# Patient-Centered Oncology Payment Model

## Environmental Scan

## 3/24/2020 (Updated)

## I. Overview

The purpose of this environmental scan is to provide members of the Physician-Focused Payment Model Technical Advisory Committee (PTAC) with background information and context for the physician-focused payment model (PFPM) "Patient-Centered Oncology Payment Model (PCOP)." This proposal that was submitted by The American Society of Clinical Oncology (ASCO) was determined to have met the administrative requirements on January 14, 2020.

The environmental scan focuses on the epidemiology of cancer, quality and performance measurement, issues in Medicare payment policy affecting oncology care, problems in cancer care delivery, and results of proposed or similar models addressing oncology care. The Appendix includes the search terms and sources used to identify the research summarized below.

*Information on the Submitter*

ASCO is a nonprofit 503(c)(3) membership organization of oncology professionals working to conquer cancer through research, education and promotion of the highest-quality patient care. Founded in 1964 with seven members, today ASCO has approximately 45,000 members and a governing board of 19. Most of ASCO's work is conducted through volunteer groups and 18 standing committees supported by full-time staff (ASCO website, 2020). ASCO supports care delivery initiatives in oncology, including the proposed PCOP model and the oncology medical home (OMH) models that inspired it, as well as oncology clinical pathways. While the original OMH model recognized by ASCO and the National Committee for Quality Assurance (NCQA) was retired by NCQA in October, 2019, the OMH model has transitioned to the Patient-Centered Specialty Practice (PCSP) model and recognition program (NCQA Website, 2020). ASCO continues to develop the criteria necessary to evaluate novel clinical pathway programs (ASCO Website, 2020). ASCO also publishes its own journals and conducts original research that appears in major publications such as the *Journal of Oncology Practice* (ASCO Website, 2020). Beyond research, ASCO offers support to oncology practices across a range of services, including direct consulting, staff recruiting and support for practice benchmarking. ASCO also produces quality improvement initiatives such as the Quality Oncology Practice Initiative (QOPI), which is offered to practices as a member benefit, to promote stronger accountability and evidence-based quality (ASCO, 2020).

A 2017 ASCO census of oncologists identified 2,248 practices, two-thirds of which were single-specialty oncology (medical oncology and/or hematology) and one-third of which were multispecialty (gynecologic, radiation and/or surgical oncologists). Over three-quarters (76 percent) of the practices employed one to five oncologists, 72 percent were single-site, and 9 nine percent had a site in a rural ZIP code. Among survey respondents, 21 percent practiced in academic settings, 37 percent in hospitals/health system-owned settings and 42 percent were independent (Kirkwood, et al., 2018). These results were similar to the Oncology Care Model (OCM) Evaluation team's findings using the 2015

Office-Based Physician File by SK&A (later acquired by OneKey) in which 2,148 unique oncology practices were identified (Abt Associates, 2018). Between 2007 and 2017, the percentage of oncology practices that were vertically integrated with a hospital (i.e., owned by the hospital system) increased by 34 percent to roughly 65 percent (Nikpay, Richards, and Penson, 2018).

## Epidemiology of Cancer

The PCOP model proposes to transform cancer care delivery for oncology patients.

***Overview of Cancer in Older Adults.*** Cancer is the second leading cause of death in the United States, with an estimated 606,520 deaths and about 1,806,950 new cancer cases anticipated in 2020 (ACS, 2020). While cancer affects all age groups, the risk of developing cancer increases with age. Between 2012 and 2016, people age 65 years and older accounted for nearly 54 percent of newly diagnosed cancer and 70 percent of all cancer deaths (National Cancer Institute (NCI), 2019). In 2017, 9 percent of all Medicare fee-for-service (FFS) beneficiaries had cancer diagnoses (Centers for Medicare and Medicaid Services (CMS), 2019, Chronic Conditions). The most commonly diagnosed types of cancer among older people age 65 and older are lung, breast, prostate, and colorectal (National Institutes of Health (NIH), 2019). In 2016, approximately 70 percent of lung cancer, 60 percent of prostate cancer, 54 percent of colorectal cancer, and 46 percent of female breast cancer occurred among those age 65 years and older (NIH, 2019).[1]

***Impact of Cancer in Older Adults.*** Cancer patients age 65 years and older have disproportionately higher health care utilization and cost, compared with younger patients. In 2009, cancer hospitalization rates among those age 65 years and older were nearly 16 times higher than for 18 to 44-year-olds, and 2.5 times higher than for 45 to 64-year-olds (Anhang Price, Stranges, and Elixhauser, 2012). Medicare accounted for 44 percent of hospital costs related to cancer in 2009 and one studied estimated the average Medicare payment per hospitalization  for cancer was $10,286 (Anhang Price, Stranges, and Elixhauser, 2012; Kedia et al., 2017). In addition to hospital inpatient stays, Medicare beneficiaries with cancer had higher rates of 30-day readmissions and more physician care visits and days in nursing homes, compared with beneficiaries without a cancer diagnosis (Kedia et al., 2017). An observational study assessing emergency department (ED) visits among adult cancer patients concluded that beneficiaries age 65 years and older had the highest rate of cancer-related ED visits compared with other age groups (Rivera et al., 2017).

***Medicare Spending Among Cancer Patients.*** Medicare is the largest payment sources for all adult cancer patients and has the highest mean expenditure for those age 65 years and older (Park and Look, 2019). A recent study investigated differences in expenditures by source of payment and concluded that Medicare paid nearly 10 times more for prostate cancer patients compared with private insurance and three times more than private payers for breast cancer (Park and Look, 2019). In 2014, Medicare accounted for nearly 33 percent of an estimated $87.8 billion spent on cancer treatment in the US (American Cancer Society, 2017). In addition, cancer treatment accounted for 5 percent of all Medicare spending in 2013 (Ruiz, et al., 2019; Agency for Healthcare Research and Quality (AHRQ), 2015). The cost of cancer care in the United States remains high, and has been projected to reach an estimated $173

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[1] A claims analysis accompanying this environmental scan will provide additional data on cancer among Medicare FFS beneficiaries.

billion in 2020 (Mariotto et al., 2011). In 2017, Medicare expenditures for cancer were $19,796 per capita (CMS, 2019, Chronic Conditions).

Medicare spending patterns vary by tumor type, with some cancers requiring more inpatient care and others mostly outpatient spending. A study examining monthly and yearly Medicare spending among patients with the most commonly diagnosed cancers, in the year of diagnosis and the year of death, found that inpatient hospitalization accounted for at least half of initial spending for lung and colorectal cancer patients (50 percent and 58 percent, respectively), while outpatient spending was the largest among breast and prostate cancer patients (Chen et al., 2018). Among adult men, the leading causes of cancer hospitalizations in 2009 were for prostate cancer, secondary malignancies (i.e., metastatic cancer), and lung cancer. Among adult women, the most common cancer hospitalizations in 2009 were for secondary malignancies, breast cancer, and lung cancer (Anhang Price, Stranges, and Elixhauser, 2012).

