.3</b>
Six qualifying conditions	<b>9</b>	<b>32</b>	<b>8</b>	<b>55</b>	<b>13</b>	<b>50</b>	<b>0.026</b>	<b>363.5</b>
<b>Acute care transition expenditures</b>								
All-cause	12,564	1,251	-2,959	5,461	-2,030	4,532	0.625	10.0
Potentially avoidable	2,224	326	-845	1,498	-587	1,239	0.647	14.7
Six qualifying conditions	1,498	-485	-1,611	641	-1,362	393	0.479	-32.4

ECCP = Enhanced Care and Coordination Provider; ED = emergency department.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 11 and MS 13).

NOTE: The *predicted expenditure absent the Initiative* is the mean of the predicted expenditures, for the residents in the intervention group, under the scenario that the intervention did not occur. Predicted expenditures are based on a resident being eligible for the Initiative for the entire year (365 days). The *Initiative effect* is calculated based on a difference-in-differences regression model with a nationally selected comparison group and adjusted for resident-level and facility-level characteristics. It is the difference between the predicted expenditures with and without the intervention. It is calculated in two ways: (1) relative to a national comparison group of nursing facility residents and (2) after accounting for differences between the national comparison group of nursing facility residents and residents within the same state. The *relative effect* = (absolute Initiative effect) / (predicted expenditure absent the Initiative). *Acute care transitions* include hospitalizations, ED visits, or observation stays. Bold text indicates values are significantly different from zero based on a p-value cutoff of 0.1.

**Table P-16**  
**Payment-Only: Initiative effect on probability of hospital-related utilization per resident,**  
**FY 2017, ATOP2 (Colorado)**

Measure	Predicted probability absent the Initiative (percent)	Absolute Initiative effect (percentage points)	90% CI		80% CI		p-value	Relative effect (percent)
<b>Relative to national comparison group</b>								
<b>Any hospitalization</b>								
All-cause	18.6	-1.3	-4.4	1.9	-3.7	1.2	0.501	-6.9
Potentially avoidable	8.2	-0.6	-2.9	1.7	-2.4	1.2	0.659	-7.6
Six qualifying conditions	4.8	-0.7	-2.5	1.1	-2.1	0.7	0.525	-14.7
<b>Any ED visit</b>								
All-cause	23.9	-1.8	-4.7	1.1	-4.1	0.4	0.300	-7.6
Potentially avoidable	13.6	-1.8	-4.1	0.4	-3.6	-0.1	0.178	-13.5
Six qualifying conditions	<b>6.4</b>	<b>-2.3</b>	<b>-3.7</b>	<b>-0.8</b>	<b>-3.4</b>	<b>-1.1</b>	<b>0.009</b>	<b>-35.4</b>
<b>Any acute care transition</b>								
All-cause	34.2	-2.3	-6.0	1.5	-5.2	0.7	0.326	-6.6
Potentially avoidable	19.5	-2.4	-5.7	0.8	-4.9	0.1	0.214	-12.5
Six qualifying conditions	<b>9.8</b>	<b>-2.4</b>	<b>-4.5</b>	<b>-0.2</b>	<b>-4.0</b>	<b>-0.7</b>	<b>0.070</b>	<b>-24.0</b>
<b>Relative to within-state reference group</b>								
<b>Any hospitalization</b>								
All-cause	19.9	-2.5	-6.1	1.1	-5.3	0.3	0.247	-12.7
Potentially avoidable	8.6	-1.1	-3.8	1.6	-3.2	1.0	0.518	-12.3
Six qualifying conditions	5.2	-1.1	-3.3	1.0	-2.8	0.6	0.399	-21.6
<b>Any ED visit</b>								
All-cause	<b>27.0</b>	<b>-4.9</b>	<b>-8.6</b>	<b>-1.1</b>	<b>-7.8</b>	<b>-2.0</b>	<b>0.032</b>	<b>-18.1</b>
Potentially avoidable	<b>15.2</b>	<b>-3.4</b>	<b>-6.4</b>	<b>-0.4</b>	<b>-5.7</b>	<b>-1.1</b>	<b>0.062</b>	<b>-22.4</b>
Six qualifying conditions	<b>8.2</b>	<b>-4.1</b>	<b>-6.5</b>	<b>-1.6</b>	<b>-5.9</b>	<b>-2.2</b>	<b>0.006</b>	<b>-49.7</b>
<b>Any acute care transition</b>								
All-cause	<b>36.3</b>	<b>-4.4</b>	<b>-8.8</b>	<b>0.0</b>	<b>-7.8</b>	<b>-1.0</b>	<b>0.097</b>	<b>-12.1</b>
Potentially avoidable	20.4	-3.3	-7.1	0.5	-6.2	-0.4	0.149	-16.3
Six qualifying conditions	<b>11.3</b>	<b>-3.9</b>	<b>-6.7</b>	<b>-1.1</b>	<b>-6.0</b>	<b>-1.7</b>	<b>0.023</b>	<b>-34.2</b>

ECCP = Enhanced Care and Coordination Provider; ED = emergency department.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 10).

NOTE: The *predicted probability absent the Initiative* is the mean of the predicted probabilities of experiencing the event during their respective exposure period, for the residents in the intervention group, under the scenario that the intervention did not occur. The *Initiative effect* is calculated based on a difference-in-differences regression model with a nationally selected comparison group and adjusted for resident-level and facility-level characteristics. It is the difference between the predicted probabilities of the event with and without the intervention. It is calculated in two ways: (1) relative to a national comparison group of nursing facility residents and (2) after accounting for differences between the national comparison group of nursing facility residents and residents within the same state. The *relative effect* = (absolute Initiative effect) / (predicted probability absent the Initiative). *Acute care transitions* include hospitalizations, ED visits, or observation stays. Bold text indicates values are significantly different from zero based on a p-value cutoff of 0.1.

**Table P-17**  
**Payment-Only: Initiative effect on count of hospital-related utilization events per resident,**  
**FY 2017, ATOP2 (Colorado)**

Measure	Predicted count absent the Initiative (events per year)	Absolute Initiative effect (events per year)	90% CI		80% CI		p-value	Relative effect (percent)
<b>Relative to national comparison group</b>								
<b>Hospitalizations</b>								
All-cause	0.266	-0.003	-0.068	0.062	-0.054	0.047	0.931	-1.3
Potentially avoidable	0.098	-0.009	-0.040	0.023	-0.034	0.016	0.644	-9.1
Six qualifying conditions	0.054	-0.006	-0.029	0.017	-0.024	0.012	0.673	-11.0
<b>ED visits</b>								
All-cause	0.361	-0.026	-0.096	0.045	-0.081	0.029	0.545	-7.2
Potentially avoidable	<b>0.179</b>	<b>-0.035</b>	<b>-0.069</b>	<b>-0.001</b>	<b>-0.062</b>	<b>-0.008</b>	<b>0.094</b>	<b>-19.6</b>
Six qualifying conditions	<b>0.074</b>	<b>-0.030</b>	<b>-0.050</b>	<b>-0.009</b>	<b>-0.046</b>	<b>-0.014</b>	<b>0.018</b>	<b>-40.1</b>
<b>Acute care transitions</b>								
All-cause	0.637	-0.038	-0.153	0.077	-0.127	0.052	0.591	-5.9
Potentially avoidable	0.278	-0.045	-0.101	0.011	-0.089	-0.001	0.185	-16.2
Six qualifying conditions	<b>0.128</b>	<b>-0.037</b>	<b>-0.071</b>	<b>-0.003</b>	<b>-0.064</b>	<b>-0.011</b>	<b>0.071</b>	<b>-29.0</b>
<b>Relative to within-state reference group</b>								
<b>Hospitalizations</b>								
All-cause	0.303	-0.041	-0.116	0.035	-0.099	0.018	0.379	-13.4
Potentially avoidable	0.106	-0.017	-0.054	0.020	-0.046	0.012	0.444	-16.3
Six qualifying conditions	0.060	-0.012	-0.039	0.015	-0.033	0.009	0.472	-20.1
<b>ED visits</b>								
All-cause	<b>0.439</b>	<b>-0.104</b>	<b>-0.203</b>	<b>-0.005</b>	<b>-0.181</b>	<b>-0.027</b>	<b>0.085</b>	<b>-23.7</b>
Potentially avoidable	<b>0.211</b>	<b>-0.067</b>	<b>-0.116</b>	<b>-0.018</b>	<b>-0.106</b>	<b>-0.029</b>	<b>0.025</b>	<b>-31.8</b>
Six qualifying conditions	<b>0.103</b>	<b>-0.059</b>	<b>-0.096</b>	<b>-0.021</b>	<b>-0.088</b>	<b>-0.029</b>	<b>0.010</b>	<b>-56.9</b>
<b>Acute care transitions</b>								
All-cause	<b>0.754</b>	<b>-0.155</b>	<b>-0.303</b>	<b>-0.006</b>	<b>-0.270</b>	<b>-0.039</b>	<b>0.087</b>	<b>-20.5</b>
Potentially avoidable	<b>0.316</b>	<b>-0.083</b>	<b>-0.154</b>	<b>-0.011</b>	<b>-0.139</b>	<b>-0.027</b>	<b>0.058</b>	<b>-26.2</b>
Six qualifying conditions	<b>0.162</b>	<b>-0.071</b>	<b>-0.121</b>	<b>-0.020</b>	<b>-0.110</b>	<b>-0.031</b>	<b>0.022</b>	<b>-43.6</b>

ECCP = Enhanced Care and Coordination Provider; ED = emergency department.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 12).

NOTE: The *predicted count absent the Initiative* is the mean of the predicted counts of events, for the residents in the intervention group, under the scenario that the intervention did not occur. The *Initiative effect* is calculated based on a difference-in-differences regression model with a nationally selected comparison group and adjusted for resident-level and facility-level characteristics. It is the difference between the predicted counts with and without the intervention. It is the difference between the predicted probabilities of the event with and without the intervention. It is calculated in two ways: (1) relative to a national comparison group of nursing facility residents and (2) after accounting for differences between the national comparison group of nursing facility residents and residents within the same state. The *relative effect* = (absolute Initiative effect) / (predicted count absent the Initiative). *Acute care transitions* include hospitalizations, ED visits, or observation stays. Bold text indicates values are significantly different from zero based on a p-value cutoff of 0.1.

**Table P-18**  
**Payment-Only: Initiative effect on Medicare expenditures, FY 2017, ATOP2 (Colorado)**

Measure	Predicted expenditure absent the Initiative (dollars)	Absolute Initiative effect (dollars)	90% CI		80% CI		p-value	Relative effect (percent)
<b>Relative to national comparison group</b>								
<b>Total Medicare expenditures</b>	19,373	1,354	-668	3,376	-222	2,930	0.271	7.0
<b>Hospitalization expenditures</b>								
All-cause	5,065	-34	-1,202	1,133	-944	876	0.962	-0.7
Potentially avoidable	1,602	-107	-675	460	-550	335	0.756	-6.7
Six qualifying conditions	776	-98	-464	268	-383	187	0.659	-12.6
<b>ED visit expenditures</b>								
All-cause	411	-64	-171	44	-147	20	0.330	-15.5
Potentially avoidable	<b>224</b>	<b>-81</b>	<b>-138</b>	<b>-25</b>	<b>-125</b>	<b>-38</b>	<b>0.017</b>	<b>-36.3</b>
Six qualifying conditions	<b>92</b>	<b>-39</b>	<b>-66</b>	<b>-12</b>	<b>-60</b>	<b>-18</b>	<b>0.017</b>	<b>-42.3</b>
<b>Acute care transition expenditures</b>								
All-cause	5,585	-180	-1,348	988	-1,090	731	0.800	-3.2
Potentially avoidable	1,910	-285	-816	246	-698	129	0.377	-14.9
Six qualifying conditions	889	-159	-480	163	-409	92	0.416	-17.9
<b>Relative to within-state reference group</b>								
<b>Total Medicare expenditures</b>	20,382	345	-2,064	2,753	-1,532	2,222	0.814	1.7
<b>Hospitalization expenditures</b>								
All-cause	5,608	-577	-1,976	822	-1,668	513	0.498	-10.3
Potentially avoidable	1,808	-314	-1,015	387	-860	233	0.462	-17.4
Six qualifying conditions	1,027	-350	-865	166	-751	52	0.265	-34.0
<b>ED visit expenditures</b>								
All-cause	<b>502</b>	<b>-155</b>	<b>-305</b>	<b>-5</b>	<b>-272</b>	<b>-38</b>	<b>0.089</b>	<b>-30.8</b>
Potentially avoidable	<b>264</b>	<b>-121</b>	<b>-201</b>	<b>-42</b>	<b>-183</b>	<b>-60</b>	<b>0.012</b>	<b>-46.0</b>
Six qualifying conditions	<b>117</b>	<b>-64</b>	<b>-110</b>	<b>-18</b>	<b>-100</b>	<b>-28</b>	<b>0.021</b>	<b>-54.8</b>
<b>Acute care transition expenditures</b>								
All-cause	6,354	-949	-2,423	526	-2,098	201	0.290	-14.9
Potentially avoidable	2,206	-581	-1,302	140	-1,143	-19	0.185	-26.3
Six qualifying conditions	1,200	-469	-959	21	-851	-88	0.115	-39.1

ECCP = Enhanced Care and Coordination Provider; ED = emergency department.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 11 and MS 13).

NOTE: The *predicted expenditure absent the Initiative* is the mean of the predicted expenditures, for the residents in the intervention group, under the scenario that the intervention did not occur. Predicted expenditures are based on a resident being eligible for the Initiative for the entire year (365 days). The *Initiative effect* is calculated based on a difference-in-differences regression model with a nationally selected comparison group and adjusted for resident-level and facility-level characteristics. It is the difference between the predicted expenditures with and without the intervention. It is calculated in two ways: (1) relative to a national comparison group of nursing facility residents and (2) after accounting for differences between the national comparison group of nursing facility residents and residents within the same state. The *relative effect* = (absolute Initiative effect) / (predicted expenditure absent the Initiative). *Acute care transitions* include hospitalizations, ED visits, or observation stays. Bold text indicates values are significantly different from zero based on a p-value cutoff of 0.1.



**Table P-19**  
**Clinical + Payment: Initiative effect on probability of hospital-related utilization per resident, FY 2017, MOQI (Missouri)**

Measure	Predicted probability absent the Initiative (percent)	Absolute Initiative effect (percentage points)	90% CI		80% CI		p-value	Relative effect (percent)
<b>Relative to national comparison group</b>								
<b>Any hospitalization</b>								
All-cause	22.1	2.3	-0.3	4.9	0.2	4.3	0.153	10.3
Potentially avoidable	9.2	1.6	-1.1	4.4	-0.5	3.8	0.323	17.7
Six qualifying conditions	5.3	1.2	-1.0	3.3	-0.5	2.8	0.370	22.1
<b>Any ED visit</b>								
All-cause	<b>14.6</b>	<b>3.8</b>	<b>1.5</b>	<b>6.1</b>	<b>2.0</b>	<b>5.6</b>	<b>0.007</b>	<b>26.1</b>
Potentially avoidable	<b>7.9</b>	<b>1.6</b>	<b>0.3</b>	<b>2.8</b>	<b>0.6</b>	<b>2.6</b>	<b>0.041</b>	<b>19.9</b>
Six qualifying conditions	1.5	0.4	-0.7	1.6	-0.5	1.3	0.539	29.1
<b>Any acute care transition</b>								
All-cause	<b>31.0</b>	<b>4.1</b>	<b>1.2</b>	<b>7.0</b>	<b>1.8</b>	<b>6.4</b>	<b>0.020</b>	<b>13.2</b>
Potentially avoidable	15.5	2.6	-0.5	5.7	0.2	5.0	0.165	16.8
Six qualifying conditions	6.2	1.7	-0.8	4.3	-0.3	3.7	0.266	28.0
<b>Relative to within-state reference group</b>								
<b>Any hospitalization</b>								
All-cause	22.5	1.9	-0.9	4.6	-0.3	4.0	0.260	8.3
Potentially avoidable	9.8	1.0	-1.8	3.9	-1.2	3.3	0.553	10.6
Six qualifying conditions	5.3	1.2	-1.0	3.3	-0.5	2.9	0.379	21.9
<b>Any ED visit</b>								
All-cause	<b>14.8</b>	<b>3.6</b>	<b>1.2</b>	<b>6.0</b>	<b>1.7</b>	<b>5.4</b>	<b>0.014</b>	<b>24.2</b>
Potentially avoidable	<b>8.1</b>	<b>1.4</b>	<b>0.1</b>	<b>2.7</b>	<b>0.4</b>	<b>2.4</b>	<b>0.084</b>	<b>17.4</b>
Six qualifying conditions	1.4	0.5	-0.6	1.6	-0.4	1.4	0.470	35.2
<b>Any acute care transition</b>								
All-cause	<b>31.4</b>	<b>3.8</b>	<b>0.8</b>	<b>6.8</b>	<b>1.4</b>	<b>6.1</b>	<b>0.040</b>	<b>12.1</b>
Potentially avoidable	16.1	2.1	-1.1	5.3	-0.4	4.6	0.287	12.9
Six qualifying conditions	6.1	1.8	-0.7	4.4	-0.2	3.8	0.239	30.3

ECCP = Enhanced Care and Coordination Provider; ED = emergency department.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 10).

