Evaluation of the Oncology Care Model:
Performance Periods 1-3

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Executive Summary

In February 2015, the Centers for Medicare & Medicaid Services (CMS) invited oncology physician group practices to participate in the Oncology Care Model (OCM), an alternative payment model based on six-month episodes for cancer care. OCM tests whether financial incentives can improve quality and reduce Medicare spending. OCM applies to Medicare fee-for-service (FFS) beneficiaries with any type of cancer who are undergoing chemotherapy treatment.[1] The Model launched on July 1, 2016 and combines attributes of medical homes (patient-centeredness, accessibility, evidence-based guidelines, and continuous quality improvement) with financial incentives for providing services efficiently and with high quality.[2]

OCM features a two-pronged financial incentive strategy. Practices have the opportunity to bill for additional money on a monthly basis to support care improvements. Participating practices may bill Medicare a $160 Monthly Enhanced Oncology Service (MEOS) fee for FFS Medicare beneficiaries, which is intended to support the practice in providing enhanced oncology services such as increased access and patient navigation.

Practices also have the opportunity to earn money in the form of retrospective performance-based payments (PBP) if they are able to meet Model cost and quality goals. Although participating OCM practices are paid under Medicare's FFS billing rules, all Medicare-covered services that their chemotherapy patients receive are combined in six-month episodes. If performance quality goals are met, practices can receive performance-based payments that CMS calculates by comparing all expenditures during an episode (including MEOS payments) to risk-adjusted historical benchmarks, minus a discount retained by CMS.

The OCM evaluation uses mixed methods, integrating comprehensive qualitative and quantitative data analyses based on Medicare administration data and claims, patient surveys, case study interviews, and other inputs.

The ***First Annual Report from the Evaluation of the Oncology Care Model: Baseline Period*** explained the construction of the evaluation comparison group and described the trends during a multi-year baseline period for both OCM and comparison groups. The ***Evaluation of the Oncology Care Model: Performance Period One*** measured program implementation and impacts for the first six-month performance period (covering episodes that began between July 1, 2016 and January 1, 2017 and ended by June 30, 2017).

This ***Evaluation of the Oncology Care Model: Performance Periods 1-3*** addresses ongoing implementation of the Model, and impacts through the third performance period (including episodes that began between July 1, 2016 and January 1, 2018, all of which ended by June 30, 2018). At the end of the third performance period, there were 191 practices actively participating in the Model.

Summary of Key Findings

This report assesses how practices participating in OCM are transforming care delivery to meet OCM requirements, and the impact of OCM on Medicare payments, utilization, and quality of care.

During Model Year Two, we learned that OCM practices expanded on their early care delivery changes in order to better support patients and to reduce ED and hospital use and the associated costs. They focused

[1] Chemotherapy is defined for OCM purposes as cytotoxic chemotherapy, biologic therapy, immunotherapy, or hormonal therapy for cancer.

[2] More information about OCM can be found at: https://innovation.cms.gov/initiatives/oncology-care/

especially on using Care Plans to improve information sharing with patients, putting more resources into navigation for high-risk patients, and using dashboards to track performance.

Medicare Payments and Savings/Losses

There Was No Overall OCM Impact On Per-Episode Payments. Across the first three performance periods (PPs), we did not find an impact on Medicare total payments (Medicare total payments are referred to as Total Episode Payments or TEP in this report and do not include MEOS).[3] There was a small, non-statistically significant relative decrease of $145 per episode, with two important, underlying patterns:

- **Per-Episode Payments Went Down for High- Risk Cancer Episodes and Went Up for Low-Risk Cancer Episodes.** While TEP (without MEOS) did not change significantly, relative to the comparison group, there were different patterns for high-risk and low-risk episodes.[4] There was a statistically significant $430 relative decrease in TEP for high-risk/high-intensity episodes (which make up approximately two-thirds of all episodes). In contrast, there was a statistically significant $130 relative increase in TEP for low-risk/low-intensity episodes (which make up approximately one-third of all episodes).

- **Medicare Part A Payments Went Down and Part D Payments Went Up.** Per-episode payments for Medicare Part A services (e.g., hospitalizations) declined by $119 relative to the comparison group. This was offset by a relative increase of $160 in per-episode Part D payments.

Some Key Acronyms in this section:

PP: Performance Period. Episodes that start during a six-month window. This report discusses impacts in the first three PPs (episodes starting 6/16 to 12/18).

TEP: Total Episode Payment. Per-episode calculation that does not include MEOS, performance incentives, or beneficiary copays.

MEOS: Monthly Enhanced Oncology Services payment. The additional $160 per-beneficiary monthly fee that participating practices may bill for, to help support their transformation efforts.

PBP: Performance-based payments. Incentive payments that participants are able to earn based on their success in reducing TEP enough to meet Model requirements. PBP factors in MEOS payments.

After Including Model Payments, OCM Resulted in Net Losses for Medicare. Participating practices can bill CMS for MEOS, and if quality goals are met, practices can receive PBPs. For OCM to result in net savings for Medicare, the Model needs to reduce per-episode payments enough to cover the MEOS and PBP payments. If per-episode payments do not decline sufficiently to cover these Model payments, OCM will result in net losses for Medicare. The combined MEOS and PBP payments for the first two PPs[5] were greater than the small overall reduction in TEP, resulting in *net losses* to Medicare of nearly $90 million in PP1 and $65 million in PP2 (see **Exhibit ES-1**).

[3] TEP includes payments for all cancer and non-cancer care during an episode as defined for OCM; TEP does not include MEOS payments.

[4] Low-risk episodes include breast and prostate cancers treated only with hormonal therapies, and bladder cancers treated with receipt of Bacillus Calmette-Guérin (BCG) therapy and/or mitomycin.

[5] At the time this report was written, MEOS and PBP amounts were available for second reconciliation cycle of PP1 and PP2, but not for PP3.

Exhibit ES-1: OCM Resulted in Net Losses for Medicare

	Gross Spending	Net Spending
Performance Period 1	- $23.38 M	+ $89.49 M**
Performance Period 2	- $46.74 M**	+ $64.85 M**

Source: Medicare claims 2014–2018. OCM first true-up reconciliations, PP1–PP2.
Notes: **Statistically significant at p<0.05. M: Million.

Cancer Treatment Patterns

The opportunity to earn PBPs by reducing episode spending is intended to motivate participating practices to avoid low-value, costly treatments that have little likelihood of benefitting patients, but OCM could also have the potential unintended consequence of incentivizing reductions in costly but potentially beneficial treatments.

No Reductions in Access to Novel Therapies or Other Treatments. No Improvement in Efficiency. No Medicare Savings. Chemotherapy treatments for common cancers were very similar in OCM and comparison episodes and changed similarly over time, yielding no savings to Medicare from more efficient treatment patterns. This indicates that OCM is not limiting potentially beneficial but costly treatments, but also is not driving more cost-consciousness.

Little Evidence of Value-Oriented Changes in Therapeutic Approach. There is little evidence that OCM is driving value-oriented selection of chemotherapy regimens, supportive care medications, or radiation therapy treatment. For example, OCM did not cause a shift towards short course radiation therapy following breast cancer surgery (which costs less than longer course radiation therapy) and did not reduce the number of palliative radiation treatments for bone metastases, despite national guidelines favoring these more efficient treatment approaches.

Increasing Use of Cost-Effective Biosimilar Drugs. OCM practices shifted to using biosimilar (rather than originator) granulocyte colony stimulating factor, reducing the cost of preventing neutropenia.

Patient Centered Care

OCM requirements emphasize timely access to care, patient navigation, and care coordination, as well as shared decision making and advance care planning (ACP). Together, these improvements could help avoid emergency department (ED) visits and hospital utilization, improve end-of-life care, and enhance patient and clinician satisfaction.

OCM Clinicians Perceive Improved Patient Care. OCM practices used Care Plans with elements recommended by the Institute of Medicine to improve information sharing with patients and support shared decision making. They also provided the core functions of patient navigation and ensured 24/7 access to the cancer care team. OCM practices expanded financial counseling, worked to reduce financial barriers, and encouraged patients to follow oral treatment regimens. Most oncologists and other clinicians in OCM practices who responded to our survey believe that the Model improves patient care and patients are better informed about their treatment because of OCM. Most OCM patients rated their cancer care very highly at the start of OCM, and there were no changes over time.

No OCM Impact on ED Visits or Hospitalizations Overall, or for Chemotherapy-Related Toxicity. During the first two program years, most OCM practices focused on preventing ED visits and hospitalizations in order to improve quality of care and reduce episode payments. Strategies included identifying and closely monitoring high-risk patients, improving triage phone systems to quickly help patients manage symptoms, and expanding access to same-day urgent care. Despite these efforts, there was no impact of OCM on ED visits or hospitalizations at acute care hospitals, or on ED visits and hospitalizations due to chemotherapy toxicity.

Fewer Hospitalizations at the End of Life. OCM led to a 1.1 percent relative reduction in hospitalizations in the last month of life for deceased OCM patients. This in turn was associated with a statistically significant reduction in TEP (without MEOS) of $672 during deceased cancer patients' last episodes.

OCM practices accomplished these improvements by hiring palliative care specialists and enhancing access to palliative care, encouraging patients to engage in advance care planning, and documenting patient wishes and proxy decision makers. Oncologists responding to our survey attested that these changes improved quality of care. However, OCM did not impact the use of hospice care or the duration or timing of hospice care.

No Evidence of Avoiding High Cost Patients. Despite the fact that OCM incentives could tempt participating practices to avoid costly patients, there is no evidence that OCM practices avoided high-risk/high-cost patients, or patients with metastatic cancer.

1. OCM Background and Evaluation

1.1. Background

Half of newly diagnosed cancer patients are over the age of 65,[6] making Medicare the single largest payer of oncology care in the United States. The Centers for Medicare & Medicaid Services (CMS) is operating the Oncology Care Model (OCM) to reduce Medicare payments, improve the quality of care beneficiaries receive, and save taxpayer money, by fostering coordinated, high-quality, cost-effective cancer care. OCM focuses on Medicare Fee-For-Service (FFS) beneficiaries with cancer who are undergoing chemotherapy treatment.[7] OCM combines attributes of medical homes[8,9] (patient-centeredness, accessibility, evidence-based guidelines,[10] and continuous monitoring for improvement opportunities) with financial incentives for providing these services efficiently and with high quality.

OCM features a two-pronged financial incentive strategy. First, practices have the opportunity to bill for additional money to support care improvements. Participating practices may bill Medicare a $160 Monthly Enhanced Oncology Service (MEOS) fee for FFS Medicare beneficiaries attributed to chemotherapy episodes. This money is intended to support enhanced oncology services, including the following:

1. 24/7 patient access to an appropriate clinician who has real-time access to the patient's medical records;
2. Core functions of patient navigation;
3. A documented Care Plan for every OCM patient that contains 13 components recommended by the Institute of Medicine; and
4. Cancer treatment that is consistent with nationally recognized clinical guidelines.

Second, practices have the opportunity to earn money in the form of retrospective performance-based payments (PBP) if they are able to meet Model cost and quality goals. Although participating OCM practices are paid under Medicare's FFS billing rules, all Medicare-covered services that their chemotherapy patients receive are combined into six-month episodes. If performance quality and savings goals are met, practices can receive PBPs. CMS calculates PBPs by comparing all expenditures during an episode (including MEOS payments) to risk-adjusted historical benchmarks, minus a discount retained by CMS. These payments are adjusted to reflect performance on several practice-reported quality measures, other quality measures derived from Medicare claims, and patient-reported ratings of care experiences measured through a survey. These adjustments are one mechanism to ensure that efficiency efforts undertaken by participating practices are consistent with maintaining quality.

The six-year OCM began with six-month episodes starting on July 1, 2016, and will operate for eleven consecutive performance periods. The last episodes will end on June 30, 2022. Some practices participate

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6 National Cancer Institute website. Retrieved on April 11, 2018 from https://www.cancer.gov/about-cancer/causes-prevention/risk/age.

7 Chemotherapy is defined for OCM purposes as systemic therapies including cytotoxic chemotherapy, hormonal therapy, biologic therapy, immunotherapy, and combinations of these therapies.

8 Demartino JK and Larsen JK. Equity in Cancer Care: Pathways, Protocols, and Guidelines. *J Natl Compr Canc Netw* Oct. 1, 2012;10, Supplement 1:S1–S9.

9 Page RD, Newcomer LN, Sprandino JD, et al. The Patient-Centered Medical Home in Oncology: From Concept to Reality. 2015 ASCO Educational Book. Retrieved on June 7, 2016 from http://meetinglibrary.asco.org/content/11500082-156.

10 Demartino JK and Larsen JK. Equity in Cancer Care: Pathways, Protocols, and Guidelines. *J Natl Compr Canc Netw* Oct. 1, 2012;10, Supplement 1:S1–S9.

in OCM on a partnership basis by pooling with other practices. This is usually because one or more oncologists work part-time in two related practices.[11] Participating OCM practices (and pools) may voluntarily adopt two-sided risk in which expenditures above the target are repaid to CMS. Accepting two-sided risk meets the Quality Payment Program's criteria for being an advanced alternative payment model. Participating practices/pools began to voluntarily adopt two-sided risk prior to PP8; at that time, downside risk will be required for those that have not earned at least one PBP in the first four PPs or else their participation will be terminated.

Additional details about OCM, including previous evaluation reports, are available on the CMS website.

1.2. OCM Evaluation

The evaluation measures the impact of OCM on Medicare spending, quality of care, clinician perceptions, and patient care experiences. The evaluation examines care provided by practices that volunteered to participate in OCM and compares changes over time in this group with changes in a carefully selected comparison group. This difference-in-differences (DID) evaluation approach measures whether changes over the course of the model are different in the OCM group than in the comparison group.

The evaluation uses data from many sources to measure impacts and the underlying changes driving these impacts. Sources include Medicare administrative data systems; case studies and interviews; practice-reported progress in meeting OCM requirements; and surveys completed by patients, families, and clinicians. The evaluation also takes advantage of inputs and data from the OCM Data Registry and annual Practice Transformation Plans (PTPs) submitted by participating practices.

This report focuses on six-month episodes that began during the first three PPs (July 1, 2016 through January 1, 2018) and ended by June 30, 2018. The report includes Medicare spending and utilization results. In addition, the report includes information from surveys of patients whose episodes began and ended during the first two Model years; a survey of clinicians conducted just after the end of Model Year Two; qualitative data collected during Model Year Two; and program data reported by participants through Model Year Two. Information in this report about net savings calculations that include PBP and MEOS payments reflects PP1 and PP2.

1.3. Organization of This Report

Chapter 2 describes the evaluation data and methods, and Chapters 3-10 contain evaluation findings through the first three PPs. Throughout these chapters, we explain the data and analyses, and point readers to appendices containing additional information that may be of interest. Chapter 11 offers a brief conclusion.

The following icons are used throughout this report to indicate the data sources for each analysis:

- Clinician Survey
- Patient Survey
- Medicare Claims

[11] For more about how CMS handles pooling arrangements in OCM, see: https://innovation.cms.gov/Files/x/ocm-pp3beyond-pymmeth.pdf

- Practice Transformation Plans
- Case Study Interviews
- Telephone Interviews

2. Methods and Data

This chapter summarizes the data and methods we use to evaluate OCM. Detail regarding the data and analytical methods is included in Appendix A.

2.1. Evaluation Data

2.1.1 Secondary Data

The OCM evaluation uses the following secondary data:

- Part A and B Medicare Claims and Part D Prescription Drug Event Data: to construct measures of health care utilization and payments, and analyze changes in treatment patterns.
- Other administrative data including beneficiary enrollment and coverage information, beneficiary characteristics, and beneficiaries involved in other CMS initiatives: to control for any beneficiary differences between intervention and comparison groups, support subgroup analyses, and select beneficiaries for surveys.
- CMS Health Professional Shortage Area (HPSA) and Area Health Resource (AHRF) files: to control for local differences between intervention and comparison practices' markets.
- Office-Based Physician File[12] and academic medical school affiliation:[13] to control for ownership/affiliation and size differences between intervention and comparison practices.
- PTPs submitted by OCM participants: to assess changes in important care delivery processes that may drive OCM impacts. These are structured, annual self-assessments of transformation activities during the prior year and plans for the future.

2.1.2 Primary Data

Performance-based payments are adjusted for quality, including patient-reported care experiences collected by surveying patients served by each of the OCM participating practices. The patient survey is also used in the evaluation to measure changes over time in patient experiences that may be due, at least in part, to OCM. Survey domains include: access, affective communication, exchange of information, symptom management, shared decision making, patient self-management, and end-of-life (EOL) care (EOL questions are asked of the family members of deceased cancer patients). The patient survey uses the following questionnaires:[14]

1. The **main** questionnaire sent to a sample of cancer patients each quarter whom we believe to be alive at the time of survey mailing; this asks about care experiences and current health status.
2. A tailored **alternative** questionnaire sent to the family proxies of cancer patients who had died by the time the survey was mailed (i.e., died during or soon after their six-month care episode). This survey asks

RELATED SECTIONS

Survey methods and response rates for the patient/caregiver survey, and component questions for each composite, are described in Appendix A.

Clinician survey methods and response rates are in Appendix A; Appendix G contains the questionnaire for the clinician survey.

[12] http://www.skainfo.com/databases/physician-data

[13] Welch, P. and Bindman, A.B. Town and gown differences among the largest medical groups in the US. *Journal of Academic Medicine* July 2016;91(7):1007–14.

[14] The questionnaires for the patient/caregiver survey are available in the *Evaluation of the Oncology Care Model: Performance Period One – Appendix* volume available at https://innovation.cms.gov/Files/reports/ocm-secondannualeval-pp1-appendix.pdf

the same care experience questions as the main survey, but does not ask about current health status (because patients are deceased) and asks about EOL care.

3. A **decedent-proxy** questionnaire sent to the family members of cancer patients who were alive for the initial survey mailing (whether or not they responded), but who died during the subsequent year; this asks about EOL care.

Other primary data collected and used for the evaluation included:

- Survey of a representative sample of oncologists, advance practice practitioners (APPs, nurse practitioners and physicians assistants), and clinical care coordinators (most of whom are nurses) working in OCM practices. The purpose of this survey was to understand clinician experiences and perceptions of OCM. This survey was conducted just after the second Model year ended.
- Case studies conducted with13 practices we visited during Model Year Two (July 2017 – June 2018).
- Interviews with 12 practices that terminated OCM participation, about their reasons for termination.
- Interviews with 10 commercial payers that volunteered to offer models aligned with OCM and were still doing so as of the end of PP3.

2.2. Analytic Methods

Construction of six-month episodes and attribution of episodes to practices follow the OCM methodology.[15] Episodes are defined based on beneficiary eligibility and qualifying trigger events (e.g., chemotherapy), and each episode is attributed to the practice that provided the plurality of visits for cancer evaluation and management. The main evaluation methods are briefly described below. Throughout the report, findings with $p<0.10$ are noted as statistically significant. We also indicate when outcomes are statistically significant at levels of $p<0.05$ and $p<0.01$.

RELATED SECTIONS

Additional detail about source data, observation periods, episode triggers, and attribution are described in Appendix A. Outcome measures, analytic methods, and characteristics of OCM and comparison groups are also described in greater detail in Appendix A.

More information about comparison group selection is available in Appendix A and in the *First Annual Report from the Evaluation of the Oncology Care Model: Baseline Period*.

2.2.1 Comparison Group Selection

The goal of comparison group selection was to identify non-OCM practices[16] that were similar to the OCM practices before OCM began. The comparison group represents what would have occurred in the absence of OCM, and allows us to identify the impact of the Model within a DID framework (see Section 2.2.5 below). Using propensity score matching we selected a comparison group of 538 oncology practices that was statistically similar to the OCM group in the baseline period, based on eligibility to participate in OCM, historic patterns of evaluation and management (E&M) billing, and observable episode, practice, market, and patient characteristics.

2.2.2 Intent to Treat Design

The practices that ended OCM participation before the end of PP3 were retained in the analysis following our Intent-to-Treat (ITT) design for the OCM evaluation. An ITT design avoids biases that ensue when impact is measured only for those that successfully implement the Model. Furthermore, key components of OCM, such as enhanced services, improved patient communication, and patient education, may continue after termination, and any ongoing impact can be captured with the ITT design.

[15] https://innovation.cms.gov/Files/x/ocm-cancercodelists.pdf, accessed on June 17, 2019.

[16] For evaluation purposes, a comparison practice is defined as a single Tax Identification Number.

2.2.3 Adapting to Programmatic Changes

During the time period covered by this report, CMS made important programmatic changes to improve OCM, most notably in how episodes are attributed to the responsible physician group practices. These changes were applied starting in PP3.[17] Since the changes were made early to improve the Model and apply for all but the first two performance periods, the rules that begin in PP3 represent the Model CMS is actively testing. For evaluation purposes, we applied these program rules throughout. For this and other minor technical reasons, we measure impacts using episodes that differ slightly from the episodes CMS actually used for PBP and MEOS payments.

2.2.4 Descriptive Analyses

This report compares OCM and comparison practices on a number of episode- and practice-level characteristics to explain how practices and episodes changed over time. We report z-tests and t-tests of statistical significance to show significant changes from the baseline to the intervention period for practice-level characteristics.

2.2.5 DID Impact Analyses

We used DID regression analyses to estimate the impact of OCM on outcomes that can be measured using Medicare claims, controlling for observable factors unrelated to OCM that could influence outcomes. DID is a statistical technique that compares changes in an outcome for the treatment group (OCM practices) with changes for the comparison group (comparison practices), from the baseline period before OCM began, through the OCM intervention period thus far, PP3.

Episodes Used in this Report's Analyses

Period (Episodes Initiating)	Number of Episodes	
	OCM	COMP
Performance Period		
Baseline -3 (7/2/14–1/1/15)	113,475	135,450
Baseline -2 (1/2/15–7/1/15)	117,281	139,993
Baseline -1 (7/2/15–1/1/16)	114,940	134,356
Hold-Out Period Before Intervention Start (1/2/16–6/30/16)	-	-
PP1 (7/1/16–1/1/17)	126,654	146,863
PP2 (1/2/17–7/1/17)	128,238	148,287
PP3 (7/2/17–1/1/18)	124,327	140,330
All Periods		
All Episodes	724,915	845,279

The baseline period for DID analyses includes six-month episodes that began July 1, 2014 through January 1, 2016, the last of which ended by June 30, 2016. We employed a six-month hold-out period during which episodes were omitted from the evaluation to ensure no overlap between baseline and intervention episodes. The intervention period includes six-month episodes that began on July 1, 2016 through January 1, 2018, all of which ended by June 30, 2018.

This report includes results of DID analyses for claims-based utilization measures, payment measures, EOL care, and important clinical measures that capture the impacts of OCM. For a subset of key outcomes, we estimated impacts for core cancer subgroups and beneficiary demographic subgroups. We measured these subgroup impacts where we have adequate statistical power (i.e., sufficient episode volume) to detect meaningful differences between the OCM and comparison groups.

DID results in this report are presented as point estimates with upper and lower confidence intervals at the 90 percent level that show the degree of certainty about the result. The

RELATED SECTIONS

Appendix A contains additional information about model specifications used in DID analyses, sensitivity tests, probability analyses, and calculation of Medicare payments and net savings (including MEOS and PBP).

[17] The revised OCM methodology is available at: https://innovation.cms.gov/Files/x/ocm-pp3beyond-pymmeth.pdf

narrower the confidence interval, the more precise the estimate (i.e., standard errors are smaller). A confidence interval that does not encompass zero is a statistically significant result and is also shown with asterisks indicating the level of significance (*10 percent, ** 5 percent, *** 1 percent).[18]

We conducted sensitivity analyses for selected key outcome measures. Sensitivity tests examined whether impact estimates change when we vary model specifications, the time period measured, or the practice or episode samples used. We repeated most DID analyses after removing the two largest OCM practices for which there are no comparison practices of comparable size. This was to ensure that results are not dependent on these two very large practices.

2.2.6 Probability Estimation

In addition to the DID impact analyses, we estimated the *probability* of alternative levels of key OCM impacts (e.g., the probability of reduced Medicare payments or reduced utilization under OCM). We used a frequentist approximation method to generate the probabilities of alternative levels of impact, based on the estimated parameter values and their standard errors. Our method closely approximates what one would obtain from a full Bayesian model, but allows for important clustering in the data. We computed probabilities for four outcome measures: total episode payments (TEP), Part B chemotherapy payments, acute care hospitalizations, and ED visits.

2.2.7 Estimating Net Impact on Medicare Spending

To estimate OCM's net impact on Medicare spending, we added the MEOS payments and the PBP payments paid by Medicare to practices during PP1 and PP2[19] to the TEP reduction estimated from the DID models. To compute the estimated reduction in TEP, we first calculated the episode-level impact on TEP, weighted according to the relative mix of cancer types, then multiplied this per-episode TEP impact by the number of episodes attributed to OCM practices.

2.2.8 Survey Trends (OCM Only)

We surveyed samples of cancer patients every quarter.[20] Results in this report reflect trends in the OCM group only, through the first two years of OCM. To test for statistically significant changes over the multiple quarterly survey waves, we conducted a linear time trend analysis after adjusting each wave of data with sampling and non-response weights. In the future, we will provide information about whether change over time in the OCM group differs from change in the comparison group.

Just after the end of Model Year Two, we surveyed clinicians in OCM practices about their experiences with practice transformation related to OCM and their perceptions of the model. We conducted descriptive analyses of survey results stratified by clinician type. We also assessed subgroup differences stratified by clinician and practice characteristics. Survey weights were used for all analyses to adjust for sample design and non-response.

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[18] For binary outcomes, we report the baseline and intervention adjusted absolute percentages as well as the absolute percentage point impact from the DID model with its associated upper and lower 90 percent confidence intervals. We also include the relative percentage change since baseline.

[19] At the time of this report, MEOS and PBP payments were available for the first two performance periods, but not the third performance period.

[20] The first wave of the patient survey in mid-2016 included both OCM and comparison respondents; the two groups were virtually identical on all measures before OCM began.

2.3. Outcome Measures by Data Source

2.3.1 Claims-Based Measures

We used Medicare claims data to compute changes in health care utilization and payments, as well as EOL care measures, for the OCM and comparison groups. All outcome measures were calculated at the episode level (not the practice level), with the exception of EOL measures, which were calculated at the person-level for deceased cancer patients.

Medicare *spending* measures include TEP, which is comprised of standardized Part A&B Medicare payments (excluding MEOS payments which are billed under Part B), and Part D Medicare payments[21], for all care (cancer-related and otherwise) received during a six-month episode. We report Part A payments for acute care hospitalizations (ACH) (i.e., stays at hospitals that are part of the inpatient prospective payment system), and hospitalizations at other inpatient facilities (i.e., prospective payment-exempt cancer hospitals). We also present payments for post-acute care, which includes home health care and care received at skilled nursing, inpatient rehabilitation, and long-term acute care facilities. We report payments for Part B chemotherapy and other services such as imaging, laboratory testing and radiation therapy, and payments for Part D drugs. We also present total beneficiary cost-sharing (deductible and coinsurance costs) separately for Parts A, B, and D.

The *utilization* measures in this report address ACH hospitalizations, emergency department (ED) visits, Part A post-acute services, selected Part B outpatient services (e.g., imaging and radiation therapy services), Part B chemotherapy use, and Part D drug use. We also report ED visits and ACH hospitalizations due to complications from chemotherapy. Measures of EOL and hospice care are reported in three domains: hospital-based care and chemotherapy at the end of life; hospice use and timing; and place of death.

Clinical measures focus on whether OCM affects: the use of new treatments, including immunotherapy for beneficiaries with lung cancer; chemotherapy treatments for the most common cancers; guideline-based symptom management; use of radiation therapy during chemotherapy episodes; substitution of generic or biosimilar drugs; and the mix of episodes for metastatic and non-metastatic colorectal cancer.

RELATED SECTIONS

Additional details of clinical analyses are included in Appendix E.

2.3.2 Patient Survey Measures

The results from eight waves of beneficiary surveys were analyzed for this report, including one baseline wave and seven waves during the OCM intervention period. For each wave, we calculated six patient experience composite scores as follows: access (six survey questions), affective communication (four questions), enabling patient self-management (eight questions), exchanging information (four questions), shared decision making (four questions), and symptom management (eight questions). In addition, there is a single survey question about each respondent's overall rating of the cancer therapy team.

2.3.3 Clinician Survey Measures

The clinician survey was conducted once, after Year Two of the Model. Survey questions address clinician perspectives about OCM requirements, practice transformation, quality of care, financial incentives, and the impact of the Model on the clinicians and their patients.

[21] Part D payments are comprised of low-income cost sharing and reinsurance payments as reflected on Part D Prescription Drug Events (PDEs).

2.3.4 Qualitative Measures

After each case study visit, we coded themes using NVivo software to identify themes found in two or more of the case studies, and important contrasts across case studies. We looked for differences that may be related to practice size or ownership (independent versus health system-owned). This report focuses case study data collected during Model Year Two (July 1, 2017 – June 30, 2018). We similarly coded interview data from practices that terminated participation, and from OCM Other Payers, to elucidate key themes.

3. How are OCM practices enhancing oncology services and transforming care delivery? What are clinician experiences with OCM? Are patient experiences changing due to OCM?

Key Findings

Process Improvements Reported by Practices (from Case Studies and Practice Transformation Plans [PTPs])

- Practices participating in OCM report using Care Plans to improve information sharing with patients, but practices vary in their attention to specific Care Plan elements, and whether Care Plans are printed and given to patients. Prognosis is the element least likely to be included in Care Plans.
- Many OCM practices are expanding access for same-day appointments and urgent care.
- Many OCM practices are enhancing patient navigation, especially for high-risk patients.
- OCM practices are using CMS's Feedback Reports and claims data, as well as their own EHR data, to identify opportunities for quality improvement; the majority of practices added dashboards to track performance.
- OCM practices are working to enhance shared decision making and communication.
- OCM practices are enhancing many care processes to better manage patients' symptoms in the outpatient setting, in an effort to prevent ED visits and hospitalizations.

Stakeholder Perceptions

- Oncologists and other clinicians in OCM practices believe the Model improves patient care, and that patients are better informed about their treatment because of OCM.
- Patient ratings of care experiences were high before OCM and remained high over time. There was no meaningful change over time in OCM patients' reports of symptoms from cancer and treatment, or in receiving help in managing those symptoms.

Data and Methods

Information about enhanced oncology services and practices' experiences implementing OCM come from: 13 case studies conducted during Model Year Two; PTPs submitted by OCM participating practices; and our survey of clinicians working in OCM practices. Patient care experiences come from our ongoing OCM patient survey. Additional methods and results can be found in the appendices: Appendix A: analytic methods and data; Appendix B: additional results of claims-based analyses; Appendix C: patient and caregiver survey; and Appendix D: clinician survey.

Practices participating in OCM are asked to foster patient-centered care, such as providing information to support shared decision making, and helping patients navigate the often confusing and stressful experience of cancer treatment. This section examines how participating practices are transforming care, clinicians' perceptions about the extent and value of these changes, and patient-reported experiences of care. This information about what is changing due to OCM provides context for the analyses that follow, measuring the utilization, cost, and clinical impacts of the Model.

3.1. How are participating practices meeting OCM requirements for enhanced oncology services?

CMS requires that practices participating in OCM use certified EHR systems and ensure 24/7 access to an appropriate clinician who can access patients' records. Practices are required to follow evidence-based clinical guidelines. They are also required to provide the core functions of patient navigation and to create a Care Plan for every patient that contains information recommended by the Institute of Medicine. This section describes the changes OCM practices made to meet these requirements, the perceptions of clinicians about these practice transformations, and any changes in patients' care experiences.

