Evaluation of the Oncology Care Model

Executive Summary

Performance Periods 1-9

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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 (APM) based on six-month episodes for cancer care. The six-year OCM began with six-month chemotherapy treatment episodes, starting on July 1, 2016, and operated for 11 consecutive performance periods (PPs). The last episodes ended on June 30, 2022. This report discusses impacts in the first nine PPs (episodes starting 7/1/16, through 1/1/21). OCM tested whether payment reform and healthcare delivery redesign 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 OCM combined attributes of medical homes—patient-centeredness, care coordination, accessibility, evidence-based guidelines, and continuous quality improvement—with financial incentives for providing services efficiently and with high quality.²

OCM featured a two-pronged financial incentive strategy. Participating practices were able to bill Medicare a \$160 Monthly Enhanced Oncology Service (MEOS) fee for Medicare FFS beneficiaries, which was intended to support the practice in providing enhanced oncology services—such as increased access to timely ambulatory care, and patient navigation. Practices were also able to earn money in the form of retrospective performance-based payments (PBPs) if they were able to meet OCM payment and quality goals.

Participating OCM practices were initially paid under Medicare's FFS billing rules. CMS then combined all Medicare-covered services provided to chemotherapy patients into six-month episodes. If practices met performance quality goals, they were able to receive a PBP that CMS calculated by comparing all expenditures during an episode (including MEOS payments) to risk-adjusted historical benchmarks, minus a discount that CMS retained. These reconciled payments were calculated for each six-month PP.

All OCM practices began participation in a one-sided risk status, benefiting from any reductions they could achieve in total episode payments (TEP) but were without responsibility for repayments if the average TEP was over the benchmark. Practices that were unable to demonstrate any reductions in TEP by the end of PP4 were required to terminate participation (by PP8) or take two-sided risk (effective in PP8). Practices that believed they could succeed under two-sided risk were encouraged to begin that risk status early in OCM. Due to the COVID-19 public health emergency (PHE), CMS offered a third option, beginning in PP8, where practices could continue to submit monthly bills for MEOS but waive their eligibility for any PBPs by opting out of PBP reconciliation and performance measurement. By opting out of reconciliation, practices that otherwise would have been required to take two-sided risk were able to continue receiving the OCM MEOS payments, without concerns of losing money under the two-sided risk arrangement. Exhibit ES-1 shows the status of OCM participants across each of the nine PPs covered in this report. The OCM evaluation summarizes OCM impact using mixed methods, integrating comprehensive quantitative and qualitative data analyses based on Medicare administrative data and claims, patient surveys, case study interviews, and other inputs.

MPORTANT ACRONYMS

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 can earn based on their success in achieving quality goals and reducing expenditures enough to meet OCM requirements.

PP: Performance Period. Six-month windows into which episodes were assigned.

PHE: COVID-19 public health emergency, affecting PP7-9.

TEP: Total Episode Payments. Total of all payments for Medicare-covered services provided to chemotherapy patients during six-month chemotherapy episodes. Does not include MEOS, PBP, or beneficiary copays.

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

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

RELATED SECTIONS

For additional information about the risk arrangements available to OCM participants, see "OCM Risk Arrangements" on **Page 1** in the main report.

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 the OCM and comparison groups. Three subsequent evaluation annual reports³ assessed care delivery changes and impacts during episodes through PP6, all of which ended before the PHE. This report, the Evaluation of the Oncology Care Model: PP1–9 Report, presents model impacts through PP9 and includes six-month episodes that began between July 1, 2016 and January 1, 2021, all of which ended by June 30, 2021. Roughly 85 percent of episodes in PP7 ended during the PHE. While all PP8 episodes overlapped the PHE, roughly 85 percent of episodes occurred entirely

within the PHE, and all PP9 episodes began and ended during the PHE. At the end of PP9, 128 practices were actively participating in OCM: 19 (including several of the largest) were taking two-sided risk, covering 30.9 percent of all OCM episodes initiated in PP9 (121,793 episodes), while 28 had opted out of PBP, covering 27.2 percent of all episodes initiated in PP9.