NOTE: The *predicted probability absent the Initiative* is the mean of the predicted probabilities of experiencing the event during their respective exposure period, for the residents in the intervention group, under the scenario that the intervention did not occur. The *Initiative effect* is calculated based on a difference-in-differences regression model with a nationally selected comparison group and adjusted for resident-level and facility-level characteristics. It is the difference between the predicted probabilities of the event with and without the intervention. It is calculated in two ways: (1) relative to a national comparison group of nursing facility residents and (2) after accounting for differences between the national comparison group of nursing facility residents and residents within the same state. The *relative effect* = (absolute Initiative effect) / (predicted probability absent the Initiative). *Acute care transitions* include hospitalizations, ED visits, or observation stays. Bold text indicates values are significantly different from zero based on a p-value cutoff of 0.1.

**Table P-20**  
**Clinical + Payment: Initiative effect on count of hospital-related utilization events per resident, FY 2017, MOQI (Missouri)**

Measure	Predicted count absent the Initiative (events per year)	Absolute Initiative effect (events per year)	90% CI		80% CI		p-value	Relative effect (percent)
<b>Relative to national comparison group</b>								
<b>Hospitalizations</b>								
All-cause	0.332	0.032	-0.020	0.085	-0.009	0.073	0.314	9.7
Potentially avoidable	0.110	0.015	-0.021	0.051	-0.013	0.043	0.500	13.5
Six qualifying conditions	0.063	0.006	-0.019	0.031	-0.013	0.025	0.689	9.7
<b>ED visits</b>								
All-cause	<b>0.207</b>	<b>0.048</b>	<b>0.008</b>	<b>0.087</b>	<b>0.017</b>	<b>0.078</b>	<b>0.049</b>	<b>23.0</b>
Potentially avoidable	<b>0.087</b>	<b>0.023</b>	<b>0.003</b>	<b>0.042</b>	<b>0.007</b>	<b>0.038</b>	<b>0.059</b>	<b>25.8</b>
Six qualifying conditions	0.015	0.006	-0.006	0.018	-0.003	0.015	0.390	40.0
<b>Acute care transitions</b>								
All-cause	<b>0.533</b>	<b>0.094</b>	<b>0.014</b>	<b>0.173</b>	<b>0.032</b>	<b>0.155</b>	<b>0.052</b>	<b>17.6</b>
Potentially avoidable	0.197	0.039	-0.007	0.085	0.003	0.075	0.161	19.9
Six qualifying conditions	0.078	0.013	-0.019	0.044	-0.012	0.037	0.511	16.2
<b>Relative to within-state reference group</b>								
<b>Hospitalizations</b>								
All-cause	0.345	0.019	-0.036	0.074	-0.024	0.062	0.565	5.6
Potentially avoidable	0.118	0.006	-0.033	0.045	-0.024	0.036	0.794	5.2
Six qualifying conditions	0.064	0.005	-0.021	0.030	-0.015	0.025	0.756	7.5
<b>ED visits</b>								
All-cause	<b>0.201</b>	<b>0.053</b>	<b>0.013</b>	<b>0.093</b>	<b>0.021</b>	<b>0.085</b>	<b>0.031</b>	<b>26.3</b>
Potentially avoidable	<b>0.086</b>	<b>0.024</b>	<b>0.004</b>	<b>0.044</b>	<b>0.008</b>	<b>0.040</b>	<b>0.048</b>	<b>28.2</b>
Six qualifying conditions	0.014	0.007	-0.004	0.018	-0.002	0.016	0.299	50.0
<b>Acute care transitions</b>								
All-cause	<b>0.534</b>	<b>0.092</b>	<b>0.011</b>	<b>0.174</b>	<b>0.029</b>	<b>0.156</b>	<b>0.063</b>	<b>17.3</b>
Potentially avoidable	0.202	0.035	-0.013	0.082	-0.002	0.071	0.231	17.1
Six qualifying conditions	0.076	0.014	-0.017	0.046	-0.010	0.039	0.460	18.5

ECCP = Enhanced Care and Coordination Provider; ED = emergency department.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 12).

NOTE: The *predicted count absent the Initiative* is the mean of the predicted counts of events, for the residents in the intervention group, under the scenario that the intervention did not occur. The *Initiative effect* is calculated based on a difference-in-differences regression model with a nationally selected comparison group and adjusted for resident-level and facility-level characteristics. It is the difference between the predicted counts with and without the intervention. It is the difference between the predicted probabilities of the event with and without the intervention. It is calculated in two ways: (1) relative to a national comparison group of nursing facility residents and (2) after accounting for differences between the national comparison group of nursing facility residents and residents within the same state. The *relative effect* = (absolute Initiative effect) / (predicted count absent the Initiative). *Acute care transitions* include hospitalizations, ED visits, or observation stays. Bold text indicates values are significantly different from zero based on a p-value cutoff of 0.1.

**Table P-21**  
**Clinical + Payment: Initiative effect on Medicare expenditures, FY 2017,**  
**MOQI (Missouri)**

Measure	Predicted expenditure absent the Initiative (dollars)	Absolute Initiative effect (dollars)	90% CI		80% CI		p-value	Relative effect (percent)
<b>Relative to national comparison group</b>								
<b>Total Medicare expenditures</b>	<b>25,283</b>	<b>1,946</b>	<b>62</b>	<b>3,830</b>	<b>478</b>	<b>3,414</b>	0.089	<b>7.7</b>
<b>Hospitalization expenditures</b>								
All-cause	5,646	521	-477	1,518	-257	1,298	0.391	9.2
Potentially avoidable	1,601	51	-476	577	-359	461	0.874	3.2
Six qualifying conditions	998	-228	-658	202	-563	107	0.383	-22.9
<b>ED visit expenditures</b>								
All-cause	201	10	-32	53	-23	43	0.690	5.1
Potentially avoidable	77	5	-9	19	-6	16	0.573	6.2
Six qualifying conditions	20	-5	-19	9	-16	6	0.562	-25.7
<b>Acute care transition expenditures</b>								
All-cause	6,051	585	-586	1,756	-328	1,498	0.411	9.7
Potentially avoidable	1,642	129	-293	550	-200	457	0.616	7.8
Six qualifying conditions	1,003	-223	-649	204	-555	110	0.391	-22.2
<b>Relative to within-state reference group</b>								
<b>Total Medicare expenditures</b>	<b>24,909</b>	<b>2,321</b>	<b>386</b>	<b>4,256</b>	<b>813</b>	<b>3,829</b>	<b>0.049</b>	<b>9.3</b>
<b>Hospitalization expenditures</b>								
All-cause	5,665	502	-532	1,535	-304	1,307	0.425	8.9
Potentially avoidable	1,731	-79	-651	493	-525	366	0.820	-4.6
Six qualifying conditions	1,015	-244	-689	200	-591	102	0.365	-24.1
<b>ED visit expenditures</b>								
All-cause	195	17	-26	59	-17	50	0.528	8.5
Potentially avoidable	77	5	-10	20	-7	17	0.576	6.6
Six qualifying conditions	19	-5	-19	10	-16	6	0.599	-23.7
<b>Acute care transition expenditures</b>								
All-cause	6,062	574	-631	1,779	-365	1,513	0.433	9.5
Potentially avoidable	1,760	11	-450	471	-348	370	0.970	0.6
Six qualifying conditions	1,012	-232	-671	207	-574	110	0.385	-22.9

ECCP = Enhanced Care and Coordination Provider; ED = emergency department.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 11 and MS 13).

NOTE: The *predicted expenditure absent the Initiative* is the mean of the predicted expenditures, for the residents in the intervention group, under the scenario that the intervention did not occur. Predicted expenditures are based on a resident being eligible for the Initiative for the entire year (365 days). The *Initiative effect* is calculated based on a difference-in-differences regression model with a nationally selected comparison group and adjusted for resident-level and facility-level characteristics. It is the difference between the predicted expenditures with and without the intervention. It is calculated in two ways: (1) relative to a national comparison group of nursing facility residents and (2) after accounting for differences between the national comparison group of nursing facility residents and residents within the same state. The *relative effect* = (absolute Initiative effect) / (predicted expenditure absent the Initiative). *Acute care transitions* include hospitalizations, ED visits, or observation stays. Bold text indicates values are significantly different from zero based on a p-value cutoff of 0.1.

**Table P-22**  
**Payment-Only: Initiative effect on probability of hospital-related utilization per resident,**  
**FY 2017, MOQI (Missouri)**

Measure	Predicted probability absent the Initiative (percent)	Absolute Initiative effect (percentage points)	90% CI		80% CI		p-value	Relative effect (percent)
<b>Relative to national comparison group</b>								
<b>Any hospitalization</b>								
All-cause	29.2	-1.1	-3.9	1.7	-3.3	1.0	0.506	-3.9
Potentially avoidable	15.4	-0.9	-3.2	1.5	-2.7	0.9	0.536	-5.7
Six qualifying conditions	9.5	-0.7	-2.6	1.2	-2.1	0.8	0.563	-7.0
<b>Any ED visit</b>								
All-cause	27.6	1.2	-2.1	4.5	-1.4	3.8	0.557	4.3
Potentially avoidable	16.9	1.5	-0.9	3.9	-0.4	3.4	0.301	8.9
Six qualifying conditions	<b>5.0</b>	<b>1.6</b>	<b>0.6</b>	<b>2.6</b>	<b>0.8</b>	<b>2.3</b>	<b>0.010</b>	<b>31.4</b>
<b>Any acute care transition</b>								
All-cause	43.7	1.1	-1.8	4.0	-1.1	3.4	0.528	2.6
Potentially avoidable	26.9	1.5	-1.6	4.5	-0.9	3.9	0.422	5.5
Six qualifying conditions	12.7	1.2	-1.0	3.4	-0.5	2.9	0.377	9.4
<b>Relative to within-state reference group</b>								
<b>Any hospitalization</b>								
All-cause	29.7	-1.6	-4.6	1.3	-3.9	0.7	0.367	-5.4
Potentially avoidable	16.3	-1.8	-4.3	0.7	-3.8	0.2	0.244	-11.1
Six qualifying conditions	9.5	-0.7	-2.7	1.3	-2.2	0.9	0.576	-7.1
<b>Any ED visit</b>								
All-cause	27.9	0.8	-2.7	4.3	-1.9	3.5	0.697	3.0
Potentially avoidable	17.2	1.2	-1.4	3.7	-0.8	3.2	0.444	6.9
Six qualifying conditions	<b>4.8</b>	<b>1.8</b>	<b>0.7</b>	<b>2.8</b>	<b>0.9</b>	<b>2.6</b>	<b>0.006</b>	<b>37.2</b>
<b>Any acute care transition</b>								
All-cause	44.0	0.8	-2.3	3.8	-1.7	3.2	0.690	1.7
Potentially avoidable	27.7	0.7	-2.5	4.0	-1.8	3.2	0.721	2.6
Six qualifying conditions	12.5	1.4	-0.9	3.7	-0.4	3.2	0.322	11.1

ECCP = Enhanced Care and Coordination Provider; ED = emergency department.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 10).

NOTE: The *predicted probability absent the Initiative* is the mean of the predicted probabilities of experiencing the event during their respective exposure period, for the residents in the intervention group, under the scenario that the intervention did not occur. The *Initiative effect* is calculated based on a difference-in-differences regression model with a nationally selected comparison group and adjusted for resident-level and facility-level characteristics. It is the difference between the predicted probabilities of the event with and without the intervention. It is calculated in two ways: (1) relative to a national comparison group of nursing facility residents and (2) after accounting for differences between the national comparison group of nursing facility residents and residents within the same state. The *relative effect* = (absolute Initiative effect) / (predicted probability absent the Initiative). *Acute care transitions* include hospitalizations, ED visits, or observation stays. Bold text indicates values are significantly different from zero based on a p-value cutoff of 0.1.

**Table P-23**  
**Payment-Only: Initiative effect on count of hospital-related utilization events per resident,**  
**FY 2017, MOQI (Missouri)**

Measure	Predicted count absent the Initiative (events per year)	Absolute Initiative effect (events per year)	90% CI		80% CI		p-value	Relative effect (percent)
<b>Relative to national comparison group</b>								
<b>Hospitalizations</b>								
All-cause	0.464	-0.019	-0.082	0.045	-0.068	0.031	0.630	-4.0
Potentially avoidable	0.184	-0.003	-0.038	0.033	-0.030	0.025	0.904	-1.4
Six qualifying conditions	0.116	-0.014	-0.039	0.012	-0.033	0.006	0.379	-11.7
<b>ED visits</b>								
All-cause	0.424	0.058	-0.004	0.119	0.010	0.106	0.124	13.6
Potentially avoidable	0.228	0.017	-0.017	0.051	-0.010	0.043	0.421	7.3
Six qualifying conditions	<b>0.062</b>	<b>0.014</b>	<b>0.002</b>	<b>0.026</b>	<b>0.005</b>	<b>0.023</b>	<b>0.047</b>	<b>22.7</b>
<b>Acute care transitions</b>								
All-cause	0.888	0.041	-0.037	0.118	-0.020	0.101	0.389	4.6
Potentially avoidable	0.415	0.011	-0.041	0.064	-0.030	0.052	0.725	2.7
Six qualifying conditions	0.179	0.001	-0.032	0.033	-0.024	0.026	0.967	0.4
<b>Relative to within-state reference group</b>								
<b>Hospitalizations</b>								
All-cause	0.482	-0.037	-0.105	0.032	-0.090	0.017	0.378	-7.6
Potentially avoidable	0.199	-0.017	-0.056	0.022	-0.047	0.013	0.469	-8.6
Six qualifying conditions	0.118	-0.016	-0.043	0.011	-0.037	0.005	0.334	-13.3
<b>ED visits</b>								
All-cause	<b>0.412</b>	<b>0.069</b>	<b>0.005</b>	<b>0.132</b>	<b>0.019</b>	<b>0.118</b>	<b>0.074</b>	<b>16.7</b>
Potentially avoidable	0.224	0.021	-0.014	0.056	-0.007	0.048	0.332	9.3
Six qualifying conditions	<b>0.058</b>	<b>0.018</b>	<b>0.006</b>	<b>0.030</b>	<b>0.009</b>	<b>0.028</b>	<b>0.014</b>	<b>31.6</b>
<b>Acute care transitions</b>								
All-cause	0.890	0.038	-0.046	0.122	-0.027	0.103	0.453	4.3
Potentially avoidable	0.425	0.001	-0.056	0.058	-0.043	0.046	0.972	0.3
Six qualifying conditions	0.175	0.004	-0.029	0.038	-0.022	0.031	0.831	2.5

ECCP = Enhanced Care and Coordination Provider; ED = emergency department.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 12).

NOTE: The *predicted count absent the Initiative* is the mean of the predicted counts of events, for the residents in the intervention group, under the scenario that the intervention did not occur. The *Initiative effect* is calculated based on a difference-in-differences regression model with a nationally selected comparison group and adjusted for resident-level and facility-level characteristics. It is the difference between the predicted counts with and without the intervention. It is the difference between the predicted probabilities of the event with and without the intervention. It is calculated in two ways: (1) relative to a national comparison group of nursing facility residents and (2) after accounting for differences between the national comparison group of nursing facility residents and residents within the same state. The *relative effect* = (absolute Initiative effect) / (predicted count absent the Initiative). *Acute care transitions* include hospitalizations, ED visits, or observation stays. Bold text indicates values are significantly different from zero based on a p-value cutoff of 0.1.