***Recent Trends in Inpatient Hospitalizations for Cancer among Medicare Beneficiaries.*** While inpatient hospitalizations are still common among cancer patients, there is evidence that they have declined over the past two decades, following a national decrease in the rate of hospitalizations for Medicare beneficiaries more generally (CMS, 2020; Healthcare Cost and Utilization Project (HCUP), 2019; Abt Associates, 2018; Whitney et al, 2017). The evaluation of the Oncology Care Model (OCM) reported a reduction in the number and rate of inpatient hospitalizations between 2014 and 2017 in both the intervention and comparison groups, which resulted in no statistically significant differences between the groups (Abt Associates, 2018). See Exhibit 1 for details. Both OCM and comparison practices also saw a decrease in hospital days and readmissions (Abt Associates, 2018). The Nationwide Inpatient Sample (NIS) demonstrated a similar trend in inpatient stays for Medicare beneficiaries and/or Medicare beneficiaries treated for cancer between 2000 and 2009 (Anhang Price, Stranges, and Elixhauser, 2012). A shift away from inpatient stays nationally is evident in data from Medicare, which show a decline in the number and rate of discharges, as well as shorter lengths of stay from 2013 to 2018, and data from the general population, which show a decline in inpatient stays per 100,000 between 2007 and 2016 (HCUP, 2019).

***Access to Cancer Care among Medicare Beneficiaries.*** Access to care is an essential component of high-quality cancer treatment and a general challenge in the Medicare population. In 2012, nearly 6 percent of Medicare beneficiaries reported difficulties accessing needed care, and 11 percent reported delaying care due to its high costs (Cubanski et al., 2015). Nationally, factors affecting access to care among older adults include insurance type, geographic barriers and sociodemographics (NCI, 2019). Under current law, Medicare Part B typically covers chemotherapy treatments that are injectable and administered in hospital settings and physician offices (CMS, 2019 Medicare coverage of cancer treatment, 2017). Medicare Part D covers anti-nausea and prescription drugs for chemotherapy that can only be taken orally. However, federal laws explicitly state that Medicare Part D cannot pay for drugs when either Part A or Part B would cover those (CMS, 2018). Medicare beneficiaries without supplemental insurance experienced significant out-of-pocket (OOP) costs following a cancer diagnosis. Studies have shown that nearly 10 percent of older adult cancer patients with Medicare (and no supplemental coverage) spent more than 60 percent of their annual household income on OOP expenditures after a cancer diagnosis. Most of these expenditures were associated with inpatient hospitalization (Narang and Nicholas, 2017).

As of 2016, fewer than 1 in 20 adults with cancer enrolled in clinical trials, a number that has not changed significantly over time (Unger et al., 2016). Research shows that some cohorts of publicly insured patients (for example, women with breast cancer) were less likely to participate in a clinical trial compared with their privately insured counterparts (Obeng-Gyasi et al., 2019); however, this is likely not a key driver of disparities in survival, given the strict eligibility criteria associated with clinical trials (Unger et al., 2016).

***Characteristics of Medicare Beneficiaries with Cancer.*** Despite Medicare's coverage of cancer treatment for its beneficiaries, disparities in cancer incidence and mortality exist among different sociodemographic groups and across groups of patients with different comorbidities. Findings from epidemiological studies using the SEER-Medicare database, which links registry data and vital records to Medicare claims, indicate that incidence and mortality of colorectal and prostate cancers are higher among blacks than whites. Additionally, as of 2017, nearly 17 percent of Medicare beneficiaries lived in rural areas, where patients received lower quality of care than urban residents, regardless of race or ethnicity (CMS, 2018). Rural residence was associated with increased incidence and mortality for colorectal cancer patients (Liang et al., 2017).

Comorbidities are common among older adult cancer patients. In 2017, nearly 93 percent of all Medicare beneficiaries with a cancer diagnosis had at least one other chronic condition, and 37 percent of beneficiaries with a cancer diagnosis had five or more other chronic conditions (CMS, 2017). Medicare beneficiaries with multiple comorbidities use health care services at a higher rate and account for a disproportionate share of Medicare spending.

***Other Payer Types.*** Medicaid reimbursement for cancer care varies by state. In 2012, Medicaid accounted for approximately 5 percent of the estimated $87.5 billion spent on cancer treatment (AHRQ, 2015). Despite Medicaid beneficiaries' access to preventive and primary care, specialists are less likely to accept Medicaid patients compared with those with private insurance (Paradise and Garfield, 2013). Findings from previous studies concluded that Medicaid beneficiaries are more likely to present with advanced-stage cancer and less likely to receive cancer-directed diagnostics and optimal treatments than those with private insurance or Medicare coverage (Walker, et al., 2014; Brown, et al., 2018). In addition, patients with Medicaid coverage have the lowest survival rates after adjusting for all other covariates (Walker, et al., 2014).

## Quality and Performance

The PCOP model emphasizes the use of high-quality clinical pathways to drive efficiency in cancer treatment. ASCO defines a clinical pathway as "a detailed protocol for delivering cancer care, including but not limited to anticancer drug regimens for specific patient populations, including type, stage and molecular subtype of disease" (Daly et al., 2018). ASCO developed criteria for assessing the quality of clinical pathways, including the strength of the evidence base and patient centeredness (Daly et al., 2018). While ASCO has not explicitly endorsed particular clinical pathways, it has identified four that meet most of its criteria: Anthem Cancer Care Quality Program, New Century Health, Value Pathways Powered by NCCN and Via Pathways (Daly et al., 2018).

Clinical guidelines are related to clinical pathways, but the former provide several potential treatment options with an evidence base whereas the latter establish a process for deciding on a particular clinical guideline in consultation with the patient and multidisciplinary care team (Chiang, Ellis, and Zon, 2017).

The published literature contains ample evidence that adhering to clinical pathways or clinical guidelines improves quality of care and reduces utilization and costs. Prior research has demonstrated that following clinical pathways or clinical guidelines for cancer patients is associated with:

- Choosing less-expensive treatment options (Ellis et al., 2017).
- Shorter duration of treatment (Hoverman et al., 2011).
- Increased patient satisfaction (Song et al., 2014).
- Improved patient safety (Polite et al., 2016).
- Lower hospital spending (Kreys and Koeller, 2013; Song et al., 2014).
- Fewer ED visits and hospitalizations (Hoverman et al., 2011; Kreys et al., 2014; Williams et al., 2019).
- Shorter lengths of stay (Kwon et al., 2018; Song et al., 2014).
- Lower spending on chemotherapy and supportive care drugs (Gautam et al., 2018).
- Lower total cost of care (Jackman et al., 2017; Kwon et al., 2018; Neubauer et al., 2010; Rocque, et al., 2018; Williams et al., 2019).