Cancer is not a single disease, and each type of cancer has different treatments, side effects, episode costs, and potential for savings. CMS assigns each cancer episode to 1 of 24 cancer types. Three types of cancer are categorized for OCM as lower-risk (low-intensity prostate cancer, low-risk breast cancer, and low-risk bladder cancer) and make up about one-third of all OCM episodes. These cancers are treated with hormonal or local therapies, and patients typically have fewer side effects from their cancer or treatment; episode costs tend to be modest. The remaining 21 cancers are considered higher-risk, making up the remaining two-thirds of OCM episodes, and episode costs are much higher because treatment typically involves cytotoxic chemotherapy, targeted therapy, and/or immunotherapy.

Exhibit ES-1: Over Half of OCM Practices Changed Their Participation Status or Risk Status in Performance Period 8.



Source: OCM program data.

Notes: PP: Performance period. Active, one-sided practices are eligible for performance-based payments (PBPs) under one-sided risk (no repayments to CMS if total episode payments exceed benchmark target). Active, two-sided practices are eligible for PBPs under two-sided risk: potential earnings are higher, but practices repay CMS some amount if total payments exceed target. Active, PBP opt-out practices are those that exercised a COVID flexibility allowing them to receive monthly payments, but not be eligible for PBPs. Terminated practices are those who no longer participate in OCM.

³ The Evaluation of the Oncology Care Model: Performance Periods 1-3 report covered through PP3, including episodes that began between July 1, 2016 and January 1, 2018 and had ended by June 30, 2018.

The Evaluation of the Oncology Care Model: Performance Periods 1-5 report covered through PP5, including episodes that began between July 1, 2016 and January 1, 2019 and had ended by June 30, 2019.

The Evaluation of the Oncology Care Model: Performance Periods 1-6 report covered through PP5, including episodes that began between July 1, 2016 and July 1, 2019 and had ended by December 31, 2019.

Treatments for higher-risk cancer types often have high prices, and patients who receive these treatments more often experience adverse side effects. Many analyses in this report separately assessed lower- and higher-risk episodes, since the two categories tend to have different treatments, severity, and costs. We also separately analyzed the ten most common cancer categories for payment and utilization outcomes to understand potential differences in OCM impacts across cancer types.

The OCM evaluation compares changes over time in OCM episodes with changes over time in a matched group of comparison episodes that were attributed to oncology physician practices that did not participate in OCM. We apply an intent-to-treat (ITT) approach that retains episodes for practices that terminate participation. We do this to avoid a case where only the most successful practices remained in OCM, such that analyses only reflect a very specific set of highperforming practices ("survivor bias"). Such bias would substantially affect the generalizability of our results, limiting their use for policymakers. However, the tradeoff is that we count as "treated" patients whose practices had opted out of the model, which may bias evaluation impact estimates towards zero (against identifying an impact). Accordingly, our estimates reflect conservative impacts across both practices that opted to remain in OCM and those that dropped out.

In our analysis, we adjusted for the influence of the PHE, which varied geographically and over time, through two mechanisms:

- To address the direct effects of the PHE, we removed all OCM and comparison episodes that included one or more claims with a COVID-19 diagnosis and tested the sensitivity of key spending and utilization results to the inclusion/ exclusion of these episodes.
- To address the indirect stress on the healthcare system, we controlled for incidence of COVID and death rates in counties served by OCM versus comparison practices (details in Appendix A.1.9).

Over the course of OCM, costs for cancer treatment increased by about 25% in both OCM and comparison episodes due to increased use of costly chemotherapy and immunotherapy. The episode expenditures averaged about \$28,500 during the OCM baseline (July 2014-December 2015) and increased to \$38,275 by PP9 (July-December 2020). This report addresses whether that increase was lower in OCM episodes than in comparison episodes, whether OCM had differential impacts on certain types of cancer or specific cancer services, and if so, how these impacts were achieved.

Additionally, we assessed at baseline how well OCM episodes reflected all Medicare FFS chemotherapy episodes (i.e., OCM reach). Assessing model generalizability is particularly important for voluntary models like OCM, because some types of oncology practices might have been more likely to participate than others. The more representative OCM's "reach" is into its target population, the more confident we can be that impacts could be replicated if OCM were expanded more broadly to other FFS Medicare beneficiaries.

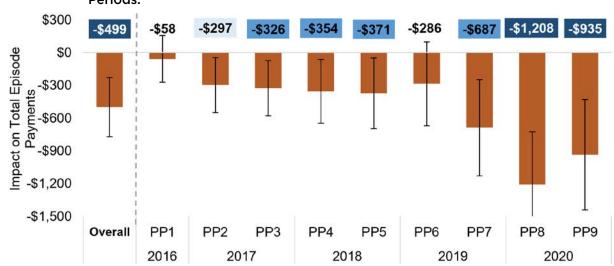


Exhibit ES-2: OCM Significantly Reduced Total Episode Payments in nearly all Performance Periods.