**Table P-24**  
**Payment-Only: Initiative effect on Medicare expenditures, FY 2017, MOQI (Missouri)**

Measure	Predicted expenditure absent the Initiative (dollars)	Absolute Initiative effect (dollars)	90% CI		80% CI		p-value	Relative effect (percent)
<b>Relative to national comparison group</b>								
<b>Total Medicare expenditures</b>	24,834	-474	-2,074	1,126	-1,721	773	0.626	-1.9
<b>Hospitalization expenditures</b>								
All-cause	6,636	-382	-1,430	666	-1,198	435	0.549	-5.8
Potentially avoidable	2,141	-23	-465	420	-368	322	0.932	-1.1
Six qualifying conditions	1,302	-226	-566	114	-491	39	0.274	-17.4
<b>ED visit expenditures</b>								
All-cause	339	13	-52	78	-38	64	0.746	3.8
Potentially avoidable	153	2	-28	33	-21	26	0.900	1.5
Six qualifying conditions	51	7	-7	22	-4	19	0.416	14.0
<b>Acute care transition expenditures</b>								
All-cause	7,170	-459	-1,524	606	-1,289	371	0.478	-6.4
Potentially avoidable	2,341	-86	-585	413	-475	303	0.777	-3.7
Six qualifying conditions	1,379	-267	-577	44	-508	-25	0.158	-19.3
<b>Relative to within-state reference group</b>								
<b>Total Medicare expenditures</b>	24,466	-106	-1,776	1,564	-1,407	1,195	0.917	-0.4
<b>Hospitalization expenditures</b>								
All-cause	6,654	-400	-1,491	691	-1,250	451	0.547	-6.0
Potentially avoidable	2,303	-185	-670	301	-563	193	0.531	-8.0
Six qualifying conditions	1,323	-247	-608	114	-529	34	0.260	-18.7
<b>ED visit expenditures</b>								
All-cause	328	24	-41	90	-27	75	0.543	7.4
Potentially avoidable	152	3	-28	35	-21	28	0.865	2.2
Six qualifying conditions	50	8	-7	24	-3	20	0.365	16.7
<b>Acute care transition expenditures</b>								
All-cause	7,177	-466	-1,577	645	-1,332	400	0.490	-6.5
Potentially avoidable	2,497	-242	-790	306	-669	185	0.468	-9.7
Six qualifying conditions	1,395	-282	-615	52	-542	-22	0.164	-20.2

ECCP = Enhanced Care and Coordination Provider; ED = emergency department.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 11 and MS 13).

NOTE: The *predicted expenditure absent the Initiative* is the mean of the predicted expenditures, for the residents in the intervention group, under the scenario that the intervention did not occur. Predicted expenditures are based on a resident being eligible for the Initiative for the entire year (365 days). The *Initiative effect* is calculated based on a difference-in-differences regression model with a nationally selected comparison group and adjusted for resident-level and facility-level characteristics. It is the difference between the predicted expenditures with and without the intervention. It is calculated in two ways: (1) relative to a national comparison group of nursing facility residents and (2) after accounting for differences between the national comparison group of nursing facility residents and residents within the same state. The *relative effect* = (absolute Initiative effect) / (predicted expenditure absent the Initiative). *Acute care transitions* include hospitalizations, ED visits, or observation stays. Bold text indicates values are significantly different from zero based on a p-value cutoff of 0.1.

**Table P-25**  
**Clinical + Payment: Initiative effect on probability of hospital-related utilization per resident, FY 2017, NY-RAH (New York)**

Measure	Predicted probability absent the Initiative (percent)	Absolute Initiative effect (percentage points)	90% CI		80% CI		p-value	Relative effect (percent)
<b>Relative to national comparison group</b>								
<b>Any hospitalization</b>								
All-cause	24.7	1.6	-0.8	4.1	-0.3	3.5	0.276	6.6
Potentially avoidable	10.2	0.4	-1.7	2.6	-1.2	2.1	0.747	4.1
Six qualifying conditions	6.2	-0.2	-2.0	1.5	-1.6	1.1	0.834	-3.6
<b>Any ED visit</b>								
All-cause	<b>15.0</b>	<b>2.6</b>	<b>0.4</b>	<b>4.9</b>	<b>0.9</b>	<b>4.4</b>	<b>0.052</b>	<b>17.5</b>
Potentially avoidable	7.6	1.2	-0.1	2.5	0.1	2.2	0.142	15.3
Six qualifying conditions	1.4	0.2	-0.4	0.8	-0.3	0.6	0.656	11.5
<b>Any acute care transition</b>								
All-cause	<b>32.8</b>	<b>3.4</b>	<b>0.1</b>	<b>6.6</b>	<b>0.8</b>	<b>5.9</b>	<b>0.090</b>	<b>10.3</b>
Potentially avoidable	16.3	1.3	-1.5	4.0	-0.9	3.4	0.448	7.7
Six qualifying conditions	7.3	-0.1	-2.0	1.8	-1.5	1.4	0.950	-1.0
<b>Relative to within-state reference group</b>								
<b>Any hospitalization</b>								
All-cause	25.1	1.2	-1.4	3.7	-0.8	3.2	0.443	4.7
Potentially avoidable	10.3	0.3	-1.9	2.5	-1.4	2.0	0.802	3.2
Six qualifying conditions	6.2	-0.2	-2.0	1.6	-1.6	1.2	0.844	-3.4
<b>Any ED visit</b>								
All-cause	<b>15.1</b>	<b>2.5</b>	<b>0.2</b>	<b>4.8</b>	<b>0.7</b>	<b>4.3</b>	<b>0.072</b>	<b>16.6</b>
Potentially avoidable	7.8	1.0	-0.4	2.3	-0.1	2.0	0.250	12.3
Six qualifying conditions	1.4	0.2	-0.4	0.8	-0.3	0.7	0.627	13.1
<b>Any acute care transition</b>								
All-cause	33.4	2.8	-0.6	6.2	0.2	5.4	0.175	8.3
Potentially avoidable	16.7	0.9	-1.9	3.6	-1.3	3.0	0.616	5.1
Six qualifying conditions	7.3	0.0	-1.9	1.9	-1.5	1.5	0.978	-0.4

ECCP = Enhanced Care and Coordination Provider; ED = emergency department.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 10).

NOTE: The *predicted probability absent the Initiative* is the mean of the predicted probabilities of experiencing the event during their respective exposure period, for the residents in the intervention group, under the scenario that the intervention did not occur. The *Initiative effect* is calculated based on a difference-in-differences regression model with a nationally selected comparison group and adjusted for resident-level and facility-level characteristics. It is the difference between the predicted probabilities of the event with and without the intervention. It is calculated in two ways: (1) relative to a national comparison group of nursing facility residents and (2) after accounting for differences between the national comparison group of nursing facility residents and residents within the same state. The *relative effect* = (absolute Initiative effect) / (predicted probability absent the Initiative). *Acute care transitions* include hospitalizations, ED visits, or observation stays. Bold text indicates values are significantly different from zero based on a p-value cutoff of 0.1.

**Table P-26**  
**Clinical + Payment: Initiative effect on count of hospital-related utilization events per resident, FY 2017, NY-RAH (New York)**

Measure	Predicted count absent the Initiative (events per year)	Absolute Initiative effect (events per year)	90% CI		80% CI		p-value	Relative effect (percent)
<b>Relative to national comparison group</b>								
<b>Hospitalizations</b>								
All-cause	0.424	0.013	-0.041	0.068	-0.029	0.056	0.689	3.1
Potentially avoidable	0.124	0.004	-0.025	0.032	-0.018	0.026	0.832	3.0
Six qualifying conditions	0.074	-0.007	-0.029	0.016	-0.024	0.011	0.635	-8.9
<b>ED visits</b>								
All-cause	<b>0.212</b>	<b>0.055</b>	<b>0.017</b>	<b>0.092</b>	<b>0.026</b>	<b>0.083</b>	<b>0.015</b>	<b>25.7</b>
Potentially avoidable	<b>0.088</b>	<b>0.024</b>	<b>0.005</b>	<b>0.042</b>	<b>0.009</b>	<b>0.038</b>	<b>0.036</b>	<b>27.0</b>
Six qualifying conditions	0.015	0.002	-0.005	0.009	-0.003	0.007	0.614	13.8
<b>Acute care transitions</b>								
All-cause	<b>0.624</b>	<b>0.076</b>	<b>0.001</b>	<b>0.150</b>	<b>0.017</b>	<b>0.134</b>	<b>0.096</b>	<b>12.1</b>
Potentially avoidable	0.209	0.032	-0.008	0.071	0.000	0.063	0.193	15.1
Six qualifying conditions	0.089	-0.004	-0.030	0.022	-0.024	0.016	0.805	-4.4
<b>Relative to within-state reference group</b>								
<b>Hospitalizations</b>								
All-cause	0.424	0.013	-0.043	0.070	-0.031	0.057	0.702	3.1
Potentially avoidable	0.125	0.003	-0.026	0.032	-0.020	0.026	0.865	2.4
Six qualifying conditions	0.075	-0.008	-0.031	0.016	-0.026	0.011	0.600	-10.0
<b>ED visits</b>								
All-cause	<b>0.215</b>	<b>0.052</b>	<b>0.014</b>	<b>0.090</b>	<b>0.022</b>	<b>0.082</b>	<b>0.025</b>	<b>24.2</b>
Potentially avoidable	<b>0.091</b>	<b>0.021</b>	<b>0.001</b>	<b>0.040</b>	<b>0.006</b>	<b>0.036</b>	<b>0.079</b>	<b>22.6</b>
Six qualifying conditions	0.015	0.003	-0.004	0.009	-0.003	0.008	0.546	17.0
<b>Acute care transitions</b>								
All-cause	0.630	0.070	-0.008	0.148	0.009	0.130	0.138	11.1
Potentially avoidable	0.214	0.027	-0.015	0.068	-0.005	0.059	0.288	12.4
Six qualifying conditions	0.089	-0.004	-0.031	0.022	-0.025	0.016	0.793	-4.7

ECCP = Enhanced Care and Coordination Provider; ED = emergency department.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 12).

NOTE: The *predicted count absent the Initiative* is the mean of the predicted counts of events, for the residents in the intervention group, under the scenario that the intervention did not occur. The *Initiative effect* is calculated based on a difference-in-differences regression model with a nationally selected comparison group and adjusted for resident-level and facility-level characteristics. It is the difference between the predicted counts with and without the intervention. It is the difference between the predicted probabilities of the event with and without the intervention. It is calculated in two ways: (1) relative to a national comparison group of nursing facility residents and (2) after accounting for differences between the national comparison group of nursing facility residents and residents within the same state. The *relative effect* = (absolute Initiative effect) / (predicted count absent the Initiative). *Acute care transitions* include hospitalizations, ED visits, or observation stays. Bold text indicates values are significantly different from zero based on a p-value cutoff of 0.1.



**Table P-27**  
**Clinical + Payment: Initiative effect on Medicare expenditures, FY 2017,**  
**NY-RAH (New York)**

Measure	Predicted expenditure absent the Initiative (dollars)	Absolute Initiative effect (dollars)	90% CI		80% CI		p-value	Relative effect (percent)
<b>Relative to national comparison group</b>								
<b>Total Medicare expenditures</b>	36,776	1,751	-1,700	5,201	-938	4,440	0.404	4.8
<b>Hospitalization expenditures</b>								
All-cause	15,046	490	-1,425	2,405	-1,002	1,982	0.674	3.3
Potentially avoidable	3,147	371	-419	1,161	-244	987	0.439	11.8
Six qualifying conditions	1,845	26	-558	610	-429	481	0.942	1.4
<b>ED visit expenditures</b>								
All-cause	239	-7	-55	40	-45	30	0.801	-3.1
Potentially avoidable	92	4	-19	27	-14	22	0.783	4.2
Six qualifying conditions	18	-1	-10	8	-8	6	0.829	-6.8
<b>Acute care transition expenditures</b>								
All-cause	16,034	482	-1,617	2,582	-1,153	2,118	0.705	3.0
Potentially avoidable	3,285	421	-406	1,247	-224	1,065	0.403	12.8
Six qualifying conditions	1,908	-1	-602	601	-470	468	0.999	0.0
<b>Relative to within-state reference group</b>								
<b>Total Medicare expenditures</b>	36,782	1,746	-1,792	5,284	-1,011	4,503	0.417	4.7
<b>Hospitalization expenditures</b>								
All-cause	14,969	567	-1,416	2,551	-978	2,113	0.638	3.8
Potentially avoidable	3,198	320	-498	1,137	-318	957	0.520	10.0
Six qualifying conditions	1,835	35	-562	633	-430	501	0.922	1.9
<b>ED visit expenditures</b>								
All-cause	238	-7	-56	42	-45	31	0.819	-2.9
Potentially avoidable	97	-1	-26	24	-20	19	0.966	-0.7
Six qualifying conditions	17	0	-9	9	-7	7	0.981	-0.8
<b>Acute care transition expenditures</b>								
All-cause	16,015	501	-1,674	2,676	-1,194	2,196	0.705	3.1
Potentially avoidable	3,340	365	-490	1,219	-301	1,031	0.483	10.9
Six qualifying conditions	1,886	21	-592	634	-456	499	0.955	1.1

ECCP = Enhanced Care and Coordination Provider; ED = emergency department.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 11 and MS 13).

NOTE: The *predicted expenditure absent the Initiative* is the mean of the predicted expenditures, for the residents in the intervention group, under the scenario that the intervention did not occur. Predicted expenditures are based on a resident being eligible for the Initiative for the entire year (365 days). The *Initiative effect* is calculated based on a difference-in-differences regression model with a nationally selected comparison group and adjusted for resident-level and facility-level characteristics. It is the difference between the predicted expenditures with and without the intervention. It is calculated in two ways: (1) relative to a national comparison group of nursing facility residents and (2) after accounting for differences between the national comparison group of nursing facility residents and residents within the same state. The *relative effect* = (absolute Initiative effect) / (predicted expenditure absent the Initiative). *Acute care transitions* include hospitalizations, ED visits, or observation stays. Bold text indicates values are significantly different from zero based on a p-value cutoff of 0.1.

**Table P-28**  
**Payment-Only: Initiative effect on probability of hospital-related utilization per resident,**  
**FY 2017, NY-RAH (New York)**

Measure	Predicted probability absent the Initiative (percent)	Absolute Initiative effect (percentage points)	90% CI		80% CI		p-value	Relative effect (percent)
<b>Relative to national comparison group</b>								
<b>Any hospitalization</b>								
All-cause	24.3	-1.8	-3.9	0.3	-3.4	-0.1	0.168	-7.3
Potentially avoidable	9.2	-0.3	-1.7	1.0	-1.4	0.7	0.703	-3.5
Six qualifying conditions	5.3	-0.3	-1.5	0.8	-1.2	0.6	0.651	-6.1
<b>Any ED visit</b>								
All-cause	19.8	-1.4	-3.9	1.0	-3.3	0.5	0.340	-7.2
Potentially avoidable	11.3	-1.1	-2.6	0.5	-2.3	0.1	0.257	-9.5
Six qualifying conditions	2.2	-0.2	-0.8	0.5	-0.7	0.3	0.658	-7.6
<b>Any acute care transition</b>								
All-cause	35.8	-1.9	-4.8	1.0	-4.1	0.3	0.273	-5.3
Potentially avoidable	18.3	-0.7	-2.9	1.4	-2.4	1.0	0.588	-3.9
Six qualifying conditions	7.0	-0.3	-1.7	1.1	-1.4	0.8	0.720	-4.3
<b>Relative to within-state reference group</b>								
<b>Any hospitalization</b>								
All-cause	24.7	-2.2	-4.5	0.0	-4.0	-0.5	0.105	-8.9
Potentially avoidable	9.3	-0.4	-1.8	1.0	-1.5	0.7	0.649	-4.2
Six qualifying conditions	5.3	-0.3	-1.5	0.9	-1.2	0.6	0.669	-5.9
<b>Any ED visit</b>								
All-cause	20.0	-1.6	-4.1	1.0	-3.5	0.4	0.309	-7.9
Potentially avoidable	11.6	-1.4	-3.0	0.3	-2.7	-0.1	0.179	-11.7
Six qualifying conditions	2.2	-0.1	-0.8	0.5	-0.7	0.4	0.718	-6.3
<b>Any acute care transition</b>								
All-cause	36.5	-2.5	-5.5	0.5	-4.9	-0.2	0.161	-7.0
Potentially avoidable	18.7	-1.2	-3.4	1.1	-2.9	0.6	0.406	-6.1
Six qualifying conditions	7.0	-0.3	-1.7	1.2	-1.4	0.8	0.762	-3.7

ECCP = Enhanced Care and Coordination Provider; ED = emergency department.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 10).