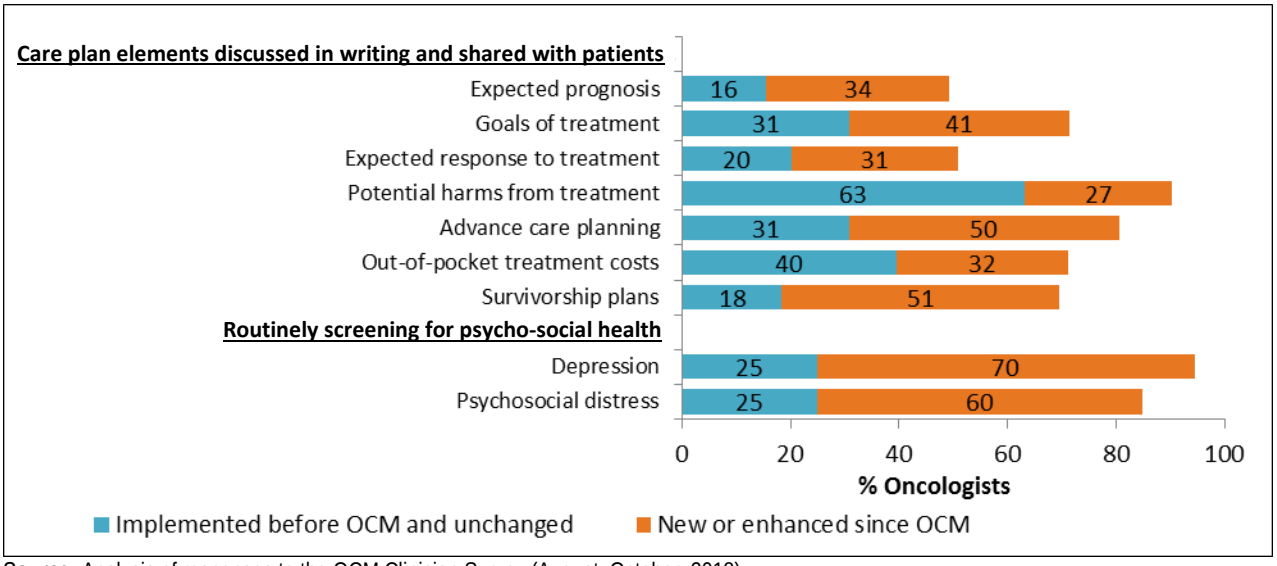
OCM practices are using Care Plans to improve information sharing with patients.

OCM requires participating practices to complete a Care Plan for each Medicare FFS beneficiary with an OCM-eligible episode. Each Care Plan contains 13 elements of information recommended by the Institute of Medicine,[22] which are intended to support shared decision making about cancer treatment and enhance communication between patients and oncology care teams. Care Plan information should be documented in the EHR and may also be given to patients in writing. These requirements together could lead to decreases in ED visits and hospitalizations, better clinician and patient adherence to evidence-based treatment regimens, earlier referral to hospice when appropriate, and improved patient care experiences.

We surveyed clinicians, including oncologists, from practices participating in OCM. According to responding oncologists, most of the practices where they work share the Care Plan elements with patients in writing, and much of this information sharing is new or enhanced since OCM began. For example, 31 percent of responding oncologists indicated that before the OCM Care Plan requirements, they explained the goals of treatment to patients (curative vs. palliative); another 41 percent said sharing this information in writing was added or enhanced after OCM began. Only 18 percent said they shared survivorship plans with patients in writing before OCM, but 51 percent said this was added or enhanced after OCM began. Systematic screening for depression and other psychosocial needs was uncommon in OCM practices before OCM, and most oncologists indicated that their practices added or enhanced this screening after OCM began. Two elements of Care Plans are less likely to be shared with patients in writing—expected prognosis and expected response to treatment. Many oncologists we interviewed during case studies explained that they do not know at the outset how a given patient will respond to treatment, and they usually wait until a patient has advanced disease before discussing an unfavorable prognosis (see **Exhibit 1**).

[22] CMS requires OCM practices to develop all 13 components of the Care Plan and to document these items in the EHR. The 13 components are: 1) patient information (e.g., name, date of birth, medication list, and allergies), 2) diagnosis, 3) prognosis, 4) treatment goals, 5) initial plan for treatment and proposed duration, 6) expected response to treatment, 7) treatment benefits and harms, 8) information on quality of life and a patient's likely experience with treatment, 9) who will take responsibility for specific aspects of a patient's care, 10) advance care plans, 11) estimated total and out-of-pocket costs of cancer treatment, 12) a plan for addressing a patient's psychosocial health needs, and 13) a survivorship plan.

Exhibit 1: OCM is Expanding/Enhancing Written Information Sharing with Patients



Source: Analysis of responses to the OCM Clinician Survey (August–October, 2018)
Notes: N=399 oncologists. Estimates weighted for sampling and non-response.

Oncologists responding to the survey who work in independent practices were more likely to report that their practice shares Care Plan elements with patients in writing; this is less common for those working in practices owned by hospitals or health systems.

We visited 13 OCM practices during Model Year Two. Prior to OCM, these practices recorded many of the 13 Care Plan elements in EHR notes but not in a standard manner. By the time we visited in Year Two, all but one of the 13 practices had added templates to their EHRs to document the 13 Care Plan elements. Four practices give paper copies of the Care Plan to patients, and three others are customizing their EHRs to assemble and print copies for patients.[23] Regardless of whether or not they give patients a paper copy, clinical staff at most practices told us that they verbally review all Care Plan elements with patients.

All of the 13 practices we visited previously shared information with patients about diagnosis, treatment plans, and what to expect from treatment. This was usually in the consent documents that patients sign before treatment begins, often with the addition of materials explaining the purpose of specific drugs and common side effects. The OCM Care Plan requirements are compelling practices to cover other topics they did not always discuss with patients in the past, especially the following:

- *Prognosis and Goals of Therapy:* For OCM, three of the 13 practices developed standard language for prognosis, using life expectancy categories (e.g., <1 year, 1–3 years, 5–10, 10+ years) or more general terms such as “good,” “fair,” or “poor.” Many oncologists at the other 10 practices prefer to focus on goals of care (curative versus palliative) and quality of life, rather than prognosis, when setting treatment expectations with their patients. These 10 practices do not apply standard definitions of prognosis and allow oncologists to decide how best to convey prognosis to each patient.

[23] CMS encourages practices to give patients a hard copy of their Care Plan, but does not require this.

- *Psychosocial Barriers and Solutions:* As a result of OCM, all 13 practices have expanded or systematized screening for depression and other psychosocial needs. They use standardized tools to screen for some or all of the following: anxiety, depression, cognitive function, mobility, social support, housing insecurity, food insecurity, transportation needs, and financial barriers to care. Most practices screen patients every six months, some more frequently. Some practices screen only OCM patients, while others now screen all their patients—a spillover effect of OCM that benefits all patients in the practice. A few practice staff mentioned that there may not be sufficient community resources to address all patients' psychosocial problems identified by the new screening.

> **STORIES FROM THE FIELD**
>
> A practice leader commends OCM for focusing on psychosocial aspects of care, stating that it is "*refreshing*" to focus on the whole patient.

> **STORIES FROM THE FIELD**
>
> "*OCM marks a dramatic shift in delivery of cancer care. Over the generations of providers, many of us treated patients in an era where no one cared who would pay for it. If you're doing an estimation of prognosis and financial impact, [patients] can make an educated decision if they want to proceed with treatment.*" – Leader at a health-system affiliated practice.

- *Cost of Treatment and Addressing Financial Barriers:* The 13 OCM practices are providing out-of-pocket (OOP) cost estimates for patients before treatment begins. In most practices, this is new for OCM and the most challenging element of the Care Plan. Most practices estimate OOP costs only for services they provide. For independent practices, this usually includes costs of office visits and drugs. Hospital-based practices may also include costs of radiation therapy, surgery, imaging, and other hospital-based services. A few practices told us they wait until after the first cycle of chemotherapy to estimate drug costs because drug prices change too frequently to provide an accurate estimate in advance. Several practices hired additional financial counselors to generate the OOP estimates, identify financial barriers, and counsel patients about insurance and financial assistance programs. In several practices, OOP estimates and counseling are now available to all patients, not just those with OCM episodes, which is another beneficial spillover effect of OCM.

- *Survivorship Plans and Return to Primary Care:* 10 of the 13 practices we visited in Year Two began or standardized survivorship planning for all their patients (including non-OCM patients) as a result of OCM. Despite efforts to improve survivorship planning and transition patients to primary care, many oncologists told us they continue to see their patients during the survivorship phase. This is due to the established relationship patients have with their oncologists, and to primary care shortages in many communities.

- *Advance Care Planning:* Most of the 13 practices supported their patients in developing advance care plans before OCM, particularly identifying health care proxies. A few practices improved their ACP activities because of OCM.

> **RELATED SECTIONS**
>
See Section 6 about advance care planning, palliative care, and end-of-life care.

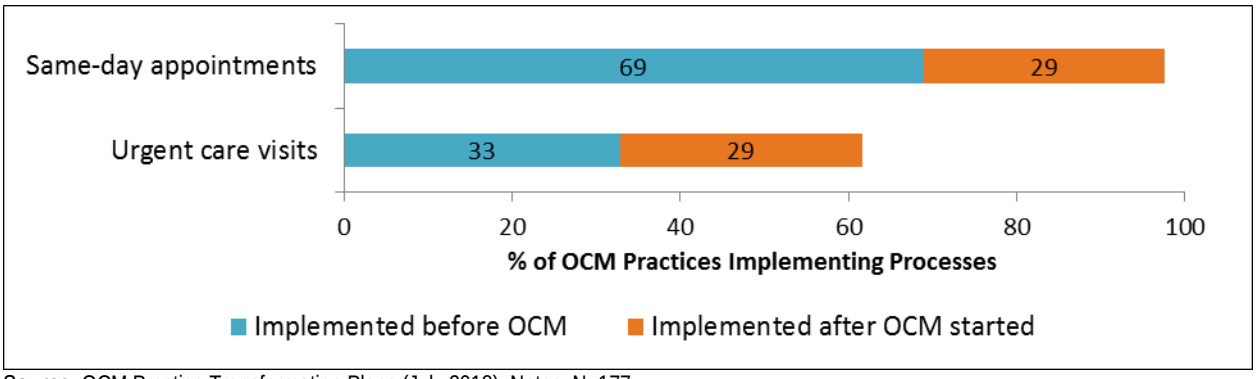
OCM practices are expanding access for urgent care.

All of the 13 practices we visited offer 24/7 access to clinicians who have access to patient medical records. Most now also offer same-day visits for urgent care, in an effort to reduce ED visits.

Each year, OCM practices use a formatted template provided by CMS to submit practice transformation plans (PTPs) describing activities undertaken in the previous year and plans for the future. According to the 2018 PTPs, OCM practices improved access for same-day and

urgent care. Nearly all OCM practices offered same-day appointments (98 percent): 69 percent offered same-day appointments prior to OCM, and 29 percent started offering same-day appointments after OCM began (see **Exhibit 2**). Many practices also offered urgent care visits: 62 percent prior to OCM, and another 29 percent after OCM began.

Exhibit 2: OCM is Improving Availability of Same-Day Appointments and Urgent Care



Source: OCM Practice Transformation Plans (July 2018). Notes: N=177.

Patients served by OCM practices rated access to their care team very highly before OCM, and this did not change.

RELATED SECTIONS
See Section 3.2 about Patient Survey responses.

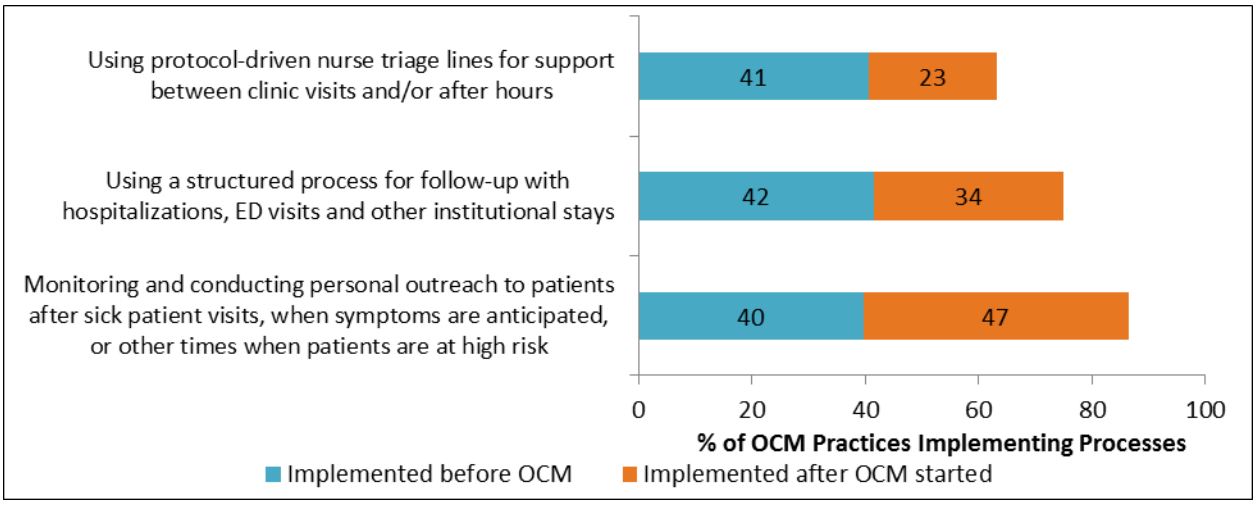
OCM practices are enhancing their patient navigation efforts, especially for high-risk patients.

OCM requires practices to provide the core functions of patient navigation.[24] The PTPs submitted by participating practices offer a broad picture of how OCM practices meet this requirement.

In the 2018 PTPs, most OCM practices reported using protocol-driven approaches to patient navigation, and many implemented this after OCM began. For example, 47 percent of practices added outreach to high-risk patients after OCM began, 34 percent started using structured processes for follow-up calls, and 23 percent started using protocol-driven nurse triage phone lines to ensure rapid response to patient needs (see **Exhibit 3**).

[24] Patient navigation functions include: 1) coordinating appointments with clinicians inside and outside the practice to ensure timely delivery of diagnostic and treatment services, 2) maintaining communication with patients and their families across the care continuum, 3) ensuring that appropriate medical records are available at scheduled appointments, 4) arranging language translation or interpretation services, 5) facilitating connections to follow-up services, 6) providing access to clinical trials, 7) building partnerships with local agencies and groups (e.g., referrals to other services and/or cancer survivor support groups), 8) facilitating financial support (e.g., counseling, or payments from foundations or drug companies), 9) arranging transportation, 10) arranging child or elder care, and 11) helping with paper work (e.g., living wills, financial support forms).

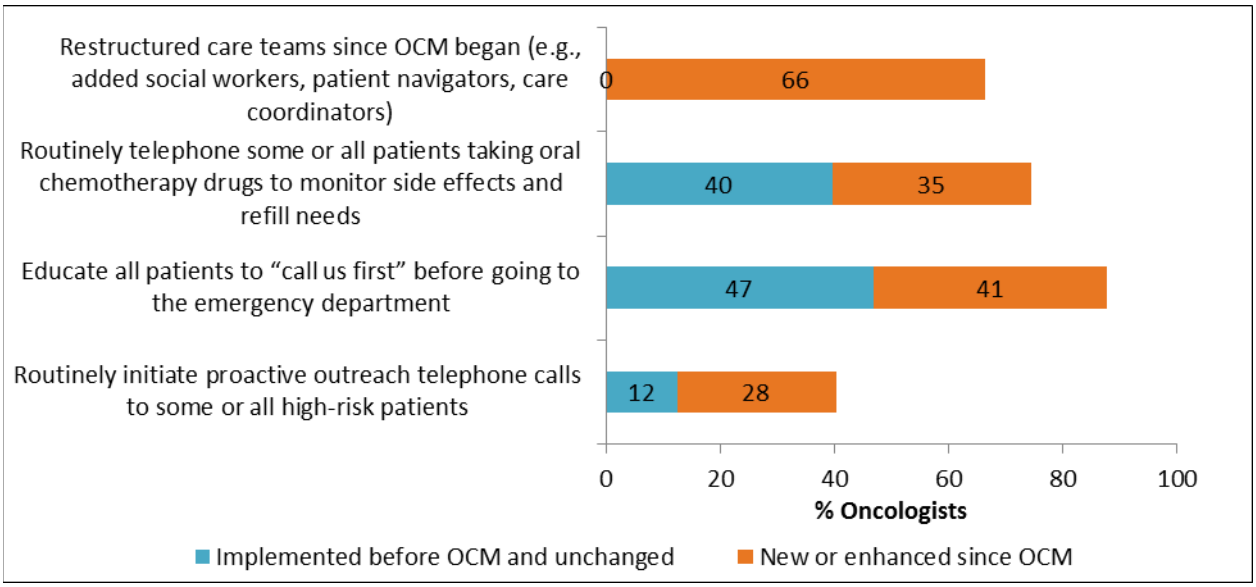
Exhibit 3: OCM is Increasing Protocol-driven Approaches to Patient Navigation and Systematic Strategies to Identify and Monitor High-Risk Patients



Source: OCM Practice Transformation Plans (July 2018). Notes: N=177.

The strategies reported by practices in their PTPs were also mentioned by oncologists responding to our survey. Most oncologists (66 percent) indicated that their practice restructured care teams after OCM began to accomplish new tasks, such as identifying and monitoring high-risk patients, offering same-day and urgent care visits, and enhancing patient navigation. Responding oncologists also indicated that most of their practices educate patients to "Call Us First" before going to an ED, and most call patients taking oral medications to address any barriers to ongoing adherence. Among practices using these strategies, about half said that their efforts are new or enhanced since OCM began. Although there has been some improvement in systematic, proactive monitoring of high-risk patients, this still occurs in only 40 percent of participating practices, according to responding oncologists (see **Exhibit 4**).

Exhibit 4: OCM Practices are Restructuring Their Care Teams, and OCM is Enhancing Patient Navigation



Source: Analysis of responses to the OCM Clinician Survey (August–October, 2018).
Notes: N=399 oncologists. Estimates weighted for sampling and non-response. Restructured care teams has a value of 0 for "New or enhanced since OCM" because the question asked about activities happening since OCM began.

All of the 13 practices we visited during Model Year Two provide some form of patient navigation, although not all have designated patient navigators. Navigation can include helping patients with specialist appointments and paperwork, ensuring that the referring provider receives a report back from the provider or specialist to whom patients were referred, scheduling complex treatments and tests (e.g., radiation, infusions, lab tests, or imaging), and generally being available to answer patients' questions. Almost all of the 13 practices offer navigation to all their cancer patients, not only those with Medicare FFS insurance. Some practices hired new navigators (usually nurses and not always called "navigators") to meet OCM requirements, while other practices already had navigators, who took on additional responsibilities for OCM. Six of the 13 practices distribute navigation tasks among various clinical and non-clinical staff rather than using dedicated navigators.

STORIES FROM THE FIELD

Practices Implement a Variety of Patient Navigation Services:

- Engaging with new patients at or before the first appointment to orient the patient to the practice and identify any psychosocial or financial issues.
- Educating patients about treatment side effects and whom to call about urgent issues (i.e., Call Us First).
- Calling patients on cycle one/day one to check on side effects, and additional follow-up for patients on especially toxic regimens.
- Referring patients to support services (e.g., counseling, support groups, spiritual counseling/chaplain, dietician services) or to community services (e.g., transportation, housing support).
- Ensuring referrals are added to medical charts, sending oncology notes to outside providers, and helping patients schedule appointments within and outside the practice.

Five of the 13 practices we visited enhanced oral medication adherence monitoring as a result of OCM, by increasing the number of oncologist visits for patients, or by making more frequent proactive calls to check that patients are taking their medications as prescribed and address any side effects they may be experiencing. Practices are also focusing more on financial barriers that prevent patients from adhering to oral treatment regimens (e.g., Part D copays) and on finding additional financial support to prevent gaps in treatment.

The practice staff we interviewed are generally positive about OCM and the additional care coordination it fosters. Some staff also reported the following:

- No notification, in real time, when a patient visits an ED, making it hard to intervene and prevent hospitalization. To address this problem, some OCM practices are trying to establish closer relationships with nearby hospitals and encourage ED physicians to contact the practice when one of their cancer patients visits the ED.
- Coordination with hospitals and non-oncology providers is easier for hospital/health system-owned practices, because they usually share an EHR across the system and refer/coordinate within the system. Independent practices face more coordination challenges.

STORIES FROM THE FIELD

"*I love OCM—I think it's a wonderful program. It gives [patients] more access to us, so it gives the patients an easier mindset.*"
– Nurse Practitioner at an independent practice.

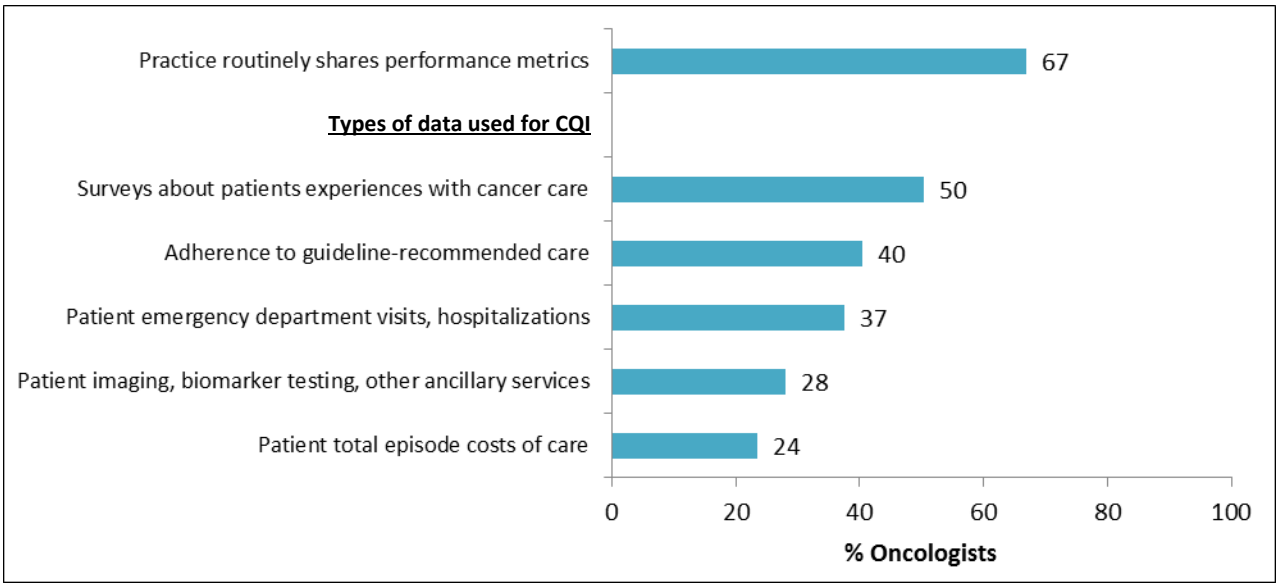
"*OCM has bumped up the quality of care for everybody.*" – Medical Assistant at an independent practice.

OCM practices use CMS's Feedback Reports and claims data, as well as their own EHR data, to track performance; most added dashboards to display trends; a few use physician compensation incentives to reward performance.

OCM practices are required to use data for continuous quality improvement (CQI). This can include clinical EHR data, CMS Feedback Reports, Medicare claims, and patient surveys. OCM practices receive quarterly Feedback Reports from CMS summarizing changes in their episode payments, utilization, EOL care, prescription drug use, and patients' experiences.

Sixty-seven percent of OCM oncologists responding to our survey indicated that their practice routinely shares performance metrics, such as scorecards, enabling them to compare their performance with that of their peers (see **Exhibit 5**). Patient satisfaction (from surveys) was the most common type of metric shared with oncologists (50 percent); cost of care was the least common metric shared (24 percent). This is consistent with several case studies where practice leaders told us that they do not believe cost should be a factor in physicians' treatment decisions.

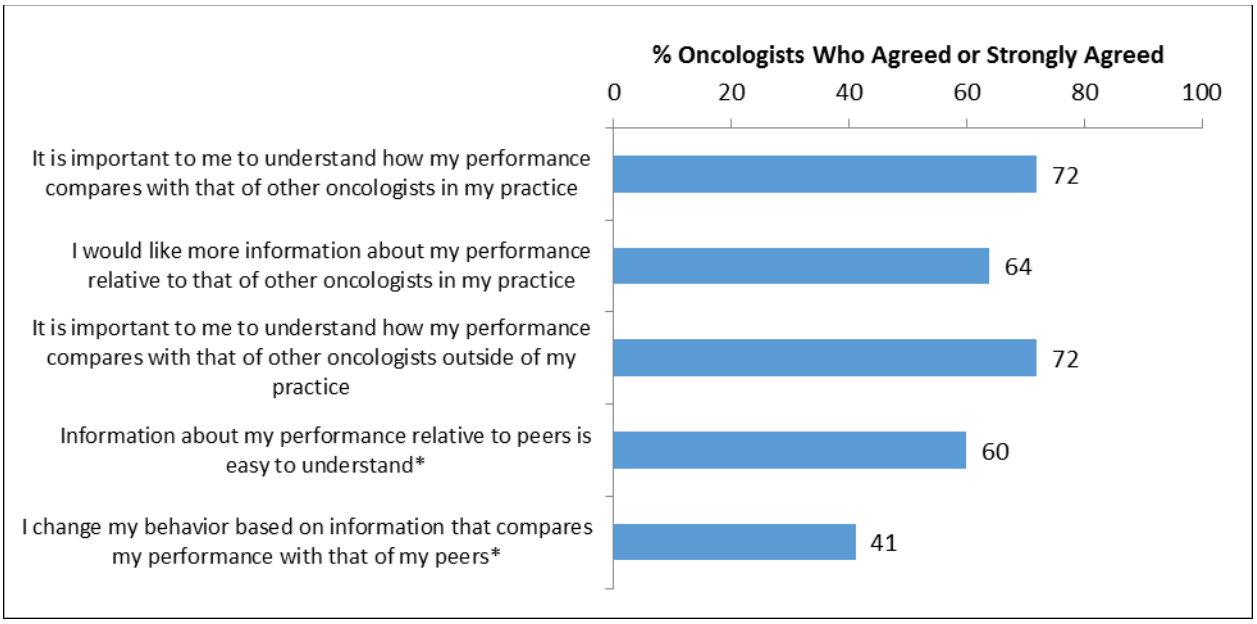
Exhibit 5: Most OCM Practices Routinely Share Performance Metrics with Oncologists, Mainly about Patient Satisfaction and Adherence to Clinical Guidelines



Source: Analysis of responses to the OCM Clinician Survey (August–October, 2018).
Notes: N=399 oncologists. Estimates weighted for sampling and non-response.

Approximately two thirds of oncologists responding to the survey routinely receive at least some feedback about their performance. However, most (64 percent) want even more information about their performance than they currently receive (see **Exhibit 6**).

Exhibit 6: Most OCM Oncologists Surveyed Want More Information about their Performance



Source: Analysis of responses to the OCM Clinician Survey (August–October, 2018).
Notes: N=399 oncologists. *Questions were answered only by clinicians whose practice routinely shared performance metrics (n=256). Estimates were weighted for sampling and non-response.

As shown in **Exhibit 6**, only 41 percent of oncologists reported that they change their behavior in response to performance feedback. Behavior change could potentially be amplified by compensation incentives for individual physicians. In the 2018 PTPs, few OCM practices reported using clinician compensation strategies that align incentives with OCM. OCM-aligned compensation strategies increased somewhat after OCM began, but were still uncommon. For example, 21 percent of practices started compensation strategies that aligned incentives with OCM, and 15 percent started using compensation to reward value and team-based care.

The 13 practices we visited in Year Two all had certified EHRs before OCM began, and the larger practices tend to have more staff dedicated to collecting and analyzing performance data and developing data-driven CQI initiatives. Eight of the 13 practices use internal data (clinical data, billing data, and/or patient surveys) for CQI. Several create dashboards to share performance metrics with their administrative and clinical teams, such as hospital utilization (e.g., admissions, length of stay) or quality (e.g., ED visits, hospice use, and timing).

Eight of the 13 practices we visited use consultants to analyze the Medicare claims data CMS provides, and one practice gets assistance from its parent network. Despite these efforts, most practices told us they have not identified actionable opportunities for improvement—specific changes they could make to improve care quality or reduce Medicare spending. In addition, four practices told us they do not use the CMS claims data due to not having the resources to analyze them.

STORIES FROM THE FIELD

The leader of a health system practice describes OCM as an "*investment strategy*" to deliver better cancer care. He said that OCM prompts infrastructure investments that enable "*smarter measurement, analysis, and reporting of value, and wraparound services that better support cancer patients*."

3.2. Are patient experiences improving?

The activities undertaken by the OCM practices represent a variety of approaches intended to improve communication between patients and their care team; improve patient understanding of their treatments, side effects, and costs; support shared decision making; foster advance care planning and survivorship planning; and generally improve patient care experiences.

Patients rated their overall experiences highly before OCM began, and there was no change over time.

We surveyed Medicare patients served by OCM practices and asked about six aspects of their experiences: shared decision making, access to care, affective communication, exchanging information, self-management, and symptom management. The survey also asked patients for their overall rating of the care they received.

Among OCM patients responding to our survey, there was no change over time on composite measures of shared decision making, affective communication, being prepared to manage their condition at home, exchanging information with their cancer care team, or in their overall rating of care. Most patients rated their care very highly on most of these measures before OCM began and this did not change. OCM does not appear to be jeopardizing positive care experiences of cancer patients, despite financial incentives to reduce costs of care.

STORIES FROM THE FIELD

"*The number one thing I like about OCM [is that it] opens up dialogue between patients and health care workers.*" – Medical Assistant at a large independent practice.

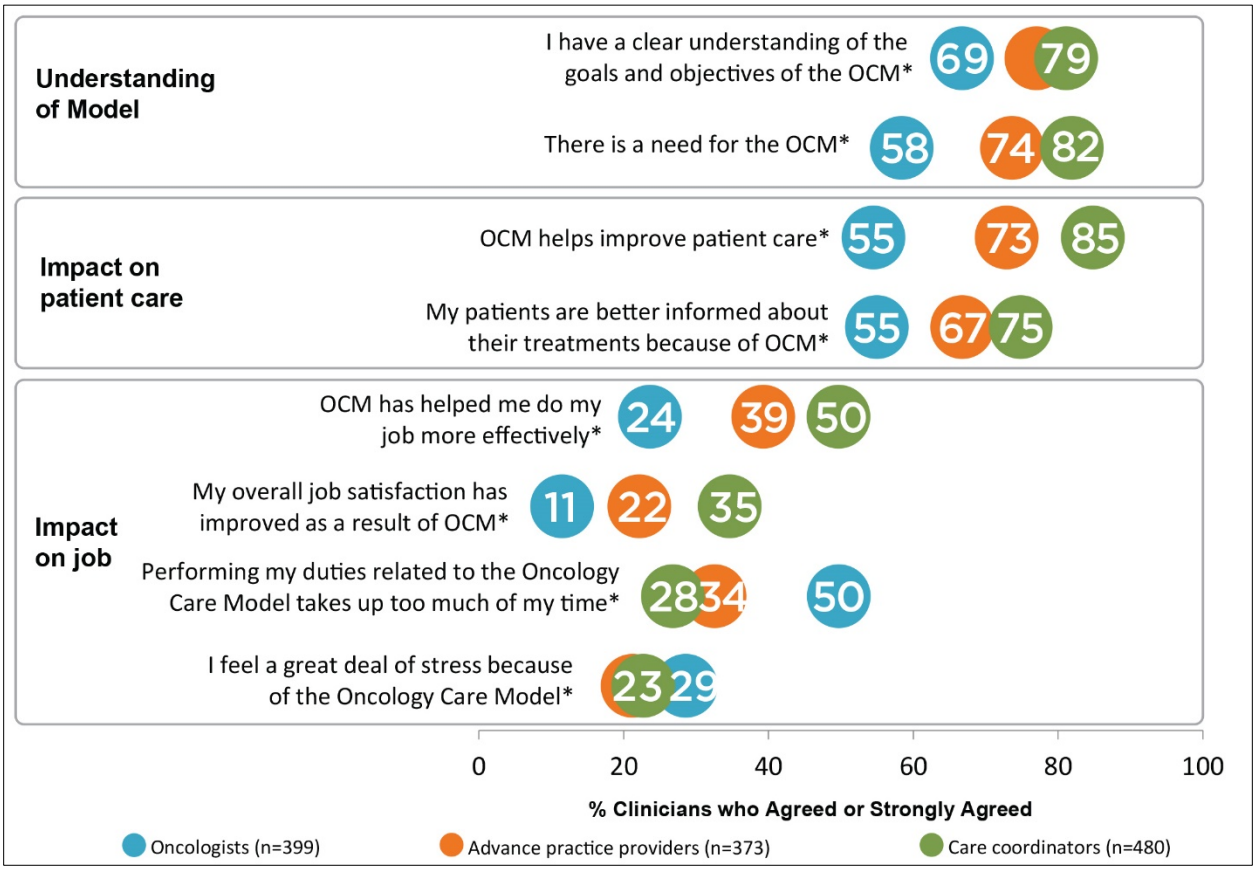
Survey respondents were also asked to rate their cancer care team on a scale ranging from zero (worst cancer team possible) to 10 (best cancer team possible). At baseline, the average rating among survey respondents cared for by OCM practices was 9.3, suggesting that the measure had little room to improve, and there was no statistically significant change over time. We explored subgroups of interest (race, age, and dual-eligibility), and found no differences and no changes over time.