Shading indicates statistically significant estimates at p \leq 0.01, p \leq 0.05, and p \leq 0.10, indicated by dark blue, medium blue, or light blue shading respectively

Source: Medicare claims 2014–2021.

Notes: Whisker bars represent 90% confidence intervals. PP: Performance period. PP1 began July 1, 2016. Each subsequent calendar year had two six-month PPs, from January-June, and July-December.



OCM participants treated roughly a quarter of all eligible FFS Medicare chemotherapy episodes, both prior to and during OCM (analyses examined the period through PP6, before the PHE). In general, patients in OCM and non-OCM episodes had similar demographic characteristics, and poverty/socioeconomic status.

OCM practices were larger, more likely to be affiliated with an academic medical center and had a larger share of high-risk cancer episodes than non-OCM practices.

The geographic markets served by OCM participants were similar to markets served by non-OCM practices but had more physicians per capita. Fewer than 3 percent of OCM and non-OCM episodes were for patients who resided in rural areas.

Summary of Key Findings

Medicare Payments and Net Savings/Losses

Total episode payments increased rapidly in both OCM and comparison episodes through Performance Period 9, and on average rose \$499 less (p<0.05) in OCM episodes: a relative reduction of 1.7 percent (Exhibit ES-2). This represents a reduction in Medicare payments (excluding MEOS) due to OCM. Reductions were largest in PP8 (\$1,208), which coincided with the timing of many OCM practices taking two-sided risk, as well as the PHE and related OCM-policy changes.

The relative reduction in total episode payments was driven by reduced Medicare payments in higher-risk episodes, averaging \$755, or 1.9 percent

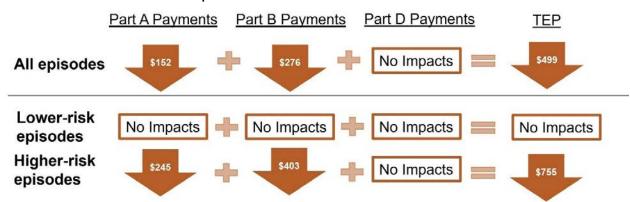
(Exhibit ES-3). Reductions were largest in episodes for high-risk breast cancer, lymphoma, lung cancer, and colorectal/small intestine cancer. There were no payment reductions due to OCM in episodes for lower-risk cancers.

Payment reductions were greatest in Part B payments (Exhibit ES-3), especially for non-chemotherapy drugs, which are mainly for supportive care. There were also relative reductions in Part A payments, including payments for acute care hospitalizations (ACH). Estimated relative reductions in Part D payments increased over time, especially in PP8 and PP9, but were not statistically significant overall.

After including OCM payments made to practices, OCM resulted in net losses for Medicare. In the first eight performance periods (PPs), OCM led to cumulative net losses for Medicare of \$528M (Exhibit ES-4). Net losses were largest in PP1 (\$105M) and smallest in PP7 (\$22M). Gross savings (from reductions in total episode payments) were not sufficient to cover both monthly payments for enhanced oncology services and performance-based payments in any period, for either higher-risk or lower-risk cancer episodes. Gross savings for higher-risk cancer episodes covered the cost of the monthly payments only (but not performancebased payments) in PP7 and PP8. Performance-based payments rose sharply in PP8, offsetting the larger gross savings in total episode payments. Calculations for performance-based payments in PP8 were influenced by several changes in that period, including:

- Practices could choose to opt out of reconciliation, an option CMS offered because of the PHE;
- Changes to quality measures related to the PHE that made it easier to meet performance benchmarks; and
- An increase in the number of practices taking two-sided risk (which made their performancebased payments larger after achieving quality thresholds).

Exhibit ES-3: OCM Led to Relative Reduction in Payments for Higher-Risk Episodes, but Not for Lower-Risk Episodes.



Source: Medicare claims 2014-2021.

Notes: A green arrow indicates a statistically significant relative reduction at p<0.10. PP: Performance period. TEP: Total episode payment.