NOTE: The *predicted probability absent the Initiative* is the mean of the predicted probabilities of experiencing the event during their respective exposure period, for the residents in the intervention group, under the scenario that the intervention did not occur. The *Initiative effect* is calculated based on a difference-in-differences regression model with a nationally selected comparison group and adjusted for resident-level and facility-level characteristics. It is the difference between the predicted probabilities of the event with and without the intervention. It is calculated in two ways: (1) relative to a national comparison group of nursing facility residents and (2) after accounting for differences between the national comparison group of nursing facility residents and residents within the same state. The *relative effect* = (absolute Initiative effect) / (predicted probability absent the Initiative). *Acute care transitions* include hospitalizations, ED visits, or observation stays. Bold text indicates values are significantly different from zero based on a p-value cutoff of 0.1.

**Table P-29**  
**Payment-Only: Initiative effect on count of hospital-related utilization events per resident,**  
**FY 2017, NY-RAH (New York)**

Measure	Predicted count absent the Initiative (events per year)	Absolute Initiative effect (events per year)	90% CI		80% CI		p-value	Relative effect (percent)
<b>Relative to national comparison group</b>								
<b>Hospitalizations</b>								
All-cause	0.370	-0.024	-0.068	0.021	-0.058	0.011	0.387	-6.3
Potentially avoidable	0.113	-0.006	-0.025	0.012	-0.021	0.008	0.576	-5.6
Six qualifying conditions	0.058	-0.001	-0.016	0.013	-0.013	0.010	0.891	-2.1
<b>ED visits</b>								
All-cause	0.297	-0.034	-0.076	0.007	-0.067	-0.002	0.174	-11.5
Potentially avoidable	0.137	-0.015	-0.036	0.005	-0.031	0.000	0.210	-11.2
Six qualifying conditions	0.023	-0.001	-0.008	0.005	-0.007	0.004	0.750	-5.7
<b>Acute care transitions</b>								
All-cause	0.663	-0.052	-0.125	0.021	-0.109	0.005	0.239	-7.8
Potentially avoidable	0.249	-0.020	-0.053	0.014	-0.046	0.007	0.344	-7.8
Six qualifying conditions	0.080	-0.002	-0.019	0.016	-0.015	0.012	0.874	-2.1
<b>Relative to within-state reference group</b>								
<b>Hospitalizations</b>								
All-cause	0.370	-0.024	-0.070	0.023	-0.060	0.013	0.401	-6.4
Potentially avoidable	0.114	-0.007	-0.027	0.013	-0.022	0.008	0.558	-6.2
Six qualifying conditions	0.059	-0.002	-0.017	0.013	-0.014	0.010	0.835	-3.2
<b>ED visits</b>								
All-cause	0.301	-0.038	-0.082	0.006	-0.072	-0.004	0.155	-12.6
Potentially avoidable	0.142	-0.020	-0.042	0.002	-0.037	-0.003	0.131	-14.2
Six qualifying conditions	0.022	-0.001	-0.008	0.006	-0.006	0.005	0.870	-3.2
<b>Acute care transitions</b>								
All-cause	0.669	-0.058	-0.134	0.018	-0.117	0.001	0.208	-8.7
Potentially avoidable	0.255	-0.025	-0.061	0.010	-0.053	0.003	0.246	-10.0
Six qualifying conditions	0.080	-0.002	-0.020	0.016	-0.016	0.012	0.857	-2.5

ECCP = Enhanced Care and Coordination Provider; ED = emergency department.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 12).

NOTE: The *predicted count absent the Initiative* is the mean of the predicted counts of events, for the residents in the intervention group, under the scenario that the intervention did not occur. The *Initiative effect* is calculated based on a difference-in-differences regression model with a nationally selected comparison group and adjusted for resident-level and facility-level characteristics. It is the difference between the predicted counts with and without the intervention. It is the difference between the predicted probabilities of the event with and without the intervention. It is calculated in two ways: (1) relative to a national comparison group of nursing facility residents and (2) after accounting for differences between the national comparison group of nursing facility residents and residents within the same state. The *relative effect* = (absolute Initiative effect) / (predicted count absent the Initiative). *Acute care transitions* include hospitalizations, ED visits, or observation stays. Bold text indicates values are significantly different from zero based on a p-value cutoff of 0.1.

**Table P-30**  
**Payment-Only: Initiative effect on Medicare expenditures, FY 2017,**  
**NY-RAH (New York)**

Measure	Predicted expenditure absent the Initiative (dollars)	Absolute Initiative effect (dollars)	90% CI		80% CI		p-value	Relative effect (percent)
<b>Relative to national comparison group</b>								
<b>Total Medicare expenditures</b>	31,101	-382	-2,709	1,945	-2,195	1,431	0.787	-1.2
<b>Hospitalization expenditures</b>								
All-cause	10,244	72	-1,194	1,339	-915	1,060	0.925	0.7
Potentially avoidable	2,276	-111	-575	352	-473	250	0.692	-4.9
Six qualifying conditions	1,140	0	-327	326	-255	254	1.000	0.0
<b>ED visit expenditures</b>								
All-cause	247	-16	-55	23	-46	14	0.500	-6.5
Potentially avoidable	106	-15	-34	4	-30	0	0.196	-14.0
Six qualifying conditions	22	-2	-11	8	-9	6	0.777	-7.1
<b>Acute care transition expenditures</b>								
All-cause	10,675	48	-1,337	1,433	-1,032	1,127	0.955	0.4
Potentially avoidable	2,436	-144	-609	321	-507	219	0.611	-5.9
Six qualifying conditions	1,175	1	-308	310	-240	242	0.996	0.1
<b>Relative to within-state reference group</b>								
<b>Total Medicare expenditures</b>	31,109	-390	-2,809	2,029	-2,275	1,496	0.791	-1.3
<b>Hospitalization expenditures</b>								
All-cause	10,196	120	-1,198	1,438	-907	1,147	0.881	1.2
Potentially avoidable	2,314	-149	-636	337	-528	229	0.613	-6.5
Six qualifying conditions	1,135	6	-330	342	-256	267	0.978	0.5
<b>ED visit expenditures</b>								
All-cause	246	-15	-56	25	-47	16	0.531	-6.3
Potentially avoidable	111	-20	-41	1	-36	-3	0.121	-18.0
Six qualifying conditions	21	0	-9	9	-7	7	0.968	-1.1
<b>Acute care transition expenditures</b>								
All-cause	10,663	60	-1,375	1,496	-1,058	1,179	0.945	0.6
Potentially avoidable	2,476	-184	-675	306	-567	198	0.536	-7.4
Six qualifying conditions	1,162	14	-303	331	-233	261	0.942	1.2

ECCP = Enhanced Care and Coordination Provider; ED = emergency department.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 11 and MS 13).

NOTE: The *predicted expenditure absent the Initiative* is the mean of the predicted expenditures, for the residents in the intervention group, under the scenario that the intervention did not occur. Predicted expenditures are based on a resident being eligible for the Initiative for the entire year (365 days). The *Initiative effect* is calculated based on a difference-in-differences regression model with a nationally selected comparison group and adjusted for resident-level and facility-level characteristics. It is the difference between the predicted expenditures with and without the intervention. It is calculated in two ways: (1) relative to a national comparison group of nursing facility residents and (2) after accounting for differences between the national comparison group of nursing facility residents and residents within the same state. The *relative effect* = (absolute Initiative effect) / (predicted expenditure absent the Initiative). *Acute care transitions* include hospitalizations, ED visits, or observation stays. Bold text indicates values are significantly different from zero based on a p-value cutoff of 0.1.

**Table P-31**  
**Clinical + Payment: Initiative effect on probability of hospital-related utilization per resident, FY 2017, OPTIMISTIC (Indiana)**

Measure	Predicted probability absent the Initiative (percent)	Absolute Initiative effect (percentage points)	90% CI		80% CI		p-value	Relative effect (percent)
<b>Relative to national comparison group</b>								
<b>Any hospitalization</b>								
All-cause	24.0	-0.8	-5.2	3.7	-4.2	2.7	0.774	-3.2
Potentially avoidable	11.2	-0.8	-3.6	2.0	-2.9	1.4	0.657	-6.8
Six qualifying conditions	5.5	-0.6	-2.5	1.3	-2.1	0.8	0.584	-11.4
<b>Any ED visit</b>								
All-cause	20.7	-3.4	-7.6	0.8	-6.7	-0.1	0.186	-16.5
Potentially avoidable	11.3	-1.8	-4.6	1.0	-3.9	0.4	0.299	-15.7
Six qualifying conditions	2.4	0.0	-1.0	1.1	-0.8	0.8	0.974	0.8
<b>Any acute care transition</b>								
All-cause	37.3	-3.8	-9.0	1.4	-7.9	0.3	0.232	-10.2
Potentially avoidable	20.4	-1.8	-5.9	2.2	-5.0	1.3	0.460	-8.9
Six qualifying conditions	8.0	-1.1	-3.2	1.0	-2.7	0.5	0.382	-13.8
<b>Relative to within-state reference group</b>								
<b>Any hospitalization</b>								
All-cause	23.6	-0.4	-4.9	4.1	-3.9	3.1	0.884	-1.7
Potentially avoidable	11.0	-0.5	-3.3	2.3	-2.7	1.7	0.764	-4.7
Six qualifying conditions	5.6	-0.7	-2.6	1.3	-2.2	0.8	0.563	-12.3
<b>Any ED visit</b>								
All-cause	21.6	-4.4	-8.8	0.0	-7.8	-0.9	0.103	-20.3
Potentially avoidable	11.5	-2.0	-4.9	0.9	-4.2	0.3	0.262	-17.1
Six qualifying conditions	2.4	0.0	-1.1	1.0	-0.8	0.8	0.986	-0.4
<b>Any acute care transition</b>								
All-cause	37.7	-4.2	-9.5	1.2	-8.3	0.0	0.200	-11.1
Potentially avoidable	20.5	-2.0	-6.1	2.2	-5.2	1.3	0.433	-9.7
Six qualifying conditions	8.1	-1.2	-3.3	1.0	-2.8	0.5	0.378	-14.3

ECCP = Enhanced Care and Coordination Provider; ED = emergency department.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 10).

NOTE: The *predicted probability absent the Initiative* is the mean of the predicted probabilities of experiencing the event during their respective exposure period, for the residents in the intervention group, under the scenario that the intervention did not occur. The *Initiative effect* is calculated based on a difference-in-differences regression model with a nationally selected comparison group and adjusted for resident-level and facility-level characteristics. It is the difference between the predicted probabilities of the event with and without the intervention. It is calculated in two ways: (1) relative to a national comparison group of nursing facility residents and (2) after accounting for differences between the national comparison group of nursing facility residents and residents within the same state. The *relative effect* = (absolute Initiative effect) / (predicted probability absent the Initiative). *Acute care transitions* include hospitalizations, ED visits, or observation stays. Bold text indicates values are significantly different from zero based on a p-value cutoff of 0.1.

**Table P-32**  
**Clinical + Payment: Initiative effect on count of hospital-related utilization events per resident, FY 2017, OPTIMISTIC (Indiana)**

Measure	Predicted count absent the Initiative (events per year)	Absolute Initiative effect (events per year)	90% CI		80% CI		p-value	Relative effect (percent)
<b>Relative to national comparison group</b>								
<b>Hospitalizations</b>								
All-cause	0.344	0.003	-0.076	0.082	-0.058	0.064	0.951	0.9
Potentially avoidable	0.119	0.001	-0.036	0.038	-0.028	0.030	0.959	1.0
Six qualifying conditions	0.058	-0.004	-0.025	0.018	-0.020	0.013	0.792	-6.0
<b>ED visits</b>								
All-cause	0.280	-0.021	-0.077	0.035	-0.064	0.023	0.542	-7.4
Potentially avoidable	0.129	-0.011	-0.045	0.023	-0.038	0.015	0.588	-8.7
Six qualifying conditions	0.025	0.002	-0.009	0.012	-0.007	0.010	0.819	5.9
<b>Acute care transitions</b>								
All-cause	0.624	-0.017	-0.123	0.090	-0.100	0.066	0.796	-2.7
Potentially avoidable	0.250	-0.010	-0.068	0.048	-0.055	0.035	0.780	-4.0
Six qualifying conditions	0.083	-0.002	-0.026	0.022	-0.021	0.017	0.877	-2.8
<b>Relative to within-state reference group</b>								
<b>Hospitalizations</b>								
All-cause	0.340	0.007	-0.073	0.086	-0.055	0.069	0.892	1.9
Potentially avoidable	0.118	0.002	-0.035	0.040	-0.027	0.031	0.922	1.9
Six qualifying conditions	0.060	-0.005	-0.028	0.017	-0.023	0.012	0.701	-8.9
<b>ED visits</b>								
All-cause	0.294	-0.035	-0.094	0.025	-0.081	0.012	0.338	-11.8
Potentially avoidable	0.137	-0.019	-0.055	0.017	-0.047	0.009	0.390	-13.8
Six qualifying conditions	0.027	0.000	-0.011	0.011	-0.009	0.009	0.978	0.7
<b>Acute care transitions</b>								
All-cause	0.635	-0.028	-0.138	0.082	-0.114	0.058	0.675	-4.4
Potentially avoidable	0.258	-0.017	-0.078	0.043	-0.064	0.030	0.638	-6.7
Six qualifying conditions	0.087	-0.006	-0.031	0.020	-0.025	0.014	0.724	-6.4

ECCP = Enhanced Care and Coordination Provider; ED = emergency department.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 12).

NOTE: The *predicted count absent the Initiative* is the mean of the predicted counts of events, for the residents in the intervention group, under the scenario that the intervention did not occur. The *Initiative effect* is calculated based on a difference-in-differences regression model with a nationally selected comparison group and adjusted for resident-level and facility-level characteristics. It is the difference between the predicted counts with and without the intervention. It is the difference between the predicted probabilities of the event with and without the intervention. It is calculated in two ways: (1) relative to a national comparison group of nursing facility residents and (2) after accounting for differences between the national comparison group of nursing facility residents and residents within the same state. The *relative effect* = (absolute Initiative effect) / (predicted count absent the Initiative). *Acute care transitions* include hospitalizations, ED visits, or observation stays. Bold text indicates values are significantly different from zero based on a p-value cutoff of 0.1.

**Table P-33**  
**Clinical + Payment: Initiative effect on Medicare expenditures, FY 2017,**  
**OPTIMISTIC (Indiana)**

Measure	Predicted expenditure absent the Initiative (dollars)	Absolute Initiative effect (dollars)	90% CI		80% CI		p-value	Relative effect (percent)
<b>Relative to national comparison group</b>								
<b>Total Medicare expenditures</b>	30,860	-202	-3,092	2,687	-2,454	2,049	0.908	-0.7
<b>Hospitalization expenditures</b>								
All-cause	7,423	393	-1,029	1,815	-715	1,501	0.650	5.3
Potentially avoidable	2,434	-211	-894	473	-744	322	0.612	-8.7
Six qualifying conditions	791	192	-152	537	-76	461	0.358	24.3
<b>ED visit expenditures</b>								
All-cause	273	-45	-114	24	-99	9	0.287	-16.4
Potentially avoidable	117	-29	-64	6	-57	-2	0.169	-25.0
Six qualifying conditions	24	1	-14	17	-10	13	0.880	5.9
<b>Acute care transition expenditures</b>								
All-cause	7,969	293	-1,047	1,633	-751	1,338	0.719	3.7
Potentially avoidable	2,642	-292	-1,089	505	-913	329	0.547	-11.1
Six qualifying conditions	810	185	-156	525	-81	450	0.372	22.8
<b>Relative to within-state reference group</b>								
<b>Total Medicare expenditures</b>	29,646	1,012	-1,832	3,855	-1,204	3,227	0.558	3.4
<b>Hospitalization expenditures</b>								
All-cause	7,126	690	-744	2,124	-427	1,808	0.429	9.7
Potentially avoidable	2,449	-226	-935	483	-778	326	0.600	-9.2
Six qualifying conditions	813	170	-188	529	-109	449	0.435	20.9
<b>ED visit expenditures</b>								
All-cause	295	-67	-141	7	-125	-10	0.135	-22.7
Potentially avoidable	<b>128</b>	<b>-40</b>	<b>-79</b>	<b>-2</b>	<b>-70</b>	<b>-10</b>	<b>0.085</b>	<b>-31.5</b>
Six qualifying conditions	27	-2	-19	15	-15	11	0.853	-7.0
<b>Acute care transition expenditures</b>								
All-cause	7,716	547	-812	1,905	-512	1,606	0.508	7.1
Potentially avoidable	2,693	-343	-1,168	482	-986	300	0.494	-12.7
Six qualifying conditions	845	150	-209	508	-130	429	0.492	17.7

ECCP = Enhanced Care and Coordination Provider; ED = emergency department.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 11 and MS 13).