3.3. How do physician and non-physician staff perceive the practice transformations and care redesign implemented for OCM?

Oncologists and other clinicians believe OCM improves patient care and that patients are better informed about their treatment because of OCM.

Clinicians working at OCM practices who responded to our survey included oncologists, advance practice providers (APPs), and clinical care coordinators. All three types of respondents indicated that they understand OCM well and that OCM improves patient care (see **Exhibit 7**). The majority also agree that patients are better informed because of OCM. While all three types of clinicians had broadly positive impressions of OCM, clinical care coordinators (who are mostly registered nurses) had the most positive impressions, and oncologists had the least positive impressions. Care coordinators may have somewhat more positive impressions of OCM than oncologists because they are responsible for providing enhanced oncology services (e.g., patient navigation and telephone triage), and hear directly from patients about the value of these services. A sizable minority of survey respondents, especially oncologists, expressed concerns about the additional time they spend on OCM-related tasks, or feel added stress because of OCM. Based on case studies, most of this added stress appears to be related to documentation required to support OCM-required metrics and reporting.

Exhibit 7: Surveyed Clinicians Say OCM Improves Patient Care, and Patients are Better Informed because of OCM



Source: Analysis of responses to the OCM Clinician Survey (August–October, 2018).
Notes: Estimates weighted for sampling and non-response. *Responses were statistically different by type of clinician (p<0.10).

3.4. Are OCM practices improving symptom management?

Managing patients' symptoms related to cancer treatment can include: identifying patients whose treatments are likely to cause side effects; using drugs to prevent nausea and neutropenia (low white

blood cell counts); answering patients phone calls quickly to assess needs and offer advice; and meeting patients' urgent care needs in the clinic setting whenever possible rather than sending them to the ED.

OCM practices are striving to manage patients' symptoms in the outpatient setting.

Many OCM practices implemented new strategies to address urgent care needs, manage symptoms in the clinic, and reduce ED use and inpatient admissions. **Exhibit 8** summarizes the strategies and some associated successes and challenges reported by the 13 practices we visited in Year Two.

STORIES FROM THE FIELD

"We use a phone triage program that has scenarios for different symptoms. The scripts walk us through the questions to ask, and next steps. If someone calls about diarrhea, the diarrhea script has me ask how long and then how many times in a day. If it's above the threshold in the script, I tell them to come in to see a provider." – Phone triage nurse in a mid-sized independent practice.

Exhibit 8: Practices Offer Same Day Visits, Enhance Triage Functions, and Implement Other Strategies to Address Patient Urgent Care Needs

Strategy		Practices Implementing Strategy due to OCM* (Of 13 Visited in Year Two)	Successes and Challenges
	Offer walk-in clinics or increased slots in oncologist/APP schedules for same-day urgent care visits	4	• Staff at one practice reported that expanding same-day visits helped them focus more on patients' immediate needs, ensuring they "don't fall through the cracks." • Space and staffing limitations affect some practices' ability to offer or expand urgent care visits.
	Emphasize "Call Us First" for symptom management, rather than going to the ED	2	• Many patients now prefer to come to the practice clinic for urgent care, because they can be seen faster at the clinic than at an ED.
	Expand clinic hours	1	• Extended clinic hours enable more oncologist and infusion appointments, and more flexibility in scheduling visits. • Nurse shortages in some communities make it difficult to staff longer clinic hours.
	Hire triage nurses or reorganize triage responsibilities to quickly return patient calls	2	• Triage nurses return urgent patient calls and also make proactive calls to patients starting new treatments, to address potential side effects before these become urgent.
	Adopt software-guided phone triage systems	2	• Triage phone systems help prioritize the most urgent call-backs and provide scripted responses for common problems. • Triage phone systems can be costly, and most are entirely separate from the EHR, leading to duplicative documentation
	Use standard processes/tools to identify high-risk patients	5	• Standardized processes allow staff to more systematically follow-up with patients identified as high-risk and refer them to other specialists and support services as needed

Note: * Practices may implement multiple strategies summarized in this table.

STORIES FROM THE FIELD

A large independent practice told us that they are trying to return patients' calls for help with symptoms within two hours. The practice's rapid call-back rate has gone from under 50 percent to almost 75 percent.

Many of the 13 practices we visited now monitor high-risk patients more closely than they did before OCM, to identify problems early and prevent ED visits and hospitalizations. Criteria used by practices to identify high-risk patients vary and include cancer diagnosis and stage, treatment regimen toxicity, co-morbidities, age, and psychosocial factors. Whether or not they use systematic processes to identify high-risk patients, once such a patient is identified, most OCM practices make proactive outreach calls ("check-ins") and schedule more frequent office visits, as well as referring patients for additional services (e.g., social work, palliative care). Although these efforts were motivated by OCM, the improved attention to the needs of high-risk patients is usually not restricted to Medicare patients—a spillover of OCM that benefits all patients in the practice. OCM practices expect these efforts will reduce use of hospital-based services for chemotherapy side effects. These efforts may also improve OCM patients' experiences, particularly in managing symptoms related to chemotherapy toxicity.

There was no meaningful change over time in patient-reported assistance with symptom management.

Our patient survey asks eight questions about symptom management,[25] which we score together in a symptom management composite measure. (This symptom management composite measure is not used for payment adjustment.) There was a slight decline in patient-reported symptom management from baseline through PP3 (-0.013 on a 10 point scale), and while this reached statistical significance, our clinical experts do not view this slight change as clinically meaningful. In the future, we will compare changes over time among both OCM and comparison survey respondents on all measures of care experience, including symptom management.

Survey respondents gave the lowest rating to receiving help with cancer-related emotional problems. Half of the OCM survey respondents reported that they were very much bothered by emotional problems related to their cancer and treatment. At baseline, and consistently throughout all subsequent survey waves, only 75 percent of those with emotional problems reported that their cancer care team "definitely" or "somewhat" tried to help with these emotional problems.

RELATED SECTIONS

See Section 5.5 for clinical analyses findings related to symptom management (use of antiemetics and granulocyte colony stimulating factors).

[25] The eight symptoms include: pain, energy levels, emotional problems, nausea/vomiting, trouble breathing, coughing, constipation/diarrhea, and neuropathy (pain and tingling in hands or feet).

4. Is OCM successful in lowering Medicare payments? Is utilization of services changing?

Key Findings

OCM Impacts on Medicare Payments and Beneficiary Cost-Sharing

- On average, OCM did not have a statistically significant impact on Medicare episode payments. OCM led to a non-statistically significant reduction in Total Episode Payments (TEP) of $145 (90 percent CI: -$379, $89). TEP results represent reductions in Medicare payments arising from changes in utilization of billed services. The decrease in TEP does not account for Model payments.
- The impact of OCM on TEP varied by cancer bundle:
  - Episodes in higher-risk/high-intensity cancer bundles had a statistically significant *decrease* in TEP of $430 ($p<0.05$). OCM reduced TEP for high-risk episodes in breast cancer, lung cancer, and colorectal/small intestine cancer.
  - Episodes in lower-risk/low-intensity cancer bundles had a statistically significant *increase* in TEP of $130 ($p<0.10$). Low-risk episodes include those for low-risk breast cancer, low-intensity prostate cancer, and low-risk bladder cancer.
- The OCM impact on episode payments also varied by Medicare coverage Part:
  - OCM led to a statistically significant *decrease* in Part A payments of $119 ($p<0.05$), and a non-statistically significant reduction in Part B payments.
  - OCM led to a statistically significant *increase* of $160 ($p<0.05$) in Part D payments.[26]

OCM's Net Impact on Medicare Spending

- OCM resulted in net losses to Medicare that totaled $154 million in PP1 and PP2 combined.

OCM Impact on Utilization of Hospital-Based Services

- Despite practices focusing on decreasing ED visits and hospitalizations, there was no overall impact of OCM on use of or payments for ED visits or acute care hospital (ACH) hospitalizations, with the exception of episode payments to Other Inpatient Hospitals (OIP), which decreased by $124 ($p<0.05$).

Data and Methods

DID and probability analyses use Medicare claims and administrative data from 2014–2018. DID results show the impact of the OCM model on outcomes; this was measured as the change in an outcome between the baseline period and the intervention period among OCM episodes, relative to the change among comparison episodes. DID impact estimates control for episode-, practice-, and market-level characteristics. Probability estimates use a frequentist approximation and represent the probabilities of achieving specific levels of OCM impacts. Analyses of the net impact of OCM were based on Medicare claims from 2014 to 2018, and PP1-PP2 CMS data for MEOS and PBP payments. More information about these methods can be found in Appendix A, and additional results (e.g., non-statistically significant results, subgroup analyses) in Appendix B.

Many of the care delivery changes described in Section 3, including efforts to improve patient navigation and care coordination, and greater access to resources such as phone triage and urgent care, were implemented by practices with the goal of avoiding ED use and hospitalizations in order to reduce

[26] Part D payments are comprised of low-income cost sharing and reinsurance payments as reflected on Part D Prescription Drug Events (PDEs).

Medicare payments. In this section, we describe the impact of OCM on TEP. We also describe impacts on different components of Medicare payments (Parts A, B, D) to understand which payment elements changed during the first three performance periods, and whether TEP changes differed for higher-risk versus lower-risk episodes.[27]

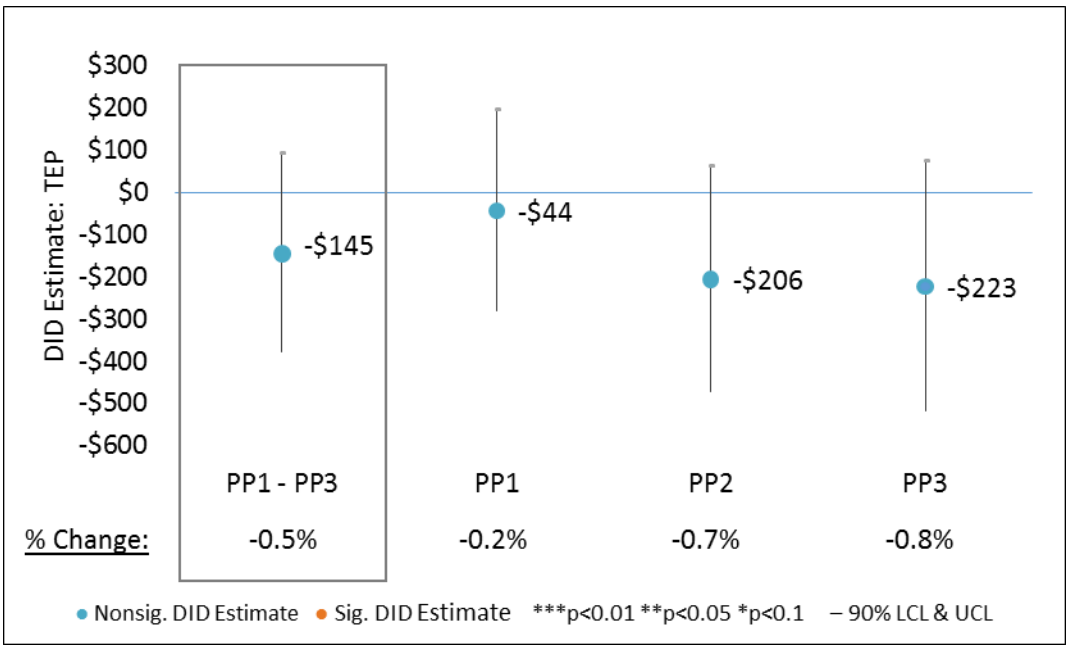
4.1. Is OCM reducing Total Payments during Six-Month Episodes?

The primary objective of OCM is to lower total Medicare spending while improving or maintaining the quality of care. To do this, OCM offers incentives to motivate participants to take actions that reduce the spending for beneficiary episodes more than the cost of the incentives. In order to achieve net savings, OCM first needs to achieve reductions in Medicare spending. TEP is measured as total Part A, B, and D payments (without MEOS) made by Medicare, and is the main outcome measure of OCM's success in lowering Medicare spending. In this section, we present TEP results for all episodes, and for different types of cancer. While OCM did not have a statistically significant impact on TEP, OCM reduced TEP for episodes in higher-risk cancer bundles, and increased TEP for episodes in lower-risk/intensity cancer bundles, relative to comparison episodes.

OCM led to a non-statistically significant reduction in TEP.

Between the baseline period and intervention period, TEP increased for both OCM and comparison episodes, but TEP increased more slowly for OCM episodes. This translated to a non-statistically significant $145 relative reduction in TEP due to OCM (**Exhibit 9**). The impact of OCM on TEP increased in magnitude over time, but was not statistically significant in any of the first three performance periods: the estimated reduction in TEP was $44 in PP1, $206 in PP2, and $223 in PP3.

Exhibit 9: OCM led to a Non-Statistically Significant Decrease in TEP in Each Performance Period



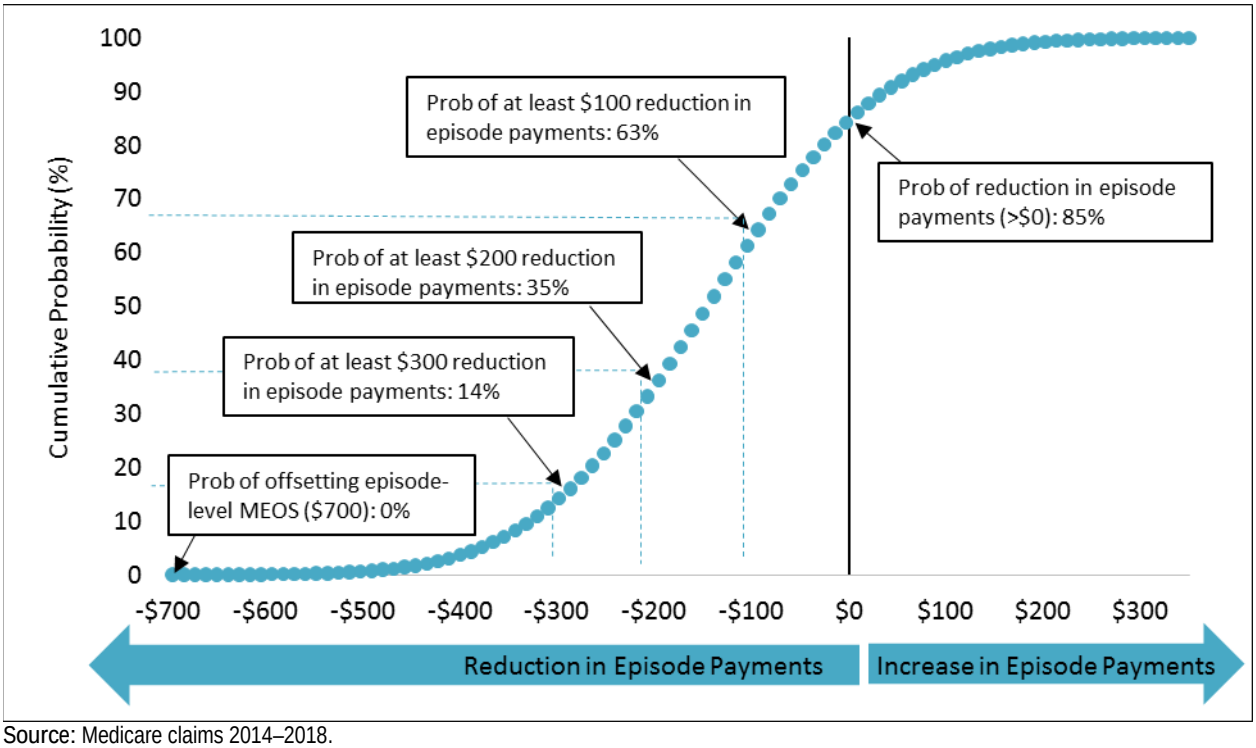
Source: Medicare claims 2014–2018.
Note: PP1: Performance Period 1; PP2: Performance Period 2; PP3: Performance Period 3. The percent change represents the DID estimate as a percent of the average OCM baseline value.

[27] Low-risk episodes include breast and prostate cancers treated only with hormonal therapies, and bladder cancers treated with receipt of Bacillus Calmette-Guérin (BCG) therapy and/or mitomycin.

We estimated the probability that OCM had various degrees of impact on TEP. As shown in **Exhibit 10**, there was an 85 percent probability that OCM led to a reduction in TEP (without MEOS) by PP3, and a 15 percent probability that OCM led to an increase in TEP. There was a 63 percent probability that Medicare payments declined by at least $100 per episode, and a 35 percent probability of at least a $200 decline.

Given that participating practices could, and often did, bill for the MEOS payments, the reduction in TEP would need to be greater than those monthly payments in order to result in savings to Medicare. This did not happen: there was zero probability that the reduction in TEP was enough to offset the MEOS payments, which were more than $700 per episode in both PP1 and PP2.

Exhibit 10: OCM had an 85 Percent Probability of Reducing TEP by at Least one Dollar, but a Zero Percent Probability that the Reduction was Enough to Cover MEOS Payments



Source: Medicare claims 2014–2018.

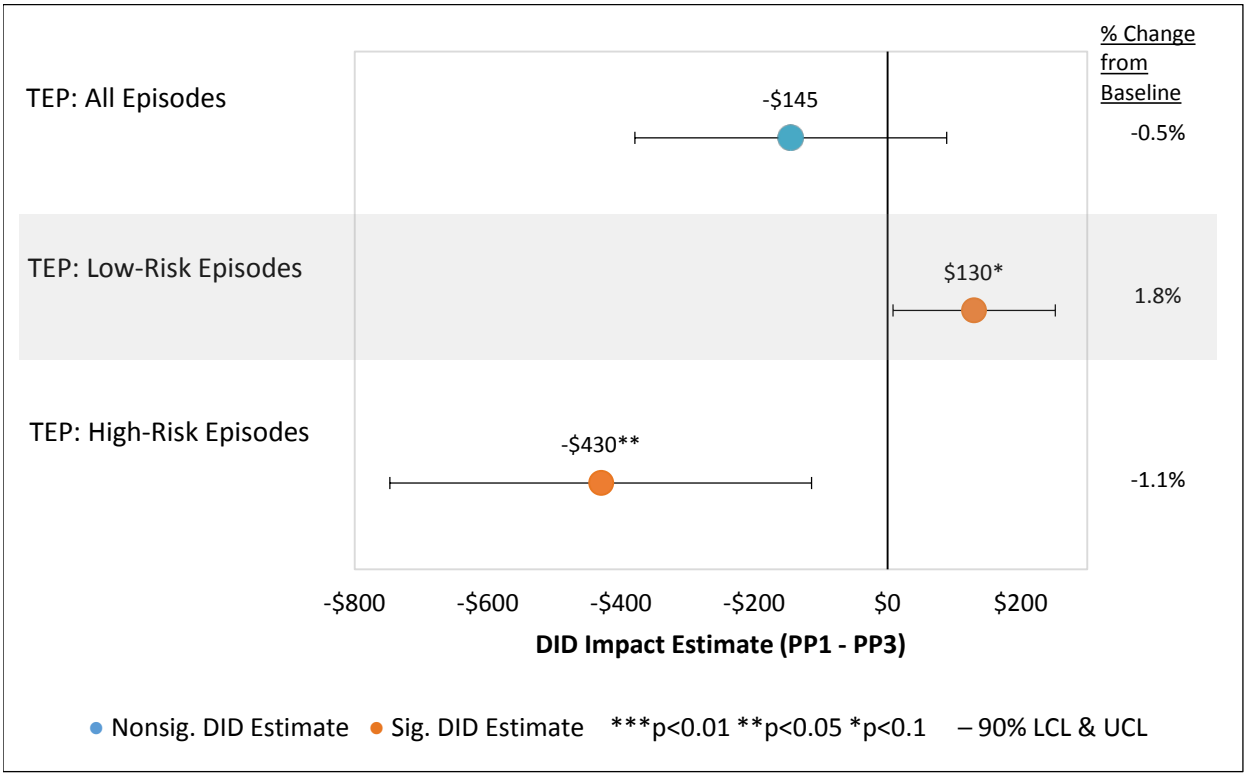
OCM reduced TEP for higher-risk/high-intensity cancer bundles and increased TEP for lower-risk/low-intensity cancer bundles.

OCM includes 24 cancer bundles (and a group of non-reconciliation eligible cancers[28]) that vary in the type, intensity, and cost of treatment. To understand if the impact of OCM differs for cancers with different costs/intensity, we separately analyzed episodes for lower-risk and higher-risk cancer bundles. Episodes for lower-risk cancers include those for low-risk breast cancer, low-intensity prostate cancer, and low-risk bladder cancer, which together represent approximately one-third of all episodes. We classified the remaining 21 cancer bundles, as well as the non-reconciliation eligible cancers, as higher-risk/higher-intensity. TEP for lower-risk cancer bundles was substantially less than TEP for higher-risk bundles. Average TEP in the intervention period was about $7,400 per episode for lower-risk cancer bundles, and almost $45,000 for higher-risk cancer bundles

[28] Non-reconciliation eligible cancers are excluded from CMS's calculations of performance-based payments.

OCM was successful in reducing TEP (without MEOS) for higher-risk/high-intensity cancer bundles, but not for lower-risk/low-cost cancer bundles. TEP *decreased* by $430 relative to comparisons for higher-risk cancer bundles (p<0.05), and *increased* by $130 relative to comparisons for lower-risk cancer bundles (p<0.1). (See **Exhibit 11**.)

Exhibit 11: OCM Decreased TEP among High-Risk Episodes, but Increased TEP among Low-Risk Episodes



Source: Medicare claims 2014–2018
Notes: The percent change represents the DID estimate as a percent of the average OCM baseline value.

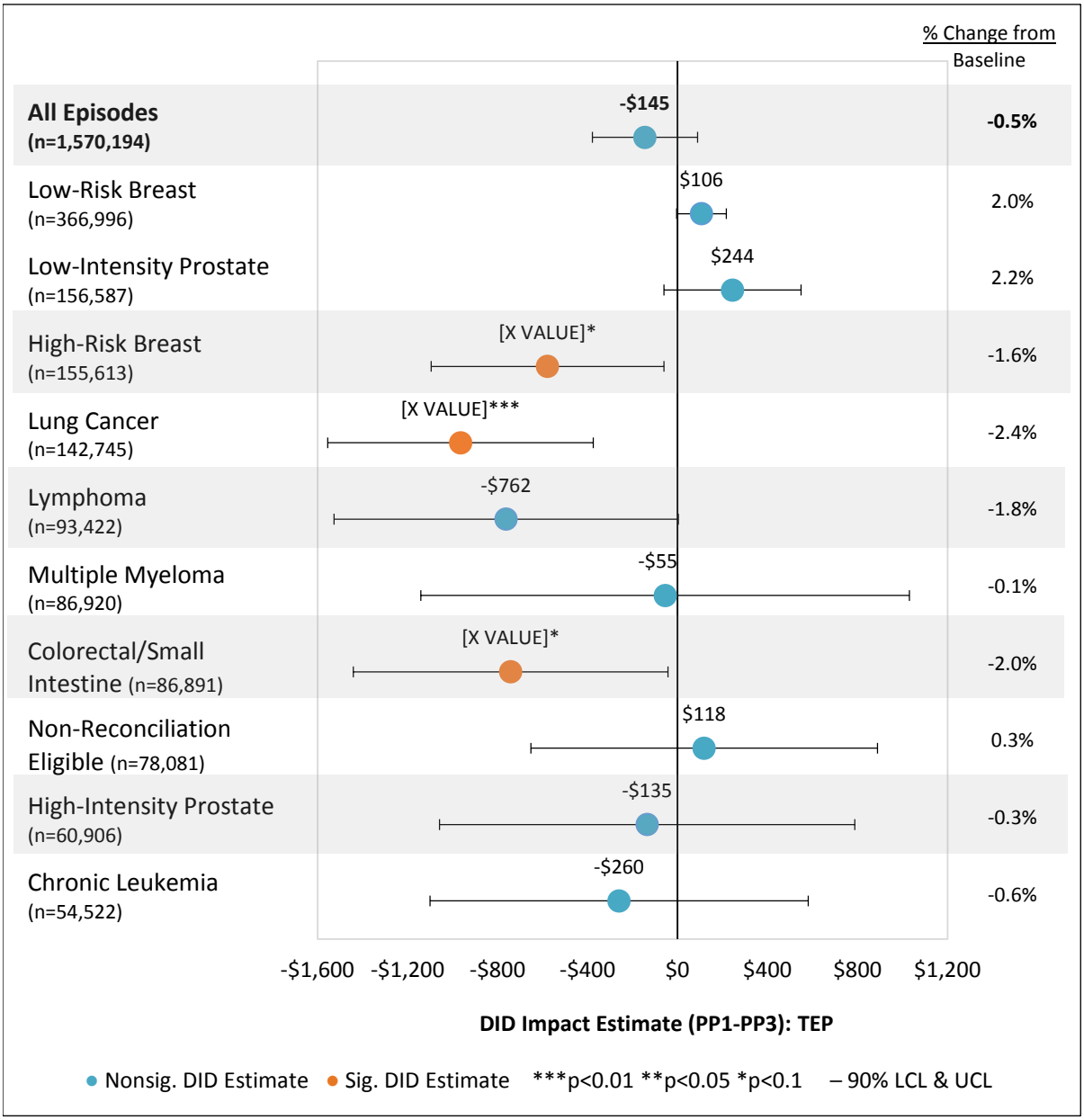
One possible explanation for the differential impact of OCM on higher- and lower-risk cancer bundles is that beneficiaries with episodes in higher-risk bundles have active cancer that is being managed intensively by the oncology practice. These beneficiaries have more hospitalizations and ED visits, and their cancer treatment can involve many costly components (e.g., surgery, radiation therapy, advanced imaging, and costly drugs), some of which may be amenable to reductions. For example, during case studies, we learned that OCM practices are focusing on providing navigation services to high-risk patients with multi-modal treatment because these patients are more likely to have costly—and potentially preventable—ED visits and hospitalizations. It may be more difficult for OCM practices to achieve meaningful reductions in TEP for episodes in lower-risk/low-cost cancer bundles because cancer care may represent a smaller proportion of their medical needs, and there are fewer opportunities to reduce utilization and payments below the baseline level.

OCM reduced TEP for three of the nine most common cancer bundles.

Within the categories of higher and lower-risk cancer bundles, we found additional variation in TEP for various cancer types. For example, high-risk breast cancer and multiple myeloma are both higher-risk cancers, but they differed in average TEP by more than $25,000 during PP1-PP3. To better understand the variability in OCM impacts, we evaluated the nine most common cancer bundles, along with the group of non-reconciliation eligible cancers (see **Exhibit 12**). We found a statistically significant decrease in TEP

relative to comparison episodes for three of the nine cancer bundles: high-risk breast cancer (-$578, p<0.10), lung cancer (-$965, p<0.01), and colorectal cancer (-$742, p<0.10). There was no statistically significant impact of OCM on TEP for the other six most common cancer bundles, or for the group of cancer types not eligible for reconciliation.

Exhibit 12: OCM Led to a Reduction in TEP for High-Risk Breast, Lung, and Colorectal Cancers



Source: Medicare claims 2014–2018.
Notes: The percent change represents the DID estimate as a percent of the average OCM baseline value. The non-reconciliation eligible cancer bundle comprises a set of cancer types identified by CMS to be rare with small samples sizes. As a result, episodes assigned with these cancer types are not eligible for CMS's PBP, although they are eligible to receive MEOS payments.

Several factors may influence the differential impact of OCM on various cancer bundles. First, there could be differential adoption of new drugs or new treatment guidelines (and associated costs) that affect some cancers more than others. It is also possible that OCM practices focused first on the most common

cancers where they identified opportunities to reduce TEP, such as the three higher-risk cancer bundles with statistically significant reductions in TEP. We will continue to assess OCM impacts at the cancer bundle level to understand these patterns.

4.2. Is OCM differentially affecting the components of Medicare payments within episodes: Part A, Part B, Part D?

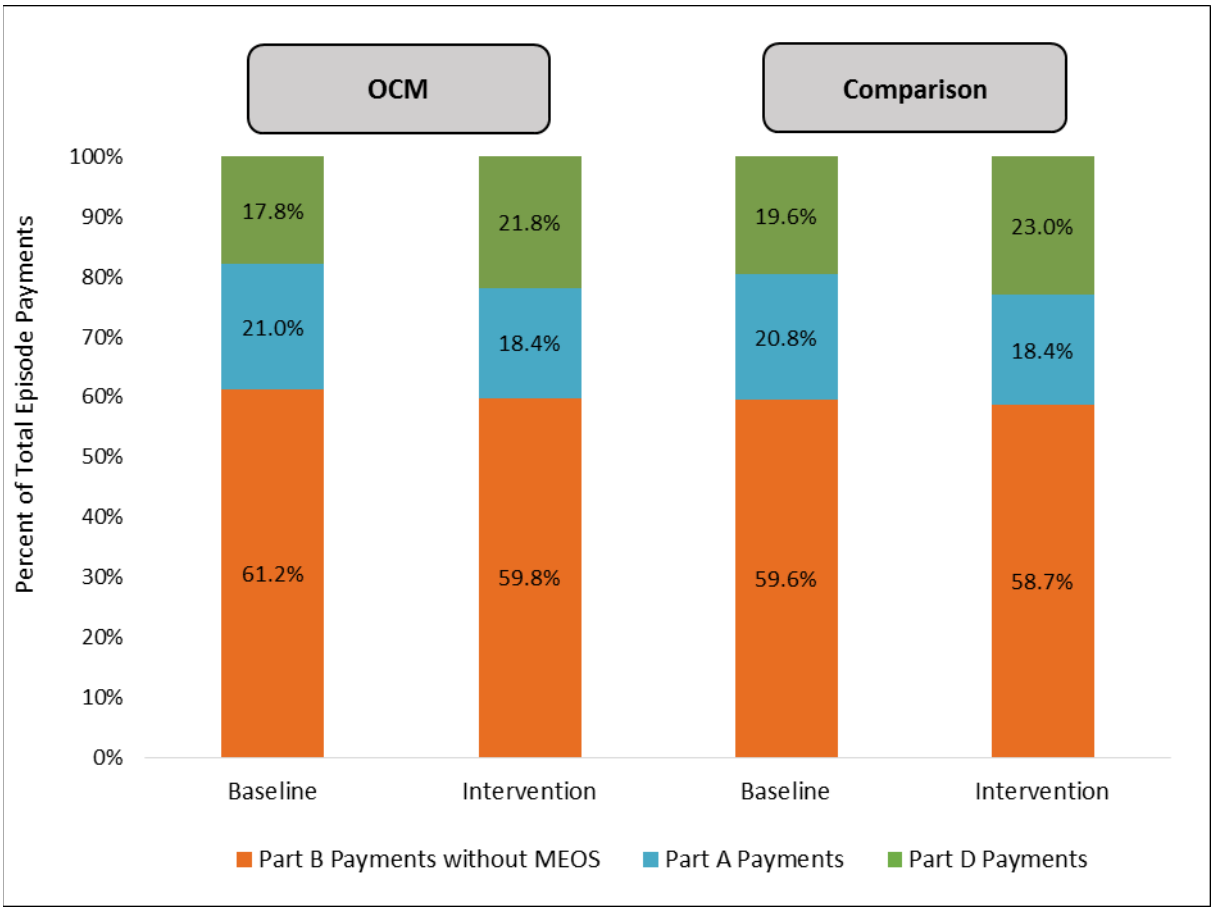
TEP is comprised of payments for Part A—acute care and other inpatient hospital, hospice, and post-acute care services; payments for Part B—outpatient and physician services (without MEOS); and payments for Part D—prescription drug events (PDE).[29] OCM may have differential impacts on these three payment components if practices focus on reducing costs and improving quality in specific service settings. In particular, practices we visited for case studies told us that during the first two years of OCM they focused on reducing unnecessary hospital use by anticipating chemotherapy toxicity and other adverse events, and increasing access to outpatient services to mitigate these events. Such efforts are intended to reduce ED and hospital use, but this could be offset by increases in other Part B and/or Part D payments. In this section, we evaluate how the composition of TEP is changing over time, and whether OCM practices were successful in reducing the three elements of Medicare payment, relative to comparisons.