Any practice that wished to take two-sided risk could do so, beginning in PP2. Given the lower discount and withholding applied by CMS for those in two-sided risk relative to one-sided risk, taking two-sided risk would have resulted in higher payment targets, opening the possibility for larger PBPs. Practices that had failed to earn PBPs in PP1-4 were required to move to twosided risk or terminate participation in OCM beginning in PP8. Starting in PP8, practices that remained in reconciliation, and were therefore eligible for PBPs, either took two-sided risk (i.e., were confident of earning PBPs) or had demonstrated payment reductions in PP1-4 and elected to remain in one-sided risk, as OCM rules permit. All of these factors likely contributed to higher PBPs being paid by CMS in PP7 and PP8, offsetting Medicare savings attributable to relative reductions in TEP.

Hospital-based care, chemotherapy, and supportive care

OCM aimed to provide higher-quality and better coordinated cancer care and reduce avoidable hospitalizations and emergency department (ED) visits. Results showed that OCM impacted hospital use in several ways.

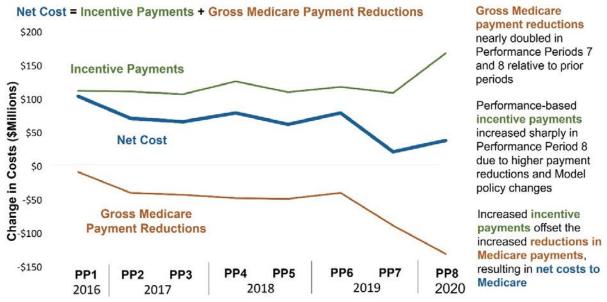
Reduced probability of intensive care unit (ICU) admission. OCM led to a significant 5.4 percent relative reduction in the proportion of episodes with any ICU admissions (6,480 fewer episodes with ICU stays between PP1 and PP9).

Reduction in the number of ED visits leading to an inpatient stay. We assessed the impact of OCM on ED visits that led to a hospital admission and, separately, ED visits that did not lead to a hospital admission. OCM led to a small but statistically significant decrease in the likelihood of an ED visit resulting in an inpatient stay: a reduction equivalent to 1.6 percent of baseline values. OCM also decreased the number of ED visits by 0.8 percent relative to baseline (among patients with at least one ED visit resulting in inpatient stay) over the course of the Model. However, OCM did not affect the overall likelihood of an inpatient admission (through the ED or otherwise) and impacts on ED visits that did not result in a hospital admission were nonsignificant.

No meaningful impact on ED visits or hospitalizations for chemotherapy-related toxicity. We separately analyzed acute-care use for chemotherapy-related toxicity. OCM practices specifically focused on preventing ED visits and hospitalizations for chemotherapy-related toxicity, to improve quality of care and reduce episode payments, and may have had more direct control over presenting this type of acute-care use relative to other ED visits and hospitalizations. However, OCM had no meaningful impact on chemotherapy-associated hospitalizations, and the significant impact on chemotherapy-associated ED visits was so slight as not to be clinically meaningful.

Reduction in readmissions. Although OCM did not reduce the likelihood of having at least one readmission, it led to a significant relative reduction in the number of readmissions and unplanned readmissions among patients with at least one readmission. OCM resulted in approximately 1,200

Exhibit ES-4: Despite Reductions in Gross Medicare Spending, OCM Yielded Net Losses for Medicare.



Source: Medicare claims 2014–2021 and OCM program data.

Notes: PP: Performance period. Incentive payments included \$160 per-beneficiary in Monthly Enhanced Oncology Services payments, as well as performance-based payments for achieving payment and quality thresholds. Gross payment reductions were equal to the average reduction in total episode payments multiplied by the total number of episodes. TEP: Total episode payments.

fewer episodes with 30-day readmissions over the intervention period (PP1–PP9), a 1.2 percent reduction relative to the baseline.

The opportunity to earn PBP was intended to motivate participating practices to avoid low-value, costly treatments that have little likelihood of benefiting patients, and emphasize higher-value care. Key findings about the impact of OCM in these areas included:

Little evidence of value-oriented changes in chemotherapy drug treatments. The chemotherapy drugs used to treat common cancers were very similar in OCM and comparison episodes, and changed similarly over time, with no savings to Medicare due to more-efficient treatment patterns (i.e., using similarly effective but less expensive drugs). One exception was in use of three biosimilar cancer treatments, which cost less than originator drugs and were used significantly more in OCM episodes than in comparison episodes following their availability in 2019: roughly 20-40 percent higher rates of use. Other than biosimilar cancer treatments, however, there is little evidence that OCM drives value-oriented selection of chemotherapy regimens. At the same time, there is no evidence that OCM impaired access to beneficial high-cost treatments, such as immunotherapy.