NOTE: The *predicted expenditure absent the Initiative* is the mean of the predicted expenditures, for the residents in the intervention group, under the scenario that the intervention did not occur. Predicted expenditures are based on a resident being eligible for the Initiative for the entire year (365 days). The *Initiative effect* is calculated based on a difference-in-differences regression model with a nationally selected comparison group and adjusted for resident-level and facility-level characteristics. It is the difference between the predicted expenditures with and without the intervention. It is calculated in two ways: (1) relative to a national comparison group of nursing facility residents and (2) after accounting for differences between the national comparison group of nursing facility residents and residents within the same state. The *relative effect* = (absolute Initiative effect) / (predicted expenditure absent the Initiative). *Acute care transitions* include hospitalizations, ED visits, or observation stays. Bold text indicates values are significantly different from zero based on a p-value cutoff of 0.1.

**Table P-34**  
**Payment-Only: Initiative effect on probability of hospital-related utilization per resident,**  
**FY 2017, OPTIMISTIC (Indiana)**

Measure	Predicted probability absent the Initiative (percent)	Absolute Initiative effect (percentage points)	90% CI		80% CI		p-value	Relative effect (percent)
<b>Relative to national comparison group</b>								
<b>Any hospitalization</b>								
All-cause	<b>24.8</b>	<b>-2.6</b>	<b>-5.0</b>	<b>-0.1</b>	<b>-4.5</b>	<b>-0.6</b>	<b>0.091</b>	<b>-10.3</b>
Potentially avoidable	12.2	-1.7	-3.6	0.1	-3.2	-0.3	0.129	-14.0
Six qualifying conditions	6.9	-1.3	-3.0	0.5	-2.6	0.1	0.235	-18.1
<b>Any ED visit</b>								
All-cause	23.3	0.7	-2.3	3.6	-1.7	3.0	0.715	2.8
Potentially avoidable	14.9	-1.6	-4.3	1.0	-3.7	0.4	0.313	-11.0
Six qualifying conditions	3.7	-0.8	-2.2	0.7	-1.9	0.4	0.388	-20.7
<b>Any acute care transition</b>								
All-cause	38.5	-2.1	-5.4	1.1	-4.7	0.4	0.285	-5.5
Potentially avoidable	<b>23.2</b>	<b>-2.9</b>	<b>-5.4</b>	<b>-0.3</b>	<b>-4.8</b>	<b>-0.9</b>	<b>0.063</b>	<b>-12.3</b>
Six qualifying conditions	9.2	-1.2	-3.1	0.8	-2.7	0.3	0.310	-12.9
<b>Relative to within-state reference group</b>								
<b>Any hospitalization</b>								
All-cause	24.4	-2.2	-4.8	0.4	-4.2	-0.1	0.173	-8.8
Potentially avoidable	11.9	-1.5	-3.4	0.5	-3.0	0.1	0.216	-12.1
Six qualifying conditions	7.0	-1.3	-3.1	0.5	-2.7	0.1	0.232	-18.9
<b>Any ED visit</b>								
All-cause	24.3	-0.4	-3.6	2.8	-2.9	2.1	0.835	-1.6
Potentially avoidable	15.1	-1.9	-4.7	0.9	-4.1	0.3	0.267	-12.5
Six qualifying conditions	3.7	-0.8	-2.3	0.7	-2.0	0.4	0.376	-21.8
<b>Any acute care transition</b>								
All-cause	38.9	-2.5	-5.9	0.9	-5.2	0.2	0.233	-6.4
Potentially avoidable	<b>23.4</b>	<b>-3.0</b>	<b>-5.7</b>	<b>-0.3</b>	<b>-5.1</b>	<b>-0.9</b>	<b>0.064</b>	<b>-12.9</b>
Six qualifying conditions	9.3	-1.2	-3.3	0.8	-2.8	0.3	0.310	-13.4

ECCP = Enhanced Care and Coordination Provider; ED = emergency department.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 10).

NOTE: The *predicted probability absent the Initiative* is the mean of the predicted probabilities of experiencing the event during their respective exposure period, for the residents in the intervention group, under the scenario that the intervention did not occur. The *Initiative effect* is calculated based on a difference-in-differences regression model with a nationally selected comparison group and adjusted for resident-level and facility-level characteristics. It is the difference between the predicted probabilities of the event with and without the intervention. It is calculated in two ways: (1) relative to a national comparison group of nursing facility residents and (2) after accounting for differences between the national comparison group of nursing facility residents and residents within the same state. The *relative effect* = (absolute Initiative effect) / (predicted probability absent the Initiative). *Acute care transitions* include hospitalizations, ED visits, or observation stays. Bold text indicates values are significantly different from zero based on a p-value cutoff of 0.1.



**Table P-35**  
**Payment-Only: Initiative effect on count of hospital-related utilization events per resident,**  
**FY 2017, OPTIMISTIC (Indiana)**

Measure	Predicted count absent the Initiative (events per year)	Absolute Initiative effect (events per year)	90% CI		80% CI		p-value	Relative effect (percent)
<b>Relative to national comparison group</b>								
<b>Hospitalizations</b>								
All-cause	0.368	-0.039	-0.085	0.007	-0.074	-0.003	0.163	-10.5
Potentially avoidable	0.149	-0.016	-0.039	0.007	-0.034	0.002	0.251	-10.9
Six qualifying conditions	0.082	-0.012	-0.033	0.010	-0.029	0.005	0.368	-14.4
<b>ED visits</b>								
All-cause	0.342	-0.002	-0.054	0.051	-0.043	0.039	0.957	-0.5
Potentially avoidable	0.188	-0.031	-0.068	0.007	-0.060	-0.002	0.175	-16.4
Six qualifying conditions	0.042	-0.011	-0.029	0.007	-0.025	0.003	0.296	-27.2
<b>Acute care transitions</b>								
All-cause	0.715	-0.042	-0.131	0.047	-0.112	0.027	0.435	-5.9
Potentially avoidable	0.336	-0.047	-0.096	0.001	-0.085	-0.009	0.111	-14.0
Six qualifying conditions	0.123	-0.023	-0.052	0.007	-0.046	0.000	0.208	-18.3
<b>Relative to within-state reference group</b>								
<b>Hospitalizations</b>								
All-cause	0.364	-0.035	-0.083	0.013	-0.072	0.002	0.230	-9.6
Potentially avoidable	0.148	-0.015	-0.040	0.010	-0.034	0.004	0.320	-10.1
Six qualifying conditions	0.085	-0.014	-0.038	0.009	-0.032	0.004	0.305	-17.0
<b>ED visits</b>								
All-cause	0.359	-0.019	-0.076	0.039	-0.063	0.026	0.594	-5.2
Potentially avoidable	<b>0.199</b>	<b>-0.042</b>	<b>-0.083</b>	<b>-0.001</b>	<b>-0.074</b>	<b>-0.010</b>	<b>0.091</b>	<b>-21.1</b>
Six qualifying conditions	0.044	-0.014	-0.033	0.006	-0.029	0.001	0.247	-30.8
<b>Acute care transitions</b>								
All-cause	0.728	-0.055	-0.150	0.039	-0.129	0.018	0.334	-7.6
Potentially avoidable	<b>0.346</b>	<b>-0.057</b>	<b>-0.109</b>	<b>-0.005</b>	<b>-0.098</b>	<b>-0.016</b>	<b>0.072</b>	<b>-16.5</b>
Six qualifying conditions	0.128	-0.027	-0.059	0.004	-0.052	-0.003	0.157	-21.3

ECCP = Enhanced Care and Coordination Provider; ED = emergency department.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 12).

NOTE: The *predicted count absent the Initiative* is the mean of the predicted counts of events, for the residents in the intervention group, under the scenario that the intervention did not occur. The *Initiative effect* is calculated based on a difference-in-differences regression model with a nationally selected comparison group and adjusted for resident-level and facility-level characteristics. It is the difference between the predicted counts with and without the intervention. It is the difference between the predicted probabilities of the event with and without the intervention. It is calculated in two ways: (1) relative to a national comparison group of nursing facility residents and (2) after accounting for differences between the national comparison group of nursing facility residents and residents within the same state. The *relative effect* = (absolute Initiative effect) / (predicted count absent the Initiative). *Acute care transitions* include hospitalizations, ED visits, or observation stays. Bold text indicates values are significantly different from zero based on a p-value cutoff of 0.1.

**Table P-36**  
**Payment-Only: Initiative effect on Medicare expenditures, FY 2017,**  
**OPTIMISTIC (Indiana)**

Measure	Predicted expenditure absent the Initiative (dollars)	Absolute Initiative effect (dollars)	90% CI		80% CI		p-value	Relative effect (percent)
<b>Relative to national comparison group</b>								
<b>Total Medicare expenditures</b>	28,397	-840	-3,125	1,446	-2,621	942	0.546	-3.0
<b>Hospitalization expenditures</b>								
All-cause	6,923	-635	-1,763	494	-1,514	245	0.355	-9.2
Potentially avoidable	2,424	-345	-836	145	-728	37	0.247	-14.3
Six qualifying conditions	1,316	-390	-844	63	-744	-37	0.157	-29.7
<b>ED visit expenditures</b>								
All-cause	273	27	-28	83	-16	71	0.419	10.0
Potentially avoidable	126	8	-24	41	-17	34	0.680	6.5
Six qualifying conditions	42	-13	-32	6	-28	1	0.247	-31.9
<b>Acute care transition expenditures</b>								
All-cause	7,504	-768	-2,231	695	-1,908	372	0.388	-10.2
Potentially avoidable	2,604	-367	-859	124	-750	15	0.218	-14.1
Six qualifying conditions	1,391	-427	-882	28	-781	-72	0.123	-30.7
<b>Relative to within-state reference group</b>								
<b>Total Medicare expenditures</b>	27,280	277	-2,022	2,576	-1,514	2,069	0.843	1.0
<b>Hospitalization expenditures</b>								
All-cause	6,648	-360	-1,500	780	-1,248	529	0.604	-5.4
Potentially avoidable	2,440	-362	-883	159	-768	44	0.253	-14.8
Six qualifying conditions	1,352	-427	-906	53	-800	-53	0.143	-31.5
<b>ED visit expenditures</b>								
All-cause	295	5	-54	65	-41	52	0.882	1.8
Potentially avoidable	137	-4	-39	32	-31	24	0.867	-2.6
Six qualifying conditions	47	-19	-41	3	-36	-2	0.155	-40.2
<b>Acute care transition expenditures</b>								
All-cause	7,264	-528	-1,992	936	-1,669	613	0.553	-7.3
Potentially avoidable	2,653	-416	-938	106	-823	-10	0.189	-15.7
Six qualifying conditions	1,451	-487	-976	2	-868	-106	0.102	-33.6

ECCP = Enhanced Care and Coordination Provider; ED = emergency department.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 11 and MS 13).

NOTE: The *predicted expenditure absent the Initiative* is the mean of the predicted expenditures, for the residents in the intervention group, under the scenario that the intervention did not occur. Predicted expenditures are based on a resident being eligible for the Initiative for the entire year (365 days). The *Initiative effect* is calculated based on a difference-in-differences regression model with a nationally selected comparison group and adjusted for resident-level and facility-level characteristics. It is the difference between the predicted expenditures with and without the intervention. It is calculated in two ways: (1) relative to a national comparison group of nursing facility residents and (2) after accounting for differences between the national comparison group of nursing facility residents and residents within the same state. The *relative effect* = (absolute Initiative effect) / (predicted expenditure absent the Initiative). *Acute care transitions* include hospitalizations, ED visits, or observation stays. Bold text indicates values are significantly different from zero based on a p-value cutoff of 0.1.

**Table P-37**  
**Clinical + Payment: Initiative effect on probability of hospital-related utilization per resident, FY 2017, RAVEN (Pennsylvania)**

Measure	Predicted probability absent the Initiative (percent)	Absolute Initiative effect (percentage points)	90% CI		80% CI		p-value	Relative effect (percent)
<b>Relative to national comparison group</b>								
<b>Any hospitalization</b>								
All-cause	20.0	0.7	-2.2	3.6	-1.5	3.0	0.680	3.6
Potentially avoidable	8.2	1.0	-1.5	3.6	-0.9	3.0	0.498	12.7
Six qualifying conditions	3.4	1.4	0.0	2.8	0.3	2.5	0.101	41.1
<b>Any ED visit</b>								
All-cause	<b>15.6</b>	<b>3.3</b>	<b>0.7</b>	<b>5.9</b>	<b>1.3</b>	<b>5.3</b>	<b>0.036</b>	<b>21.3</b>
Potentially avoidable	8.4	1.7	-0.8	4.1	-0.2	3.6	0.263	19.9
Six qualifying conditions	2.5	0.8	-0.6	2.1	-0.3	1.8	0.338	30.5
<b>Any acute care transition</b>								
All-cause	29.2	2.4	-2.1	6.9	-1.1	5.9	0.379	8.2
Potentially avoidable	14.7	2.1	-1.6	5.8	-0.8	5.0	0.347	14.4
Six qualifying conditions	5.6	1.5	-0.3	3.2	0.1	2.9	0.168	26.7
<b>Relative to within-state reference group</b>								
<b>Any hospitalization</b>								
All-cause	20.9	-0.2	-3.2	2.8	-2.5	2.2	0.928	-0.8
Potentially avoidable	8.6	0.6	-2.0	3.2	-1.4	2.7	0.696	7.2
Six qualifying conditions	3.8	1.1	-0.4	2.6	-0.1	2.3	0.232	29.1
<b>Any ED visit</b>								
All-cause	16.8	2.1	-0.7	4.9	-0.1	4.2	0.218	12.4
Potentially avoidable	9.2	0.9	-1.7	3.6	-1.1	3.0	0.567	10.0
Six qualifying conditions	2.8	0.4	-1.0	1.9	-0.7	1.5	0.628	14.8
<b>Any acute care transition</b>								
All-cause	30.7	1.0	-3.7	5.6	-2.7	4.6	0.733	3.2
Potentially avoidable	15.6	1.3	-2.6	5.1	-1.7	4.3	0.590	8.1
Six qualifying conditions	6.1	0.9	-0.9	2.8	-0.5	2.4	0.414	15.3

ECCP = Enhanced Care and Coordination Provider; ED = emergency department.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 10).

NOTE: The *predicted probability absent the Initiative* is the mean of the predicted probabilities of experiencing the event during their respective exposure period, for the residents in the intervention group, under the scenario that the intervention did not occur. The *Initiative effect* is calculated based on a difference-in-differences regression model with a nationally selected comparison group and adjusted for resident-level and facility-level characteristics. It is the difference between the predicted probabilities of the event with and without the intervention. It is calculated in two ways: (1) relative to a national comparison group of nursing facility residents and (2) after accounting for differences between the national comparison group of nursing facility residents and residents within the same state. The *relative effect* = (absolute Initiative effect) / (predicted probability absent the Initiative). *Acute care transitions* include hospitalizations, ED visits, or observation stays. Bold text indicates values are significantly different from zero based on a p-value cutoff of 0.1.