No studies demonstrated an impact of clinical pathways or clinical guidance on survival rates.

It is important to recognize that these studies cover different cancers and different clinical pathways and guidance. However, the evidence base might vary for the particular combinations of pathways and diseases that communities participating in the PCOP model would potentially select. While there are no comprehensive, publicly available statistics on the number of practices implementing particular pathways, a recent literature review found increased awareness of and implementation of evidence-based guidelines (Chawla, et al, 2019).

The clinical and research communities have several concerns about the current implementation of clinical pathways. The Turning Tide Against Cancer initiative convened a multi-stakeholder roundtable and working group to understand how alternative payment models and clinical pathways can enable patient-focused care. These discussions generated a set of best practices for developing clinical pathways, which revolved around the themes of stakeholder engagement, transparency and evidence-based shared decision-making (Abrahams, et al., 2017; Miller, et al., 2016). Assessments of pathway organizations found that current practices are lacking in all three areas, interfering with the patient-provider decision-making process instead of enhancing it (Abrahams, et al., 2017). Participants in the roundtable stressed the importance of flexibility for "off-pathway" treatments when necessary to achieve patients' goals (Miller, et al., 2016). While pathways are intended to make treatment decisions more clinically effective, they can also create confusion and additional administrative burden for practices, especially when different payers specify different pathways for the same clinical scenario (ASCO, 2016).) Clinical pathways may also be subject to proprietary rules, as not all pathways are available to all payers or providers. In many cases, clinical pathways are available only to the entities that develop them, effectively blocking entire sectors of the patient population and limiting the effectiveness of cost containment and the preservation of strong patient outcomes (MedPAC, 2016). Additionally, a recent survey of representatives from health plans, provider groups and clinical pathway developers revealed apprehension that clinical pathways may promote less expensive treatments over patients' individual needs (Shah and Reh, 2017).

The PCOP model would give participating communities flexibility in choosing quality measures. Most of the potential quality measures that ASCO suggests in Appendix B are endorsed by the National Quality

Forum (NQF), which vets measures based on their measurement properties, evidence base and expert consensus (NQF, 2017). There is also an array of patient-reported outcomes (PROs) instruments available for use by oncology practices, and the Agency for Healthcare Research and Quality (AHRQ) launched the Consumer Assessment of Healthcare Providers and Systems (CAHPS®) Cancer Care Survey in 2016 (Warsame and D'Souza, 2019; AHRQ, 2019). However, data about how many oncology practices are tracking NQF measures, PROs, or the CAHPS® Cancer Care Survey are currently not available, and there is no widespread reporting of performance on the measures. Additionally, there does not appear to be any evidence in the literature identifying specific outcome measures related to stronger oncology medical homes. Moreover, while ASCO's QOPI certification program includes several structural measures for practices to meet, it is unclear how many and what types of practices participate in the United States, as ASCO has indicated that only 300 practices across the world are certified (ASCO website, 2020), or how many additional practices could potentially meet the eligibility criteria. Furthermore, an expert roundtable published a review of quality measures for cancer in 2017 that identified several gaps, including lack of measures for appropriate mutational and biomarker testing, appropriate imaging use for diagnosis and monitoring of treatment effectiveness, post-treatment surveillance for specific cancers and palliative care (Valuck et al., 2017).

***Efforts to Align Quality Measures Across Payers.*** In multi-payer collaborations, private and public sector insurers generally agree to align quality metric and incentives for their providers, who typically contract with several different payers and face varying requirements. While recruiting private payers for participation in multi-payer models and getting all insurers to agree on quality and payment mechanisms is difficult, some payers see an opportunity to provide the necessary motivation and financial resources for practices to improve care delivery (Anglin et al., 2017; Levey, 2019). The Comprehensive Primary Care (CPC) Initiative evaluation revealed challenges in convening multiple payers, such as the effort and cost to construct new systems for data sharing and analysis, the need to build trust among former competitors, and waning momentum (Levey, 2019). Factors that facilitated CPC implementation included strong federal leadership and investment, a neutral payer convener, and prior collaborative experience (Anglin et al., 2017; RTI International, 2017; Levey, 2019).

Local market characteristics play an important role in private payer engagement. The Multi-Payer Advanced Primary Care Practice (MAPCP) initiative saw varying engagement depending on local market contexts. For example, Rhode Island achieved strong engagement due in part to its concentrated insurance market and the insurance commissioner's strong support for the initiative, while Pennsylvania struggled with strong state-level leadership and payer buy-in (RTI International, 2017). CPC and its successor CPC+ Model included regions with varying levels of political support, prior experience in primary care transformation, data capacity, and market competitiveness (Levey 2019).

In CPC, all seven participating regions reached agreement about quality measures; however, only about half of payers across the regions ultimately used the common set of measures to determine practices' shared savings eligibility (Anglin et al., 2017). In the State Innovation Models (SIM) Initiative, for a given payment model, the number and range of performance metrics varied by state, patient subpopulation, and even provider. Only two states, Vermont and Massachusetts, managed to align measures across all providers (RTI International, 2018). Elsewhere, providers expressed frustration with submitting data to multiple systems on multiple quality measures, as well as the number of metrics they were expected to track and report (RTI International, 2018). Recognizing providers' frustrations, some states attempted to align measures across payers and providers, with little success. In Maine and Oregon, for example,

efforts to convene stakeholders resulted in proliferation rather than a consolidation of measures as payers each added their favored metrics to the model (RTI International, 2018). Even where payers could agree on basic measures, idiosyncrasies between reporting requirements burdened providers and required extra resources to comply (RTI International, 2018).

## Issues in Payment Policy

ASCO states that the proposed PCOP model is a community-based oncology medical home model aiming to improve access and experience for patients within a provider-driven, value-based care environment that incentivizes quality and contains costs. This section reviews current payment methodologies for oncology care across payer types, current and proposed alternatives to status quo oncology payments, and provider risk.

***Traditional Payment.*** Traditional Medicare oncology payment methodology has followed FFS mechanisms for physician services and cost-plus mechanisms for chemotherapy and other biologics (Robinson, 2017). FFS payments are in many cases intended to cover services beyond the physician office visit, including telephonic counseling, coordination with ED services and coordination with community services. Cost-plus reimbursement for chemotherapies and biologics account for average cost and include an additional markup for inventory and shipping costs. Medicare currently pays average cost with a markup of 4.3 percent, while private insurers typically pay a more significant markup of between 10 and 15 percent (Robinson, 2017).