More value-oriented supportive care. Episode payments for Part B non-chemotherapy drugs increased significantly less in OCM episodes than in comparison episodes, reflecting more value-oriented use of costly supportive therapies to prevent neutropenia, nausea, and cancerrelated bone fractures. OCM also had greater use of biosimilar white blood cell growth factors (granulocyte colony stimulating factors, GCSFs). This result is consistent with the substitution of biosimilar anti-cancer treatments described above.

No value-oriented changes in palliative radiation therapy. In situations where patients need palliative radiation therapy and clinical guidelines recommend fewer radiation fractions, changes over time were small and similar for OCM and comparison episodes.

Patient-Centered Care

OCM practices implemented strategies to enhance care coordination and symptom management and expanded clinic access, financial counseling, and palliative care, a topic we explore more thoroughly in the **Participants' Perspective Report**. These changes intended to improve patient care experiences, improve adherence to oral treatment regimens, and foster more appropriate care at the end of life.

Observations about the impact of OCM on patientcentered care include the following:

Continued high rating of patient care experience.

Most cancer patient respondents rated their cancer care very highly at the start of OCM, and there were no significant changes over time.

Continued high patient adherence to oral treatment regimens. OCM practices redesigned care processes to identify financial and other barriers to oral cancer treatment and to educate patients about how to take oral drugs and manage side effects. Patient adherence exceeded 85 percent in both OCM and comparison episodes. While OCM did not improve adherence relative to the comparison group overall, OCM was associated with significantly improved adherence for patients who are Black, Hispanic, or dually eligible for Medicaid.

Fewer hospitalizations at the end of life.

Guidelines generally emphasize non-hospital comfort care for patients at the end of life rather than use of acute hospital care. Hospital admissions in the last 30 days of life decreased by 0.8 percentage points for deceased OCM patients relative to comparison patients (p≤0.10); this is equivalent to avoiding hospitalization in the last 30 days of life for about 1 out of every 125 deceased OCM patients. OCM had no impact on ED use (two or more visits) in the last 30 days of life or on use of chemotherapy in the last two weeks of life.

No impact on hospice care use or timing. Many OCM practices attempted to improve end-of-life care by hiring palliative care specialists and enhancing access to palliative care, encouraging patients and their families to engage in advance care planning, and documenting patient wishes and proxy decision makers. However, OCM had no observable impact on the use of hospice care or the duration or timing of hospice care.

Health Equity

Although OCM did not include explicit design elements focused on improving health equity, it is possible that efforts participants made to improve care quality may have disproportionately benefited patients from historically underserved communities by helping to address needs that are not met under standard Medicare FFS care. Conversely, OCM may have disproportionately benefitted other patients if systemic barriers faced by historically underserved populations prevented them from acquiring the full benefits of the Model. We investigated these possibilities by running analyses focused on patients who were Black, Hispanic, or dually eligible, relative to patients who were White and patients with only Medicare coverage.

This investigation yielded the following findings.

Outcomes differed between patients who were Black, Hispanic, or had dual eligibility, and their reference populations prior to OCM. During the baseline period, patients from the three historically underserved populations were significantly more likely to utilize hospital-based care and also had higher TEP, relative to their reference populations. Patients from each of these populations were also significantly less likely to have timely initiation of chemotherapy after surgery, had lower adherence to oral medications, and were less likely to receive hospice care at the end of life than patients in their reference populations.

There were few consistent patterns of differential changes across underserved populations: in general, OCM did not decrease pre-existing differences in outcomes. OCM was associated with small differential increases in acute-care service utilization among patients who were Black or had dual eligibility, which increased pre-existing differences between these groups and their reference populations. While TEP increased less slowly for all five subpopulations we analyzed, TEP differentially decreased among patients who were Hispanic relative to patients who were non-Hispanic White. Clinical analyses showed that OCM eliminated baseline differences in adherence to oral medications by improving adherence among historically underserved populations. However, results did not show consistent evidence of improved care quality for the three historically underserved populations across the broader set of quality measures included in the analysis.

Patient-reported care experience remained high for all three underserved populations. At the start of the Model, patient-reported outcomes were similarly high across all subpopulations analyzed. Our results did not show that any of these subpopulations had differentially better or worse trends in care experience over the first nine PPs, leaving experience scores consistently high.