**Table P-38**  
**Clinical + Payment: Initiative effect on count of hospital-related utilization events per resident, FY 2017, RAVEN (Pennsylvania)**

Measure	Predicted count absent the Initiative (events per year)	Absolute Initiative effect (events per year)	90% CI		80% CI		p-value	Relative effect (percent)
<b>Relative to national comparison group</b>								
<b>Hospitalizations</b>								
All-cause	0.295	0.026	-0.027	0.079	-0.015	0.067	0.417	8.8
Potentially avoidable	0.095	0.015	-0.017	0.048	-0.010	0.040	0.443	15.8
Six qualifying conditions	<b>0.037</b>	<b>0.021</b>	<b>0.004</b>	<b>0.037</b>	<b>0.008</b>	<b>0.033</b>	<b>0.043</b>	<b>55.6</b>
<b>ED visits</b>								
All-cause	0.216	0.048	-0.001	0.096	0.010	0.085	0.106	22.0
Potentially avoidable	0.098	0.017	-0.016	0.050	-0.009	0.043	0.390	17.6
Six qualifying conditions	0.028	0.006	-0.009	0.021	-0.006	0.017	0.514	21.0
<b>Acute care transitions</b>								
All-cause	0.508	0.075	-0.026	0.176	-0.004	0.154	0.224	14.8
Potentially avoidable	0.194	0.032	-0.028	0.091	-0.015	0.078	0.380	16.4
Six qualifying conditions	<b>0.063</b>	<b>0.028</b>	<b>0.004</b>	<b>0.051</b>	<b>0.010</b>	<b>0.046</b>	<b>0.051</b>	<b>43.9</b>
<b>Relative to within-state reference group</b>								
<b>Hospitalizations</b>								
All-cause	0.314	0.007	-0.048	0.063	-0.036	0.051	0.830	2.3
Potentially avoidable	0.101	0.010	-0.024	0.044	-0.017	0.036	0.636	9.7
Six qualifying conditions	0.041	0.017	-0.001	0.035	0.003	0.031	0.114	41.7
<b>ED visits</b>								
All-cause	0.238	0.026	-0.028	0.079	-0.016	0.067	0.430	10.8
Potentially avoidable	0.107	0.009	-0.027	0.044	-0.019	0.037	0.692	8.1
Six qualifying conditions	0.032	0.002	-0.015	0.018	-0.011	0.015	0.869	5.3
<b>Acute care transitions</b>								
All-cause	0.549	0.034	-0.075	0.142	-0.051	0.118	0.611	6.1
Potentially avoidable	0.208	0.018	-0.046	0.081	-0.032	0.067	0.647	8.5
Six qualifying conditions	0.070	0.020	-0.005	0.045	0.001	0.040	0.184	28.7

ECCP = Enhanced Care and Coordination Provider; ED = emergency department.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 12).

NOTE: The *predicted count absent the Initiative* is the mean of the predicted counts of events, for the residents in the intervention group, under the scenario that the intervention did not occur. The *Initiative effect* is calculated based on a difference-in-differences regression model with a nationally selected comparison group and adjusted for resident-level and facility-level characteristics. It is the difference between the predicted counts with and without the intervention. It is the difference between the predicted probabilities of the event with and without the intervention. It is calculated in two ways: (1) relative to a national comparison group of nursing facility residents and (2) after accounting for differences between the national comparison group of nursing facility residents and residents within the same state. The *relative effect* = (absolute Initiative effect) / (predicted count absent the Initiative). *Acute care transitions* include hospitalizations, ED visits, or observation stays. Bold text indicates values are significantly different from zero based on a p-value cutoff of 0.1.

**Table P-39**  
**Clinical + Payment: Initiative effect on Medicare expenditures, FY 2017,**  
**RAVEN (Pennsylvania)**

Measure	Predicted expenditure absent the Initiative (dollars)	Absolute Initiative effect (dollars)	90% CI		80% CI		p-value	Relative effect (percent)
<b>Relative to national comparison group</b>								
<b>Total Medicare expenditures</b>	<b>23,866</b>	<b>2,654</b>	<b>732</b>	<b>4,576</b>	<b>1,157</b>	<b>4,152</b>	<b>0.023</b>	<b>11.1</b>
<b>Hospitalization expenditures</b>								
All-cause	5,401	538	-606	1,682	-353	1,430	0.439	10.0
Potentially avoidable	1,222	379	-111	870	-3	761	0.203	31.0
Six qualifying conditions	<b>437</b>	<b>348</b>	<b>113</b>	<b>583</b>	<b>165</b>	<b>531</b>	<b>0.015</b>	<b>79.6</b>
<b>ED visit expenditures</b>								
All-cause	165	51	-2	103	10	92	0.114	30.7
Potentially avoidable	79	7	-26	39	-19	32	0.737	8.4
Six qualifying conditions	29	1	-21	23	-16	18	0.940	3.5
<b>Acute care transition expenditures</b>								
All-cause	5,594	586	-585	1,757	-327	1,499	0.410	10.5
Potentially avoidable	1,331	352	-124	827	-19	722	0.224	26.4
Six qualifying conditions	<b>466</b>	<b>349</b>	<b>115</b>	<b>583</b>	<b>166</b>	<b>531</b>	<b>0.014</b>	<b>74.8</b>
<b>Relative to within-state reference group</b>								
<b>Total Medicare expenditures</b>	<b>23,988</b>	<b>2,533</b>	<b>556</b>	<b>4,509</b>	<b>993</b>	<b>4,073</b>	<b>0.035</b>	<b>10.6</b>
<b>Hospitalization expenditures</b>								
All-cause	5,603	336	-853	1,525	-590	1,263	0.642	6.0
Potentially avoidable	1,321	280	-238	798	-123	683	0.373	21.2
Six qualifying conditions	<b>489</b>	<b>297</b>	<b>44</b>	<b>549</b>	<b>100</b>	<b>493</b>	<b>0.053</b>	<b>60.7</b>
<b>ED visit expenditures</b>								
All-cause	177	39	-18	95	-5	82	0.259	21.8
Potentially avoidable	86	-1	-37	35	-29	27	0.962	-1.2
Six qualifying conditions	32	-2	-27	22	-21	17	0.881	-6.9
<b>Acute care transition expenditures</b>								
All-cause	5,840	340	-877	1,557	-608	1,288	0.646	5.8
Potentially avoidable	1,449	233	-264	731	-154	621	0.440	16.1
Six qualifying conditions	<b>522</b>	<b>293</b>	<b>47</b>	<b>540</b>	<b>101</b>	<b>486</b>	<b>0.051</b>	<b>56.2</b>

ECCP = Enhanced Care and Coordination Provider; ED = emergency department.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 11 and MS 13).

NOTE: The *predicted expenditure absent the Initiative* is the mean of the predicted expenditures, for the residents in the intervention group, under the scenario that the intervention did not occur. Predicted expenditures are based on a resident being eligible for the Initiative for the entire year (365 days). The *Initiative effect* is calculated based on a difference-in-differences regression model with a nationally selected comparison group and adjusted for resident-level and facility-level characteristics. It is the difference between the predicted expenditures with and without the intervention. It is calculated in two ways: (1) relative to a national comparison group of nursing facility residents and (2) after accounting for differences between the national comparison group of nursing facility residents and residents within the same state. The *relative effect* = (absolute Initiative effect) / (predicted expenditure absent the Initiative). *Acute care transitions* include hospitalizations, ED visits, or observation stays. Bold text indicates values are significantly different from zero based on a p-value cutoff of 0.1.

**Table P-40**  
**Payment-Only: Initiative effect on probability of hospital-related utilization per resident,**  
**FY 2017, RAVEN (Pennsylvania)**

Measure	Predicted probability absent the Initiative (percent)	Absolute Initiative effect (percentage points)	90% CI		80% CI		p-value	Relative effect (percent)
<b>Relative to national comparison group</b>								
<b>Any hospitalization</b>								
All-cause	26.6	-2.3	-5.2	0.5	-4.5	-0.1	0.171	-8.8
Potentially avoidable	<b>13.2</b>	<b>-2.4</b>	<b>-4.5</b>	<b>-0.4</b>	<b>-4.0</b>	<b>-0.8</b>	<b>0.050</b>	<b>-18.5</b>
Six qualifying conditions	6.9	-0.7	-2.6	1.2	-2.1	0.8	0.567	-9.6
<b>Any ED visit</b>								
All-cause	20.9	-0.8	-3.8	2.3	-3.1	1.6	0.686	-3.6
Potentially avoidable	9.9	-0.2	-2.7	2.3	-2.2	1.8	0.901	-1.9
Six qualifying conditions	3.0	-0.5	-1.8	0.8	-1.5	0.5	0.544	-16.4
<b>Any acute care transition</b>								
All-cause	38.3	-2.8	-6.2	0.7	-5.5	0.0	0.194	-7.2
Potentially avoidable	21.0	-2.9	-6.0	0.2	-5.3	-0.5	0.126	-13.8
Six qualifying conditions	9.7	-1.6	-3.5	0.3	-3.1	-0.1	0.174	-16.2
<b>Relative to within-state reference group</b>								
<b>Any hospitalization</b>								
All-cause	<b>27.6</b>	<b>-3.4</b>	<b>-6.3</b>	<b>-0.4</b>	<b>-5.7</b>	<b>-1.1</b>	<b>0.057</b>	<b>-12.3</b>
Potentially avoidable	<b>13.8</b>	<b>-3.1</b>	<b>-5.2</b>	<b>-0.9</b>	<b>-4.8</b>	<b>-1.3</b>	<b>0.022</b>	<b>-22.1</b>
Six qualifying conditions	7.5	-1.3	-3.3	0.8	-2.8	0.3	0.305	-16.9
<b>Any ED visit</b>								
All-cause	22.5	-2.3	-5.5	1.0	-4.8	0.3	0.252	-10.1
Potentially avoidable	10.7	-1.1	-3.8	1.7	-3.2	1.1	0.525	-9.9
Six qualifying conditions	3.4	-0.9	-2.4	0.6	-2.1	0.3	0.329	-26.5
<b>Any acute care transition</b>								
All-cause	<b>39.9</b>	<b>-4.4</b>	<b>-8.0</b>	<b>-0.8</b>	<b>-7.2</b>	<b>-1.5</b>	<b>0.047</b>	<b>-10.9</b>
Potentially avoidable	<b>22.1</b>	<b>-4.0</b>	<b>-7.3</b>	<b>-0.7</b>	<b>-6.6</b>	<b>-1.4</b>	<b>0.046</b>	<b>-18.2</b>
Six qualifying conditions	<b>10.6</b>	<b>-2.5</b>	<b>-4.6</b>	<b>-0.4</b>	<b>-4.1</b>	<b>-0.8</b>	<b>0.052</b>	<b>-23.3</b>

ECCP = Enhanced Care and Coordination Provider; ED = emergency department.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 10).

NOTE: The *predicted probability absent the Initiative* is the mean of the predicted probabilities of experiencing the event during their respective exposure period, for the residents in the intervention group, under the scenario that the intervention did not occur. The *Initiative effect* is calculated based on a difference-in-differences regression model with a nationally selected comparison group and adjusted for resident-level and facility-level characteristics. It is the difference between the predicted probabilities of the event with and without the intervention. It is calculated in two ways: (1) relative to a national comparison group of nursing facility residents and (2) after accounting for differences between the national comparison group of nursing facility residents and residents within the same state. The *relative effect* = (absolute Initiative effect) / (predicted probability absent the Initiative). *Acute care transitions* include hospitalizations, ED visits, or observation stays. Bold text indicates values are significantly different from zero based on a p-value cutoff of 0.1.

**Table P-41**  
**Payment-Only: Initiative effect on count of hospital-related utilization events per resident,**  
**FY 2017, RAVEN (Pennsylvania)**

Measure	Predicted count absent the Initiative (events per year)	Absolute Initiative effect (events per year)	90% CI		80% CI		p-value	Relative effect (percent)
<b>Relative to national comparison group</b>								
<b>Hospitalizations</b>								
All-cause	<b>0.465</b>	<b>-0.079</b>	<b>-0.134</b>	<b>-0.023</b>	<b>-0.122</b>	<b>-0.035</b>	<b>0.020</b>	<b>-16.9</b>
Potentially avoidable	<b>0.170</b>	<b>-0.042</b>	<b>-0.069</b>	<b>-0.015</b>	<b>-0.063</b>	<b>-0.021</b>	<b>0.011</b>	<b>-24.8</b>
Six qualifying conditions	0.082	-0.013	-0.035	0.010	-0.030	0.005	0.355	-15.5
<b>ED visits</b>								
All-cause	0.299	-0.014	-0.077	0.050	-0.063	0.036	0.726	-4.5
Potentially avoidable	0.106	0.006	-0.025	0.037	-0.018	0.031	0.733	6.0
Six qualifying conditions	0.032	-0.004	-0.018	0.010	-0.015	0.007	0.639	-12.5
<b>Acute care transitions</b>								
All-cause	<b>0.762</b>	<b>-0.094</b>	<b>-0.179</b>	<b>-0.010</b>	<b>-0.160</b>	<b>-0.029</b>	<b>0.066</b>	<b>-12.4</b>
Potentially avoidable	0.274	-0.034	-0.072	0.005	-0.064	-0.004	0.151	-12.3
Six qualifying conditions	0.114	-0.017	-0.041	0.006	-0.035	0.001	0.223	-15.1
<b>Relative to within-state reference group</b>								
<b>Hospitalizations</b>								
All-cause	<b>0.495</b>	<b>-0.108</b>	<b>-0.169</b>	<b>-0.048</b>	<b>-0.155</b>	<b>-0.061</b>	<b>0.003</b>	<b>-21.9</b>
Potentially avoidable	<b>0.179</b>	<b>-0.052</b>	<b>-0.081</b>	<b>-0.022</b>	<b>-0.075</b>	<b>-0.028</b>	<b>0.004</b>	<b>-28.8</b>
Six qualifying conditions	0.090	-0.021	-0.045	0.004	-0.040	-0.001	0.172	-23.0
<b>ED visits</b>								
All-cause	0.329	-0.044	-0.115	0.027	-0.099	0.011	0.307	-13.3
Potentially avoidable	0.116	-0.003	-0.037	0.031	-0.029	0.023	0.888	-2.5
Six qualifying conditions	0.037	-0.009	-0.025	0.008	-0.022	0.004	0.374	-24.1
<b>Acute care transitions</b>								
All-cause	<b>0.824</b>	<b>-0.157</b>	<b>-0.249</b>	<b>-0.064</b>	<b>-0.229</b>	<b>-0.084</b>	<b>0.006</b>	<b>-19.0</b>
Potentially avoidable	<b>0.294</b>	<b>-0.054</b>	<b>-0.096</b>	<b>-0.011</b>	<b>-0.087</b>	<b>-0.020</b>	<b>0.038</b>	<b>-18.2</b>
Six qualifying conditions	<b>0.127</b>	<b>-0.031</b>	<b>-0.057</b>	<b>-0.004</b>	<b>-0.051</b>	<b>-0.010</b>	<b>0.056</b>	<b>-24.0</b>

ECCP = Enhanced Care and Coordination Provider; ED = emergency department.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 12).

NOTE: The *predicted count absent the Initiative* is the mean of the predicted counts of events, for the residents in the intervention group, under the scenario that the intervention did not occur. The *Initiative effect* is calculated based on a difference-in-differences regression model with a nationally selected comparison group and adjusted for resident-level and facility-level characteristics. It is the difference between the predicted counts with and without the intervention. It is the difference between the predicted probabilities of the event with and without the intervention. It is calculated in two ways: (1) relative to a national comparison group of nursing facility residents and (2) after accounting for differences between the national comparison group of nursing facility residents and residents within the same state. The *relative effect* = (absolute Initiative effect) / (predicted count absent the Initiative). *Acute care transitions* include hospitalizations, ED visits, or observation stays. Bold text indicates values are significantly different from zero based on a p-value cutoff of 0.1.