***Medicaid and Medicare Advantage.*** Medicaid reimbursement for oncology is highly variable by state, as are services such as radiation oncology. A 2019 study found that episodic reimbursement for radiation oncology services ranged from $2,945 to $15,218 (Agarwal, et al., 2019). Medicaid patients' access to quality care also varies by state and there are geographic disparities in the availability of highly-performing health centers and hospitals (Paradise and Garfield, 2013). Fragmentation of care is a continuing problem for dually eligible beneficiaries, particularly in coordination of cancer care, which has been shown to lead to improved outcomes (Gorin et al., 2017). A retrospective study over 1,200 Medicare cancer patients found that dual-eligibles were less likely to receive chemotherapy than those with traditional Medicare and Medigap (Warren et al., 2015).

Enrollment in Medicare Advantage (MA) has grown significantly over the last decade. As of 2019, over 22 million beneficiaries were enrolled in an MA plan (Kaiser Family Foundation (KFF), 2019). MA beneficiaries still have to pay the traditional Medicare Part B premium, which in 2020 was $135.50 per month (CMS, 2019, 2020 Medicare Parts A & B Premiums and Deductibles), in addition to their monthly plan premiums, which averaged $29 a month in 2019 (KFF, 2019). Given the commercial nature of MA plans, it is possible that beneficiaries may face utilization management that they wouldn't face in traditional Medicare, particularly regarding high-cost cancer treatments. Additionally, like true commercial plans, MA has networks of providers whereas traditional Medicare allows a beneficiary to see any doctor accepting Medicare. The private payer features of MA plans may have implications for Medicare beneficiaries' access to providers and treatments for cancer. For instance, a University of Pittsburgh Cancer Institute study conducted in the early years of MA found that Medicare beneficiaries enrolled in a health maintenance organization (HMO) were hindered from participating in clinical trials (Lin et al., 2008). However, Medicare beneficiaries in MA plans have an out-of-pocket maximum unlike those in traditional Medicare with Medigap, which could limit the burden of high-cost medications or treatments.

***Drug Payment.*** Medicare spending on anticancer drugs has historically accounted for over 50 percent of the nearly $21 billion in Part B spending. Overall, drug spending has increased faster than all cancer care costs, mostly due to the approval of new therapies (Fitch, Pelezzari, and Pyenson, 2014). Under Part B, Medicare pays for the majority of drugs at the average sales price (ASP) plus 6 percent (this is reduced to 4.3 percent due to the budget sequester that went into effect in 2013). Historically, there has been concern that the 6 percent markup provides a negative incentive for providers to prescribe lower-cost drugs (MedPAC, 2015).

Physician-administered drugs such as chemotherapies and other supportive therapies tend to be administered by a physician and therefore are reimbursed differently than drugs obtained from the pharmacy. Access issues are limited for physician-administered drugs in Medicare, given that there are not formularies for Part B drugs. This does not hold true for physician-administered drugs in the commercial market. Although there are not traditional formularies as there are for drugs obtained from a pharmacy, payers tend to place these drugs under different types of utilization management such as prior authorization and step therapy in order to contain cost. Utilization management techniques have been associated with decrease in cost, increase in value and, at times, access challenges (Patt, 2018).

Medicare Part D covers antineoplastic and supportive prescription drugs that are taken orally and self-administered by the patient (CMS, Medicare Coverage of Treatment Services, 2017). This includes antineoplastic drugs for which no injectable or IV form is available (e.g., drugs that treat certain leukemias, such as Imatinib). Similar to Part D plans, private health insurance plans have formularies that drive utilization of individual therapies.

Under Medicare Part D, plans often modify the standard three- to four- phase patient cost-sharing scheme (deductible, initial coverage, coverage gap, catastrophic coverage) by offering tiered formularies for initial coverage. Under these plans, specialty drugs may be placed into specialty tiers that coincide with 30 to 33 percent coinsurance. Because of these differing tiers and coinsurance rates, the prices of specialty cancer drugs vary significantly across different commercial Part D plans (Jung, et al., 2017). When the initial price is high, older adult cancer beneficiaries may be less likely to use a specialty cancer drug covered under Part D (Jung, et al., 2017). This will only occur if their providers are willing to prescribe the drugs with lower patient costs.

***Overview of Alternatives.*** Although FFS remains the primary payment model for oncology, CMS and other payers have undergone extensive efforts to develop value-based payment models, the most relevant being OCM. Approaches to alternative care delivery and associated payment models in oncology have been identified by leadership in the field, including bundled payments, standardized clinical pathways, oncology patient-centered medical homes (PCMHs), and oncology accountable care organizations (ACOs) (Patel et al., 2015).

Bundled (sometimes referred to as episodic) payment models have been of consistent interest to CMS, having tested four since 2013 - the Bundled Payments for Care Improvement (BPCI) and BPCI Advanced Models, the Comprehensive Care for Joint Replacement (CJR) Model, and OCM. OCM has demonstrated some promising results in reducing intensive care unit (ICU) stays and ED visits (Abt Associates, 2018). Of six bundled oncology payment interventions studied in a systematic review, only one reported decreased hospitalization and significant savings. This intervention, run by United Healthcare, also included payment for hospice and care management. However, as a commercial model it is less clear whether these results are generalizable to the Medicare FFS population. (Aviki et al., 2018).

Bundled oncology payments to cover new drugs have also been tested via OCM and have demonstrated promising results. Rather than setting drug-spending targets based on historical spending, value-based initiatives can instead adjust for novel, often higher-cost therapies and cover some of the spending difference between practices that use higher-cost novel therapies and those that do not. A simulation of the OCM novel therapies adjustment provided valuable financial protections for practices that more often prescribed novel drug treatments (Muldoon, et al., 2018).

Oncology clinical pathways have been explored as an alternative to standardized drug treatment. When coupled with other value-based initiatives such as risk arrangements, oncology medical homes and bundled payments, clinical pathways may contain spending on drugs by limiting the provider's ability to freely prescribe high-cost drugs. As previously discussed, multiple studies have demonstrated positive impacts of clinical pathways on quality, utilization, and cost outcomes.

Oncology medical homes, an extension of the PCMH, have some support among oncology providers (Sprandio, 2012). The PCMH affords particular flexibility to oncology practices by providing case management fees to be used for traditionally unreimbursed services, allowing practices to design care management programs that fit their unique, attributed populations without funding constraints (Patel, et al., 2015). Some successful models have achieved reductions in Medicare spending, driven by reductions in utilization. In one oncology PCMH model (COME HOME), the intervention group reduced spending by over 8 percent while maintaining a 10 percent reduction in ED utilization over a 6-month period (Waters, et al., 2018). Given the variety of activities associated with PCMH and different settings in which they are applied, it is difficult to ascertain exactly which factors drive performance (Patel, et al., 2015).