Growth in TEP was driven by an increase in Medicare payments for Part D.

Growth in payments varied across Medicare Parts A, B, and D (see **Exhibit 13**). Part A payments contributed 21 percent of TEP at baseline, and decreased to 18 percent of TEP during the PP1-PP3 period. Part B payments comprised 60 percent of TEP at baseline, and there was almost no change over time. The largest growth in payments was for Part D, which increased from 18 percent of TEP to 22 percent for OCM episodes, and from 20 percent to 23 percent for comparison episodes.

[29] For more information about Part A, B, and D coverage, see: https://www.medicare.gov/what-medicare-covers/what-part-a-covers/medicare-part-a-coverage-hospital-care

Exhibit 13: Unadjusted Part A Payments Decreased and Unadjusted Part D Payments Increased as a Proportion of TEP, Between Baseline and Intervention

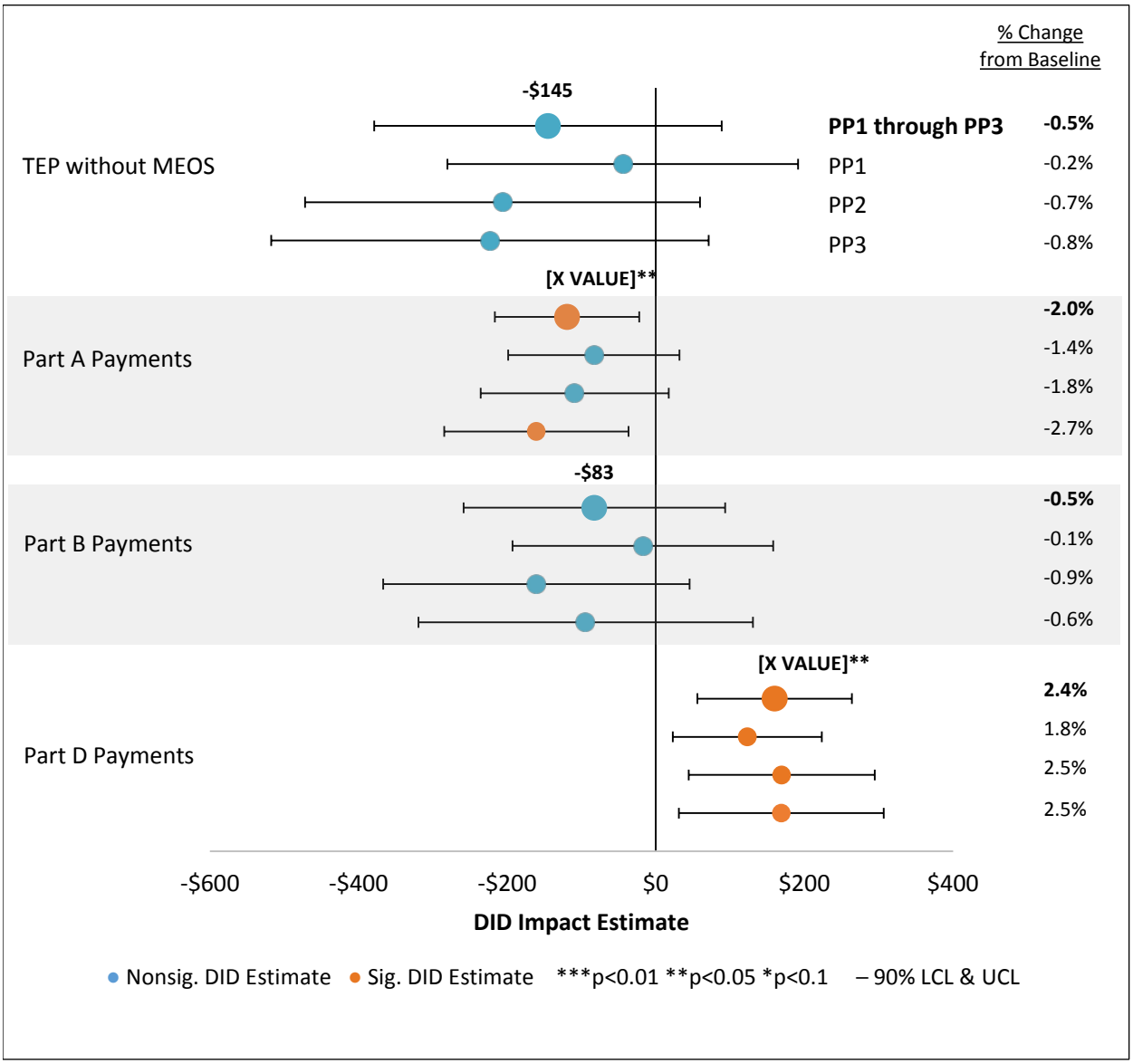


Source: Medicare claims 2014–2018.
Notes: Percentages based on unadjusted values are shown. Part D values are based on all episodes and not limited to beneficiaries enrolled in Part D. Percentage shares of TEP may not sum to 100 percent due to rounding.

OCM led to a reduction in Part A payments, but an increase in Part D payments.

OCM reduced Part A payments by $119 per episode ($p<0.05$), which represents a two percent change from the average OCM baseline value of $5,973 (see **Exhibit 14**). The decrease in Part A payments was most pronounced in PP3. In contrast, OCM led to an increase in Part D payments of $160 per episode ($p<0.05$), representing a 2.4 percent increase from the average OCM baseline value of $6,746. OCM did not have a statistically significant impact on Part B payments, which decreased slightly relative to comparisons.

Exhibit 14: OCM Reduced Part A Payments and Increased Part D Payments in All Periods but the Part A Payment Increase was not Statistically Significant in All Periods



Source: Medicare claims 2014–2018.
Notes: Part D Payment values are based on a subset of episodes for beneficiaries enrolled in Part D. PP1: Performance Period 1; PP2: Performance Period 2; PP3: Performance Period 3. The percent change represents the DID estimate as a percent of the average OCM baseline value.

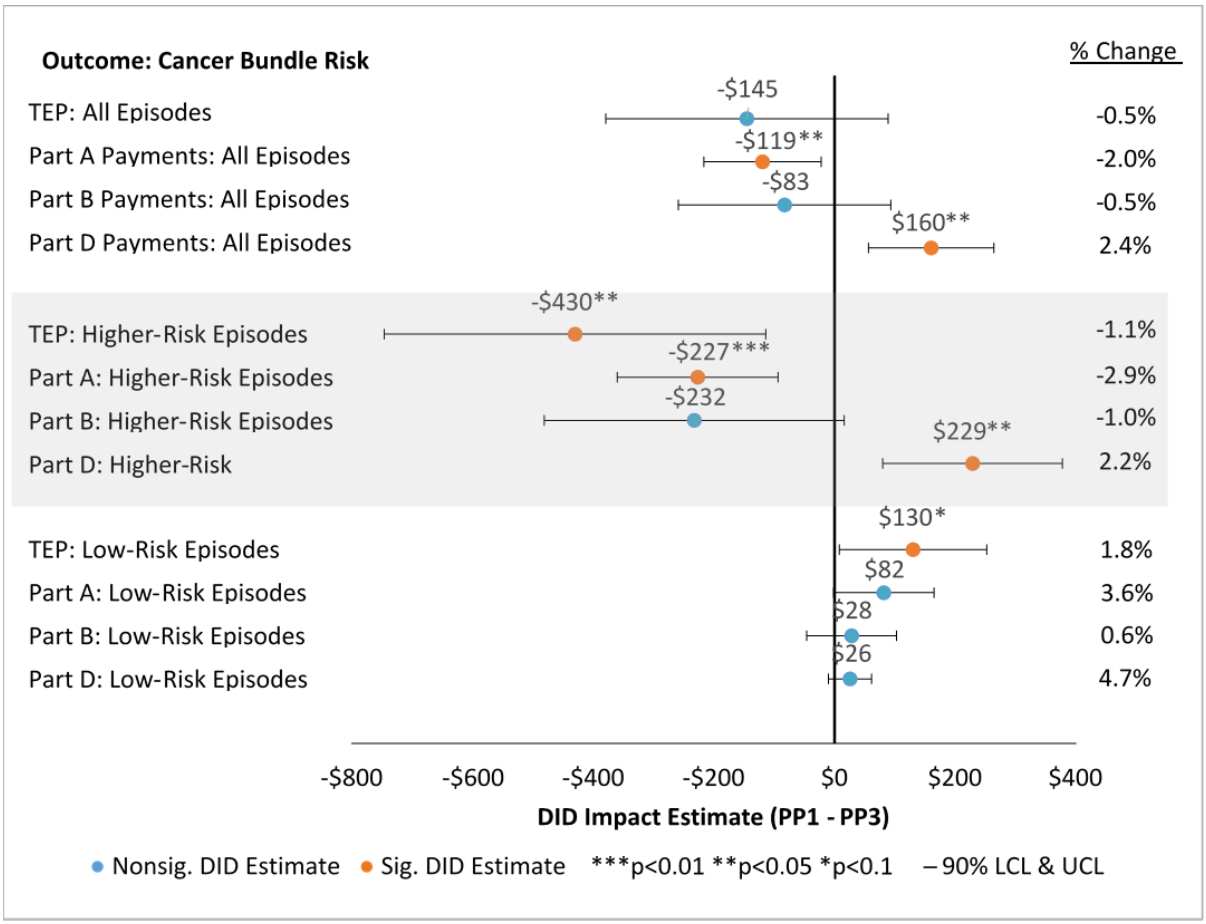
OCM's impact on Part A and D payments was driven by episodes for higher-risk cancer bundles.

We evaluated OCM's impact on payments by Medicare coverage part, separately for episodes in higher-risk and lower-risk cancer bundles. As noted in Section 4.1, OCM led to a decrease in TEP for episodes in higher-risk cancer bundles, especially colorectal/small intestine cancer, high-risk breast cancer, and lung cancer, and led to an increase in TEP for low-risk episodes (low-risk breast cancer, low-intensity prostate cancer, and low-risk bladder cancer). This same pattern was true for impacts on Part A, B and D payments. For higher-risk cancer bundles, OCM reduced Part A payments by $227 per episode ($p<0.01$), had a non-significant impact on Part B payments, and increased Part D payments by $229 per episode

(p<0.05). In contrast, for lower-risk cancer bundles, none of the impact estimates for Part A, B or D payments were statistically significant, although all three increased somewhat (**Exhibit 15**).

The greater OCM impacts for episodes in higher-risk cancer bundles may indicate that OCM practices are targeting cost-reduction efforts among cancer bundles with higher costs and more intense treatments. It is also possible that efforts to reduce payments were most effective for higher-risk cancer bundles.

Exhibit 15: Episodes for Higher-Risk Cancer Bundles Accounted for the Decrease in Part A Payments and Increase in Part D Payments



Source: Medicare claims 2014–2018.
Notes: Part D Payment values are based on a subset of episodes for beneficiaries enrolled in Part D. The percent change represents the DID estimate as a percent of the average OCM baseline value.

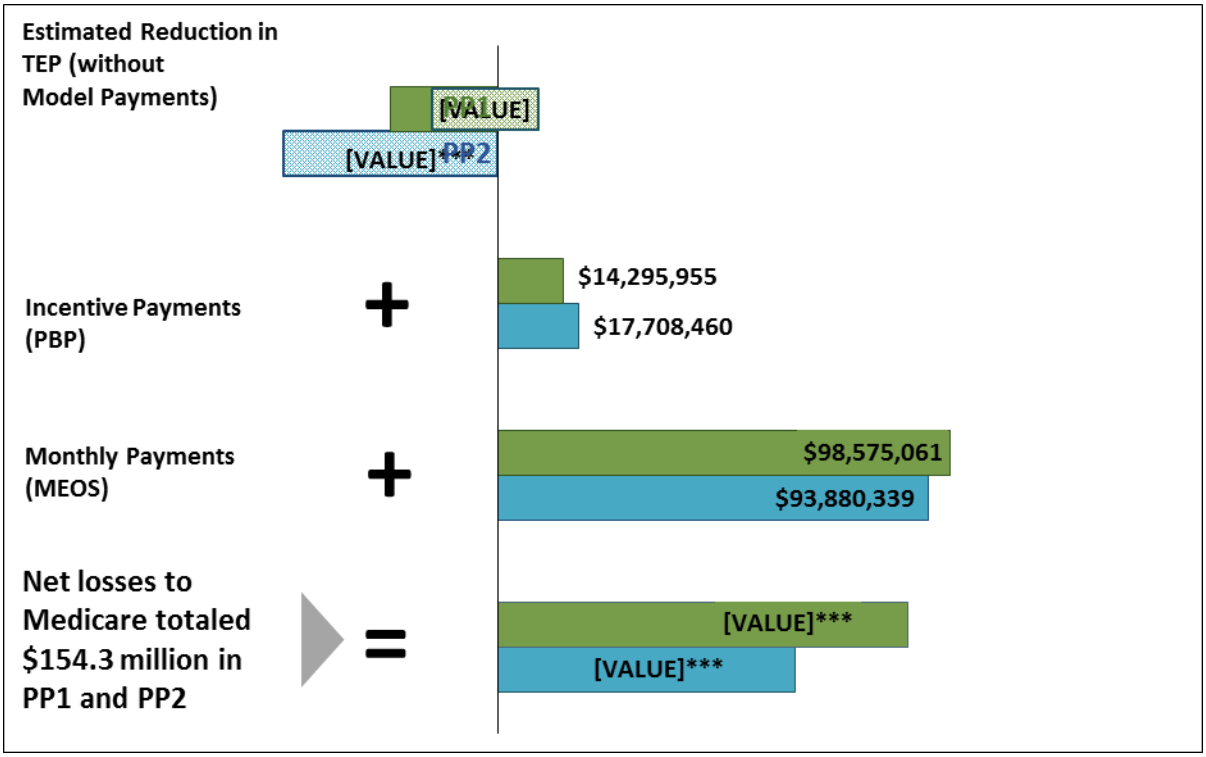
4.3. What is the net impact of OCM on Medicare spending?

A reduction in TEP would suggest that OCM is reducing episode payments, but since TEP does not include the MEOS or PBP payments that Medicare makes to participating practices, reduced TEP does not necessarily translate into savings for Medicare. In this section, we assess the net impact of OCM by incorporating MEOS and PBP payments for the first two performance periods.

OCM resulted in net losses to Medicare in PP1 and PP2.

As discussed in Section 4.1, OCM led to a non-statistically significant reduction in TEP (without MEOS). When Model incentive payments made by CMS to participating practices are accounted for, OCM resulted in net losses to Medicare. **Exhibit 16** shows the reductions in TEP, PBP payments, and MEOS payments, for PP1 and PP2.[30] OCM increased net Medicare payments (i.e., resulted in net losses for Medicare) by an estimated $154.3 million through PP2 ($89,487,262 in PP1[31] and $64,847,909 in PP2[32]).

Exhibit 16: OCM Did Not Reduce TEP Sufficiently to Cover MEOS and PBP, Resulting in Net Losses for Medicare



Source: Medicare claims 2014–2018. OCM first true-up reconciliation reports, PP1–PP2.
Notes: ***Statistically significant at p < 0.01. PP1: Performance Period 1; PP2: Performance Period 2.

30 PP3 is not reported because CMS's first true-up reconciliation of MEOS payments and PBPs was not available at the time of writing.

31 LCL $62,554,583, UCL $116,419,955

32 LCL $39,034,105, UCL $90,661,269

4.4. Is OCM affecting utilization patterns and related payments for specific services?

Despite practices' efforts to manage symptoms in the outpatient setting and help beneficiaries avoid ED visits and hospitalizations, there was no OCM impact on ED visits or hospitalizations for chemotherapy-related toxicity.

If OCM practices are successful in better managing patients' symptoms in the outpatient setting, we would expect to see fewer ED visits and hospitalizations for complications related to treatment toxicities. There were consistent, small declines in all measures of ED visits and hospitalizations related to chemotherapy toxicity, but none were statistically significant.

As described in Section 4.2, OCM led to a decrease in Part A payments, an increase in Part D payments, and no significant change in Part B payments. OCM practices reported that they implemented targeted strategies to reduce hospital-based utilization and related Medicare payments. These efforts did not translate into fewer ED visits or hospitalizations in acute care hospitals (ACHs), or the associated payments, for OCM episodes. However, OCM led to decreased payments to other inpatient hospitals (e.g., prospective payment exempt-cancer hospitals), accounting for most of the OCM impact on Part A payments (reported below).

OCM had no impact on the use of hospital-based services.

ED visits and ACH hospitalizations decreased at similar rates over time in both OCM and comparison episodes. As a result, OCM had no relative impact during the PP1-PP3 period. A few changes began to emerge in certain performance periods: shorter hospital length-of-stay and less use of ICUs (see **Exhibit 17**).

Probabilities: There was a 49 percent probability of some reduction in the number of hospitalizations, and a 53 percent probability of some decrease in ED visits, due to OCM. Any reductions were likely very small.

Exhibit 17: OCM Had no Overall Impact on Utilization of Hospital-Based Services

Measure	Number of Episodes	OCM		COMP		Impact Estimates Through PP3				Period by Period Impact Estimates		
		Base-line Mean	Int Mean	Base-line Mean	Int Mean	DID	90% LCL	90% UCL	Percent Change	PP1 DID	PP2 DID	PP3 DID
Occurrence of ACH hospitalization	1,570,194	27.2%	25.9%	25.9%	24.3%	0.2%	-0.2%	0.5%	0.6%	0.1%	0.1%	0.3%
Number of ACH hospitalizations	1,570,194	0.428	0.403	0.401	0.376	0.000	-0.007	0.007	0.0%	0	0	0
Number of ACH days	404,385	8.543	8.297	8.433	8.246	-0.059	-0.153	0.036	-0.7%	-0.008	0.015	-0.184**
Occurrence of ICU admission	1,570,194	9.9%	9.5%	9.4%	9.2%	-0.3%	-0.6%	0.0%	-2.8%	-0.3%*	-0.2%	-0.3%
Occurrence of ED visit not resulting in hospitalization	1,570,194	23.5%	23.6%	24.2%	24.3%	-0.0%	-0.3%	0.3%	-0.1%	-0.1%	0.1%	0.0%
Number of ED visits not resulting in hospitalization	1,570,194	0.358	0.359	0.373	0.375	-0.000	-0.006	0.005	-0.1%	-0.002	0.002	0

Source: Medicare claims 2014–2018.

Notes: OCM: OCM intervention group; COMP: Comparison group. Int.: Intervention period. Asterisks denote statistically significant impact estimates at *p<0.10, **p<0.05, and ***p<0.01. PP1: Performance Period 1; PP2: Performance Period 2; PP3: Performance Period 3. LCL: Lower confidence limit; UCL: Upper confidence limit.

While OCM had no impact on payments for ACH hospitalizations, OCM did reduce payments for hospitalizations at other inpatient hospitals.

As shown in Section 4.2, OCM led to a statistically significant reduction in Part A episode payments. Although payments for ACH hospitalizations comprise about 65 percent of Part A payments, the relative reduction in Part A payments was not driven by payments for ACH hospitalizations, which decreased similarly for both OCM and comparison episodes. Rather, payments for other inpatient (OIP) hospitalizations were responsible for the reduction in Part A payments. OCM led to a $124 per episode ($p<0.05$) reduction in OIP payments (OIP hospitals include cancer hospitals that are exempt from the Medicare prospective payment system, and inpatient psychiatric facilities) (**Exhibit 18**). Payments for OIP hospitalizations increased in comparison episodes but not in OCM episodes, leading to this relative reduction. Hospitalizations at these other types of hospitals, especially at PPS-exempt cancer hospitals, are important in oncology care and may be much like hospitalizations at academic medical centers (which are included in ACH payments).

RELATED SECTIONS

See Section 4.2 for additional findings on components of Medicare payments.

Exhibit 18: OCM Had no Impact on ACH Payments, but Led to a Reduction in OIP Payments

Measure	Number of Episodes	OCM		COMP		Impact Estimates				Period by Period Impact Estimates		
		Baseline Mean	Int Mean	Baseline Mean	Int Mean	DID	90% LCL	90% UCL	Percent Change	PP1 DID Percentage Point Impact	PP2 DID Percentage Point Impact	PP3 DID Percentage Point Impact
ACH Payments	1,570,194	$3,879	$3,832	$3,629	$3,575	$7	-$66	$79	0.2%	$30	$13	-$19
OIP Payments	1,570,194	-$19	$4	$215	$362	-$124**	-$206	-$42	650.8%	-$122**	-$127**	-$123**

Source: Medicare claims 2014–2018.

Notes: OCM: OCM intervention group; COMP: Comparison group. Int.: Intervention period. Asterisks denote statistically significant impact estimates at *p<0.10, **p<0.05, and ***p<0.01. PP1: Performance Period 1; PP2: Performance Period 2; PP3: Performance Period 3. LCL: Lower confidence limit; UCL: Upper confidence limit.

There was no OCM impact on other Part A or B services or payments, except imaging services.

There was no impact of OCM on the utilization or payments for outpatient E&M visits/services or on outpatient therapy services. Use of skilled nursing facility and home health services decreased between the baseline and intervention periods in both groups, and there was no impact of OCM.

RELATED SECTIONS

Section 6.3 discusses use of ICUs and other services at the end of life.

OCM could reduce use of low-value services, such as excessive imaging or lab tests. In a few case studies, practice administrators described efforts to reduce unnecessary scans, and use of costly PET scans when lower-cost CT scans are sufficient. These efforts may be having a small impact. OCM led to a reduction in the number of standard and "other" imaging services[33] and also reduced both total imaging payments and payments for advanced imaging services; however, the reductions were very small and likely not clinically meaningful.

[33] Definitions for imaging services included under 'standard and other' and 'advanced' are included in Appendix A.

5. Is OCM affecting cancer-related treatment? Affecting cancer-related utlization and payments? Encouraging high-value treatment?

Key Findings

Process Improvements

- Many OCM practices are using or considering treatment pathways software to standardize cancer treatment and encourage oncologists to follow nationally recognized clinical guidelines, and many started using these pathways after OCM began.

Impact of OCM on Cancer Treatment, Payments, and Quality

- OCM had no impact on Part B chemotherapy payments or use.
- Chemotherapy treatment regimens were very similar in OCM and comparison episodes at baseline and changed in similar ways over time.
- OCM had limited impact on increasing higher-value care and reducing potentially lower-value care.
  - OCM led to greater use of biosimilar vs. originator granulocyte colony stimulating factors (GCSF) relative to comparison practices; this reduced cost without impacting quality.
  - OCM did not affect the number of palliative radiation treatments for bone metastases or use of short-course radiation therapy or intensity modulated radiation therapy (IMRT) after breast cancer surgery; such changes could have reduced cost and improved quality.
  - OCM did not lead to greater use of generic imatinib, or first vs. second generation tyrosine kinase inhibitors for chronic myeloid leukemia, both of which are opportunities to reduce Part D payments.

Data and Methods

Using Medicare claims and DID analyses, this section explores utilization and payments for cancer-related services, specific examples of cancer-related treatment, including use of specific treatment regimens, adherence to evidence-based guidelines for specific supportive care treatments, and adoption of new treatment modalities. Clinician survey data reveal oncologists' opinions about OCM's impacts on treatment decisions, and information from 13 case studies explains how practices ensure that cancer treatment follows clinical guidelines. More information about clinical analyses, including radiation therapy, can be found in Appendix E.

OCM incentives could motivate participating practices to eschew low-value, costly treatments with little likelihood of benefitting patients. OCM incentives could also cause practices to restrict the use of potentially beneficial treatments that are very costly, such as immunotherapy. To understand whether OCM is driving treatment choices, we examined utilization and payments for cancer-related services, including the following treatment patterns: chemotherapy drugs used for the most frequently diagnosed cancers; use of novel therapies and costly supportive care treatments; and radiation therapy for patients with early-stage breast cancer and patients with bone metastases.

5.1. Is OCM affecting utilization and payments for chemotherapy or other cancer-related services?

Oncologists may have more control over cancer-related care than they have over other, non-cancer care their patients require. We therefore explored relative impacts on the use of and payments for Part B chemotherapy drugs. Since payments for Part D chemotherapy drugs made up more than 85 percent of overall Part D payments in the intervention period, we assessed impacts on total Part D drug utilization and did not separately evaluate use of or payments for Part D chemotherapy drugs.

OCM had no impact on payments for Part B chemotherapy or payments for costly Part B novel therapies.

OCM had no impact on payments for Part B chemotherapy, or on the number of Part B chemotherapy services. Over time, however, Part B chemotherapy was responsible for a growing share of TEP (27 percent of baseline TEP, 30 percent of intervention period TEP). There was a similar but slightly smaller increase for comparison episodes. These patterns are consistent with national trends in adoption of costly new treatments,[34] rising chemotherapy drug prices (even for established drugs),[35,36] and Medicare drug spending per beneficiary.[37] Novel therapies, recently approved by the FDA, are increasingly important in both chemotherapy regimens and episode payments. Payments for Part B novel therapies increased by 51 percent between the baseline and interventions among OCM episodes and 49 percent among comparison episodes. Despite the rapid growth, there was no statistically significant impact of OCM on Part B novel therapy payments, and there is no indication that OCM limited the choice of treatment regimens or the use of new treatments.[38]

OCM increased payments for Part D drugs.

As noted previously in Section 4.2, OCM led to an increase in Part D payments by $160 ($p<0.05$; 2.4% of OCM baseline mean of $6,746).

There was no detectable OCM impact on other cancer-related services.

There was no statistically significant impact of OCM on cancer-related E&M services or payments, or on Part B radiation therapy services or payments. The lack of impact on radiation therapy is consistent with clinical analyses that show no OCM impact on either adjuvant radiation after breast cancer surgery or palliative radiation for bone metastases.

RELATED SECTIONS

See Section 5.5 regarding clinical analyses about the impact of OCM on radiation therapy.

[34] See https://www.iqvia.com/institute/reports/global-oncology-trends-2018; accessed on May 2, 2019.

[35] Gordon, N, et al. Trajectories of Injectable Cancer Drug Costs After Launch in the United States. *J Clin Oncol* 2018;36(4):319–325.

[36] Dusetzina SB, Huskamp HA, Keating NL. Specialty Drug Pricing and Out-of-Pocket Spending on Orally-Administered Anticancer Drugs in Medicare Part D, 2010 to 2018. *JAMA* 2019;321(20):2025–2028.

[37] Centers for Medicare and Medicaid Services. CMS Drug Spending. Dashboards available at https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/Information-on-Prescription-Drugs/index.html

[38] Defined as treatments for which the OCM definition of "novel therapy adjustment" applies

5.2. How do OCM practices ensure that treatments follow evidence-based guidelines?

OCM practices are required to follow evidence-based clinical guidelines including the use of new, often expensive treatments. Simultaneously, participating practices are eligible for PBPs if they reduce TEP compared to a benchmark. OCM practices follow national, evidence-based clinical guidelines.

For many cancer patients, oncologists must select a treatment regimen from among multiple similarly effective treatment alternatives. The OCM requirement to follow evidence-based guidelines could lead practices to reduce the use of treatment regimens that are not evidence-supported. We first explored the mechanisms OCM practices use to ensure adherence to national clinical guidelines.

All 13 practices we visited in Year Two follow clinical guidelines from the National Comprehensive Cancer Network (NCCN) or the American Society of Clinical Oncology (ASCO), and use the same guidelines for OCM and non-OCM patients. Most have processes through which their oncologists and pharmacists review new published literature and national guidelines to decide which preferred regimens the practice will use. Many practice executives and physician-leaders told us that they do not want to dictate treatment decisions to their physicians. Some also feel strongly that treatment decisions should not be based on cost, and deliberately avoid sharing information about the relative cost of different drugs with physicians, so as not to influence treatment decisions. Other practice leaders are more comfortable considering the relative costs of different treatment options, especially for guideline-consistent supportive therapies (e.g., antiemetics), and encourage the use of treatment pathways programs that favor less costly medications when medically appropriate.

Many OCM practices are using treatment pathways to standardize cancer treatment.

Treatment pathways are a form of clinical decision support that helps oncologists choose from among guideline-concordant treatment regimens.

A majority of oncologists who responded to our survey (60 percent) reported that their practice uses treatment pathways, either developed internally or purchased from a vendor, to guide treatment decisions. Among those whose practice uses treatment pathways, 59 percent indicated that the treatment pathways are either new or enhanced since OCM began.

Five of the 13 practices we visited use pathways software programs to standardize treatment and drug choices. These pathways programs generally consider efficacy, toxicity and cost – in that order. Rather than balancing these trade-offs on an ad hoc basis, and updating as scientific evidence changes, practices that use these software programs rely on the vendors to strike a balance that incorporates cost issues as clinically appropriate. These practices did not necessarily adopt the software because of OCM, but they described the OCM-aligned advantages of these programs, including standardization, reducing outlier (inappropriate) prescribing, encouraging use of less costly generic drugs, and fostering consistent approaches to supportive therapy.

A few practices we visited decided against purchasing treatment pathway software because the programs are costly and do not interoperate with their EHRs. Oncologists must extract information from the EHR, enter it into the pathways software program, select the best pathway, then go back to the EHR to find the regimen and order set that matches the pathway.

5.3. Is OCM affecting of choice of treatment regimens? Is it affecting adoption of new treatments?

OCM financial incentives could lead OCM practices to prioritize lower-cost treatment regimens. The same dynamic could potentially lead OCM practices to slow their adoption of costly new treatments. To identify whether OCM is changing the types of chemotherapy oncologists select, we examined treatment regimens for patients in OCM and comparison practices in the baseline and intervention periods. We

studied a variety of clinical scenarios to develop a richer understanding of the impact of OCM on cancer treatment. Specifically, we examined: treatment regimens for patients initiating new episodes for four of the most common cancer bundles (lung cancer, colorectal cancer, high-risk breast cancer, high-intensity prostate cancer); adherence to oral drug regimens in two cancers for which oral therapies are very important; use of radiation therapy for patients with early-stage breast cancer and for patients with bone metastases; and guideline-concordant use of supportive care treatments (antiemetics and growth factors).

Chemotherapy treatments for common cancers were very similar in OCM and comparison episodes, and changes were similar over time.

We found very similar patterns of chemotherapy treatment in OCM and comparison episodes for patients with lung, colorectal, breast, and prostate cancer (we did not study treatment patterns for other types of cancer). Changes between baseline and intervention periods were quite similar in the two groups, and we found no notable shifts in the use of certain costly and often marginally-effective therapies.[39] These findings suggest that OCM has not thus far influenced chemotherapy regimen selection in a value-based direction.