**Table P-42**  
**Payment-Only: Initiative effect on Medicare expenditures, FY 2017,**  
**RAVEN (Pennsylvania)**

Measure	Predicted expenditure absent the Initiative (dollars)	Absolute Initiative effect (dollars)	90% CI		80% CI		p-value	Relative effect (percent)
<b>Relative to national comparison group</b>								
<b>Total Medicare expenditures</b>	29,721	-1,437	-4,592	1,717	-3,896	1,021	0.454	-4.8
<b>Hospitalization expenditures</b>								
All-cause	<b>8,078</b>	<b>-1,380</b>	<b>-2,667</b>	<b>-93</b>	<b>-2,383</b>	<b>-377</b>	<b>0.078</b>	<b>-17.1</b>
Potentially avoidable	<b>2,614</b>	<b>-668</b>	<b>-1,227</b>	<b>-109</b>	<b>-1,103</b>	<b>-233</b>	<b>0.049</b>	<b>-25.6</b>
Six qualifying conditions	1,228	-222	-658	215	-562	119	0.404	-18.0
<b>ED visit expenditures</b>								
All-cause	270	10	-66	86	-49	69	0.831	3.7
Potentially avoidable	79	15	-11	41	-5	35	0.344	19.1
Six qualifying conditions	25	3	-11	18	-8	14	0.708	13.2
<b>Acute care transition expenditures</b>								
All-cause	<b>8,596</b>	<b>-1,420</b>	<b>-2,611</b>	<b>-229</b>	<b>-2,349</b>	<b>-491</b>	<b>0.050</b>	<b>-16.5</b>
Potentially avoidable	<b>2,811</b>	<b>-739</b>	<b>-1,371</b>	<b>-107</b>	<b>-1,232</b>	<b>-246</b>	<b>0.055</b>	<b>-26.3</b>
Six qualifying conditions	1,290	-242	-734	250	-625	142	0.419	-18.8
<b>Relative to within-state reference group</b>								
<b>Total Medicare expenditures</b>	29,870	-1,587	-4,792	1,618	-4,084	911	0.415	-5.3
<b>Hospitalization expenditures</b>								
All-cause	<b>8,341</b>	<b>-1,644</b>	<b>-2,993</b>	<b>-296</b>	<b>-2,695</b>	<b>-593</b>	<b>0.045</b>	<b>-19.7</b>
Potentially avoidable	<b>2,815</b>	<b>-869</b>	<b>-1,476</b>	<b>-262</b>	<b>-1,342</b>	<b>-396</b>	<b>0.019</b>	<b>-30.9</b>
Six qualifying conditions	1,363	-357	-833	118	-728	13	0.217	-26.2
<b>ED visit expenditures</b>								
All-cause	287	-7	-88	73	-70	55	0.879	-2.6
Potentially avoidable	86	8	-21	36	-14	30	0.659	8.8
Six qualifying conditions	27	1	-15	16	-12	13	0.953	2.1
<b>Acute care transition expenditures</b>								
All-cause	<b>8,912</b>	<b>-1,736</b>	<b>-2,996</b>	<b>-475</b>	<b>-2,718</b>	<b>-753</b>	<b>0.024</b>	<b>-19.5</b>
Potentially avoidable	<b>3,043</b>	<b>-971</b>	<b>-1,659</b>	<b>-283</b>	<b>-1,507</b>	<b>-435</b>	<b>0.020</b>	<b>-31.9</b>
Six qualifying conditions	1,432	-384	-923	154	-804	36	0.241	-26.8

ECCP = Enhanced Care and Coordination Provider; ED = emergency department.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 11 and MS 13).

NOTE: The *predicted expenditure absent the Initiative* is the mean of the predicted expenditures, for the residents in the intervention group, under the scenario that the intervention did not occur. Predicted expenditures are based on a resident being eligible for the Initiative for the entire year (365 days). The *Initiative effect* is calculated based on a difference-in-differences regression model with a nationally selected comparison group and adjusted for resident-level and facility-level characteristics. It is the difference between the predicted expenditures with and without the intervention. It is calculated in two ways: (1) relative to a national comparison group of nursing facility residents and (2) after accounting for differences between the national comparison group of nursing facility residents and residents within the same state. The *relative effect* = (absolute Initiative effect) / (predicted expenditure absent the Initiative). *Acute care transitions* include hospitalizations, ED visits, or observation stays. Bold text indicates values are significantly different from zero based on a p-value cutoff of 0.1.



**Table P-43**  
**Sensitivity Analysis with 2016 as Base Year: Initiative effect on probability of**  
**hospital-related utilization per resident, FY 2017,**  
**all ECCPs (all states)**

Measure	Clinical + Payment			Payment-Only		
	Predicted probability absent the Initiative (percent)	Absolute initiative effect (percentage points)	Relative effect (percent)	Predicted probability absent the Initiative (percent)	Absolute Initiative effect (percentage points)	Relative effect (percent)
<b>Any hospitalization</b>						
All-cause	26.1	-1.0	-3.7	25.3	-1.7	-6.7***
Potentially avoidable	11.0	0.0	-0.4	11.5	-0.9	-7.9**
Six qualifying conditions	5.9	-0.1	-1.9	6.7	-0.7	-9.7**
<b>Any ED visit</b>						
All-cause	18.6	0.5	2.9	23.2	-1.0	-4.1
Potentially avoidable	10.0	0.1	0.8	13.3	-0.8	-6.3*
Six qualifying conditions	2.6	-0.3	-10.9	3.9	-0.5	-12.9**
<b>Any acute care transition</b>						
All-cause	36.3	-0.3	-0.9	38.4	-1.5	-4.0**
Potentially avoidable	18.9	-0.1	-0.6	21.7	-1.3	-6.1**
Six qualifying conditions	8.1	-0.5	-6.4	9.7	-0.9	-9.5**

ECCP = Enhanced Care and Coordination Provider; ED = emergency department.

\*/\*\*/\*\* = Significantly different from zero based on a p-value cutoff of 0.1/0.05/0.01. Dark green shading indicates a statistically significant decrease. Light orange shading indicates a statistically significant increase.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 16).

NOTE: The *predicted probability absent the Initiative* is the mean of the predicted probabilities of experiencing the event during their respective exposure period, for the residents in the intervention group, under the scenario that the intervention did not occur. The *Initiative effect* is calculated based on a difference-in-differences regression model with a national comparison group and adjusted for resident-level and facility-level characteristics. It is the difference between the predicted probabilities of the event with and without the intervention. The *relative effect* = (absolute Initiative effect) / (predicted probability absent the Initiative). *Acute care transitions* include hospitalizations, ED visits, or observation stays.

**Table P-44**  
**Sensitivity Analysis with 2016 as Base Year: Initiative effect on probability of**  
**hospital-related utilization per resident, FY 2017,**  
**AQAF (Alabama)**

Measure	Clinical + Payment			Payment-Only		
	Predicted probability absent the Initiative (percent)	Absolute initiative effect (percentage points)	Relative effect (percent)	Predicted probability absent the Initiative (percent)	Absolute Initiative effect (percentage points)	Relative effect (percent)
<b>Any hospitalization</b>						
All-cause	30.9	-2.9	-9.4*	29.1	-2.0	-6.9
Potentially avoidable	14.0	-0.3	-2.4	13.5	-0.6	-4.4
Six qualifying conditions	7.0	-0.3	-4.1	8.3	-1.1	-13.5
<b>Any ED visit</b>						
All-cause	23.3	-1.2	-5.0	27.3	-3.3	-12.0*
Potentially avoidable	13.6	-1.4	-10.5	16.0	-2.9	-18.2
Six qualifying conditions	4.2	-1.5	-36.6***	4.7	-1.2	-24.6
<b>Any acute care transition</b>						
All-cause	42.7	-3.1	-7.2*	44.0	-3.1	-7.1
Potentially avoidable	24.3	-2.0	-8.2	25.9	-3.1	-11.9*
Six qualifying conditions	10.6	-1.8	-16.9*	12.0	-1.8	-15.1

ECCP = Enhanced Care and Coordination Provider; ED = emergency department.

\*/\*\*/\*\* = Significantly different from zero based on a p-value cutoff of 0.1/0.05/0.01. Dark green shading indicates a statistically significant decrease. Light orange shading indicates a statistically significant increase.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 16).

NOTE: The *predicted probability absent the Initiative* is the mean of the predicted probabilities of experiencing the event during their respective exposure period, for the residents in the intervention group, under the scenario that the intervention did not occur. The *Initiative effect* is calculated based on a difference-in-differences regression model with a national comparison group and adjusted for resident-level and facility-level characteristics. It is the difference between the predicted probabilities of the event with and without the intervention. The *relative effect* = (absolute Initiative effect) / (predicted probability absent the Initiative). *Acute care transitions* include hospitalizations, ED visits, or observation stays.

**Table P-45**  
**Sensitivity Analysis with 2016 as Base Year: Initiative effect on probability of**  
**hospital-related utilization per resident, FY 2017,**  
**ATOP 2 (Nevada/Colorado)**

Measure	Clinical + Payment (NV)			Payment-Only (CO)		
	Predicted probability absent the Initiative (percent)	Absolute initiative effect (percentage points)	Relative effect (percent)	Predicted probability absent the Initiative (percent)	Absolute Initiative effect (percentage points)	Relative effect (percent)
<b>Any hospitalization</b>						
All-cause	28.1	-2.6	-9.1*	19.0	-1.7	-8.9
Potentially avoidable	10.0	0.5	4.6	8.4	-0.8	-9.6
Six qualifying conditions	5.5	0.1	1.8	5.0	-1.0	-19.5
<b>Any ED visit</b>						
All-cause	18.4	3.4	18.4	24.8	-2.7	-10.8**
Potentially avoidable	9.6	1.8	19.2	13.8	-2.1	-15.0**
Six qualifying conditions	3.0	-0.2	-7.0	6.2	-2.1	-33.4***
<b>Any acute care transition</b>						
All-cause	38.8	0.1	0.1	34.9	-3.0	-8.5*
Potentially avoidable	17.8	1.7	9.7	19.9	-2.8	-14.2**
Six qualifying conditions	8.1	-0.6	-6.9	10.0	-2.6	-25.9***

ECCP = Enhanced Care and Coordination Provider; ED = emergency department.

\*/\*\*/\*\* = Significantly different from zero based on a p-value cutoff of 0.1/0.05/0.01. Dark green shading indicates a statistically significant decrease. Light orange shading indicates a statistically significant increase.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 16).

NOTE: The *predicted probability absent the Initiative* is the mean of the predicted probabilities of experiencing the event during their respective exposure period, for the residents in the intervention group, under the scenario that the intervention did not occur. The *Initiative effect* is calculated based on a difference-in-differences regression model with a national comparison group and adjusted for resident-level and facility-level characteristics. It is the difference between the predicted probabilities of the event with and without the intervention. The *relative effect* = (absolute Initiative effect) / (predicted probability absent the Initiative). *Acute care transitions* include hospitalizations, ED visits, or observation stays.

**Table P-46**  
**Sensitivity Analysis with 2016 as Base Year: Initiative effect on probability of**  
**hospital-related utilization per resident, FY 2017,**  
**MOQI (Missouri)**

Measure	Clinical + Payment			Payment-Only		
	Predicted probability absent the Initiative (percent)	Absolute initiative effect (percentage points)	Relative effect (percent)	Predicted probability absent the Initiative (percent)	Absolute Initiative effect (percentage points)	Relative effect (percent)
<b>Any hospitalization</b>						
All-cause	24.1	0.3	1.2	28.8	-0.7	-2.4
Potentially avoidable	10.1	0.8	8.4	14.7	-0.2	-1.6
Six qualifying conditions	6.0	0.5	8.0	8.9	0.0	0.2
<b>Any ED visit</b>						
All-cause	18.0	0.4	2.2	28.5	0.2	0.8
Potentially avoidable	9.7	-0.2	-2.0	17.5	0.9	5.0
Six qualifying conditions	2.0	0.0	-2.1	5.6	1.0	17.2**
<b>Any acute care transition</b>						
All-cause	34.8	0.4	1.0	44.1	0.7	1.7
Potentially avoidable	17.6	0.5	2.8	27.1	1.3	4.7
Six qualifying conditions	7.2	0.7	9.6	12.8	1.1	8.7

ECCP = Enhanced Care and Coordination Provider; ED = emergency department.

\*/\*\*/\*\* = Significantly different from zero based on a p-value cutoff of 0.1/0.05/0.01. Dark green shading indicates a statistically significant decrease. Light orange shading indicates a statistically significant increase.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 16).

NOTE: The *predicted probability absent the Initiative* is the mean of the predicted probabilities of experiencing the event during their respective exposure period, for the residents in the intervention group, under the scenario that the intervention did not occur. The *Initiative effect* is calculated based on a difference-in-differences regression model with a national comparison group and adjusted for resident-level and facility-level characteristics. It is the difference between the predicted probabilities of the event with and without the intervention. The *relative effect* = (absolute Initiative effect) / (predicted probability absent the Initiative). *Acute care transitions* include hospitalizations, ED visits, or observation stays.

**Table P-47**  
**Sensitivity Analysis with 2016 as Base Year: Initiative effect on probability of**  
**hospital-related utilization per resident, FY 2017,**  
**NY-RAH (New York)**

Measure	Clinical + Payment			Payment-Only		
	Predicted probability absent the Initiative (percent)	Absolute initiative effect (percentage points)	Relative effect (percent)	Predicted probability absent the Initiative (percent)	Absolute Initiative effect (percentage points)	Relative effect (percent)
<b>Any hospitalization</b>						
All-cause	26.5	-0.2	-0.9	24.1	-1.6	-6.7*
Potentially avoidable	11.0	-0.4	-3.6	9.4	-0.5	-5.3
Six qualifying conditions	6.5	-0.5	-7.9	5.4	-0.5	-9.0
<b>Any ED visit</b>						
All-cause	15.3	2.3	15.1**	19.1	-0.7	-3.8
Potentially avoidable	7.4	1.3	17.7*	10.4	-0.2	-2.2
Six qualifying conditions	1.5	0.1	3.3	2.1	-0.1	-3.3
<b>Any acute care transition</b>						
All-cause	34.3	1.8	5.3	35.1	-1.1	-3.3
Potentially avoidable	17.0	0.6	3.5	17.8	-0.2	-1.3
Six qualifying conditions	7.7	-0.4	-5.7	7.2	-0.5	-6.7

ECCP = Enhanced Care and Coordination Provider; ED = emergency department.

\*/\*\*/\*\* = Significantly different from zero based on a p-value cutoff of 0.1/0.05/0.01. Dark green shading indicates a statistically significant decrease. Light orange shading indicates a statistically significant increase.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 16).

NOTE: The *predicted probability absent the Initiative* is the mean of the predicted probabilities of experiencing the event during their respective exposure period, for the residents in the intervention group, under the scenario that the intervention did not occur. The *Initiative effect* is calculated based on a difference-in-differences regression model with a national comparison group and adjusted for resident-level and facility-level characteristics. It is the difference between the predicted probabilities of the event with and without the intervention. The *relative effect* = (absolute Initiative effect) / (predicted probability absent the Initiative). *Acute care transitions* include hospitalizations, ED visits, or observation stays.

**Table P-48**  
**Sensitivity Analysis with 2016 as Base Year: Initiative effect on probability of**  
**hospital-related utilization per resident, FY 2017,**  
**OPTIMISTIC (Indiana)**

Measure	Clinical + Payment			Payment-Only		
	Predicted probability absent the Initiative (percent)	Absolute initiative effect (percentage points)	Relative effect (percent)	Predicted probability absent the Initiative (percent)	Absolute Initiative effect (percentage points)	Relative effect (percent)
<b>Any hospitalization</b>						
All-cause	23.9	-0.7	-2.9	24.8	-2.5	-10.1**
Potentially avoidable	10.8	-0.3	-2.9	12.4	-1.9	-15.3**
Six qualifying conditions	5.2	-0.3	-5.4	6.8	-1.2	-17.3
<b>Any ED visit</b>						
All-cause	21.6	-4.4	-20.3**	24.4	-0.5	-1.8
Potentially avoidable	12.0	-2.4	-20.3*	15.0	-1.8	-11.8
Six qualifying conditions	2.9	-0.4	-15.4	4.3	-1.4	-32.3*
<b>Any acute care transition</b>						
All-cause	37.4	-3.9	-10.3*	38.6	-2.2	-5.7
Potentially avoidable	20.5	-2.0	-9.6	23.4	-3.1	-13.0***
Six qualifying conditions	7.9	-1.0	-12.5	9.8	-1.8	-18.4*

ECCP = Enhanced Care and Coordination Provider; ED = emergency department.

\*/\*\*/\*\* = Significantly different from zero based on a p-value cutoff of 0.1/0.05/0.01. Dark green shading indicates a statistically significant decrease. Light orange shading indicates a statistically significant increase.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 16).