Private payers have developed at least two cancer-specific ACOs, with only one (an Aetna ACO developed with the U.S. Oncology Texas affiliate) having reported results. Enrollment in that ACO demonstrated promising results, with substantial reductions in utilization for ER visits, inpatient admissions and inpatient days, all of which contributed to a 10 percent reduction in overall cost after the first year (Aviki et al., 2018). However, with results from only one organization and limited examples of cancer-specific ACOs nationwide, the replicability of the model's success remains uncertain.

***Cost of Care.*** Under the PCOP model**,** ASCO proposes a performance incentive based on total cost of care, as an aggregate of three measures: unplanned hospital admissions per treatment per month, emergency and observation care visits per treatment per month, and supportive and maintenance drug care costs per treatment per month (ASCO Proposal, 2019).

A simulation of the PCOP model, performed by ASCO, used SEER-Medicare data from a cohort of 3,777 primary debulking (partial removal of surgically incurable malignant tumors) surgery patients and 866 pre-surgery chemotherapy patients. Medicare payments were compared against the PCOP payment methodology, and the mean additional PCOP payment for all patients was estimated to be $2,330 (an average of $2,250 for primary debulking surgery patients, and $2,650 for pre-surgery chemotherapy patients). Results suggested that the PCOP payment model would be cost saving, relative to FFS, if inpatient costs were reduced by more than $2,259, which corresponded to either an 11.6 percent reduction in hospitalizations or an 88 percent reduction in imaging claims (Moss et al., 2019).

***Subjecting Providers to Risk.*** The ASCO proposal offers two tracks within its payment methodology, the second of which allows providers to shift to Consolidated Payments for Oncology Care (CPOC) and

subsequently bundle either 50 or 100 percent of the value of consolidated services. The optional nature of this track does not necessitate a risk arrangement and therefore may limit the model's disruptiveness to traditional FFS.

In past risk-based models, such as the Next Generation Accountable Care Organization (NGACO) model, providers have been more conservative in undertaking risk. In the first year of the NGACO model, 15 out of 18 participants selected the lower-risk track, and two of those that took on 100 percent risk did so with prior shared-savings experience. Similarly, the majority of organizations selected smaller savings/risk caps to protect themselves from greater potential loss. Of the three payment mechanisms offered in the NGACO model, the most popular in the first year was traditional FFS given its alignment with existing cash flows. Only two organizations selected the consolidated population-based payment option, with leadership citing a "willingness to experiment" as a primary driver (NORC, 2018).

***Upcoming CMMI Oncology APMs.*** CMMI has issued a Request for Information to test a novel oncology APM called Oncology Care First (OCF). OCF intends to test new approaches for prospective payment for management and drug administration services. The payment mechanism involves: 1) a prospective monthly population payment, and 2) a risk arrangement that holds practices accountable for total cost of care to Medicare (including drug costs) for 6-month episodes similar to OCM (OCF RFI, 2019). CMMI has also announced the proposed Radiation Oncology Model (RO), which, unlike OCM or OCF, would specifically target radiotherapy services by using a primary payment mechanism involving a prospective episodic payment based on 90-day episodes to cover radiotherapy services in particular (CMMI, 2019).

## Problems in Care Delivery

***Challenges of Consolidating Care for Beneficiaries in Acute Cancer Episodes***. Care coordination is particularly complex in cancer care, as patients are often dealing with comorbidities and being treated by multiple specialists (Weaver and Jacobsen, 2018), often across multiple care settings and even multiple health systems (Zuchowski et al., 2017; Grant et al., 2018).

In both community-based and integrated settings, care may be disjointed due to multiple factors, including the separation between practice disciplines such as medicine and social services. As a result, oncology care often depends on a multi-team system (MTS), including primary care, medical oncology/hematology, radiation oncology, surgical oncology, pharmacy, pathology and/or supportive care (palliative, behavioral health, etc.), employing multidisciplinary treatment planning (MTP) (Craddock Lee et al., 2016; Kosty et al., 2016). There are numerous barriers to strong MTSs, including ambiguous roles of multiple care teams, diffuse health information technology (IT) systems that do not facilitate closed-loop communication, a lack of shared understanding about the goals of care/priorities, and disparate payment systems (Craddock, Lee, et al., 2016; Siddiqui et al., 2019).

***Impact of Care Coordination Practices on Quality, Patient Safety, and Patient Experience of Care.*** A systematic review of 26 studies found that cancer care coordination was associated with improvements in 81 percent of patient-measured outcomes, such as screening, patient experience and the quality of end-of-life care (Gorin et al., 2017). Several of the reviewed studies reported positive impacts on end-of-life care, such as increased hospice enrollment and decreased ED, acute care and intensive care unit (ICU) visits, as well as fewer deaths in acute-care hospitals. However, other studies found no change in hospice referrals or the aggressiveness of end-of-life care. Impacts on patient-rated experience were more mixed; a few studies reported improved patient ratings, but more found no difference in

measurements such as emotional well-being, quality of life or symptom intensity. Overall, Gorin found that care coordination increased appropriate health care utilization and decreased costs among survivors.

A 2018 systematic review of MTP in U.S. cancer treatment identified 45 studies conducted between 2000 and 2017. The studies demonstrated positive outcomes in the provision of guideline-concordant treatment (16/19); timeliness of care (11/13) and survival (9/16). The review found mixed results of MTP on access to clinical trials (Prabhu Das et al., 2018).

***Health Consequences Associated with Inadequate Care Management.*** Care fragmentation during cancer treatment is associated with preventable hospitalizations and deviance from best practices, as well as increased costs (Walling et al., 2016; Rocque et al., 2017; Hussain, et al., 2015). Patients with comorbidities are especially prone to inadequate care management, as care needs to be coordinated not only among oncologists, but also across specialties (Sarfati et al., 2016; Craddock Lee et al., 2016). This can lead to higher costs and less-effective care for both the cancer and the comorbid condition (Sarfati et al., 2016). New cancer diagnoses can interrupt care for other chronic conditions; as the patient undergoes intensive cancer treatments, attention to other conditions is sidelined (Craddock Lee et al., 2016).

Racial and ethnic minority groups may receive less coordinated care, due in part to higher rates of comorbidities among these groups (Sarfati et al., 2016; Gorin et al., 2017). However, more research on sociodemographic subgroups is needed to see how care coordination varies across diverse populations and how practices can better tailor their efforts to improve health outcomes (Gorin et al., 2017).