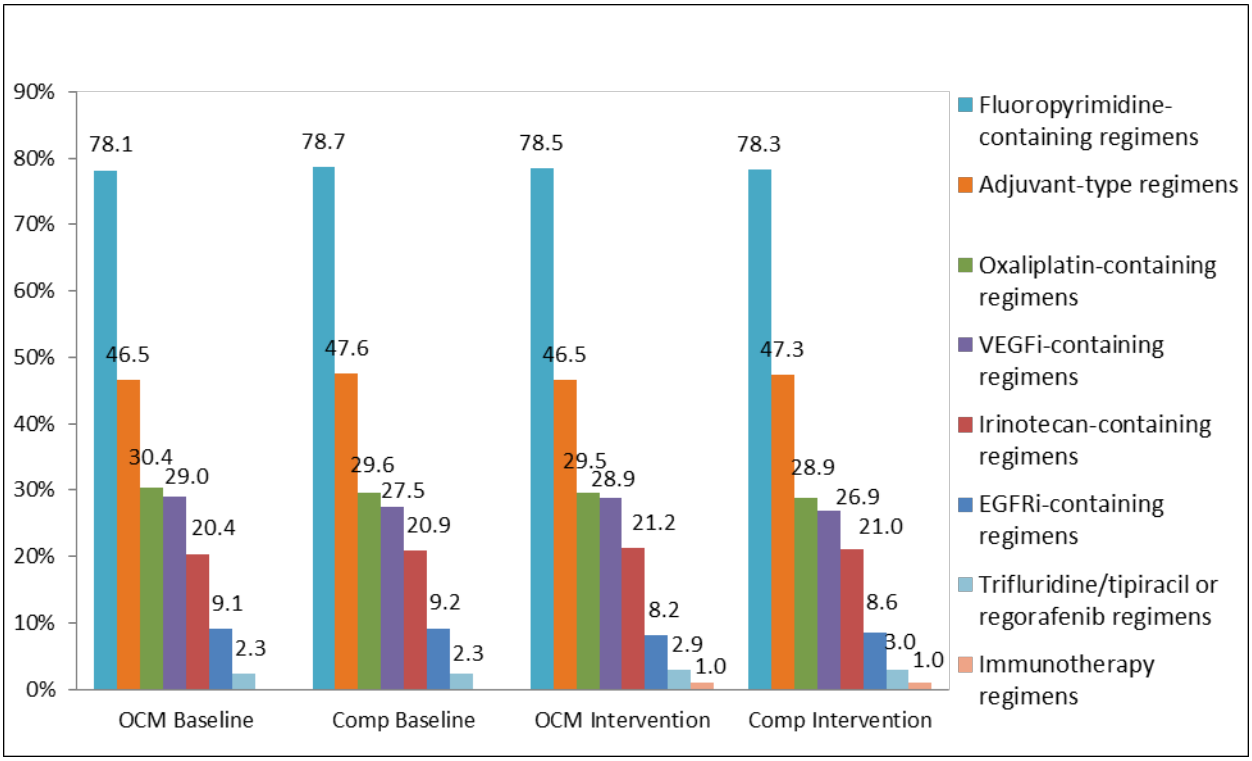
The following sections summarize the cancer-specific analysis of chemotherapy treatment patterns for four cancers. Specifically, we studied the component drugs of the first chemotherapy regimen during each episode, for patients with one of these common cancers.

Detailed descriptions of patterns for specific chemotherapy regimens are included in Appendix E.

Colorectal Cancer: OCM did not substantially affect selection of chemotherapy treatments for colorectal cancer. Patterns of colorectal cancer treatment were very similar for OCM and comparison episodes in both the baseline and intervention periods and there were few changes in regimens in this cohort over time. **Exhibit 19** groups colorectal cancer chemotherapy regimens into non-exclusive descriptive categories. Older cytotoxic chemotherapy agents (including 5-fluorouracil, capecitabine, oxaliplatin, and irinotecan) were the predominant components of colorectal cancer treatment in OCM and comparison episodes. Newer, high-cost agents, such as monoclonal antibodies against vascular endothelial growth factor (VEGF), and epidermal growth factor receptor (EGFR) were also commonly used. Two oral agents (regorafenib and trifluridine/tipiracil) that have shown modest clinical benefits for treatment of advanced, refractory colorectal cancer were used with similar frequency in OCM and comparison episodes (2.9 percent vs 3.0 percent of colorectal cancer episodes during the intervention period).

[39] Zhu J, Sharma DB, Gray SW, Chen AB, Weeks JC, Schrag D. Carboplatin and paclitaxel with versus without bevacizumab in older patients with advanced non-small cell lung cancer. *JAMA* Apr 18 2012;307(15):1593–1601.

Exhibit 19: Similar Treatment Patterns for OCM and Comparison Episodes for Colorectal Cancer



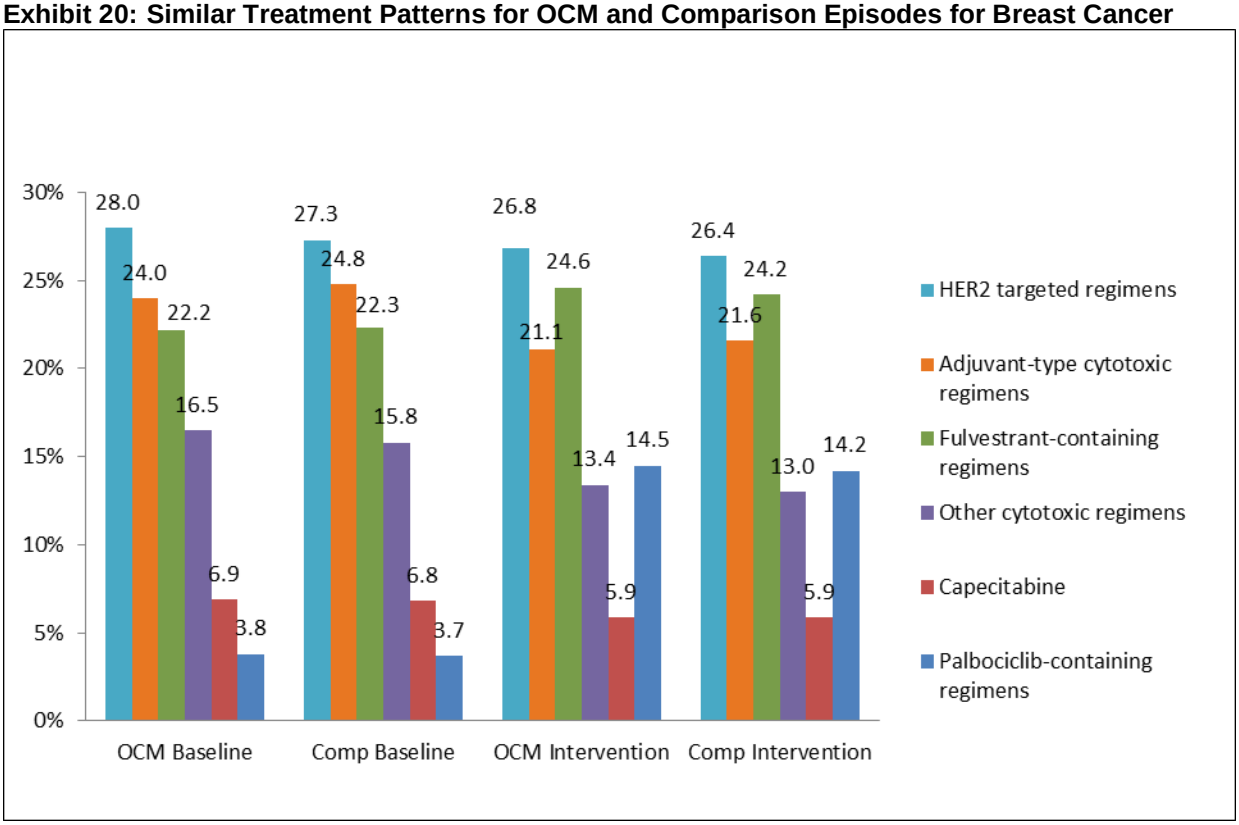
Source: Medicare claims 2014–2018.
Notes: OCM: OCM intervention group; COMP: Comparison group. Int.: Intervention period. Immunotherapy was used in less than 0.1 percent of OCM and comparison episodes during the baseline period. Adjuvant-type regimens: fluoropyrimidine +/- oxaliplatin only.

High-Risk Breast Cancer: The high-risk breast cancer bundle includes two primary groups of patients: those receiving adjuvant chemotherapy after breast cancer surgery, and those receiving palliative chemotherapy for treatment of metastatic breast cancer.[40] Patterns of care were nearly identical for breast cancer episodes in both OCM and comparison practices during both the baseline and intervention periods (**Exhibit 20**). For example, similar proportions of OCM and comparison patients received adjuvant-type cytotoxic chemotherapy regimens, HER2 targeted regimens, and fulvestrant-containing regimens. There is no evidence that OCM slowed the adoption of new and expensive drugs, such as palbociclib. Additionally, OCM did not lead to value-based changes in chemotherapy regimens, despite substantial differences in cost for equally effective adjuvant chemotherapy regimens (see Appendix E).[41]

[40] Regimens limited to tamoxifen or aromatase inhibitors are grouped for OCM in a low-risk breast cancer bundle.

[41] Giordano SH, Niu J, Chavez-MacGregor M, Xhao H, Zorzi D, Shih YT, Smith BD, Shen C. Estimating regimen-specific costs of chemotherapy for breast cancer: Observational cohort study. Cancer. 2016;122(22):3447-3455.

Exhibit 20: Similar Treatment Patterns for OCM and Comparison Episodes for Breast Cancer



Source: Medicare claims 2014–2018.
Notes: OCM: OCM intervention group; COMP: Comparison group. Int.: Intervention period

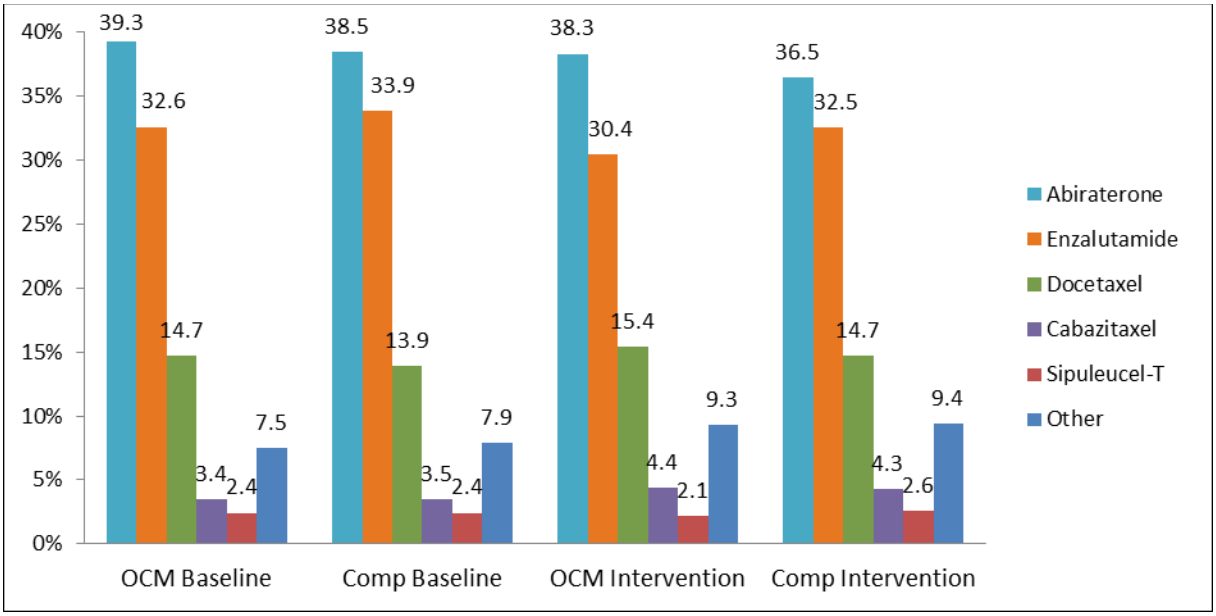
High-Intensity Prostate Cancer Bundle: Patterns of chemotherapy use for prostate cancer were generally similar for OCM and comparison practices. (See **Exhibit 21**.) Abiraterone and enzalutamide were the most common prostate cancer treatment regimens for OCM and comparison episodes in both the baseline and interventions periods.

OCM did not materially affect selection of chemotherapy treatments for high-intensity prostate cancer. Some OCM practices told us they are specifically trying to reduce the use of sipuleucel-T, in favor of lower-cost and equally efficacious alternatives, but due to small numbers we cannot detect whether the reduction for OCM is greater than for comparisons.

STORIES FROM THE FIELD

"We don't think that Medicare should reimburse for certain drugs. We're telling our oncologists they can't use sipuleucel." – Leader in an academic medical practice

Exhibit 21: Similar Prostate Cancer Treatment Patterns for OCM and Comparison Episodes

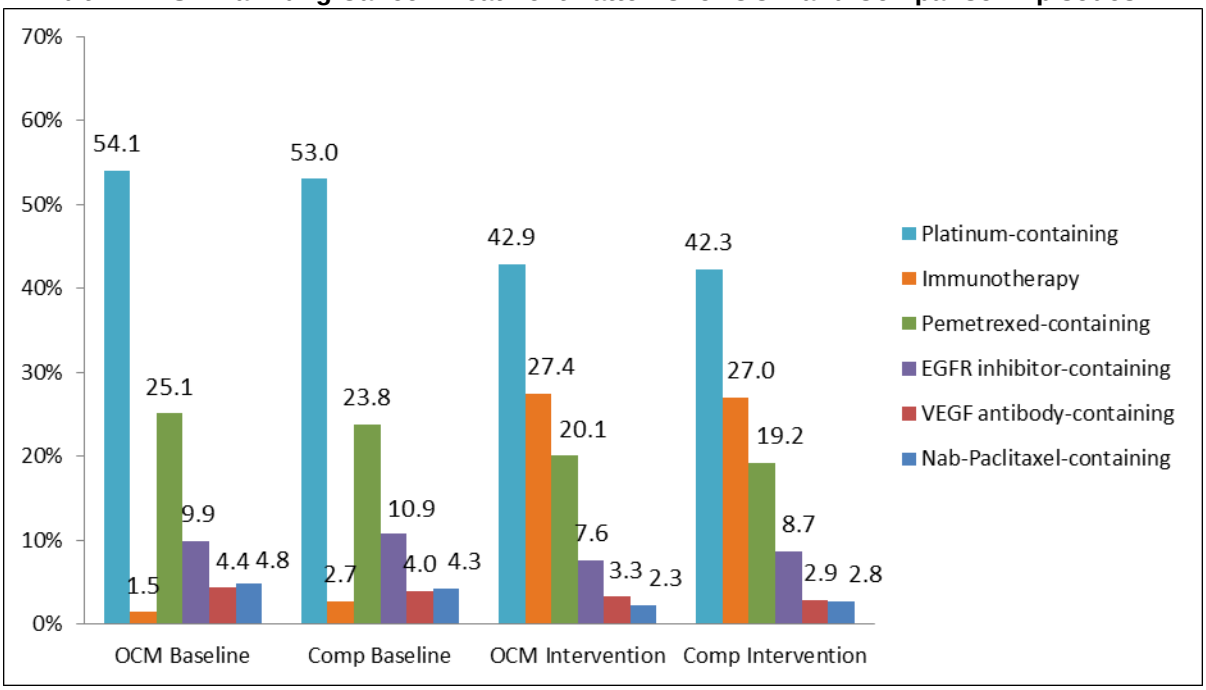


Source: Medicare claims 2014–2018.
Notes: OCM: OCM intervention group; COMP: Comparison group. Int.: Intervention period. Prostate cancer regimens may include concurrent use of leuprolide or other hormonal therapy.

Lung Cancer: There is a broad spectrum of guideline-recommended treatment approaches for lung cancer. OCM practices could therefore try to reduce episode payments by emphasizing use of lower-cost platinum doublets (e.g., carboplatin-paclitaxel), and/or restricting use of higher-cost treatments such as immunotherapy, VEGF antibodies (e.g., bevacizumab), and patent-protected cytotoxic chemotherapies (e.g., pemetrexed and nab-paclitaxel). We examined treatment patterns to understand whether OCM practices are favoring lower-cost treatment regimens for lung cancer or avoiding high-cost regimens.

We examined the component drugs used in the first chemotherapy regimen during each lung cancer treatment episode (many regimens include more than one drug). Patterns of care were similar for lung cancer episodes attributed to OCM and comparison practices. **Exhibit 22** shows that OCM and comparison episodes had very similar proportions of immunotherapy-containing regimens, platinum-based regimens, and EGFR-targeted therapies in the baseline and intervention periods. While the distribution of regimens changed substantially from the baseline to the intervention period, the distributions were very similar for OCM and comparison episodes in each period.

Exhibit 22: Similar Lung Cancer Treatment Patterns for OCM and Comparison Episodes



Source: Medicare claims 2014–2018.
Notes: OCM: OCM intervention group; COMP: Comparison group. Int.: Intervention period.

Use of immunotherapies increased relative to comparisons, and OCM practices appear to be adopting immunotherapies for lung cancer at a higher rate than comparison practices.

In recent years, the FDA has approved new immunotherapies (monoclonal antibodies against PD-1 and PD-L1) and expanded the indications for existing immunotherapies. For this analysis, we examined the use of immunotherapy drugs at any time during the first year of lung cancer treatment, regardless of whether immunotherapy was part of the initial lung cancer treatment regimen or was added later in the year.

During PP1-PP3, episodes with any immunotherapy use had an average TEP of $62,700 per episode, which was more than double the average TEP for episodes without immunotherapy use. The proportion of OCM episodes using immunotherapies increased from 1.3 percent to 5.1 percent between the baseline and intervention periods.[42] This increase in use aligns with the availability of these drugs, as the FDA approved many of them after OCM began.

These treatments have led to substantial improvements in survival compared with previously available treatment options for patients with lung cancer. These treatments are also very costly and can drive up costs when used in situations where clinical evidence for effectiveness is lacking (e.g., in patients with poor performance status or other comorbidities that were not represented in clinical trials supporting efficacy).

Use of high cost immunotherapies increased over time for both OCM and comparison lung cancer episodes, and this increase was greater in OCM than comparisons, resulting in a 2.2 percentage point higher adoption for OCM lung cancer episodes (18 percent relative increase from baseline use). (See **Exhibit 23**). It appears

RELATED SECTIONS
Section 5.1 discusses payments for chemotherapy.

[42] These values represent unadjusted trends in use of immunotherapies.

that OCM practices are adopting these costly new therapies at a higher rate than comparison practices, contributing to the relative increase in chemotherapy payments described in Section 5.1. The extent to which this increased use leads to better long-term patient outcomes is not knowable during the timeframe examined in this report, but the data indicate that OCM is not leading practices to limit the adoption of new, potentially beneficial, high-priced therapies for patients with lung cancer.[43]

Exhibit 23: Use of Immunotherapies for Lung Cancer Increased in OCM Relative to Comparison Practices

	# of Episodes		OCM		COMP		Impact Estimates Through PP3			
	OCM	COMP	Baseline Percent	Int. Percent	Baseline Percent	Int. Percent	DID Percentage Point Impact	90% LCL	90% UCL	Percent Change
Any immunotherapy before 1 year (lung cancer bundle)	30,648	34,431	12.0%	32.0%	13.6%	31.3%	2.2%**	0.4%	4.0%	18.4%

Source: Medicare claims 2014–2018.
Notes: OCM: OCM intervention group; COMP: Comparison group. Int.: Intervention period. Asterisks denote statistically significant impact estimates at *p≤0.10, **p≤0.05, ***p≤0.01. LCL: Lower confidence limit; UCL: Upper confidence limit.

5.4. Is OCM affecting adherence to oral treatment regimens?

If OCM practices are improving adherence to oral treatment regimens, then beneficiaries will take more of their oral drugs. This would lead to more prescription fills during the episode and higher Part D payments. As noted above, there was a relative increase in Party D payments of $160 for OCM vs. comparison practices.

As described in Section 5.1, many practices we visited told us that care coordinators and pharmacists work closely with patients to ensure that they are taking their oral anticancer drugs and to address any side effects or financial barriers that may hinder adherence. In addition, OCM practices are required to discuss expected OOP costs, and these discussions may help to address financial barriers to adherence (other evidence suggests that adherence is higher for individuals with lower OOP costs[44,45]).

Adherence is defined using the proportion of days covered (PDC); this is the number of days in a period for which a patient has sufficient medication (i.e., refilled their prescriptions on time or early) divided by the number of days in the period. For example, if a patient fills a prescription for 30 tablets of a once-daily medication every 30 days for a 180-day period, their PDC is 100 percent (we capped PDC at 100 percent). If a patient fills a prescription for 30 days on day one, day 40, day 100, and day 160, the PDC would be 110/180, or 61.1 percent.

STORIES FROM THE FIELD

"Since OCM began, we now call every patient on oral medication once a month to monitor if they're taking their drugs and getting their refills...if the patient is on the drug for five years, we'll keep calling." – Nurse Practitioner in mid-sized independent practice.

We examined tyrosine kinase inhibitors (TKIs) for CML.

43 In sensitivity analyses that excluded the two very large OCM practices, the DID impact estimate was still positive (1.7 percent) but no longer statistically significant (p=.14).

44 Dusetzina SB, Winn AN, Abel GA, Huskamp HA, Keating NL. Cost sharing and adherence to tyrosine kinase inhibitors for patients with chronic myeloid leukemia. *J Clin Oncol.* 2014;32(4):306–311.

45 Winn AN, Keating NL, Dusetzina SB. Factors associated with tyrosine kinase inhibitor initiation and adherence among Medicare beneficiaries with chronic myeloid leukemia. *J Clin Oncol.* 2016;34(36):4323–4328.

TKIs may be the most successful class of targeted therapies, transforming CML from a condition with a median survival of 5–6 years, to a condition with a near normal life expectancy.[46] Long-term adherence to CML drugs is important because non-adherence may lead to the development of treatment-resistant disease. Prior studies have shown suboptimal adherence to CML therapies, including in the Medicare population. For example, a study using SEER-Medicare data assessed adherence to TKIs among Medicare beneficiaries newly diagnosed with CML during 2007–2011—only 61 percent of patients had optimal adherence (defined as having medication available for more than 80 percent of days in a six-month period).

We also examined oral drug adherence in abiraterone or enzalutamide for prostate cancer. These drugs were initially approved for the treatment of castration-resistant metastatic prostate cancer. More recently, the FDA expanded treatment indications to include metastatic high-risk castration-sensitive prostate cancer (abiraterone in February 2018) and non-metastatic castration-resistant prostate cancer (enzalutamide in July 2018) due to research showing substantial improvement in survival.[47] Patients typically continue taking these drugs until their cancer progresses, and are often switched to one of the other drugs if progression occurs.

Despite OCM practices' enhanced efforts to identify and mitigate adherence barriers, there was no impact of OCM on patient adherence to oral treatment regimens in either of these clinical scenarios. (See Appendix E)

5.5. Are OCM practices taking advantage of medically appropriate opportunities to reduce Medicare payments?

There are some clinical situations where oncologists have opportunities to reduce Medicare spending by adopting high-value treatment approaches that cost less than the alternatives and improve quality of care. We explored five situations to understand whether OCM practices are taking advantage of these opportunities more than comparison practices: 1) reducing discretionary use of antiemetics (used to prevent nausea); 2) reducing low value use of GCSF (used to prevent infection and neutropenia during chemotherapy); 3) switching to less costly forms of GCSF; 4) encouraging/adopting short course radiation therapy after surgery for breast cancer as an alternative to the more costly long course treatment; and 5) reducing the number of radiation sessions (fractions) used for palliative treatment of cancer that has metastasized to the bone.

There was no OCM impact on discretionary use of antiemetics.

Nausea is a common side effect of chemotherapy, and antiemetic (anti-nausea) medications are often prescribed as supportive care for patients undergoing chemotherapy treatment. Some treatments are especially prone to causing nausea—have a high emetogenic risk—and national guidelines specify appropriate antiemetic therapy for low-, medium-, and high-risk chemotherapy regimens. Greater attention to drug costs could appropriately avoid use of high-intensity antiemetics in situations where less potent, less costly options should suffice.

We evaluated discretionary use of more costly "high-intensity" guideline-concordant antiemetic therapy among patients receiving guideline-recommended antiemetic drugs for low and moderate emetogenic risk chemotherapy regimens. For example, guidelines recommend use of a 5-hydroxytryptamine (5-HT3) receptor antagonist with or without a neurokinin (NK1) receptor antagonist, for patients receiving

[46] Gambacorti-Passerini C, Antolini L, Mahon FX, et al. Multicenter independent assessment of outcomes in chronic myeloid leukemia patients treated with imatinib. *J Natl Cancer Inst.* 2011;103(7):553–561.

[47] Apalutamide, another androgen receptor inhibitor, was approved in February 2018 for treating non-metastatic castrate-resistant prostate cancer. Only 29 episodes in the intervention period in either OCM or comparison practices used apalutamide, so we have not included it in this analysis.

moderate emetogenic risk chemotherapy. We classified the discretionary treatment of these patients with dual 5-HT3/NK1 receptor antagonist therapy as "high-intensity."

OCM did not have a statistically significant impact on the use of higher- versus lower-value antiemetic drugs (see Appendix E). Use of high-intensity (and more costly) antiemetic drugs among patients receiving guideline-recommended antiemetic therapy for low- or moderate-risk emetic risk chemotherapy is an example of potentially low-value care, and an opportunity for cost savings that was not realized by OCM practices.

OCM led to a modest reduction in low-value prophylactic use of GCSFs to prevent neutropenia in breast cancer, but not in lung or colorectal cancer.

Patients receiving chemotherapy are also at risk of developing bacterial infections, such as pneumonia or sepsis, due to chemotherapy-induced immuno-suppression. Different chemotherapy regimens are associated with differing risk for immuno-suppression, fever, and neutropenia. The NCCN classifies chemotherapy regimens as high, intermediate, or low risk for fever and neutropenia. High risk is defined as greater than 20 percent risk of fever and neutropenia, intermediate as 10–20 percent risk of neutropenia, and low as less than 10 percent risk.[48]

GCSFs are often given prophylactically (accompanying the first chemotherapy treatment) to prevent fever, infection, and neutropenia. ASCO and NCCN guidelines recommend prophylactic use of GCSFs for patients receiving high-risk chemotherapy regimens.[49] These guidelines advise that patients receiving chemotherapy with intermediate risk of neutropenia may benefit from prophylactic GCSFs if patient characteristics indicate increased risk of fever and neutropenia, but use in these situations is of lower-value. The prophylactic use of GCSFs is discretionary for patients whose chemotherapy has an intermediate risk of causing neutropenia, and discouraging its overuse could reduce episode costs. Patients receiving chemotherapy regimens with low risk of causing neutropenia generally should not be given prophylactic GCSFs. GCSFs are costly and are widely suspected to be overused. ASCO's 2012 ***Choosing Wisely*** campaign included the recommendation: *Do not use white cell stimulating factors for prevention of febrile neutropenia for patients with less than 20 percent risk for this complication.*[50]

During case studies, several practices mentioned that they are exploring mechanisms to ensure that GCSFs are used appropriately. We evaluated the impact of OCM on use of GCSFs for patients receiving chemotherapy regimens at intermediate and low risk for febrile neutropenia, where reduced use of GCSFs may reflect higher-value care. We focused on three common cancers where chemotherapy regimens may increase risk for fever and neutropenia: high-risk breast cancer, lung cancer, and colorectal cancer.

- *Breast Cancer:* OCM led to less use of discretionary and potentially low-value prophylactic GCSFs (and attendant costs) during breast cancer episodes treated with chemotherapy that carries an intermediate risk of febrile neutropenia. Prophylactic use of GCSFs declined slightly for OCM episodes and increased slightly for comparison episodes, yielding a statistically significant OCM impact of 7.7 percentage points. There was no OCM impact on prophylactic GCSF use during low-risk chemotherapy episodes. (See **Exhibit 24**.)
- *Lung Cancer:* OCM had no impact on prophylactic GCSF use during lung cancer chemotherapy episodes with intermediate or low risk for neutropenia, despite apparent evidence of overuse of

48 National Comprehensive Care Network. NCCN Guidelines for Supportive Care: Hematopoietic Growth Factors. Version 2.0–March 27, 2019. Available from: https://www.nccn.org/professionals/physician_gls/default.aspx#supportive

49 Smith TJ, Bohlke K, Lyman GH, et al. Recommendations for the Use of WBC Growth Factors: American Society of Clinical Oncology Clinical Practice Guideline Update. *J Clin Oncol*. Oct 1 2015;33(28):3199–3212.

50 Schnipper LE, Smith TJ, Raghavan D, et al. American Society of Clinical Oncology identifies five key opportunities to improve care and reduce costs: the top five list for oncology. *J Clin Oncol*. May 10 2012;30(14):1715–1724.

GCSFs for lung cancer patients. Use of GCSFs declined in both OCM and comparison episodes where the chemotherapy regimen posed low risk of febrile neutropenia, but over 10 percent of such episodes (where guidelines discourage use) still had prophylactic GCSFs in both groups, suggesting additional room to improve.

- *Colorectal Cancer:* OCM did not lead to any changes in prophylactic GCSF use during colon cancer episodes where chemotherapy regimens carried low- or intermediate- risk of febrile neutropenia. Rates were lower than for breast and lung cancer, but there was nevertheless room for improvement.

Exhibit 24: OCM Led to a Modest Reduction in Potentially Low-value Prophylactic Use of GCSF for Breast Cancer Regimens with Intermediate Risk for Fever/Neutropenia, but No Changes for Lung or Colorectal Cancer

Measure	# of Episodes		OCM		COMP		Impact Estimates Through PP3			
	OCM	COMP	Base-line Mean	Int. Mean	Base-line Mean	Int. Mean	DID Percentage Point Impact	90% LCL	90% UCL	Percent Change
Use of Growth Factors – Breast Cancer										
Intermediate risk	2,056	2,228	52.3%	51.6%	43.4%	50.4%	-7.7%**	-13.1%	-2.2%	-14.7%
Low risk	9,336	9,693	1.8%	1.6%	1.9%	1.7%	0.1%	-0.5%	0.6%	3.2%
Use of Growth Factors – Lung Cancer										
Intermediate risk	11,422	12,776	29.6%	27.3%	27.4%	25.9%	-0.8%	-3.0%	1.4%	-2.8%
Low risk	12,103	13,771	18.4%	13.5%	16.9%	11.9%	0.1%	-1.8%	2.0%	0.5%
Use of Growth Factors – Colorectal Cancer										
Intermediate risk	4,993	5,208	10.6%	11.4%	11.9%	10.8%	1.9%	-0.5%	4.4%	18.2%
Low risk	7,098	7,901	4.2%	3.5%	3.2%	2.5%	-0.1%	-1.1%	1.0%	-1.4%

Source: Medicare claims 2014-2018.
Notes: OCM: OCM intervention group; COMP: Comparison group. Int.: Intervention period. Asterisks denote statistically significant impact estimates at *p≤0.10, **p≤0.05, ***p≤0.01. LCL: Lower confidence limit; UCL: Upper confidence limit. Risk refers to risk for fever and neutropenia.

OCM led to a relative increase in use of less costly biosimilar filgrastim, but had little impact on selection of GCSF agent (filgrastim versus more costly pegfilgrastim).

GCSFs include filgrastim, a short-acting agent that requires daily injections for 5-10 days, and pegfilgrastim, a long-acting and more costly form that is given as a single injection. The two drugs are equally effective at preventing fever and neutropenia. We evaluated whether OCM influenced receipt of pegfilgrastim versus the less costly but also less convenient filgrastim, among episodes for patients who received any GCSF agent (filgrastim or pegfilgrastim) for three common cancers (breast cancer, lung cancer, and colorectal cancer). This substitution is complicated because patients who are accustomed to the once-per-cycle schedule of the more costly pegfilgrastim may resist switching to 5-10 daily injections of filgrastim. We also assessed use of biosimilar filgrastim—one of the only biosimilar drugs available for cancer care in the first three performance periods—versus originator filgrastim. Biosimilar filgrastim offers the same benefit as originator filgrastim at a lower cost, which is an opportunity to reduce lower-value care. We selected the first administration of GCSF given during an episode to determine the type of GCSF agent.

Pegfilgrastim was used more often than the less costly filgrastim for all three cancer types in OCM and comparison episodes (see **Exhibit 25**), and there was limited OCM impact on substitution for filgrastim. Specifically, there was a statistically significant 1.9 percentage point relative decline in pegfilgrastim use (i.e., a relative increase in filgrastim use) during OCM episodes for breast cancer patients who received any GCSF. This should reduce Medicare payments, because payments for filgrastim are lower than for pegfilgrastim. There was a similar 1.9 percentage point relative decline in pegfilgrastim use during OCM

lung cancer episodes, although that was not statistically significant. There was no statistically significant change in pegfilgrastim (versus filgrastim) use in colorectal cancer episodes.