NOTE: The *predicted probability absent the Initiative* is the mean of the predicted probabilities of experiencing the event during their respective exposure period, for the residents in the intervention group, under the scenario that the intervention did not occur. The *Initiative effect* is calculated based on a difference-in-differences regression model with a national comparison group and adjusted for resident-level and facility-level characteristics. It is the difference between the predicted probabilities of the event with and without the intervention. The *relative effect* = (absolute Initiative effect) / (predicted probability absent the Initiative). *Acute care transitions* include hospitalizations, ED visits, or observation stays.

**Table P-49**  
**Sensitivity Analysis with 2016 as Base Year: Initiative effect on probability of**  
**hospital-related utilization per resident, FY 2017,**  
**RAVEN (Pennsylvania)**

Measure	Clinical + Payment			Payment-Only		
	Predicted probability absent the Initiative (percent)	Absolute initiative effect (percentage points)	Relative effect (percent)	Predicted probability absent the Initiative (percent)	Absolute Initiative effect (percentage points)	Relative effect (percent)
<b>Any hospitalization</b>						
All-cause	20.9	-0.1	-0.6	26.1	-1.9	-7.1
Potentially avoidable	8.8	0.4	4.7	12.9	-2.1	-16.5**
Six qualifying conditions	4.3	0.6	13.3	6.8	-0.5	-7.8
<b>Any ED visit</b>						
All-cause	16.5	2.4	14.4	19.8	0.4	1.9
Potentially avoidable	8.9	1.2	13.4	9.6	0.0	0.3
Six qualifying conditions	2.5	0.7	28.5	2.7	-0.2	-8.1
<b>Any acute care transition</b>						
All-cause	30.1	1.5	5.1	37.0	-1.5	-3.9
Potentially avoidable	15.7	1.2	7.5	20.1	-2.0	-9.9
Six qualifying conditions	6.4	0.6	9.7	9.2	-1.1	-11.6

ECCP = Enhanced Care and Coordination Provider; ED = emergency department.

\*/\*\*/\*\* = Significantly different from zero based on a p-value cutoff of 0.1/0.05/0.01. Dark green shading indicates a statistically significant decrease. Light orange shading indicates a statistically significant increase.

SOURCE: RTI analysis of Medicare claims data (RTI program MS 16).

NOTE: The *predicted probability absent the Initiative* is the mean of the predicted probabilities of experiencing the event during their respective exposure period, for the residents in the intervention group, under the scenario that the intervention did not occur. The *Initiative effect* is calculated based on a difference-in-differences regression model with a national comparison group and adjusted for resident-level and facility-level characteristics. It is the difference between the predicted probabilities of the event with and without the intervention. The *relative effect* = (absolute Initiative effect) / (predicted probability absent the Initiative). *Acute care transitions* include hospitalizations, ED visits, or observation stays.

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**APPENDIX Q**  
**COMPLETE MULTIVARIATE REGRESSION RESULTS OF EXAMPLE MODEL**

*Appendix Q-1* shows parameter estimates from the complete model of a key example outcome, the probability of having any potentially avoidable hospitalization. This illustrates an example model used in this report: a logistic model of the probability of utilization. For illustration, we use the data from the pooled model combining all ECCPs for the Payment-Only group.

**Table Q-1**  
**Complete multivariate regression results of probability of potentially avoidable hospitalization per resident, all ECCPs (6 states), Payment-Only: Estimated coefficients with standard errors and p-values**

Parameter	Any potentially avoidable hospitalizations		
	$\beta$	SE	<i>p</i>
Intervention group	-0.179	0.050	0.000
Post period (FY 2017) * Intervention group	-0.089	0.053	0.092
Post period (FY 2017)	0.033	0.008	0.000
Within-state reference group (WSRG)	-0.124	0.027	0.000
Post period * WSRG	0.016	0.018	0.385
Year count (2014 = 0, 2015 = 1, etc.)	-0.056	0.003	0.000
Year count * Intervention group	-0.027	0.021	0.205
Year count * WSRG	-0.012	0.007	0.107
Exposure days 1-89	-0.404	0.006	0.000
Exposure days 90-179	0.228	0.005	0.000
Exposure days 180-269	0.379	0.005	0.000
Exposure days 270-364	0.546	0.005	0.000
Male, <65	-0.078	0.012	0.000
Female, 65-69	0.048	0.013	0.000
Male, 65-69	-0.006	0.013	0.640
Female, 70-74	0.123	0.012	0.000
Male, 70-74	0.064	0.013	0.000
Female, 75-79	0.168	0.012	0.000
Male, 75-79	0.135	0.013	0.000
Female, 80-84	0.190	0.011	0.000
Male, 80-84	0.194	0.013	0.000
Male, 85-89	0.197	0.011	0.000
Male, 85-89	0.248	0.013	0.000
Female, 90-94	0.163	0.012	0.000
Male, 90-94	0.269	0.015	0.000
Female, 95+	0.062	0.014	0.000
Male, 95+	0.211	0.022	0.000
Black, non-Hispanic	0.032	0.008	0.000
Asian	0.027	0.022	0.225
Hispanic	0.082	0.017	0.000
Other race/ethnicity	-0.044	0.014	0.001
Dementia	0.005	0.005	0.253
Anemia	0.091	0.004	0.000
BMI <18.5	-0.081	0.008	0.000
BMI = 25-29.9	0.004	0.005	0.387
BMI $\geq$ 30	0.070	0.005	0.000

(continued)

**Table Q-1 (continued)**  
**Complete multivariate regression results of probability of potentially avoidable hospitalization per resident, all ECCPs (6 states): Estimated coefficients with standard errors and p-values**

Parameter	Any potentially avoidable hospitalizations		
	$\beta$	SE	<i>p</i>
ADL score = 8–14	0.068	0.007	0.000
ADL score = 15–21	-0.024	0.007	0.001
ADL score = 22–28	-0.103	0.009	0.000
CFS = 2 (Mildly impaired)	-0.042	0.005	0.000
CFS = 1 (Moderately impaired)	-0.059	0.006	0.000
CFS = 0 (The highest level of impairment)	-0.124	0.009	0.000
Urban Non-Metropolitan	0.192	0.010	0.000
Rural	0.375	0.025	0.000
Resident's mood assessment (PHQ)	0.004	0.001	0.000
Neurogenic Bladder	0.104	0.012	0.000
Obstructive Uropathy	-0.005	0.019	0.788
Community Based Care Transition Program (CCTP)	0.539	0.033	0.000
Comprehensive ESRD Care (CEC)	-0.026	0.054	0.630
Comprehensive Primary Care Initiative (CPCI)	-0.261	0.041	0.000
Comprehensive Primary Care Plus (CPC+), non-SSP Participants	-0.330	0.058	0.000
Comprehensive Primary Care Plus (CPC+), SSP Participants	-0.335	0.056	0.000
Financial Alignment Initiative	-0.066	0.038	0.083
Multi-Payer Advanced Primary Care Practice (MAPCP)	0.017	0.124	0.890
Next Generation Accountable Care Organization (NGACO)	0.073	0.020	0.000
Pioneer Accountable Care Organization	-0.004	0.017	0.793
Medicare Shared Savings Program	0.021	0.007	0.004
HIV/AIDS (HCC 1)	-0.046	0.033	0.169
Septicemia, Sepsis, Systemic Inflammatory Response Syndrome/Shock (HCC 2)	0.044	0.006	0.000
Opportunistic Infections (HCC 6)	0.052	0.022	0.019
Metastatic Cancer and Acute Leukemia (HCC 8)	0.038	0.019	0.044
Lung and Other Severe Cancers (HCC 9)	0.089	0.016	0.000
Lymphoma and Other Cancers (HCC 10)	0.088	0.016	0.000
Colorectal, Bladder, and Other Cancers (HCC 11)	0.021	0.013	0.105
Breast, Prostate, and Other Cancers and Tumors (HCC 12)	0.016	0.009	0.077
Diabetes with Acute Complications (HCC 17)	0.256	0.015	0.000
Diabetes with Chronic Complications (HCC 18)	0.221	0.005	0.000
Diabetes without Complication (HCC 19)	0.119	0.005	0.000
Protein-Calorie Malnutrition (HCC 21)	0.020	0.007	0.003
Other Significant Endocrine and Metabolic Disorders (HCC 23)	0.082	0.008	0.000
End-Stage Liver Disease (HCC 27)	0.066	0.020	0.001

(continued)

**Table Q-1 (continued)**  
**Complete multivariate regression results of probability of potentially avoidable hospitalization per resident, all ECCPs (6 states): Estimated coefficients with standard errors and p-values**

Parameter	Any potentially avoidable hospitalizations		
	$\beta$	SE	<i>p</i>
Cirrhosis of Liver (HCC 28)	0.060	0.019	0.002
Chronic Hepatitis (HCC 29)	0.074	0.024	0.003
Intestinal Obstruction/Perforation (HCC 33)	0.073	0.009	0.000
Chronic Pancreatitis (HCC 34)	0.100	0.029	0.000
Inflammatory Bowel Disease (HCC 35)	0.095	0.018	0.000
Bone/Joint/Muscle Infections/Necrosis (HCC 39)	0.020	0.010	0.048
Rheumatoid Arthritis and Inflammatory Connective Tissue Disease (HCC 40)	0.080	0.008	0.000
Severe Hematological Disorders (HCC 46)	0.166	0.018	0.000
Disorders of Immunity (HCC 47)	0.115	0.013	0.000
Coagulation Defects and Other Specified Hematological Disorders (HCC 48)	0.039	0.006	0.000
Drug/Alcohol Psychosis (HCC 54)	-0.073	0.015	0.000
Drug/Alcohol Dependence (HCC 55)	-0.008	0.012	0.520
Schizophrenia (HCC 57)	0.109	0.011	0.000
Major Depressive, Bipolar, and Paranoid Disorders (HCC 58)	0.093	0.005	0.000
Quadriplegia (HCC 70)	0.195	0.014	0.000
Paraplegia (HCC 71)	0.191	0.016	0.000
Spinal Cord Disorders/Injuries (HCC 72)	0.047	0.016	0.003
Amyotrophic Lateral Sclerosis and Other Motor Neuron Disease (HCC 73)	0.029	0.042	0.499
Cerebral Palsy (HCC 74)	-0.014	0.019	0.462
Myasthenia Gravis/Myoneural Disorders and Guillain-Barre Syndrome/Inflammatory and Toxic Neuropathy (HCC 75)	-0.013	0.016	0.422
Muscular Dystrophy (HCC 76)	0.043	0.046	0.348
Multiple Sclerosis (HCC 77)	0.114	0.015	0.000
Parkinson's and Huntington's Diseases (HCC 78)	0.090	0.007	0.000
Seizure Disorders and Convulsions (HCC 79)	0.226	0.006	0.000
Coma, Brain Compression/Anoxic Damage (HCC 80)	-0.142	0.016	0.000
Respiratory Arrest (HCC 83)	0.209	0.040	0.000
Cardio-Respiratory Failure and Shock (HCC 84)	0.287	0.006	0.000
Congestive Heart Failure (HCC 85)	0.301	0.004	0.000
Acute Myocardial Infarction (HCC 86)	0.026	0.009	0.005
Unstable Angina and Other Acute Ischemic Heart Disease (HCC 87)	0.100	0.011	0.000
Angina Pectoris (HCC 88)	0.074	0.012	0.000
Specified Heart Arrhythmias (HCC 96)	0.146	0.004	0.000
Cerebral Hemorrhage (HCC 99)	-0.090	0.013	0.000
Ischemic or Unspecified Stroke (HCC 100)	0.002	0.006	0.709
Hemiplegia/Hemiparesis (HCC 103)	0.050	0.007	0.000

(continued)

**Table Q-1 (continued)**  
**Complete multivariate regression results of probability of potentially avoidable hospitalization per resident, all ECCPs (6 states): Estimated coefficients with standard errors and p-values**

Parameter	Any potentially avoidable hospitalizations		
	$\beta$	SE	<i>p</i>
Monoplegia, Other Paralytic Syndromes (HCC 104)	0.085	0.025	0.001
Atherosclerosis of the Extremities with Ulceration or Gangrene (HCC 106)	0.168	0.011	0.000
Vascular Disease with Complications (HCC 107)	0.070	0.009	0.000
Vascular Disease (HCC 108)	0.060	0.005	0.000
Cystic Fibrosis or Chronic Obstructive Pulmonary Disease (HCC 110 or HCC 111)	0.365	0.005	0.000
Fibrosis of Lung and Other Chronic Lung Disorders (HCC 112)	0.226	0.019	0.000
Aspiration and Specified Bacterial Pneumonias (HCC 114)	0.376	0.008	0.000
Pneumococcal Pneumonia, Empyema, Lung Abscess (HCC 115)	0.294	0.017	0.000
Proliferative Diabetic Retinopathy and Vitreous Hemorrhage (HCC 122)	0.095	0.015	0.000
Exudative Macular Degeneration (HCC 124)	0.044	0.012	0.000
Acute Renal Failure (HCC 135)	0.388	0.005	0.000
Chronic Kidney Disease, Stage 5 (HCC 136)	0.115	0.019	0.000
Chronic Kidney Disease, Severe (Stage 4) (HCC 137)	0.254	0.015	0.000
Pressure Ulcer of Skin with Necrosis Through to Muscle, Tendon, or Bone (HCC 157)	0.197	0.013	0.000
Pressure Ulcer of Skin with Full Thickness Skin Loss (HCC 158)	0.111	0.009	0.000
Chronic Ulcer of Skin, Except Pressure (HCC 161)	0.126	0.007	0.000
Severe Head Injury or Major Head Injury (HCC 166 or HCC 167)	0.153	0.012	0.000
Vertebral Fractures without Spinal Cord Injury (HCC 169)	0.139	0.010	0.000
Hip Fracture/Dislocation (HCC 170)	0.321	0.007	0.000
Complications of Specified Implanted Device or Graft (HCC 176)	-0.050	0.008	0.000
Artificial Openings for Feeding or Elimination (HCC 188)	0.195	0.008	0.000
Amputation Status, Lower Limb/Amputation Complications (HCC 189)	0.194	0.013	0.000
ESRD patient with dialysis status	0.449	0.012	0.000
ESRD patients after transplant who are not on dialysis after transplant	0.411	0.051	0.000
Full-dual eligibility	0.118	0.006	0.000
Original eligibility due to disability	0.059	0.005	0.000
Nursing facility in the hospital	-0.058	0.033	0.079
For-profit nursing facility	0.075	0.010	0.000
Arkansas	0.383	0.035	0.000
Arizona	-0.349	0.057	0.000
Connecticut	-0.354	0.038	0.000
Delaware	-0.014	0.079	0.856
Florida	0.037	0.030	0.218
Georgia	0.083	0.032	0.010
Iowa	-0.045	0.032	0.166

(continued)

**Table Q-1 (continued)**  
**Complete multivariate regression results of probability of potentially avoidable hospitalization per resident, all ECCPs (6 states): Estimated coefficients with standard errors and p-values**

Parameter	Any potentially avoidable hospitalizations		
	$\beta$	SE	<i>p</i>
Idaho	-0.487	0.064	0.000
Illinois	0.045	0.029	0.130
Kansas	0.136	0.036	0.000
Kentucky	0.131	0.037	0.000
Louisiana	0.536	0.033	0.000
Massachusetts	-0.226	0.030	0.000
Maryland	-0.297	0.033	0.000
Maine	-0.440	0.052	0.000
Michigan	-0.333	0.033	0.000
Minnesota	-0.345	0.036	0.000
Missouri	0.439	0.043	0.000
Montana	-0.322	0.060	0.000
North Carolina	-0.209	0.032	0.000
North Dakota	-0.221	0.052	0.000
New Hampshire	-0.386	0.056	0.000
New Jersey	-0.055	0.032	0.083
New Mexico	-0.101	0.060	0.095
Ohio	-0.272	0.028	0.000
Oklahoma	0.314	0.036	0.000
Oregon	-0.411	0.059	0.000
Rhode Island	-0.433	0.045	0.000
South Carolina	0.047	0.044	0.284
South Dakota	-0.109	0.052	0.037
Tennessee	0.079	0.037	0.036
Texas	0.078	0.027	0.003
Utah	-0.524	0.082	0.000
Virginia	-0.293	0.034	0.000
Vermont	-0.367	0.080	0.000
Washington	-0.617	0.042	0.000
Wisconsin	-0.356	0.036	0.000
West Virginia	-0.127	0.050	0.011
Wyoming	-0.213	0.073	0.004
Constant	-2.860	0.029	0.000