***Barriers to the Expansion/Adoption of Oncology Medical Homes.*** Market consolidation and competition may limit the expansion of oncology medical homes. As demonstrated in the 2019 decision in N.M. Oncology vs. Presbyterian Healthcare Services, community-based/physician-owned oncology practices often act in competition, which can limit both parties' willingness to collaborate (N.M. Oncology vs. Presbyterian HealthCare Services, Civ. No. 12-00526 MV/GBW, D.N.M., Nov. 14, 2019).

***Medicare Spending Associated with Care Coordination, Patient Navigation, and Care Management.*** Several pilot programs have demonstrated mixed results on cost savings from interventions using care coordination, patient navigation, and care management in oncology. In both the COME HOME model and Patient Care Connect Program (PCCP), the internal and independent evaluations found relative decreases in cost of care in the last 30, 90 and 180 days of life (Colligan et al., 2017; Rocque et al., 2017; Waters et al., 2018). OCM, which required care coordination and patient navigation, did not demonstrate any changes in total cost of care relative to the comparison group (Abt Associates, 2018). Notably, the OCM evaluation did not factor the Monthly Enhanced Oncology Services (MEOS) payments into the total cost of care calculations, which suggests that practices receiving additional payments from Medicare to support care coordination have a high bar to achieve net savings. Analyses of Medicare beneficiaries with cancer in ACOs, which focus heavily on care coordination, found no evidence of reduced spending or utilization in this population either overall or at the end of life (Lam 2018, 2019).

***Health IT Infrastructure and Potential Considerations.*** Ninety-six percent of hospitals have implemented ONC-certified electronic health records (Office of the National Coordinator for Health Information Technology (ONC), 2018). Most office-based physicians also use ONC-certified EHRs (ONC, 2019). In addition to the top six EHR systems, there are several specialized EHRs for community-based

oncology practices, including McKesson's iKnowMed, Flatiron's OncoEMR and Varian's Aria. All are ONC-certified, assert being interoperable and have quality/tumor registry reporting capabilities.

Lack of standardization and interoperability is a challenge with respect to coordinating across care teams. Oncology data are particularly challenging to access due to siloes among data types (e.g., test results, medication information); provider (e.g., physician, resident, nurse) and care setting (e.g., inpatient, ambulatory evaluation, ambulatory infusion, telemedicine, home) (Chollete et al., 2017; Bersani et al., 2020). Lack of closed-loop communication between multidisciplinary treatment planning (MTP) staff within integrated EHR systems or across multiple EHRs can lead to lapses in care coordination and suboptimal quality (Craddock Lee et al., 2016). Within medical oncology and hematology practices, standardized clinical pathways for symptom management and guidelines-based pathways for selecting treatment plans can enhance care coordination (Hanley et al., 2018; Page et al., 2015). There is limited evidence as to the value of health information exchange (HIE) for oncology practices due to the volume and complexity of the data required to inform care delivery.

Several EHR systems (e.g., Epic, McKesson, and Flatiron) have developed additional value-based payment modules specific to oncology that provide analytic tools for tracking cost and utilization. However, practices still need to work with EHR vendors and internal EHR teams to create solutions to meet model specific reporting requirements, including reports on quality metrics (Eppers et al., 2017). Many of the EHR data elements needed for clinical and patient-reported outcomes for oncology are entered as free text, and are not standardized across systems, requiring manual chart review (Valuck et al, 2017).

All-payer claims databases (APCD) may offer new opportunities that further enable the ability to capture health information across systems and payers (Hashibe et al., 2019). A recent pilot study in Utah found that linking APCDs to cancer registries can improve the comprehensiveness of cancer registry treatment data for chemotherapy, hormone therapy, immunotherapy and radiation therapy (Hashibe et al., 2019).This data can be used to provide population-based survival according to specific treatments, drawing on data from a broader population of patients (Hashibe et al., 2019). However, the implementation of and reporting requirements for APCDs vary by state. Only eighteen states have existing APCDs and few of these have mandatory reporting requirements (APCD Council, 2020). Three states are currently implementing APCDs, twelve states have no APCD activity, and the remainder are interested in establishing APCDs but have no current system (APCD Council, 2020).

***Impact of Oncology Medical Homes and Proposed Model on Care Delivery, Cost, Quality, Safety.*** The NCQA developed a set of recommendations for PCMHs and PCSPs that emphasize care management, shared decision-making and quality improvement (Tirodkar et al., 2015). Studies of the predecessor OMH models have consistently reported reduced ED visits, inpatient admissions and costs. (Colligan et al., 2017; Waters, et al., 2018). United Healthcare's oncology bundled payments pilot reported a 34 percent cost reduction for pilot patients compared with matched FFS patients (Newcomer et al., 2014). PCSPs and OMHs have similar requirements though PCSP has six standards areas whereas OMH had seven.

## Results of Proposed or Similar Models

In discussing whether the proposed ASCO PCOP model may improve upon the current cancer care delivery system, the ASCO proposal refers to the strengths and areas for improvement of other models, including CMMI's OCM and Comprehensive Primary Care Plus (CPC+). As discussed in the Issues in Payment Policy section above, previous oncology medical home models like COME HOME had success in decreasing Medicare utilization and spending. For instance, in COME HOME, a 10 percent reduction in ED utilization over a 6-month period led to a reduction in spending of over 8 percent (Waters, et al., 2018). However the two current CMMI models, OCM and CPC+, are more widespread and have more comprehensive independent evaluation results available, as explained below. A comparison exhibit accompanying this environmental scan illustrates the similarities and differences among the ASCO PCOP, CPC+, and OCM models.

*CPC+ Evaluation Results:* Overall, CPC+ had a minimal impact on Medicare FFS beneficiaries in 2017. Compared with experiences in the prior year (2016), beneficiaries had slightly greater reductions in outpatient ED visits (1.6 versus 1.2 percent); slower rates of growth of primary care ambulatory visits (1.8 vs. 1.6 percent) and larger improvements in claims-based quality measures for diabetes services and breast cancer screenings when compared with comparison practices (1 percentage point or less). Changes in expenditures (including Medicare-enhanced payments for FFS beneficiaries) were 2 to 3 percent higher for CPC+ versus comparison practices (Mathematica Policy Research, 2019).