Among patients who received filgrastim, we found a strong, consistent, and statistically significant impact of OCM on increasing use of biosimilar (versus originator) filgrastim, relative to comparisons. During the baseline, biosimilar filgrastim use was lower for OCM episodes than for comparison episodes. However, biosimilar filgrastim use was much higher for OCM episodes during the intervention period. OCM was associated with a greater than 20 percentage point impact on use of biosimilar filgrastim for each of the three cancer types we studied, which should reduce Medicare payments.

Exhibit 25: Little OCM Impact on Use of Pegfilgrastim versus Filgrastim; Among users of Filgrastim, Substantial Impact on Substitution of Lower Cost Biosimilar versus Originator Filgrastim

Measure	# of Episodes		OCM		COMP		Impact Estimates Through PP3			
	OCM	COMP	Baseline Mean Percent	Int. Mean Percent	Baseline Mean Percent	Int. Mean Percent	DID Percentage Point Impact	90% LCL	90% UCL	Percent Change
Use of Pegfilgrastim versus Filgrastim (biosimilar or originator)										
Breast cancer	17,895	18,830	78.6%	78.5%	77.3%	79.2%	-1.9%*	-3.7%	0.0%	-2.4%
Lung cancer	19,832	20,250	77.2%	77.3%	74.3%	76.2%	-1.9%	-3.8%	0.1%	-2.4%
Colorectal cancer	8,910	8,425	65.5%	66.5%	67.4%	69.1%	-0.7%	-3.8%	2.4%	-1.1%
Among Users of Filgrastim, Use of Lower Cost Biosimilar versus Originator Filgrastim										
Breast cancer	3,785	4,142	4.1%	55.1%	15.5%	45.5%	20.9%***	10.0%	31.9%	511.0%
Lung cancer	4,707	4,811	3.1%	58.2%	16.4%	49.1%	22.5%***	10.8%	34.2%	731.3%
Colorectal cancer	2,679	3,006	0.0%	56.8%	17.5%	47.6%	27.5%***	16.0%	39.1%	NA

Source: Episode analytic file (2014–2018).
Notes: OCM: OCM intervention group; COMP: Comparison group. Int.: Intervention period. Asterisks denote statistically significant impact estimates at *p≤0.10, **p≤0.05, ***p≤0.01. LCL: Lower confidence limit; UCL: Upper confidence limit.

These findings indicate that some OCM practices are improving the value-based use of GCSFs. There appears to be a small OCM impact in the direction of substituting lower-cost filgrastim in place of pegfilgrastim, at least in breast cancer. This substitution may be less convenient for patients, however, as it requires daily injections for 5-10 days, rather than a single injection for pegfilgrastim. In addition, OCM practices emphasized use of biosimilar versus originator filgrastim, reflecting a straightforward strategy of therapeutic substitution.

OCM did not lead to more value-based radiation treatment after breast cancer surgery, or palliative radiation for bone metastases.

The number of radiation treatment sessions (called fractions) is prescribed by the treating radiation oncologist, and in FFS Medicare a claim is submitted for each fraction/session. We explored whether OCM is affecting use of radiation therapy in two clinical scenarios: adjuvant radiation during breast cancer episodes, and palliative radiation for bone metastases. These scenarios have the potential to reduce costs by limiting the number of radiation fractions or by selecting less costly types of radiation therapy. OCM did not result in a value-based shift toward less costly short course radiation therapy (rather than more costly longer course) after breast cancer surgery, and did not affect the number of radiation fractions for palliative radiation of bone metastases.[51]

[51] Details of these analyses are presented in Appendix E.

Short Course Radiation after Breast Cancer Surgery

Radiation therapy after either lumpectomy or mastectomy improves breast cancer survival and reduces risk for cancer recurrence.[52,53] Shorter courses of radiation given to the residual breast following lumpectomy have outcomes that are equivalent to longer treatment courses and may also reduce toxicity.[54] Shorter treatment schedules are more convenient for patients, and are also less costly for payers and patients. As a result, in 2013 the American Society for Radiation Oncology (ASTRO) made the following recommendation as part of the American Board of Internal Medicine (ABIM) ***Choosing Wisely*** campaign: *Do not initiate whole breast radiotherapy as a part of breast conservation therapy in women with early stage invasive breast cancer without considering shorter treatment schedules.*[55]

Another factor associated with increased cost of adjuvant breast radiotherapy is use of IMRT (intensity modulated radiation therapy), a more technologically complex and costly form of radiation therapy. IMRT has not been shown to improve outcomes or decrease toxicity compared with conventional radiation therapy. This led to another ASTRO ***Choosing Wisely*** recommendation: *Do not routinely use IMRT to deliver whole breast radiotherapy as part of breast conservation therapy.*[56]

To assess whether OCM is affecting use of adjuvant radiation for breast cancer, we identified patients with breast cancer who were treated with lumpectomy or mastectomy, many of whom would also be eligible for adjuvant-type radiation. We first examined likelihood of receiving any adjuvant radiation therapy during an OCM-defined episode triggered by chemotherapy and found no OCM impact on receipt of adjuvant-type radiation for breast cancer. Among patients who received any radiation, we assessed both the number and type of radiation fractions. These analyses are summarized here.[57]

- *Receipt of IMRT among Patients Treated with Adjuvant-Type Radiation for Breast Cancer*. Among patients receiving adjuvant-type radiation, the proportion who received IMRT decreased from the baseline to the intervention period in OCM and comparison episodes, and there was no statistically significant OCM impact on receipt of IMRT.
- *Receipt of Short Course Radiation among Patients Treated with Adjuvant-Type Radiation for Breast Cancer*. Use of short course adjuvant radiation increased in both OCM and comparison episodes from approximately 23 percent receiving short course radiation in the baseline to 31 percent in the intervention period, with no significant OCM impact.

Palliative Radiation for Bone Metastases

Patients with cancer that has metastasized to the bone may receive palliative radiation treatment to alleviate pain, reduce fracture risk, and/or prevent neurologic impairment. Longer treatment courses (more fractions/sessions) do not improve symptom relief compared to shorter schedules, and shorter treatment schedules are less costly and more convenient for patients. As a result, in 2013 ASTRO

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52 Darby S, McGale P, Correa C, et al. Effect of radiotherapy after breast-conserving surgery on 10-year recurrence and 15-year breast cancer death: meta-analysis of individual patient data for 10,801 women in 17 randomised trials. *Lancet* Nov 12, 2011;378(9804):1707–1716.

53 McGale P, Taylor C, Correa C, et al. Effect of radiotherapy after mastectomy and axillary surgery on 10-year recurrence and 20-year breast cancer mortality: meta-analysis of individual patient data for 8135 women in 22 randomised trials. *Lancet* Jun 21, 2014;383(9935):2127–2135.

54 Valle LF, Agarwal S, Bickel KE, Herchek HA, Nalepinski DC, Kapadia NS. Hypofractionated whole breast radiotherapy in breast conservation for early-stage breast cancer: a systematic review and meta-analysis of randomized trials. *Breast Cancer Res Treat*. Apr 2017;162(3):409–417.

55 Choosing Wisely. American Society for Radiation Oncology: Ten Things Physicians and Patients Should Question. Last updated 06/18/2018. Available from: https://www.choosingwisely.org/societies/american-society-for-radiation-oncology/

56 Ibid.

57 Additional details about OCM impact on radiation therapy are available in Appendix E.

recommended that radiation oncologists should *avoid using treatment courses of longer than 10 fractions when delivering palliative treatment for bone metastases.*[58]

We evaluated the number of radiation fractions delivered to patients receiving radiation therapy for bone metastases (as determined from diagnosis codes). There was no significant OCM impact on either 1) the proportion of patients who received guideline-concordant treatment with 10 or fewer radiation fractions, or 2) the proportion of patients who received the lowest-cost and most convenient treatment with a single fraction of radiation.[59]

In treatment episodes for chronic myeloid leukemia (CML), OCM did not lead to preferential selection of less costly treatment regimens.

Analyses of treatment for CML are presented in Appendix E. Briefly, NCCN treatment guidelines recommend that the majority of patients with CML (those without high-risk disease) may be treated with either imatinib (a first-generation agent), or with more costly second-generation agents (nilotinib, dasatinib or bosutinib). Contrary to model incentives for value-based care, OCM led to greater use of more costly second-generation agents, and lower use of less-costly imatinib. Among patients who did receive imatinib, cross-sectional analyses did not show any differences in use of generic (vs. brand-name) imatinib in OCM episodes relative to comparisons, which could have reduced costs.

[58] American Society for Radiation Oncology. Choosing Wisely. Ten Things Physicians and Patients Should Question. Last updated 06/18/2018. Available from: https://www.choosingwisely.org/societies/american-society-for-radiation-oncology/

[59] Additional details are contained in Appendix E.

6. Is OCM improving advance care planning, palliative care, or referral to hospice care? Is OCM improving quality of care at the end of life, or reducing Medicare payments at the end of life?

Key Findings

Process Improvements

- OCM practices are hiring more palliative care specialists and enhancing access to palliative care; oncologists believe this improves quality.
- OCM practices are enhancing/expanding Advance Care Planning (ACP) and improving documentation (e.g., advance directives).

Impact of OCM on End-of-Life (EOL) Care

- Among beneficiaries who died during or soon after an episode, OCM reduced ACH hospitalizations and reduced TEP (without MEOS) relative to comparisons.
- There was no OCM impact on use or timing of hospice care.
- There was no change over time in caregivers' reports of patients' EOL preferences being met.

Data and Methods

Information in this section comes from: OCM practices' transformation plans; case study interviews with OCM providers about EOL care at their practices; clinician survey results about palliative and EOL care and quality improvements due to OCM; trends in caregiver-reported EOL care experiences; and DID analysis of Medicare claims for health care utilization and Medicare payments at the end of life. More information about EOL analyses can be found in Appendix F.

When patients are terminally ill and further intensive treatment may reduce quality of life, holistic care shifts to prioritizing pain management and symptom palliation. EOL care can be overseen by oncologists and often involves other care providers, such as palliative care specialists and hospice care providers.[60] The incorporation of palliative care for patients who may benefit from supportive care, as well as the careful management of patient comfort during transitions to hospice care, are important elements of high-quality EOL care.

Extensive prior research indicates that timely hospice referral, avoiding medical interventions in the last month of life, and death outside the hospital reflect better quality of care and higher satisfaction as perceived by family members and caregivers.[61]

[60] Both palliative care and hospice care seek to improve patients' comfort by managing pain and other symptoms. Palliative care may be concurrent with curative treatment, while hospice care begins after the cessation of curative treatment.

[61] Ersek M, Miller SC, Wagner TH, Thorpe JM, et al. Association between aggressive care and bereaved families' evaluation of end of life care for veterans with non-small cell lung cancer who died in Veterans Affairs facilities. *Cancer* 2017;123(16):3186–3194.

Kris AE, Cherlin EJ, Prigerson H, et al. Length of hospice enrollment and subsequent depression in family caregivers: 13-month follow-up study. *American Journal of Geriatric Psychiatry* 2006;14(3):264–269.

Wright AA, Keating NL, Ayanian JZ, et al. Family perspectives on aggressive cancer care near the end of life. *JAMA* 2016;315(3):284–292.

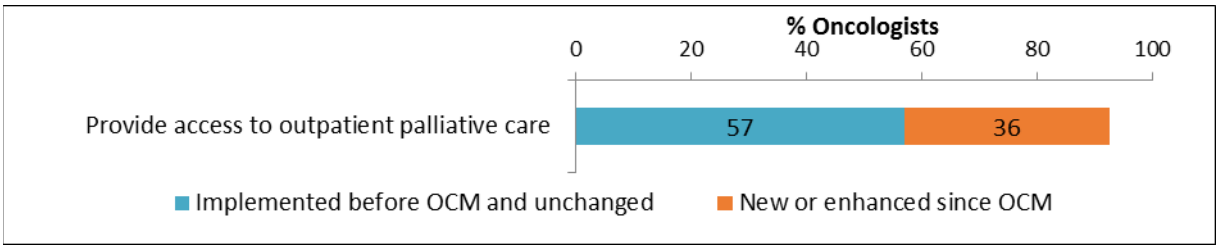
Eliminating ineffective, unnecessary, and often costly treatments in the last weeks of life may improve quality and reduce TEP for dying patients, while improving patient and caregiver experiences of care. OCM emphasizes ACP and shared decision making, with specific requirements, incentives, and feedback to practices that are intended to improve EOL care.

6.1. Is OCM improving access to palliative care and EOL care processes?

OCM practices are hiring more palliative care specialists and enhancing patient access to palliative care.

Nearly all oncologists responding to our survey (93 percent) indicated that their practice provides access to outpatient palliative care, with 36 percent reporting that palliative care services are new or enhanced since OCM began. (See **Exhibit 26**.)

Exhibit 26: OCM is Expanding Access to Outpatient Palliative Care



Source: Analysis of responses to the OCM Clinician Survey (August–October, 2018.
Notes: N=399 oncologists. Estimates weighted for sampling and non-response.

All 13 practices we visited in Year Two offer access to palliative care services, as shown in **Exhibit 27**. Ten of these practices offer palliative care in-house and three refer patients to community resources. Among the 10 practices offering palliative care in-house, eight employ their own palliative care specialist(s) and two employ an oncologist or APP who is also certified in palliative care. Three of the 10 practices that offer palliative care in-house told us they started these programs specifically because of OCM.

Wright AA, Keating NL, Balboni TA, et al. Place of death: correlations with quality of life of patients with cancer and predictors of bereaved caregivers' mental health. *Journal of Clinical Oncology* 2010;28(29):4457–4464.

Wright AA, Zhang B, Keating NL, et al. Associations between palliative chemotherapy and adult cancer patients' end of life care and place of death: prospective cohort study. *BMJ* 2014;348:g1219.

Wright AA, Zhang B, Ray A, Mack JW, et al. Associations between end-of-life discussions, patient mental health, medical care near death, and caregiver bereavement adjustment. *JAMA* 2008;300(14):1665–1673.

Exhibit 27: OCM Practices are Hiring Specialists Trained in Palliative Care

Palliative Care Strategy	Number (N=13)	New for OCM
Strategy #1: Palliative care provided by oncologists at the practice	2 practices	One practice hired an oncologist who is board-certified in palliative care for OCM. He opened an outpatient palliative care clinic onsite.
Strategy #2: Palliative care provided by specialists on staff (or contracted) at the practice[1]	8 practices	One practice hired two full-time palliative care physicians for OCM; another hired a part-time palliative care physician for OCM.
Strategy #3: Patients have access to palliative care specialists at local hospital (generally inpatient only)	3 practices	

Source: 13 OCM case studies conducted in Year Two.
Notes: Only one practice contracts with a palliative care agency. It also employs one part-time palliative care physician.

STORIES FROM THE FIELD

Using Telehealth to Improve Palliative Care for Rural Patients

An academic medical center in a large rural state serves cancer patients who live hours away. Using technology purchased with an additional grant, the palliative care and psycho-oncology specialists hired for OCM will hold tele-health visits with patients, especially those with advanced disease, who cannot easily travel for in-person visits. The goal is to support ongoing discussions about managing pain, depression, and other symptoms, and quality of life trade-offs of continuing chemotherapy versus prioritizing comfort care.

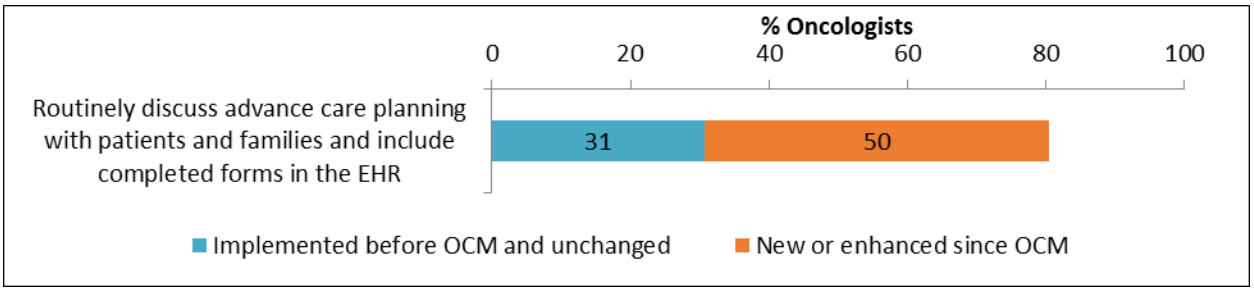
6.2. Is OCM Improving Advance Care Planning?

OCM practices are enhancing/expanding advance care planning and documentation.

Advance care planning (ACP) involves discussions between patients and their care team about the types of decisions that might need to be made about future care needs, as well as documenting these conversations and decisions ahead of time for the patient, their family, and clinicians.[62] Oncologists responding to our survey indicated that ACP discussions are now routine (81 percent), and half indicated that ACP conversations are new or enhanced since OCM began. (See **Exhibit 28**.)

[62] National Institute on Aging. Advance Care Planning: Healthcare Directives. Accessed 2019 Oct 11. Available at: https://www.nia.nih.gov/health/advance-care-planning-healthcare-directives

Exhibit 28: Practice Staff Increasingly Discuss Advance Care Planning (ACP) with Patients and Include Completed Forms in the EHR

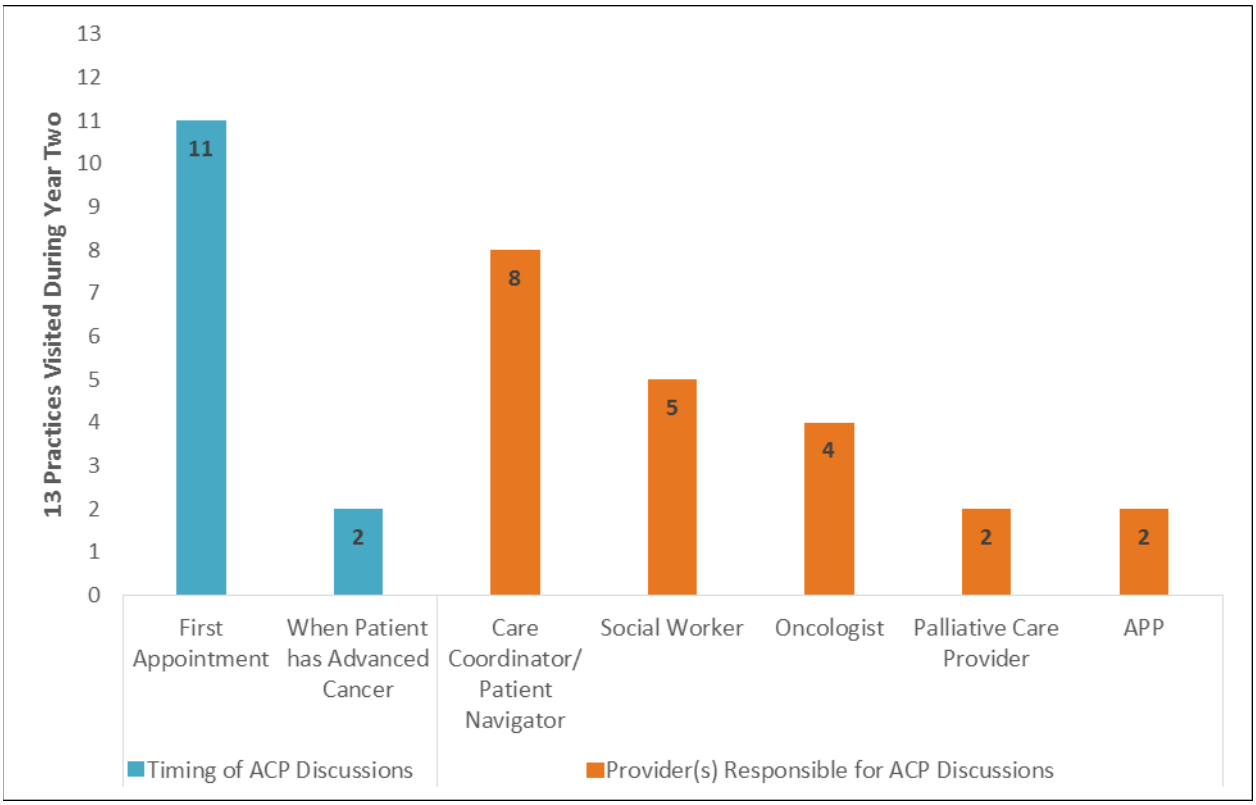


Source: Analysis of responses to the OCM Clinician Survey (August–October, 2018).
Notes: N=399 oncologists. Estimates weighted for sampling and non-response.

Independent OCM practices were significantly more likely to have enhanced their ACP discussions after OCM began (74 percent for oncologists in independent practices versus 53 percent for oncologists in practices owned by a hospital or health system, $p<0.01$). This suggests that OCM is motivating independent practices to catch up with hospital/health system-owned practices with respect to ACP discussions.

All of the 13 practices we visited in Year Two conduct some form of ACP with their patients. (See **Exhibit 29**.) Almost all practices introduce ACP with new cancer patients during the first appointment. Care coordinators or patient navigators are primarily responsible for leading these discussions. ACP can take many forms. Some practices only ask patients to complete a health care proxy form, while others use tools to facilitate more extensive conversations about patients' preferences. Eight practices told us that they conducted ACP discussions prior to OCM and made no changes, while five began or enhanced ACP initiatives around the time that OCM began. For example, the front desk staff at one practice now ask all patients to complete the Physician Order for Life-Sustaining Treatment (POLST) form at check-in for the first appointment, and trained social workers hold ACP discussions with patients who have advanced cancer.

Exhibit 29: When Advance Care Planning (ACP) Discussions Occur and with Whom, Based on 13 Year Two Case Studies



Source: OCM Evaluation case studies.
Notes: Multiple providers are responsible for having ACP discussions at many of the practices we visited in Year Two.

6.3. Is OCM improving care at the end of life?

OCM led to reduced hospital admissions during deceased patients' last episodes.

Exhibit 30 shows improvement in reducing hospital care in the last month of life.[63,64]

- Inpatient hospital admissions in the last 30 days of life decreased by 1.1 percent for deceased OCM patients relative to comparisons ($p \leq 0.05$); this is equivalent to avoiding any inpatient admissions in the last 30 days of life for two out of every 100 deceased OCM patients.
- There was no statistically significant impact of OCM on receipt of chemotherapy during the last 14 days of life, or on ED use (two or more visits) in the last 30 days of life.

63 In our evaluation report for the first performance period, we measured use of high-intensity EOL care services for beneficiaries dying during their six-month OCM episodes (and analogous comparison beneficiaries). Since the care provided during an OCM episode can affect EOL care for dying patients beyond the six-month episode period, we include patients in this report who died during their OCM-defined episode or within the 90 days after their last episode ended. The decision to include patients who died up to three months after the last OCM episode is based on clinicians' advice about how appropriate EOL care can affect utilization for several months after treatment ends. Because OCM episodes start with chemotherapy administration, EOL care that discourages a last futile round of chemotherapy could avert a final OCM episode from being triggered, potentially altering the composition of the OCM group and the DID results.

64 Most claims-based EOL results are at the patient level not the episode level, because death is a person event, not an episode event.

Exhibit 30: OCM led to Fewer Inpatient Admissions at the End of Life

Measure	Number of Episodes		OCM		COMP		Cumulative Impact Estimates Through PP3			
	OCM	COMP	Baseline Mean	Int. Mean	Baseline Mean	Int. Mean	DID	90% LCL	90% UCL	Percent Change
High-Intensity Care										
Any chemo-therapy in last 14 days of life	88,831	100,059	11.9%	10.8%	11.6%	10.5%	-0.1%	-0.6%	0.4%	-0.6%
Any inpatient admissions in last 30 days of life	88,831	100,059	53.5%	52.4%	53.6%	53.5%	-1.1%**	-2.0%	-0.3%	-2.1%
ED use (2+ visits) in last 30 days of life	88,831	100,059	15.1%	15.4%	15.8%	16.6%	-0.6%	-1.2%	0.0%	-3.8%

Source: Medicare claims 2014–2018.
Notes: OCM: OCM intervention group; COMP: Comparison group. Int.: Intervention period. Means and DID impact estimates are regression-adjusted. Means and DID impact estimates are regression-adjusted. Asterisks denote statistically significant impact estimates at *p≤0.10, **p≤0.05, ***p≤0.01. LCL: Lower confidence limit; UCL: Upper confidence limit.

OCM had no impact on hospice use, duration, or timing.

Although OCM practices appear to be encouraging more ACP than in the past, there was no statistically significant impact of OCM on hospice use. For those who did use hospice, OCM had no impact on duration of hospice use before death. (See **Exhibit 31**.)

Exhibit 31: No OCM Impact on Hospice Use, Duration, or Timing

Measure	Number of Episodes		OCM		COMP		Cumulative Impact Estimates Through PP3			
	OCM	COMP	Baseline Mean	Int. Mean	Baseline Mean	Int. Mean	DID	90% LCL	90% UCL	Percent Change
Never used hospice	88,831	100,059	32.6%	30.7%	33.8%	32.5%	-0.5%	-1.3%	0.3%	-1.6%
Hospice stay of 3-180 days and dying with hospice	88,831	100,059	58.4%	59.7%	57.2%	58.1%	0.4%	-0.5%	1.3%	0.7%
Hospice stay of 1-2 days and dying with hospice	88,831	100,059	7.4%	7.7%	7.2%	7.5%	0.0%	-0.5%	0.5%	0.3%

Source: Medicare administrative data 2014–2018.
Notes: OCM: OCM intervention group; COMP: Comparison group. Int.: Intervention period. Means and DID impact estimates are regression-adjusted. LCL: Lower confidence limit; UCL: Upper confidence limit.

Among caregivers of deceased patients who responded to our survey, most (82 percent) reported that a provider from the cancer care team had discussed hospice care with the patient, and this rate did not change significantly over time. For caregivers whose deceased loved one used hospice care, more than three-fourths said that hospice care started at the right time, and this did not change over time. These rates were already high before OCM began, without a great deal of room for improvement.

Of the 13 practices we visited, none told us that they are systematically or deliberately referring patients earlier for hospice care as a result of OCM. Most do not use specific criteria (or an automatic alert generated by their EHR) to determine when to refer a patient to hospice care. However, two have standard guidelines on when to discuss EOL care with patients (e.g., discuss EOL care with all stage IV lung cancer patients). Most oncologists told us that they refer patients to hospice care when it becomes clear there is no longer any benefit from curative cancer treatment. At several practices, APPs and nurses told us that oncologists should raise the option of hospice care sooner, but often persist with chemotherapy until a patient signals that he or she no longer wants to continue. Others mentioned that patients may continue treatment longer than they truly want, because their oncologist recommends trying a third or fourth line of treatment. Most of these clinicians alert the oncologist if a patient seems ready for hospice care, in case the oncologist has not yet discussed it.

STORIES FROM THE FIELD

"A lot of times patients are scared to tell their oncologists 'I don't want to do this [chemotherapy] anymore.' They feel like they are letting the oncologist down. But with us [PAs], they're not trying to impress us." – Physician's Assistant in an independent practice.

Among oncologists responding to our survey, 32 percent use standards or guidelines to trigger discussions about hospice care (e.g., patients with pancreatic cancer, stage IV lung cancer). In many practices, these triggers/standards are new since OCM began. Most oncologists feel the standards, and the hospice care discussions they prompt, improve the quality of care for dying patients. There was no change over time in place of death aligning with patient wishes**.**

We surveyed the caregivers of deceased cancer patients about the patients' wishes regarding palliative care that prioritizes comfort (69 percent) versus care to extend life for as long as possible, and whether those goals were attained (82 percent). There was no significant change over time in either of these measures.

Our survey also asked where the deceased patient preferred to die and where they did die, to ascertain whether those last wishes were met. Seventy-five percent of OCM patients died in their preferred setting according to the family member who responded to the survey, and there was no consistent or significant change over time.

6.4. Is OCM reducing Medicare payments near the end of life?

Avoiding hospital care may reduce TEP for dying patients' final OCM-defined episodes, and also align with patient and family perceptions of high-quality care. We examined TEP during the last episode for those who died during or soon after an OCM-defined episode.

For patients who died during or soon after an OCM-defined episode, there was a decrease in TEP (without MEOS) during their last episode.

Exhibit 32 shows that both TEP (without MEOS) and Part A payments during the patient's last episode decreased for deceased OCM patients relative to comparisons. This is consistent with **Exhibit 30**, which

RELATED SECTIONS

See Section 4.2 regarding overall impact of OCM on Part A payments.

shows a reduction in hospital care in the last month of life. This relative reduction in Part A payments for deceased OCM patients contributed to the overall impact of OCM in reducing Part A payments.

- The average TEP (without MEOS) decreased by $672 (a 1.8 percent reduction from the OCM baseline mean of $37,158) for deceased OCM patients' final episode relative to comparisons ($p \leq 0.05$).
- Part A payments during the last episode for deceased OCM patients decreased by $542, a 2.9 percent reduction from the OCM baseline mean of $18,427, relative to comparisons ($p \leq 0.05$).
- There was no impact of OCM on Part B or Part D Medicare payments during deceased patients' last episodes.

Exhibit 32: TEP and Part A Payments Decreased for Dying OCM Patients' Last Episodes Relative to Comparisons

Measure	Number of Episodes		OCM		COMP		Cumulative Impact Estimates Through PP3			
	OCM	COMP	Baseline Mean	Int. Mean	Baseline Mean	Int. Mean	DID Percentage Point Impact	90% LCL	90% UCL	Percent Change
TEP without MEOS	88,831	100,059	$37,158	$44,326	$37,559	$45,399	-$672**	-$1,221	-$124	-1.8%
Part A payments	88,831	100,059	$18,427	$19,009	$18,529	$19,653	-$542**	-$924	-$160	-2.9%
Part B payments	88,831	100,059	$16,049	$21,391	$16,316	$21,688	-$29	-$340	$282	-0.2%
Part D payments	66,055	75,762	$3,521	$5,207	$3,665	$5,309	$42	-$112	$197	1.2%

Source: Medicare claims 2014-2018.
Notes: OCM: OCM intervention group; COMP: Comparison group. Int.: Intervention period. Means and DID impact estimates are regression-adjusted. Asterisks denote statistically significant impact estimates at *p≤0.10, **p≤0.05, ***p≤0.01. LCL: Lower confidence limit; UCL: Upper confidence limit.

7. Is OCM having differential impacts for different types of beneficiaries?

Key Findings

- OCM led to a decline in TEP (without MEOS) of $576 ($p<0.05$) among episodes for minority beneficiaries.
- OCM resulted in a decline in TEP (without MEOS) of $344 ($p<0.10$) among episodes for beneficiaries with high Hierarchical Condition Category (HCC) risk scores, which may reflect efforts by practices to enhance outreach and follow-up services to beneficiaries with metastatic cancer, comorbidities, and related health risks.
- There were no differential impacts of OCM on TEP (without MEOS) for beneficiary subgroups based on age or dual eligibility for Medicaid.
- There were no differences in EOL care or patient-reported care experiences, or changes over time, based on beneficiary race, education, or type of cancer.

Data and Methods

Trend and DID analyses of the impact of OCM on beneficiary subgroups, are based on Medicare claims from 2014-2018. More information and results can be found in Appendix B.

Disparities persist in cancer diagnosis and access to cancer treatment in the United States.[65] OCM's enhanced oncology services and incentives, especially patient navigation, Care Plans, and attention to symptom management, may support beneficiaries who are most affected by disparities in care. To understand whether OCM had a differential impact for certain types of beneficiaries, we evaluated select outcome measures for four subgroups based on demographics: race (minority versus non-minority[66]), age (80 years and older versus 65 to 79 years), dual eligibility (versus non-dual eligibility), and beneficiary risk (high versus low HCC risk score).

OCM led to a decline in TEP (without MEOS) among episodes for minority beneficiaries.