Conclusion

OCM reduced TEP by 1.7 percent, on average, over the first nine PPs, with reductions notably increasing in PP7-PP9 as the Model matured. The OCM evaluation found these reductions despite using an intent-to-treat study design that included episodes from practices even after they had terminated their participation in the Model. The impact achieved by practices that remained active through PP9 may be higher. Estimated payment impacts were robust to several sensitivity analyses related to the COVID-19 PHE, indicating that estimates

are not an artifact of the PHE. Reductions in TEP were limited to higher-risk cancer types, which collectively comprised 67 percent of all OCM episodes. In particular, reductions were concentrated in episodes for highrisk breast cancer, lung cancer, colorectal cancer, and lymphoma. Most reductions in TEP were attributable to reductions in Part B spending, due primarily to reductions in spending on non-chemotherapy drugs. Although Part B chemotherapy and Part D drug spending account for the bulk of TEP, the OCM did not generate reductions in spending for these types of care.

Despite these reductions in TEP, OCM resulted in net losses for Medicare exceeding \$500M, after accounting for monthly and performance-based payments to participants in each of the first eight performance periods (PBPs for PP9 had not been calculated in time for inclusion in this report). Net losses were lower in PPs 7 and 8 than in prior periods, and TEP reductions for higher-risk cancers did cover the MEOS payments in PPs 7 and 8. The forthcoming Enhanced Oncology Model (EOM) will focus on patients receiving systemic chemotherapy for seven cancer types, which tend to have higher risk of side effects and higher episode costs, relative to cancers treated by hormonal therapy only. That higher-risk episodes broke even in the most recent OCM performance periods indicates promise of net savings for EOM.

The inclusion of the MEOS payments to participants was intended to improve the quality of care provided to OCM patients. Our most recent evaluation findings show some evidence of small, statistically significant reductions in certain measures of utilization, including readmissions and ICU admissions. However, in terms of the quality measures that practices were held accountable for, such as ED visits not resulting in a hospital admission, timely receipt of hospice care, and patient-reported care experience from survey data, we found no evidence of significant improvement among OCM participants either in absolute terms or relative to the comparison group. This may suggest limited room for improvement on these measures, at least under current treatment paradigms.

OCM was intended to transform cancer treatment by incentivizing substitution of higher-value treatment alternatives and encouraging better adherence to clinical guidelines. OCM increased the use of higher-value supportive therapies to prevent neutropenia, nausea, and cancer-related bone fractures. This change in usual care was likely the biggest contributor towards reductions in TEP attributable to OCM. OCM was also associated with greater adoption of three higher-value biosimilar anti-cancer treatments, which also contributed to reductions in TEP. While chemotherapy drug spending is the single largest contributor to TEP, we found

little evidence for increased adoption of higher-value chemotherapy. OCM also did not affect the timeliness of post-chemotherapy surgery, patient adherence to oral cancer regimens, or provision of higher-value palliative radiation.

To explore the potential impact of OCM on health equity, we assessed outcomes for three historically underserved populations, including patients who were Black, Hispanic or had dual eligibility, relative to patients who were non-Hispanic White or only enrolled in Medicare. We found that, prior to OCM, patients from historically underserved populations had higher acute-care utilization and TEP, but were less likely to have timely initiation of chemotherapy after surgery, adherence to oral treatment, or hospice care at end of life. While OCM improved adherence to oral treatment for all three historically underserved populations, in absolute terms and relative to their reference populations, we did not find consistent evidence

of improved care quality for the three historically underserved populations across the measures included in the analysis. We estimated reductions in TEP for all subpopulations analyzed; only for patients who were Hispanic were reductions differentially larger than in their reference population.

Two reports remain under this evaluation. A Patient Perspectives Report will provide insights on OCM as experienced by patients receiving chemotherapy under the model. Our final impact report will extend these findings for an additional year (two PPs), covering episodes that began in 2021, and will account for net Medicare payments through the end of the Model. These reports will provide a final summative review of evidence from the OCM evaluation. While it is unlikely that estimates of OCM on TEP and net Medicare spending will change after accounting for the remaining performance periods, we will evaluate trends over time to see if increased reductions in TEP were sustained or enhanced in the final year, and whether Medicare saved money on net in any individual performance period. These results will help to inform future model design.