*OCM Evaluation Results:* Abt Associates conducted an evaluation of OCM using 6-month treatment episodes in performance period one (PP1), between July 1, 2016, and June 30, 2017. Exhibit 1 below summarizes key utilization and cost findings from the OCM evaluation. As discussed previously, OCM did not have an impact on the number or rate of hospitalizations, but there were statistically significant reductions in ICU stays and ED visits. There were no statistically significant effects on any category of Medicare expenditures or total cost of care (TCOC). In terms of quality measures, OCM had no impact on the use of antiemetic (anti-nausea) therapy according to guidelines, ED visits or hospitalizations for chemotherapy-associated complications, or the rate or timing of hospice initiation. OCM had a small impact in reducing hospital-based care near the end of life, including fewer inpatient admissions and ICU stays in the last month of life.

While results for both the CPC+ and OCM models only reflect the early stages of intervention, and are therefore limited and minimal, key findings include a decline in key hospital utilization measures for both models. Meaningful care transformation is resource- and time-intensive, and requires training, staff, EHR upgrades, patient education and new metrics and data. Therefore, it is too early to determine the overall impact of either the CPC+ or OCM models, and future evaluations of claims-based data, survey data, program data and interviews are required for more substantive results (Mathematica Policy Research, 2019; Abt Associates, 2018).

**Exhibit 1: Utilization and Cost Outcomes for the Oncology Care Model in Performance Period One**

| Utilization / Cost Outcome | OCM Episodes | | Comparator Episodes | | Impact Estimates | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Baseline Mean | PP1 Mean | Baseline Mean | PP1 Mean | DID | 90% LCL | 90% UCL | Percent Change |
| Occurrence of Inpatient (IP) Stay | 0.27 | 0.26 | 0.26 | 0.25 | 0.00 | -0.01 | 0.00 | -0.01 |
| Number of IP Hospitalizations | 0.43 | 0.41 | 0.40 | 0.38 | 0.00 | -0.01 | 0.00 | -0.01 |
| Number of ICU Admissions | 0.12 | 0.12 | 0.12 | 0.12 | -0.007** | -0.01 | 0.00 | -0.05 |
| Number of IP Days | 8.57 | 8.37 | 8.46 | 8.29 | -0.03 | -0.17 | 0.10 | 0.00 |
| Occurrence of 30-Day Readmission | 0.22 | 0.22 | 0.22 | 0.21 | 0.00 | -0.01 | 0.00 | -0.01 |
| Number of All 30-Day Readmissions | 0.10 | 0.10 | 0.09 | 0.09 | 0.00 | -0.01 | 0.00 | -0.03 |
| Occurrence of 30-Day Unplanned Readmission | 0.21 | 0.20 | 0.20 | 0.20 | 0.00 | -0.01 | 0.00 | -0.01 |
| Number of 30-Day Unplanned Readmissions | 0.09 | 0.09 | 0.08 | 0.08 | 0.00 | -0.01 | 0.00 | -0.03 |
| Occurrence of ED Visit Not Resulting in IP Stay | 0.23 | 0.24 | 0.24 | 0.24 | 0.00 | -0.01 | 0.00 | -0.01 |
| Number of ED Visits | 0.66 | 0.66 | 0.64 | 0.66 | -0.015*** | -0.02 | -0.01 | -0.02 |
| Number of ED Visits Not Resulting in IP Stay | 0.35 | 0.36 | 0.37 | 0.38 | 0.00 | -0.01 | 0.01 | -0.01 |
| Number of ED Visits Resulting in IP Stay | 0.30 | 0.30 | 0.28 | 0.28 | -0.011*** | -0.02 | -0.01 | -0.04 |
| TCOC (Part A, B, and D Costs) | 27484 | 30313 | 27204 | 30206 | -173 | -446 | 100 | 0 |

Source: Abt Associates. Evaluation of the Oncology Care Model: Performance Period One. December 2018.

Note: DID = Difference in Differences, LCL = Lower Confidence Limit, UCL = Upper Confidence Limit.

## II. Annotated Bibliography

Abrahams E, Balch A, Goldsmith P, et al. Clinical Pathways: Recommendations for Putting Patients at the Center of Value-Based Care. Clin Cancer Res. 2017;23(16):4545-4549. doi:10.1158/1078-0432.CCR-17-1609

> **Subtopic(s)**: Quality and performance, Problems in care delivery
> **Type of Source**: Journal article
> **Objective**: To summarize the Turning the Tide Against Cancer working group's findings on best practices for oncology clinical pathways.
> **Main Findings**: The article focuses on four key findings on how pathways affect patient care, including transparency, patient engagement, the patient-provider decision-making process, and accountability.
> **Strengths/Limitations**: Findings reflect the discussions of one working group.
> **Generalizability to Medicare Population**: Somewhat generalizable; article does not discuss Medicare populations or policies specifically; however, findings could be easily translated to the Medicare context.
> **Methods**: Summary and assessment of working group discussions.

Abt Associates. Evaluation of the Oncology Care Model: Performance Period One. https://innovation.cms.gov/Files/reports/ocm-secondannualeval-pp1.pdf. Published December 2018. Accessed February 11, 2020.

> **Subtopic(s)**: Problems in care delivery, Results of proposed or similar models
> **Type of Source**: Report
> **Objective**: To summarize findings from the first performance period of the Oncology Care Model (OCM)
> **Main Findings**: During the first six months of implementation, practices were hiring staff, enhancing their oncology services, improving their electronic health record systems, and establishing new care processes.  Though only the use of intensive care units and emergency department (ED) visits reached statistical significance and all difference-in-difference (DID) estimates were small, all five hospital utilization measures (any inpatient hospitalizations, number of inpatient hospitalizations, number of ICU admissions, number of inpatient days per episode, or 30-day readmissions per episode) and ED visits declined more for OCM episodes than for comparators.
> **Strengths/Limitations**: Results limited to the first six months of implementation.
> **Generalizability to Medicare Population**: Strong; study focuses on Medicare population
> **Methods**: Mixed methods evaluation, including claims, survey data, and interviews. DID analysis for utilization and cost impacts.

Agarwal A, Peterson J, Hoyle L, Marks L. Variations in Medicaid Payment Rates for Radiation Oncology. International Journal of Radiation, Oncology, Biology, and Physics. 2019; 104(3): 488-493. doi: 10.1016/j.ijrobp.2019.02.031

> **Subtopic(s)**: Issues in payment policy
> **Type of Source**: Journal Article
> **Objective**: To describe the extent of variations in Medicaid reimbursements for radiation oncology services throughout the United States.
> **Main Findings**: Total per-episode reimbursement varied from $2945 to $15218.

**Strengths/Limitations**: Variations in Medicaid payment rates do not account for variation in practice expense between locations, the analysis did not consider fees of Medicaid managed care plans, and the analysis is limited to a specific clinical scenario.
**Generalizability to Medicare Population**: Somewhat generalizable; the study employs the Medicaid fee schedule and Medicaid-to-Medicare fee index was used in analysis.
**Methods**: Publicly available fee schedules were queried to determine reimbursement for each service by state, and interstate payment variation was calculated via computation of range, mean, standard deviation, and coefficient of variation.