OCM and comparison episodes for minority beneficiaries had similar TEP in the baseline period, and the same was true for OCM and comparison non-minority beneficiaries. OCM decreased TEP by $576 among episodes for minority beneficiaries ($p<0.05$). (See **Exhibit 33**.) This represents a two percent change from the OCM mean baseline value of $30,281. The relative decline in TEP among minority beneficiaries early in OCM signals that key Model components, such as Care Plans, patient navigation, and financial counseling, may be having a meaningful impact for minority beneficiaries. There was no significant OCM impact on TEP among episodes for non-minority beneficiaries.

65 American Cancer Society. Cancer Disparities: a Chartbook; 2018. Retrieved from Fight Cancer: http://www.fightcancer.org/disparitieschartbook.

66 Non-minority beneficiaries are defined as non-Hispanic, white according to the RTI race algorithm. Minority beneficiaries are defined as all other beneficiaries; this includes beneficiaries with multiple races reported or no race reported. .

OCM decreased TEP (without MEOS) among episodes for beneficiaries with higher risk scores (HCC)[67] but had no impact among episodes for beneficiaries with lower risk scores.

Several practices told us that they deliberately target high-risk beneficiaries for extra attention such as proactive outreach and careful monitoring. TEP declined by $344 ($p<0.10$) among OCM episodes for beneficiaries with higher HCC scores relative to comparison episodes for similar higher-risk beneficiaries. This represents a one percent decrease from the OCM mean baseline value of $37,133. OCM had no impact on TEP among episodes for lower-risk beneficiaries. These OCM impacts for beneficiary risk subgroups may be related to the cancer bundle distributions within each group—for example, the lower-risk beneficiary subgroup had a large share of episodes for lower-risk cancers. The decrease in TEP among higher-risk beneficiaries may similarly be due to the impact on higher-risk cancer bundles (reported in Section 4.1). In addition, high HCC scores may reflect more comorbid illness, more complex cancers, or a combination of both.

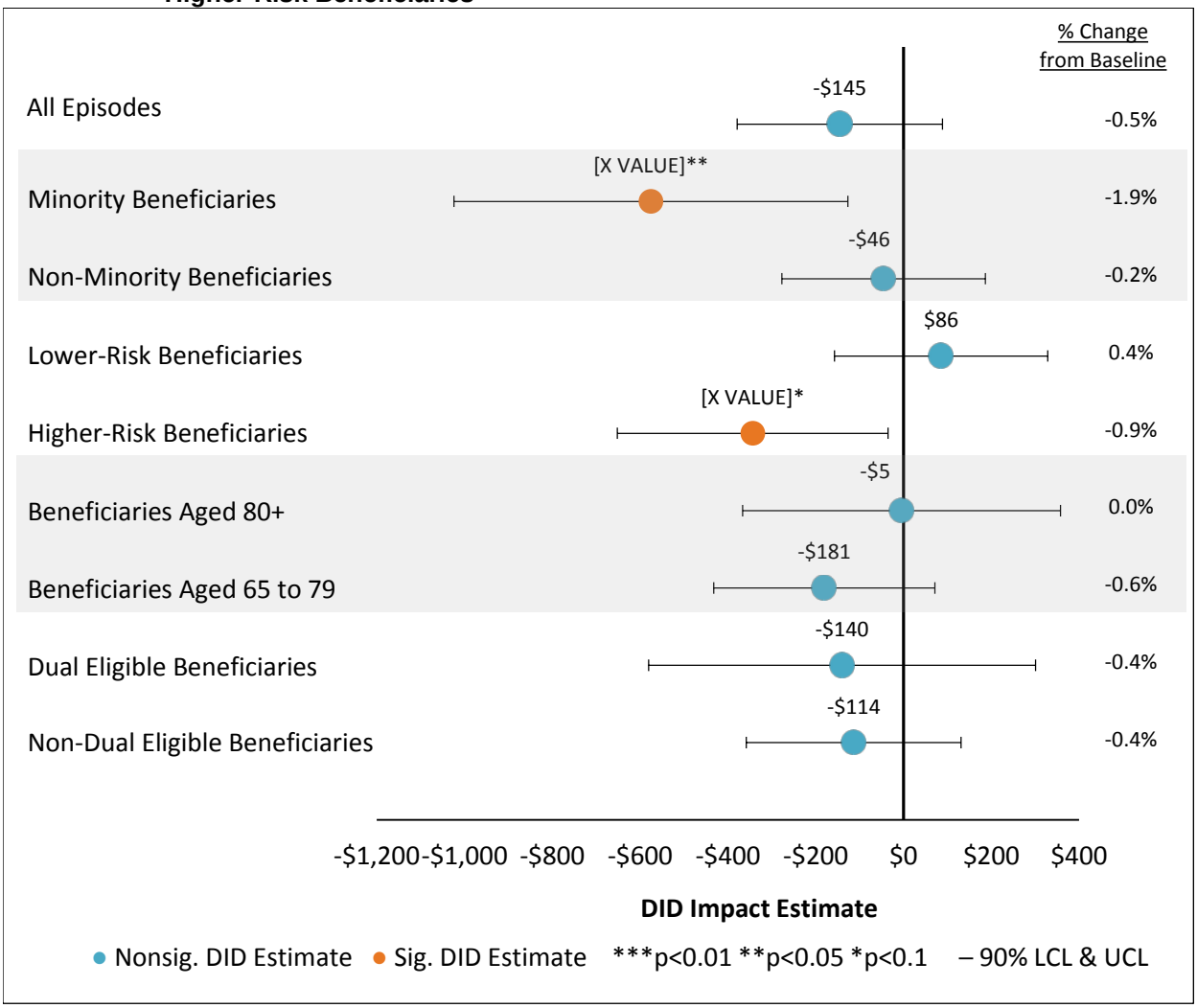
RELATED SECTIONS

Section 4.1 discusses payments by cancer bundle.

There were no statistically significant differential impacts on TEP for beneficiary subgroups based on age or dual eligibility. There were also no differences in patient-reported care experiences, or in changes over time, based on beneficiary race, education, or type of cancer.

[67] HCC or Hierarchical Condition Category is a relative measure used to quantify beneficiary comorbidity and predict plan payments in Medicare Advantage risk adjustment. HCC scores are based on beneficiary demographics and diagnostic history for the 12 months prior to the episode start date. The HCC score is calculated inclusive of the cancer condition categories, and it is not a measure of non-cancer comorbidity.

Exhibit 33: OCM Reduced TEP (without MEOS) among Episodes for Minority Beneficiaries and Higher-Risk Beneficiaries



Source: Medicare claims 2014–2018.
Notes: Asterisks denote statistically significant impact estimates at *p<0.10, **p<0.05, and ***p<0.01. The percent change represents the DID estimate as a percent of the average OCM baseline value.

8. How have practice characteristics changed since the start of OCM? Is OCM altering the mix of beneficiaries treated by participating practices?

Key Findings

- The number of OCM practices changed little over time
  - Four practices terminated participation, and six joined the Model through mandatory pooling arrangements with participating practices.
- Both OCM and comparison practices grew in size between the baseline and intervention period by four to six providers, mainly as a result of consolidation and affiliation with larger practices and health systems.
- Other than size, there were few differences in practice characteristics between OCM and comparison practices, or differential changes over time.
- There is no indication that OCM practices are altering the mix of beneficiaries they treat (cancer mix, HCC risk, demographics).

Data and Methods

This section uses Medicare claims and administrative data, along with secondary data from other sources, to describe changes over time in the size, ownership, and affiliations of OCM practices, and the types of cancer patients treated in these practices. More information and results can be found in Appendix B.

There will likely be some changes in both OCM and comparison practices during the six-year Model. Changes may reflect national patterns in oncology care or could be influenced by participation in OCM. Changes such as practice mergers, acquisitions, or closures may be related to market factors outside of OCM, but it is also possible that practices will choose to consolidate in response to OCM incentives. Some practice changes may be due to OCM participation, such as the hiring of APPs to deliver the enhanced services required by the Model. It is also important to confirm that there are not unintended consequences of the Model, such as practices choosing healthier (less costly) beneficiaries. In this section, we describe practice and episode characteristics, and changes over time.

8.1. Are the characteristics of OCM practices (e.g., size, specialty mix) changing over time? Are changes different than for comparison practices?

We investigated whether there were changes in key practice characteristics between the baseline and intervention periods, to understand if OCM and comparison practices were changing in different ways. Overall, there was consolidation in the oncology practice market in the first two years of the Model, which primarily affected the number of comparison practices. Of the 538 comparison practices initially selected,[68] 44 merged with or were acquired by another practice, no longer had OCM-defined episodes, or began billing under a new taxpayer identification number (TIN).[69] In contrast, the number of OCM

[68] For evaluation purposes, a comparison practice is defined as a single Tax Identification Number.

[69] Three of the 44 comparison practices did not contribute episodes in PP3 because they began using a new TIN (likely due to an acquisition or merger).

practices changed little over time: four practices terminated participation by January 1, 2018,[70] and six joined before January 2018 through pooled relationships with other OCM participants.

Both OCM and comparison practices became larger over time. Before OCM began, OCM practices had 70 percent more NPIs on average than comparison practices. The mean number of NPIs per practice increased from the baseline period to PP3, from 36 to 42 providers in OCM practices, and from 21 to 25 providers in comparison practices ($p<0.10$). During case studies, we learned that many OCM practices hired new clinical staff—mainly APPs—to offer urgent care visits, survivorship planning, ACP, and other enhanced oncology services. On average, OCM practices added the equivalent of three additional APPs per practice, and comparison practices added two, a statistically significant difference.

Over time, both OCM and comparison practices were more likely to be owned or affiliated with a hospital/health system. The proportion of practices owned by a hospital or affiliated with a health system increased by four percentage points between the baseline period and PP3 for OCM practices, and by six percentage points for comparison practices—even as the number of comparison practices declined over time. The change in ownership for comparison practices was statistically significant.[71] These changes in ownership/affiliation align with broader national trends towards vertical integration between hospitals and oncology physician practices.[72]

8.2. Why did some practices stop participating in OCM during the first two years?

By the end of the last PP3 episodes (June 30, 2018), 19 practices had terminated OCM participation.[73] We contacted these practices to understand why they terminated. Twelve practices responded to our request for information.

OCM requirements and reporting burden were the main reasons for practice terminations.

Exhibit 34 displays the reasons for termination, for the 12 practices that provided information.

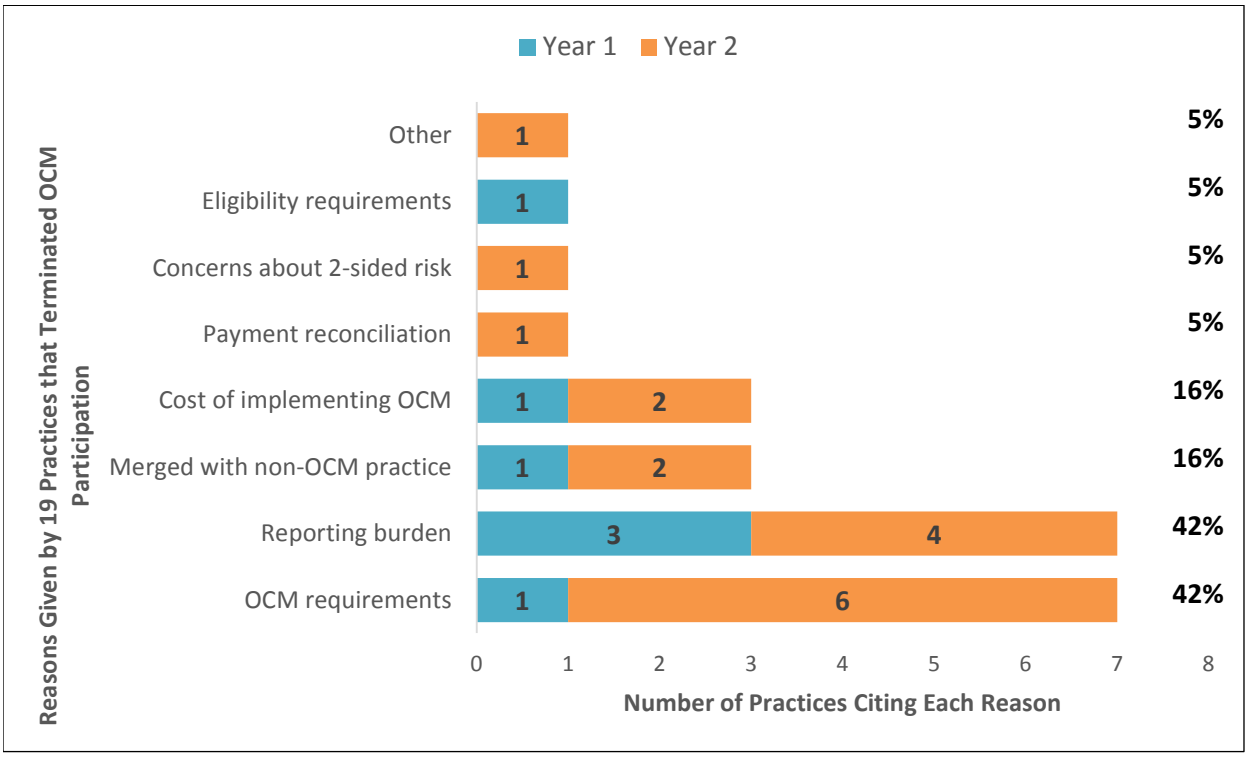
[70] Four practice terminations were included in this analysis because we included only those that terminated by the last date when PP3 episodes could start (January 1, 2018). Twelve more practices terminated between January 1 and June 30, 2018, and are included in our qualitative analysis of reasons for termination (see Section 8.2).

[71] Practice-level affiliation with a health system and hospital ownership were constructed using practice site-level information from the SK&A data. SK&A extracts from August 2016, 2017, and 2018 were used for the intervention period, while a historical extract from July 2015 was used to construct affiliations for the baseline period.

[72] Alpert A, Hsi H, Jacobson M. Evaluating the role of payment policy in driving vertical integration in the oncology market. *Health Affairs* 2017;36(4):680–688.

[73] Five practices terminated almost immediately after OCM began; we interviewed them but did not include their episodes in any claims analyses. Terminated practices, other than these five, are retained in all claims analyses following our ITT evaluation design.

Exhibit 34: Terminations were Mainly Due to Concerns about OCM Requirements and Reporting Burden



Source: Interviews with 12 of the 19 practices that terminated OCM participation in Year One or Two.

Most of the 12 terminating practices we interviewed cited reporting burden and meeting OCM requirements as reasons for termination. Some practices told us they did not have adequate staff to complete the required reporting. Practices also faced challenges using their EHRs for reporting, as these tools are not structured to readily extract information about disease stage, or to calculate numerators and denominators for specific populations (e.g., Medicare FFS patients with OCM-defined episodes). The cost of implementing OCM was cited by three practices as a reason for termination; this is closely related to reporting burden. Inability to deliver all of the enhanced oncology services, such as calculating OOP cost estimates for beneficiaries, was another important reason for termination. While many practice leaders expressed concern about eventually taking two-sided risk, only one said this was the sole reason they terminated participation.

STORIES FROM THE FIELD

Despite leaving OCM, many terminating practices described lasting benefits of their abbreviated participation. "*OCM raised awareness among physicians and nursing staff and they began really evaluating patients as they called in, from a triage perspective, to accommodate patients in the office rather than sending them to the ED.*"
– OCM Practice that terminated in 2017

8.3. *Are the characteristics of episodes/beneficiaries attributed to OCM practices changing over time? Are these changes different than for comparison practices?*

If cancer bundle mix, beneficiary risk, and demographics changed differently between OCM and comparison episodes, this could influence episode-level utilization and payments. In addition, differential changes in episode characteristics between OCM and comparison practices may indicate an unintended consequence of the Model. This section describes trends in episode/beneficiary characteristics of OCM and comparison practices.

There were small changes over time in the mix of cancers treated in both OCM and comparison practices, which were not clinically meaningful. In particular, the proportion of episodes in low-risk cancer bundles increased slightly for OCM practices (from 33 percent in the baseline period to 34 percent in the intervention period), and decreased slightly for comparison practices (from 36 to 35 percent). These changes were mainly driven by a small increase in the proportion of episodes for low-risk breast cancer among OCM episodes, accompanied by a small decrease in the proportion among comparison episodes.

Another way of categorizing risk is the average HCC risk score, which increased between the baseline and intervention periods for both OCM and comparison episodes. The mean HCC score among OCM episodes increased from 2.66 in the baseline period to 2.81 in the intervention period, and from 2.66 to 2.85 among comparison episodes. These parallel increases over time are consistent with the upward trend in HCC scores for FFS Medicare beneficiaries nationwide,[74] and indicates that OCM practices are not systematically selecting lower-risk beneficiaries.

The demographic characteristics (i.e., gender, race/ethnicity, Medicare-Medicaid dual eligibility) of beneficiaries with attributed episodes changed very little between the baseline and intervention periods for either OCM or comparison practices. There is no indication that OCM practices are selecting (or avoiding) any demographic group of beneficiaries.

8.4. Is OCM affecting the balance of metastatic versus non-metastatic cancers treated in OCM practices?

If OCM practices perceive that treating a greater share of lower-cost patients within a bundle will help the practice earn a PBP, practices may prefer to treat patients with early-stage disease rather than metastatic disease.

OCM did not affect the proportion of colorectal cancer episodes for patients with (imputed) metastatic versus non-metastatic cancer.

We used a clinical stage classification algorithm (described elsewhere)[75,76] to identify patients receiving chemotherapy for presumed stage IV (metastatic) cancer. We focused on colorectal cancers, for which data reported by OCM practices about cancer stage most closely matched the stage predicted by our clinical algorithm (classification accuracy of approximately 80 percent[77]).

As shown in **Exhibit 35**, the stage classification algorithm suggests that before OCM began, about 70 percent of for colorectal cancer episodes in OCM and comparison practices were for treatment of metastatic disease, and the same was true during the intervention period. The proportion of colorectal cancer episodes for presumed metastatic disease remained relatively stable over time, and there was no statistically significant impact of OCM.

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74 "Advance Notice of Methodological Changes for Calendar Year (CY) 2018 for Medicare Advantage (MA) Capitation Rates, Part C and Part D Payment Policies and 2018 Call Letter." Published February 1, 2017. https://www.cms.gov/Medicare/Health-Plans/MedicareAdvtgSpecRateStats/Downloads/Advance2018.pdf

75 Brooks GA, Keating NL, Landrum MB. Memorandum: Inferring Cancer Stage from Administrative Data. Prepared for the Centers for Medicare and Medicaid Services on behalf of the Oncology Care Model Evaluation Contractor. Bethesda, MD: Abt Associates; 2017.

76 Brooks GA, Bergquist S, Landrum MB, Rose S, Keating NL. Classifying lung cancer stage from health care claims: A comparison of multiple analytic approaches. JCO Clin Informatics 2019. In press. *JCO Clin Cancer Inform* 2019:3:1–19.

77 Accuracy = number of correct assessments/number of all assessments.

Exhibit 35: No OCM Impact on Proportion of Episodes for Patients with Metastatic Cancers (Based on Clinical Classification Algorithm)

Predicted Metastatic	# of Episodes		OCM		COMP		Impact Estimates Through PP3			
	OCM	COMP	Baseline Mean	Int. Mean	Baseline Mean	Int. Mean	DID Percentage Point Impact	90% LCL	90% UCL	Percent Change
Colorectal cancer – (imputed) metastatic	41,268	45,623	70.0%	70.6%	70.4%	71.1%	-0.1%	-1.2%	0.9%	-0.2%

Source: Medicare claims 2014–2018.
Notes: OCM: OCM intervention group; COMP: Comparison group. Int.: Intervention period. LCL: Lower confidence limit; UCL: Upper confidence limit

9. Are there any unintended consequences as a result of OCM?

Key Findings
We found no evidence of care stinting, slower adoption of new therapies, or case mix manipulation.

OCM incentives and requirements raise hypothetical concerns about potential unintended consequences—changes associated with OCM that could be deleterious for patients. Several earlier sections of this report address potential unintended consequences of OCM and are reassembled here to address these concerns.

9.1. Is OCM limiting access to costly care (i.e., care stinting)?

OCM practices could choose to deliberately and systematically avoid specific high-cost treatments in an effort to meet their episode payment targets. In some cases, these behaviors can be viewed as intended consequences of OCM, especially when there is inadequate evidence to support higher-cost diagnostic and treatment approaches. However, withholding of costly evidence-based services or new therapies that offer substantial benefit for beneficiaries is clearly not an intended objective of OCM.

As explained in Section 5.3, there is no indication that OCM limited the choice of treatment regimens for any of the most common cancers.

9.2. Is OCM slowing adoption of new therapies?

Although CMS adjusts payments for the use of newly approved cancer treatments, practices may not trust that they will receive a sufficient novel therapy upward price adjustment, based on their novel therapy use exceeding the national trend. This could have the unintended consequence of practices choosing to slow adoption of new therapies.

As explained in Section 5.3, there was no impact of OCM on use of Part B (infused or injected) novel therapies.

9.3. Is OCM leading to case-mix manipulation?

OCM practices have an incentive to reduce TEP, which could prompt them to avoid patients who are likely to be high cost (within a given cancer bundle) in favor of those who are likely to have lower costs of care.

There is no systematic pattern of OCM practices avoiding high-risk/high-cost patients.

9.4. Is OCM affecting beneficiary cost-sharing or out-of-pocket spending?

Rising costs may pose a financial burden for beneficiaries, and adversely affect adherence to treatment and subsequent health outcomes. Cost-sharing for oral drugs is especially important if financial barriers cause beneficiaries to delay prescription fills and refills. We assessed whether OCM has affected beneficiary cost-sharing and out-of-pocket (OOP) payments.

There was no impact of OCM on total beneficiary cost-sharing, and no change over time in patient-reported OOP spending for cancer care. OCM led to increased Part D beneficiary cost-sharing[78] ($20, $p<0.01$), which corresponds to the increase reported for Part D payments in Section 4.2. This small per-episode increase in Part D cost-sharing was offset by small relative decreases in Part A and Part B beneficiary cost-sharing (see **Exhibit 36**).

RELATED SECTIONS
See Section 4.2 for discussion of payments by Medicare component.

[78] Measurement of the impact on Part D beneficiary cost-sharing is limited to episodes for beneficiaries enrolled in Part D.

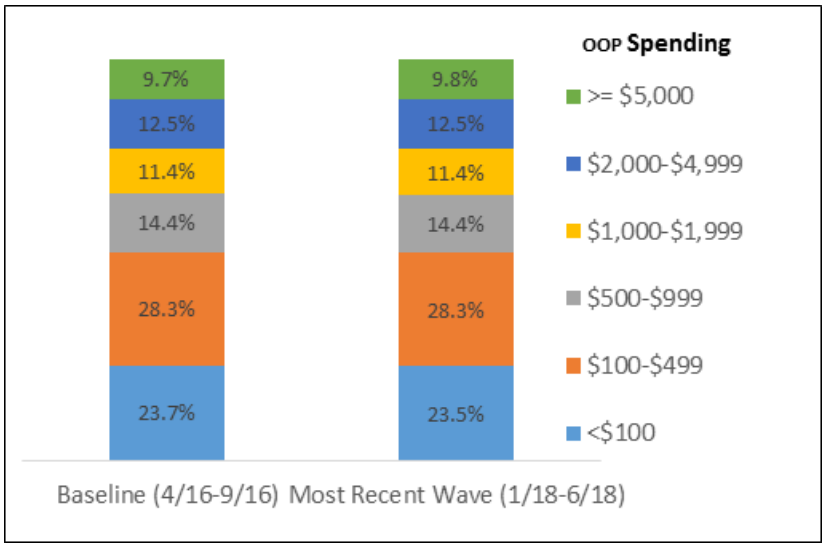
Exhibit 36: Relative Increases in Part D Beneficiary Cost-Sharing were Offset by Reductions in Part A and B Beneficiary Cost-Sharing

Measure	Number of Episodes	OCM		COMP		Impact Estimates Through PP3			
		Baseline Mean	Int Mean	Baseline Mean	Int Mean	DID	90% LCL	90% UCL	Percent Change
Cost-Sharing for All Services									
Total Part A, B, and D beneficiary cost-sharing	1,570,194	$5,564	$5,992	$5,527	$5,970	-$16	-$66	$35	-0.3%
Part A beneficiary cost-sharing	1,570,194	$457	$442	$443	$430	-$2	-$8	$5	-0.3%
Part B beneficiary cost-sharing	1,570,194	$4,498	$4,864	$4,468	$4,864	-$30	-$78	$18	-0.7%
Part D beneficiary cost-sharing	1,289,835	$733	$827	$743	$816	$20***	$7	$33	2.7%

Source: Medicare claims 2014–2018.
Notes: Part D payment values are based on a subset of episodes enrolled in Part D. OCM: OCM intervention group; COMP: Comparison group. Int.: Intervention period. Asterisks denote statistically significant impact estimates at *p<0.10, **p<0.05, and ***p<0.01. LCL: Lower confidence limit; UCL: Upper confidence limit

Beneficiaries' share of costs may be covered partially or entirely by supplemental insurance, or by Medicaid for those with dual eligibility. Respondents to our OCM patient survey indicated that OOP expenses for cancer care did not change over time (see **Exhibit 37**).

Exhibit 37: No Change over Time in Patient-Reported Out-of-Pocket Spending for Cancer Care



Source: Analysis of responses to the OCM Patient Survey; OCM patients only.
Baseline N= 8,616 respondents, most recent survey wave N= 8,418.

10. How are other payers implementing oncology payment models aligned with OCM?

Key Findings

Ten commercial payers developed OCM-aligned models, and signed contracts with at least one OCM practice. Their models differ from OCM in several ways:

- All 10 other payers identify eligible insured patients rather than episodes.
- All 10 other payers attribute patients to practices based on lists (or case management claims) submitted by the practices.
- Six of the 10 payers offer monthly payments analogous to MEOS.
- Five of the 10 payers set target prices based on historic benchmarks.

Data and Methods

CMS invited commercial payers to create oncology alternative payment models (APMs) aligned with OCM. The purpose was to reduce the burden on OCM practices by promoting consistent requirements and financial incentives. Sixteen commercial payers volunteered; we interviewed these payers twice (in January 2017 and December 2017) to understand how closely their models align with OCM and factors influencing their APM designs.

By early 2018, 10 payers had each signed contracts with at least one OCM practice—five with one OCM practice each, and five with between four and 22 OCM practices. Three other payers stopped participating, and three developed oncology alternative payment models (APMs) but had not yet signed contracts with any OCM practices.

The 10 payers that signed contracts with OCM practices are implementing OCM-aligned payment models across a variety of their commercial and public lines of business. Three focus on commercial insurance products, one on its Medicare Advantage product, and one has a Medicaid oncology APM. The other five implement their oncology APMs in both selected commercial and public product lines.

CMS makes payments to OCM practices for each episode, a six-month period triggered by chemotherapy infusion/prescription within 59 days of a Part B claim for a qualifying cancer diagnosis. The 10 payers focus on identifying eligible patients rather than identifying episode start and end dates. They ask practices to identify eligible patients covered under the payer's contracts in various ways:

- Submitting claims with a care management procedure code, analogous to the MEOS claims in OCM (five payers);
- Producing a list derived from clinical decision support software or EHRs (three payers); or
- Submitting a list of patients receiving chemotherapy (two payers).

While CMS attributes each OCM episode to the oncology practice that provided the plurality of visits, the 10 payers rely on practice-submitted lists or claims to attribute a patient (not an episode) to a practice. Only one payer considers whether a patient also received oncology services at another practice. Six of the 10 payers validate that the patients the practice billed for were in fact eligible for the payer's oncology APM.

Six of the 10 payers offer monthly payments to support care coordination and practice redesign, analogous to the OCM MEOS payments. Among payers that told us their monthly payment amounts, payments range from $100 to $160. Five of the payers make one-time payments when a patient begins chemotherapy, alone or in addition to monthly payments.

Five of the 10 payers mirror the CMS approach of comparing total costs against a three-year benchmark used to set target prices. Four of these five payers risk-adjust to account for high-risk populations, and four adjust for high-cost outlier cases (three do both). The other five payers either use a different benchmark period or have not yet determined appropriate benchmarks. One payer uses benchmarks from peer practices rather than using each practice's own historic costs to calculate targets.

CMS gives each practice quarterly feedback reports, and offers each practice complete Medicare FFS claims for all the episodes attributed to the practice, for additional analyses the practice may wish to conduct. Nine of the 10 commercial payers also provide feedback reports showing trends in cost and utilization, every month (five payers) or quarterly (four payers). Many provide feedback on measures similar to those in CMS's OCM Feedback Reports, although usually with less detail. Some payers also offer a patient-level Excel file or dashboard that each practice can use to further analyze/understand its claims-based performance.

Payers told us about several challenges in developing their oncology APMs, and trying to align with OCM. These challenges include low patient volume, multiple lines of business, separation of prescription drug and medical coverage, and data availability. The following challenges were identified by the payers we interviewed:

- The payers' contracts with OCM practices generally cover 100 to 500 eligible oncology patients each year (low of 28, high of 2,000). These patients have different types of cancer with different benchmarks or target prices. Small numbers of patients with each type of cancer makes it challenging to calculate stable benchmarks.
- Five of the 10 payers include multiple lines of business in their oncology APM (e.g., Medicare Advantage and commercial products). Each line of business has different regulatory and contractual requirements. In addition, commercial products typically have multiple plans with different criteria, such as deductibles or provider networks. Payers negotiate separate contracts with each employer, some of which request unique terms and actuarial analysis. Aligning products and negotiating employer contracts is time-consuming and costly.
- Some commercial products include prescription drug coverage as well as medical coverage, but some do not. If employers decide not to purchase drug coverage from a payer, it is difficult for the payer to identify oral chemotherapy patients/episodes, or to include prescription drug costs—which can be substantial—in calculating costs of care.
- Billing systems are dynamic, taking in data continuously, and patients can change their insurance when they change employers or elect Medicare Advantage coverage, or when employers' contracts are renegotiated. This makes it challenging to understand which patients are in the oncology APM each month, adjust for case mix fluctuations, calculate benchmarks and PBPs, and understand the impact of their models over time.
- Few payers adjust payments for quality as CMS does in OCM due to technical challenges. For example, rate of entry to hospice care less than three days before death is an OCM quality measure that is used to adjust payments. This requires accurate dates of hospice entry and death, which are not readily available to commercial payers.

11. Conclusions

This report covers evaluation findings through the third of eleven performance periods for OCM. The practices we visited during PP2 and PP3 told us that they had largely finished hiring staff, and most had implemented the main elements of practice transformation to meet OCM requirements. This is confirmed by information the practices reported to CMS, and by clinicians responding to our survey. We therefore believe that the Model was reasonably mature by the end of PP3, in terms of important care redesign to meet OCM requirements.

Cancer care, in general, is experiencing rapidly rising treatment costs. This is particularly the case for chemotherapy drugs, for which average Medicare payments increased by six to seven percentage points between the baseline and intervention periods. Despite the fact that Medicare Part B payments for chemotherapy accounted for more than half the cost of an average OCM episode, and Part D payments were a growing component of episode costs, few practices told us about specific efforts to reduce drug spending (other than those that adopted treatment pathways software programs that incorporate efficacy, toxicity and cost considerations). Instead, practices reported that their priority during the first two years of the Model was to focus on beneficiaries at higher risk of adverse events, to avoid ED and costly hospital services. To accomplish this, OCM practices implemented numerous process improvements to enhance patient-centered care, and especially to manage symptoms related to toxic chemotherapy. Most of the practices we visited told us that they hired new staff to expand access to same-day urgent care, improve phone triage to return patient calls quickly, and manage patients' symptoms—all in an effort to address patient needs and avoid ED visits and hospitalizations. Notwithstanding these efforts, we found no statistically significant impact of OCM in reducing ED visits or hospitalizations overall, or those due to chemotherapy toxicity. It is possible that the additional telephonic contact with patients between office visits improved symptom management but also identified situations where patients needed more hospital care.

OCM is improving some end-of-life care. OCM practices are engaging in more advanced care planning to ensure that cancer patients' wishes are known and documented; they are also hiring more palliative care specialists and enhancing access to palliative care. These investments helped OCM practices reduce hospital use in the last month of life. This not only benefits dying patients who avoid the disruption and stress of hospital care, it also contributed to a decrease in Part A payments for dying patients' last episodes. However, despite quality measures and Feedback Reports emphasizing earlier hospice, OCM had no impact on the use or timing of hospice care.

Overall, there was no impact of OCM on TEP (without MEOS), but there were some noteworthy patterns. OCM led to a relative increase in TEP (without MEOS) for lower-risk episodes (low-risk breast cancer, low-intensity prostate cancer, low-risk bladder cancer), which constituted about one third of OCM episodes. In contrast, OCM led to a relative decrease in TEP for higher-risk episodes (all other cancers, including high-risk breast cancer, lung cancer, lymphoma, multiple myeloma, etc.). Higher-risk, high-intensity episodes have higher costs, and there may be greater opportunities to reduce episode payments. For less expensive, lower-risk episodes, it may be more difficult to achieve reductions in episode payments.

OCM led to a relative decrease in Part A payments and an increase in Part D payments. The decrease in Part A payments was due to reductions in payments for hospitalizations at other inpatient facilities such as prospective-payment exempt cancer facilities; there was no impact on payments for hospitalizations at acute care hospitals. The decrease in Part A payments was significant for higher-risk cancer episodes but not for lower-risk cancer episodes. These patterns will be explored in more detail in a future report.

When MEOS and PBP payments to participating practices for the first and second performance periods are factored into the calculations, the bottom line was net losses for Medicare. These losses were lower in PP2 than in PP1, but were still substantial.

Acronyms

ABIM	The American Board of Internal Medicine
ACO	Accountable Care Organization
ACP	Advance Care Planning; Advance Care Plan
AHRF	Area Health Resources Files
AMC	Academic medical center
APM	Alternative Payment Model
APP	Advanced Practice Provider
ASCO	American Society of Clinical Oncology
ASTRO	American Society for Radiation Oncology
CME	Common Medicare Environment
CML	Chronic Myelogenous Leukemia
CMS	Centers for Medicare & Medicaid Services
CNS	Central Nervous System
CPC	Comprehensive Primary Care
CQI	Continuous Quality Improvement
DID	Difference-In-Differences
DRG	Diagnosis-Related Group
E&M	Evaluation and Management
ED	Emergency Department
EHR	Electronic Health Record
EOL	End-Of-Life
ESRD	End-Stage Renal Disease
FDA	U.S. Food and Drug Administration
FFS	Fee-For-Service
GCFS	Granulocyte Colony Stimulating Factor
GDC	Gross Drug Cost
HCC	Hierarchical Condition Category
HHA	Home Health Agency

HMO	Health Maintenance Organization
HPSA	Health Professional Shortage Area
ICU	Intensive Care Unit
IDR	Integrated Data Repository
IMRT	Intensity Modulated Radiation Therapy
IP	Inpatient
ITT	Intent-To-Treat
LCL	Lower Confidence Limit
MDM	Master Data Management
MDS	Myelodysplastic Syndrome
MEOS	Monthly Enhanced Oncology Service
MIPS	Merit-Based Incentive Payment System
MSSP	Medicare Shared Savings Program
NCCN	National Comprehensive Cancer Network
NP/PA	Nurse Practitioner/Physician Assistant
NPI	National Provider Identifier
OCM	Oncology Care Model
OIP	Other Inpatient Hospitalization
OLS	Ordinary Least Squares
OOP	Out-of-Pocket
PAC	Post-Acute Care
PBP	Performance-Based Payment
PDC	Proportion of Days Covered
PDE	Prescription Drug Event
POLST	Physician Order for Life-Sustaining Treatment
PP	Performance Period
PSM	Propensity Score Matching
PTP	Practice Transformation Plan
QPP	Quality Payment Program

TEP	Total Episode Payment
TIN	Taxpayer Identification Number
TKI	Tyrosine Kinase Inhibitors
UCL	Upper Confidence Limit
VEGF	Vascular Endothelial Growth Factor
VRDC	Virtual Research Data Center

Glossary

340B Drug Pricing Program	The 340B Program provides discounts on outpatient drugs to certain safety net health providers, including Title X agencies. Outpatient prescription drugs, over-the-counter drugs (with a prescription), and physician-administered drugs are eligible for these discounts, whereas vaccines and inpatient drugs are not covered.
Accountable Care Organization (ACO)	An ACO is a group of doctors, hospitals, and other health care providers that come together voluntarily to give coordinated high-quality care to their Medicare patients. When an ACO succeeds both in delivering high-quality care and in spending health care dollars more wisely, the ACO will share in the savings it achieves for the Medicare program.
Adjuvant therapy	Additional cancer treatment given after surgery to lower the risk that the cancer will come back. Adjuvant therapy may include chemotherapy, radiation therapy, hormone therapy, targeted therapy, or biological therapy. Neo-adjuvant therapy is given before surgery, usually to shrink the tumor or make it more accessible.
Advance care planning	A conversation between a physician (or other qualified health care professional) and a patient to discuss the patient's wishes regarding their medical treatment, if they should become unable to communicate. This discussion may or may not include completing relevant legal forms, such as health care proxies or advance directives.
Advanced Alternative Payment Model	A subset of Alternative Payment Models (APMs) that let physician practices earn payments for taking on down-side risk related to patient outcomes. Practices that participate in an Advanced APM are eligible for up to a 5 percent incentive payment beginning in 2019, and are excluded from the MIPS reporting requirements and payment adjustment.
Advanced-practice provider	Medical professionals other than physicians who are authorized to prescribe medications, such as physician assistants and nurse practitioners.
Alternative Payment Model (APM)	A payment approach that rewards providers or practices with incentive payments for providing high-quality and cost-efficient care.
Antiemetic	Medication to prevent or reduce nausea and vomiting.
Baseline period	The analytic time period during which outcomes are assessed prior the implementation of OCM, covering episodes that initiate July 1, 2014 to January 1, 2016.
Biosimilar drug	A biological drug that is very much like another biological drug (called the reference drug) that has already been approved by the U.S. Food and Drug Administration (FDA). Biosimilar drugs and reference drugs are made from living organisms but they may be made in different ways and of slightly different substances. To be called biosimilar, a biological drug must be shown to be as safe as, work as well as, and work in the same way as its reference drug. It must also be used in the same way, at the same dose, and for the same condition as the reference drug. Biosimilar drugs must be approved by FDA, and may cost less than the reference drugs.

Cancer bundle	The cancer bundle represents the primary cancer a beneficiary has during their episode. An episode is assigned a cancer type using the plurality of diagnoses on E&M services in the carrier file that occurred during the episode, per OCM program rules. The 21 reconciliation-eligible cancer types in the original OCM methodology are then expanded to 24, with breast cancer divided into low- versus high-risk, prostate cancer divided into low- versus high-intensity, and bladder cancer divided into low- versus high-risk. The 25th bundle is for all non-reconciliation eligible cancer types combined.
Cancer bundle mix	The proportion of the different types of patients' cancers being treated by a given practice or observed within a given group of episodes.
Care coordination/Care coordinators	Care coordination involves deliberately organizing care activities and sharing information among all of the participants involved in a patient's care, to ensure the safe, appropriate, and effective delivery of health care services. The individuals who coordinate care may be called care coordinators or nurse navigators.
Care Plan	Practices participating in OCM are required to document a Care Plan for every OCM patient that includes 13 components as outlined by the Institute of Medicine. The OCM Care Plan should include: 1) patient information (e.g., name, date of birth, medication list, allergies); 2) diagnosis, including specific tissue information, relevant biomarkers, and stage; 3) prognosis; 4) treatment goals; 5) initial plan for treatment and proposed duration, including surgeries and radiation therapy; 6) expected response to treatment; 7) treatment benefits and harms; 8) information on quality of life and patient's likely experience with treatment; 9) who will take responsibility for specific aspects of a patient's care; 10) advance care plans, including advance directives and other legal documents; 11) estimated total and OOP costs of treatment; 12) a plan for addressing a patient's psychosocial health needs, including psychological, vocational, disability, legal, and financial concerns, and; 13) a survivorship plan.
Chemotherapy (chemo)	For OCM purposes, CMS defines chemotherapy as systemic therapies including cytotoxic chemotherapy, hormonal therapy, biologic therapy, immunotherapy, and combinations of these therapies.
Clinical decision support (CDS)	Provides clinicians, staff, patients, or other individuals with knowledge and person-specific information, intelligently filtered or presented at appropriate times, to support treatment decisions. CDS encompasses a variety of tools including computerized alerts and reminders to care providers and patients, clinical guidelines, condition-specific order sets, focused patient data reports and summaries, documentation templates, diagnostic support, and contextually relevant reference information.

Clinical guidelines	Systematically developed statements to assist practitioner and patient decisions about appropriate treatment in specific clinical circumstances. Guidelines contain recommendations based on evidence from a rigorous systematic review and synthesis of the published medical literature, and define the role of specific diagnostic and treatment modalities in the diagnosis and management of patients. A clinical guideline may be broad, with several acceptable treatment regimens considered as compliant with the guideline. While clinical guidelines identify and describe generally recommended courses of treatment, they are not presented as a substitute for the advice of a physician or other knowledgeable health care professional or provider.
Coinsurance	The patient's share of costs of a covered health care service, calculated as a percentage. For example, a patient may pay 20 percent for a lab test or 80 percent for a prescribed medication that is not listed on their insurance plan's approved medication list.
Comparison practice	A non-OCM oncology practice (identified by its TIN) selected to be in the evaluation comparison group. The evaluation team found selected comparison practices to be statistically similar to participating OCM practice(s) according to propensity score matching methods.
Continuous Quality Improvement (CQI)	As part of participation in OCM, practices are expected to track performance against selected clinical quality measures, set future goals, and monitor the effects of changes made. Strategies to improve quality might include data reviews of metrics related to quality of care, utilization, or patient experience, with or without a formal model of quality improvement in the practice.
Copay/copayment	A fixed amount or percentage that a patient pays for a covered health service. For example, a patient may need to pay $20 to visit a doctor, or for a prescription.
Cost-sharing	What a patient pays for medical services covered by their health insurance. Typical cost-sharing includes deductible, copayment, coinsurance, and premium.
Deductible	The amount a patient must spend for health care services that the patient's plan covers, before their health insurance begins to pay. For example, if a patient's deductible is $1,000, their plan will not pay anything until they have met the $1,000 deductible for covered health care services.
Diagnosis-related group (DRG)	A patient classification system that standardizes prospective payment to hospitals based on a patient's specific diagnoses and treatments. In general, a DRG payment covers all charges associated with a hospitalization from the time of admission to discharge.
Difference-in-Differences (DID)	A statistical technique that quantifies the impact of an intervention by comparing changes in outcomes of treatment cases (i.e., OCM episodes) to changes in outcomes in a matched comparison group (i.e., comparison episodes), from before to after Model implementation.
Dual eligible	A beneficiary who is enrolled in Medicare and also receiving full or partial Medicaid benefits.

Electronic health record (EHR)	A longitudinal electronic record of patient health information generated by one or more encounters in any care delivery setting. Included in this information are patient demographics, progress notes, problems, medications, vital signs, past medical history, immunizations, laboratory data, and radiology reports. Also commonly referred to as electronic medical record (EMR).
Emetic	An agent that induces vomiting.
Emetogenic	Causing nausea and vomiting.
Enhanced oncology services	OCM practices are required to make the following enhanced services available to beneficiaries with traditional Medicare insurance: 24/7 patient access to an appropriate clinician who has real-time access to patient's medical records; 2) core functions of patient navigation; 3) a documented Care Plan that contains the 13 components recommended by the Institute of Medicine; and 4) therapies consistent with nationally recognized clinical guidelines (and explain deviations).
Episodes (for OCM)	A six-month period of care that is triggered by receipt of chemotherapy with at least one cancer-related E&M service occurring within six months of the initial chemotherapy. Episodes initiate upon the date of service for an initial Part B chemotherapy drug claim with a corresponding cancer diagnosis on the claim, or upon the fill date for an initial Part D chemotherapy drug claim with a corresponding Part B claim for cancer on the date of, or in the 59 days preceding, the drug claim. If treatment continues for a beneficiary after the six-month episode, a new episode begins when the episode criteria are met again (i.e., a Part B chemotherapy infusion or Part D chemotherapy prescription within 59 days after a Part B claim for cancer, followed by a cancer E&M within six months).
Evaluation and Management (E&M)	The billing code for a specific type of patient visit with a physician or advanced practice provider, which includes at minimum the following components: 1) history; 2) examination; and 3) medical decision making. An E&M service with a cancer diagnosis on the same claim line on a carrier claim is required to identify an OCM episode as well as assign the cancer bundle to the episode.
Evidence-based care	Evidence-based care incorporates three fundamental components: 1) individual clinical expertise; 2) best external evidence; and 3) patient values and expectations. Also referred to as evidence-based practice.
Fee-for-Service (FFS)	A method in which doctors and other health care providers are paid for each service performed. Examples of services include tests and office visits. Traditional Medicare is also referred to as FFS Medicare insurance.
Fractions	The full dose of radiation is usually delivered in separate sessions, called fractions. This allows healthy cells to recover between treatments. In Medicare, a separate claim is submitted for each fraction/session.

Generic drugs	Generic drugs are copies of brand-name drugs that have exactly the same dosage, intended use, effects, side effects, route of administration, risks, safety, and strength as the original drug. Their pharmacological effects are exactly the same as those of their brand-name counterparts.
Gross drug costs (GDC)	Total spending for the prescription claim, including payments from Medicare, supplemental insurance, and beneficiary payments.
Growth factors	Proteins that help the body produce white blood cells. They are also called hematopoietic, meaning blood-forming, colony-stimulating factors (CSFs). White blood cells help fight infection and can be destroyed during some types of cancer treatment. Growth factors can be administered to cancer patients, to prevent neutropenia and infection.
Gynecologic oncology	The diagnosis and treatment of cancers located on a woman's reproductive organs (e.g., ovarian cancer).
Health system or integrated health system	An organization that includes at least one hospital, and at least one group of physicians who are connected with each other and with the hospital through common ownership or joint management, and combine their activities to deliver comprehensive health care services.
Health care proxy	A legally designated person who will express a patient's wishes and make health care decisions for them if they are unable to speak for themselves.
Hematology-oncology	The diagnosis, treatment, and prevention of blood diseases and blood cancers, such as leukemia, lymphoma, and myeloma.
Hierarchical condition categories (HCC)	CMS HCC flags are used to calculate risk scores that adjusts capitation payments to Medicare Advantage health care plans for the health expenditure risk of their enrollees. HCC scores use clinical diagnoses and comorbidities (i.e., severity of illness) from the previous year to predict costs in the coming year. Source: Evaluation of the CMS-HCC Risk Adjustment Model Final Report, available at: https://www.cms.gov/Medicare/Health-Plans/MedicareAdvtgSpecRateStats/downloads/Evaluation_Risk_Adj_Model_2011.pdf
High-risk cancer bundle	Includes 22 of the 25 defined cancer bundles, and excludes the following: lower-risk breast cancer, lower-intensity prostate cancer, and lower-risk bladder cancer.
Hold-out period	The six-month time period prior to the implementation of OCM during which the evaluation does not include episodes in order to prevent overlap between baseline and intervention episodes.
Home health care	Medical care provided in a patient's home. Home health care can include skilled nursing care, physical therapy, occupational therapy, intravenous drug therapy, and non-medical home aide services.

Hormone therapy	A type of therapy that adds, blocks, or removes hormones. Hormones can cause certain cancers (such as prostate and breast cancer) to grow. To slow or stop the growth of cancer, synthetic hormones or other drugs may be given to block the body's natural hormones. Also called endocrine therapy, hormonal therapy, and hormone treatment.
Hospice care	End-of-life care provided by a team of health care professionals and volunteers. The goal of hospice care is to help people who are dying have peace, comfort, and dignity. Hospice care is covered by Medicare when a patient is terminally ill and expected to live for six months or less. Patients must stop active treatment for their terminal condition to receive Medicare-covered hospice services. Hospice care can take place at home, at a hospice center, in a hospital, or in a skilled nursing facility.
Hospital readmission	An admission to an acute care hospital within 30 days of discharge from an acute care hospital.
Hospital utilization measures	Hospital utilization measures include measures of inpatient care such as hospitalizations and length of stay (i.e., Medicare covered inpatient days per episode).
Imaging	A type of test that makes detailed pictures of areas inside the body. Imaging tests use different forms of energy, such as x-rays (high-energy radiation), ultrasound (high-energy sound waves), radio waves, and radioactive substances to help diagnose or treat cancer, and to monitor for cancer recurrence. Examples of imaging tests are computed tomography (CT), ultrasonography, magnetic resonance imaging (MRI), and nuclear medicine tests.
Immunotherapy	A type of therapy that uses substances to stimulate or suppress the immune system to help the body fight cancer.
Infusion	Treatment in which fluids, including drugs, are given through a needle or tube inserted into a vein, and travel through the blood. Also called intravenous infusion.
Inpatient care	Inpatient care is medical treatment administered to a patient who has been formally admitted to a hospital or other health care facility.
Intensity modulated radiation therapy (IMRT)	A type of three-dimensional radiation therapy that uses computer-generated images to show the size and shape of a tumor. Thin beams of radiation of different intensities are aimed at the tumor from many angles. This type of radiation therapy reduces the damage to healthy tissue near the tumor.
Intent-to-Treat (ITT)	A method for analyzing results in a prospective study where all participants are included in the statistical analysis and analyzed according to the group they were originally assigned (intervention or comparison), regardless of what treatment (if any) they received. In the OCM evaluation, ITT analysis includes all originally participating practices, including those that terminate participation.

Intervention period	The analytic time period during which outcomes are assessed while the OCM intervention is in effect. For this report, the intervention period covers episodes that initiate in PP1, PP2, and PP3.
Intravenous chemotherapy	Treatment in which anticancer drugs are given through a needle or tube inserted into a vein, and travel through the blood to kill cancer cells in the body.
Long-term care (LTC)	A variety of services designed to meet a person's health or personal care needs when they can no longer perform everyday activities on their own. LTC is provided in different places by different caregivers, depending on a person's needs. It can be provided at home by unpaid family members and friends, or in a facility such as a nursing home.
Low-risk cancer bundle	Includes lower-risk breast cancer, lower-intensity prostate cancer, and lower-risk bladder cancer.
Lumpectomy	Excision of a breast tumor with a limited amount of associated tissue.
Malignant	Cancerous. Malignant cells can invade and destroy nearby tissue and spread to other parts of the body.
Mastectomy	Surgery to remove part or all of the breast.
Medical homes	An approach to the delivery of primary care that is: 1) patient centered; 2) comprehensive; 3) coordinated; 4) accessible; and 5) committed to quality and safety.
Medical oncology	The diagnosis and treatment of cancer using chemotherapy, hormonal therapy, biological therapy, and targeted therapy. A medical oncologist often is the main health care provider while a person is undergoing treatment for cancer. A medical oncologist also gives supportive care and may coordinate treatment given by other specialists.
Medicare Advantage	A type of Medicare health plan offered by a private company that contracts with Medicare. Medicare Advantage plans include: Health Maintenance Organizations, Preferred Provider Organizations, Private FFS Plans, Special Needs Plans, and Medicare Medical Savings Account Plans.
Medicare beneficiary	A person enrolled in Medicare insurance, whether traditional Medicare or a Medicare Advantage plan.
Merit-based Incentive Payment System (MIPS)	CMS operates a quality payment incentive program, referred to as the QPP, which rewards value and outcomes in one of two ways: MIPS and Advanced APMs. Performance is measured in four areas: 1) quality; 2) improvement activities; 3) promoting interoperability of electronic health information; and 4) cost. All eligible clinicians were required to participate in MIPS starting in 2017 or be subject to a negative 4 percent payment adjustment on Medicare Part B reimbursements starting in 2019. Those who participate in an Advanced APM are eligible to receive up to a 5 percent bonus adjustment.

Metastasis	The spread of cancer cells from the place where they first formed to another part of the body. The new metastatic tumor is the same type of cancer as the primary tumor.
Monthly Enhanced Oncology Service (MEOS) payment	Payment intended to support care redesign and enhanced oncology services (see definition for enhanced oncology services). MEOS and PBPs are the financial incentives in OCM. OCM practices may bill Medicare a $160 per beneficiary fee for each month of a six-month episode, unless the beneficiary enters hospice care or dies. MEOS payments billed for beneficiaries who do not meet all episode eligibility criteria (e.g., those who switch to Medicare Advantage during the episode) will be recouped since no episode will be identified for these beneficiaries.
Multi-modal treatment	Therapy that combines more than one method of treatment. This can include any combination of surgery, chemotherapy/immunotherapy, and radiation therapy. Also called combination therapy and multimodality therapy.
Multi-specialty practice	Includes physicians certified in different specialties, for example, oncologists, cardiologists, surgeons, and pediatricians.
National Comprehensive Cancer Network (NCCN)	A not-for-profit alliance of leading cancer centers devoted to patient care, research, and education. NCCN is dedicated to improving and facilitating quality, effective, efficient, and accessible cancer care. NCCN develops resources that present valuable information to the numerous stakeholders in the health care delivery system, promotes the importance of CQI, and creates/updates clinical practice guidelines for cancer care.
National provider identifier (NPI)	A unique identification number assigned to health care providers in the United States, used for administrative and financial transactions, such as submitting claims to Medicare for payment of services rendered to Medicare beneficiaries.
National Quality Forum (NQF)	A not-for-profit, nonpartisan, membership-based organization that endorses quality measures. NQF-endorsed measures are considered the gold standard for health care measurement in the United States. Most OCM measures are NQF endorsed.
Neoplasm	An abnormal mass of tissue that results when cells divide more than they should or do not die when they should. Neoplasms may be benign (not cancer), or malignant (cancer). Also called tumor.
Neutropenia	A condition in which there is a lower-than-normal number of neutrophils (a type of white blood cell) in the blood. Neutrophils are made in the bone marrow. People who have neutropenia have a higher risk of getting serious infections.
Non-Reconciliation Eligible Cancer	Types of cancer identified by CMS to be rare. OCM episodes for these cancer types are not included in PBPs, although practices may submit claims for MEOS payment during treatment episodes for these types of cancer.

Novel therapies	Novel therapies are treatments newly approved by the Food and Drug Administration (FDA) for treatment of cancer. In OCM, performance-based payments are adjusted for novel therapies, which are often more costly than alternative therapies. Use of the novel therapy must be consistent with the FDA-approved indications. Most new oncology drugs/indications are considered "novel" for two years after FDA approval for that specific indication. Payment adjustment is based on the percentage of each practice's average episode expenditures for novel therapies, compared to the average percentage for practices that are not participating in OCM.
OCM Data Registry	CMS requires practices participating in OCM to enter information about each patient's anatomic disease staging, and other clinically relevant data into a data registry (e.g., molecular mutations that enable the use of targeted therapies). In addition, practices must report quality measurement data for the purposes of calculating PBPs and for measuring practice quality improvement.
OCM practice	An oncology practice that is participating in the Oncology Care Model. OCM practices comprise the evaluation treatment group.
Oncologist	A physician who treats cancer and provides medical care for people with cancer.
Oncology	A branch of medicine that specializes in the diagnosis and treatment of cancer.
Oral chemotherapy	Treatment with drugs given by mouth to kill cancer cells or stop them from dividing.
Out-of-pocket (OOP) costs	Expenses for medical care that are not reimbursed by insurance and are the responsibility of the patient. OOP costs include deductibles, coinsurance, and copayments for covered services, and all costs for services that are not covered by insurance.
Outpatient care	Care provided to a patient who has not been admitted to a hospital or other inpatient facility.
Palliative care	Palliative care addresses symptoms of disease and treatment, to improve the quality of life of patients and their families facing life-threatening illness. Palliative care aims to prevent or relieve pain and other suffering, whether physical, psychosocial, or spiritual.
Part A	Medicare Part A is insurance coverage for inpatient care in a hospital, skilled nursing facility, inpatient rehabilitation facility, or long term care hospital, as well as hospice care and home health care.
Part B	Medicare Part B is insurance coverage for outpatient/medical care, including medically necessary physician and other professional services and therapies, preventive services, and professionally administered prescription drugs such as chemotherapy infusions.

Part D	Medicare Part D is optional insurance coverage to help Medicare beneficiaries pay for self-administered prescription drugs. Medicare Part D plans are offered by private insurance companies.
Pathways software programs	Pathways software programs provide clinical decision support that guides physicians about which treatment regimen to select for a patient, based on clinical guidelines about the most efficacious or the best-value treatment option (for example, when more than one drug is equally efficacious, with equivalent toxicity risk, but they have different costs). Pathways software programs are sold by vendors, and can be incorporated into or separate from a practice's EHR.
Patient navigator	A health professional who focuses on the patient's needs. The navigator helps guide the patient through the health care system and works to overcome obstacles that are in the way of the patient receiving the care and treatment they require.
Performance period (PP)	OCM episodes are organized into six-month performance periods. At each participating practice, all episodes that begin during a performance period are reconciled together. For example, Performance Period One (PP1) includes OCM-defined six-month treatment episodes that began between July 1, 2016, and January 1, 2017, the last of which ended by June 30, 2017.
Performance-based payment (PBP)	A practice participating in OCM may be eligible to receive a proportion of reductions in Medicare episode payments as compared with its historic benchmarks (less a discount retained by CMS). The PBP is calculated retrospectively for each PP, based on the practice's reductions in Medicare payments below a target price, adjusted for quality. The combination of these PBPs, along with monthly per-patient payments for enhanced oncology services (the MEOS payment) form the financial and quality incentives in OCM.
Physician Order for Life-Sustaining Treatment (POLST)	Medical orders that travel with a patient, to be used when they have become seriously ill or frail, and toward the end of life. A POLST form is completed by a physician after discussing with a patient the diagnosis, prognosis, and likely outcomes, and the patient's individual goals and preferences. It gives medical orders to emergency personnel about which treatments the patient does and does not wish to undergo. A doctor (sometimes physician assistant or nurse practitioner, depending on the state) must sign the POLST form for it to be valid.
Post-acute care (PAC)	Includes rehabilitation or palliative services that beneficiaries receive after, or in some cases instead of, hospital care. Depending on the intensity of care the patient requires, PAC may be provided in a skilled nursing facility or in a patient's home by a home health agency.
Practice	Physician group or business entity that provides cancer care to patients, defined for OCM purposes by the unique TIN that the physicians use to submit claims for Medicare payment. Practices can be independently owned, health-system/hospital owned, or part of an academic medical center.

Practice transformation plans (PTP)	CMS asks participating OCM practices to submit annual PTPs. These are structured self-assessments of their practice transformation activities during the prior year, and their plans for the future.
Prognosis	The likely outcome or course of a disease; the chance of recovery or recurrence. A cancer prognosis may indicate the likelihood of cure, or the anticipated life expectancy when cure is not possible.
Propensity score matching	Propensity score matching is used to select a comparison group that is statistically similar to an intervention/treatment group. Propensity scores can be used to reduce or eliminate selection bias in observational studies by balancing observed covariates (the characteristics of participants' practices, markets and attributed episodes) between treatment and comparison groups. The goal is to approximate a random experiment, eliminating many of the problems that come with observational data analysis.
Prophylactic	A preventive measure. A medication or treatment designed to prevent a disease or other outcome from occurring.
Proton beam radiation therapy	A type of radiation therapy that uses streams of protons (tiny particles with a positive charge) to kill tumor cells while reducing radiation damage to healthy tissue near a tumor. It is used to treat cancers of the head and neck and organs such as the brain, eye, lung, spine, and prostate. Proton beam radiation is different from x-ray radiation therapy.
Quality Payment Program (QPP)	The Medicare Access and CHIP Reauthorization Act of 2015 (MACRA) requires CMS to operate the Medicare QPP. There are two ways clinicians can participate in the QPP: MIPS or Advanced APMs. (See previous definitions.)
Radiation oncology	One of the three primary specialties in oncology, the other two being surgical and medical oncology, involved in the treatment of cancer. Radiation can be given as a curative modality, either alone or in combination with surgery and/or chemotherapy. It may also be palliative, to relieve symptoms (e.g., pain from bone metastases) in patients with incurable cancer.
Radiation therapy	The use of high-energy radiation from x-rays, gamma rays, neutrons, protons, and other sources to kill cancer cells or shrink tumors. Radiation may come from a machine outside the body (external-beam radiation therapy) or from radioactive material placed in the body near cancer cells (internal radiation therapy or brachytherapy). Also called irradiation and radiotherapy.
Regimen	A treatment plan that specifies the drug, dosage, schedule, and duration of treatment. A treatment regimen for a specific patient may include chemotherapy drugs as well as supportive therapy drugs such as white cell growth factors or antiemetics.
Shared decision making	A process in which clinicians and patients work together to make decisions and select tests, treatments, and Care Plans based on clinical evidence that balances risks and expected outcomes with patient preferences and values.

SK&A Office-Based Physician File	A data source of physician data for marketing and research purposes. The SK&A database maintains information about every practice site in the United States where care is provided by medical professionals. It includes the owners, size, address, list of individual providers operating at the practice site, along with their health and hospital affiliations.
Skilled nursing facility (SNF)	An inpatient nursing facility where skilled nursing is provided by medical professionals. Medicare Part A covers up to 100 days of care in a SNF each benefit period.
Stage	Cancer staging is usually based on the size of the tumor, whether lymph nodes contain cancer, and whether the cancer has spread from the original site to other parts of the body. Higher stages indicate larger, or more broadly spread cancer in the body and usually a poorer prognosis.
Supportive therapy	Medications that are used to ameliorate chemotherapy-related side effects that may occur during cancer treatments. Common types of supportive therapies include anti-nausea medications, blood cell growth factors, and bone-stabilizing medications.
Surgical oncology (surg onc)	Surgical oncology is one of the three primary specialties in the treatment of cancer and involves the use of surgery to remove cancerous tumors. Surgery can be used by itself or with other (adjuvant) treatments, such as chemotherapy and radiation.
Survivorship plan	A detailed plan given to a patient after successful treatment ends, that contains a summary of the patient's treatment, along with recommendations for follow-up care. In cancer, the survivorship plan is based on the type of cancer and the treatment the patient received. A survivorship care plan may include schedules for physical exams and medical tests to (also called surveillance) to detect if the cancer has recurred or spread to other parts of the body. This follow-up care and surveillance usually continues for several years. A survivorship plan may also include information to help meet the emotional, social, legal, and financial needs of the patient, such as referrals to specialists and recommendations for a healthy lifestyle.
Taxpayer identification number (TIN)	CMS uses IRS-assigned TINs to identify hospitals, physicians, and others that submit claims for payment, for services delivered to Medicare beneficiaries. The TIN is the same as the Federal Employer ID Number (FEIN) or Employer Identification Number (EIN). In OCM, all providers in a practice must submit claims for their services under one unified TIN.
Total episode payment (TEP)	The total gross Medicare Part A, B and D payment for all cancer and non-cancer care for a patient during a six-month OCM-defined episode. Part A and B payments are standardized to remove geographic differences in labor costs and to exclude payments to providers that support larger Medicare program goals such as disproportionate share payments. Part D payments are not standardized and are calculated as the sum of low income cost-sharing and reinsurance. TEP does not include MEOS payments.
Toxicity	The extent to which treatment is poisonous or harmful, or causes side effects.

Triage	The sorting of patients according to the urgency of their need for care. Triage can be provided over the phone, to assess whether a patient should come into the clinic or visit an emergency room.
Two-sided risk	Participating OCM practices may voluntarily adopt two-sided risk, in which Medicare payments above the target are recouped by CMS. Accepting two-sided risk meets the QPP's criteria for being an Advanced APM. Practices will be required to move to two-sided risk (or their participation will be terminated) if, as of the initial reconciliation of the fourth performance period (estimated fall 2019), they have not yet achieved a PBP for at least one of the first four performance periods. Practices that have achieved a PBP in one of the first four performance periods may choose to stay in the model under one-sided risk.
Value-based payment models	Payment models that reward health care providers with incentive payments for the quality of care they provide to patients. These models are part of CMS's larger quality strategy to reform how health care is delivered and paid for.