Agency for HealthCare Research and Quality (AHRQ). Medical Expenditure Panel Survey. STATISTICAL BRIEF #470: Trends in the Five Most Costly Conditions among the U.S. Civilian Noninstitutionalized Population, 2002 and 2012. https://meps.ahrq.gov/data_files/publications/st470/stat470.shtml. Published April 15, 2015. Accessed February 17, 2020.

**Subtopic(s):** Epidemiology
**Type of Source:** Statistical brief
**Objective:** To provide distribution of total expenditures by source of payment for the top five most costly conditions (cancer, heart condition, trauma-related, medical disorders, COPD) in 2002 and 2012.
**Main Findings:** The expenditures for cancer rose from $59.8 billion in 2002 to $87.5 billion in 2012. In 2012, Medicare accounted for nearly 33% of the estimated $87.5 billion spent on cancer treatment. Medicaid accounted for approximately 5%, and private insurers accounted for nearly 51% of the total cancer expenditures.
**Strengths/Limitations:** N/A
**Generalizability to Medicare Population:** Yes
**Methods:** The estimates shown in this Statistical Brief are based on data from the MEPS 2002 and 2012 Full Year consolidated data file.

Agency for Healthcare Research and Quality (AHRQ). CAHPS® Cancer Care Survey. https://www.ahrq.gov/cahps/surveys-guidance/cancer/index.html. Published December 2019. Accessed March 20, 2020.

**Subtopic(s)**: Quality and performance
**Type of Source**: Website
**Objective**: To describe the Consumer Assessment of Healthcare Providers and Systems (CAHPS®) Cancer Care Survey.
**Main Findings**: N/A
**Strengths/Limitations**: N/A
**Generalizability to Medicare Population**: Somewhat generalizable; the survey can be used in Medicare beneficiaries with cancer
**Methods**: N/A

All-Payer Claims Database (APCD) Council. Interactive State Report Map. https://www.apcdcouncil.org/state/map. Published 2020. Accessed March 2, 2020.

**Subtopic(s)**: Problems in care delivery
**Type of Source**: Website
**Objective**: To depict the status of APCDs by state.
**Main Findings**: Eighteen states have existing APCDs but few have mandatory reporting requirements. Three states have APCDs in implementation.
**Strengths/Limitations**: N/A

**Generalizability to Medicare Population**: Somewhat generalizable; Medicare data is included in the APCDs.
**Methods**: N/A

American Cancer Society Cancer Action Network. The Cost of Cancer: Addressing Patient Costs. https://www.fightcancer.org/sites/default/files/Costs%20of%20Cancer%20-%20Final%20Web.pdf. Published 2017. Accessed April 1, 2020.

**Subtopic(s)**: Epidemiology of cancer
**Type of Source**: Report
**Objective**: To compile data from federal surveys and insurers to gauge the costs of cancer treatment in the US.
**Main Findings**: ACS estimated that in 2014 $87.8 billion was spent on cancer care in the US and that beneficiaries paid $4 billion out-of-pocket, with private insurance paying 44% and Medicare paying 33%.
**Strengths/Limitations**: Variety of data sources and types.
**Generalizability to Medicare Population**: Somewhat generalizable; Medicare patients are a large portion of cancer patients
**Methods**: Descriptive analysis.

American Society of Clinical Oncology. www.asco.org. Published 2020. Accessed February 11, 2020.

**Subtopic(s)**: Background
**Type of Source**: Website
**Objective**: To describe the work of ASCO, including its work on quality and clinical pathways, as well as provide support to clinicians.
**Main Findings**: N/A
**Strengths/Limitations**: N/A
**Generalizability to Medicare Population**: Somewhat generalizable; Medicare is largest payer of cancer care in the US.
**Methods**: N/A

American Society of Clinical Oncology. The State of Cancer Care in America, 2016: A Report by the American Society of Clinical Oncology. JOP. 2016;12(4):339-383. doi:10.1200/JOP.2015.010462

**Subtopic(s)**: Quality and performance
**Type of Source**: Journal article
**Objective**: To summarize the challenges and opportunities facing cancer care in the U.S.
**Main Findings**: Progresses included FDA approval of new drugs and biologic therapies and continued commitment to innovation. Challenges included increasing stagnant cancer mortality rates, navigating increasing complexity of care, and rising drug prices.
**Strengths/Limitations**: Findings limited to the consensus of one organization's leadership.
**Generalizability to Medicare Population**: Somewhat generalizable; article not specific to Medicare but any of the progresses, challenges, and recommendations apply to the Medicare population and program.
**Methods**: Summary of data from the 2016 ASCO Census and ASCO Practice Trends surveys.

Anglin G, Tu H, Liao K, Sessums L, Taylor EF. Strengthening Multipayer Collaboration: Lessons From the Comprehensive Primary Care Initiative. Milbank Q. 2017;95(3):602-633. doi:10.1111/1468-0009.12280

**Subtopic(s)**: Quality and performance
**Type of Source**: Journal article

**Objective**: To examine the factors that influenced the effectiveness of multipayer collaboration in the CPC initiative.

**Main Findings**: Contracting with effective, neutral payer conveners, leveraging the support of payer champions, and seeking input on decisions from practice representatives increased the likelihood of successful payer collaboration. Leadership from CMS was key to achieving broad payer engagement, but CMS's dual role as initiative convener and participating payer created challenges.

**Strengths/Limitations**: CPC findings may be most generalizable to multipayer initiatives with similar goals.

**Generalizability to Medicare Population**: Strong; Medicare was the main CPC payer.

**Methods**: Qualitative analysis of semistructured interviews with CPC-participating payers and payer conveners

Anhang Price R, Stranges E, and Elixhauser A. Cancer Hospitalizations for Adults, 2009. HCUP Statistical Brief #125. http://www.hcupus.ahrq.gov/reports/statbriefs/sb125.pdf Published February 2012. Accessed March 20, 2020.

**Subtopic(s)**: Epidemiology of cancer

**Type of Source**: Report

**Objective**: To explore trends in hospitalizations for cancer by sociodemographic and clinical characteristics.

**Main Findings**: Inpatient hospitalizations with cancer as the primary cause declined between 2000 and 2009.

**Strengths/Limitations**: Descriptive analysis, no multivariate regression

**Generalizability to Medicare Population**: Somewhat generalizable; Medicare covered a plurality of hospital stays for cancer.

**Methods**: Descriptive analysis using data from the Nationwide Inpatient Sample (NIS).

Aviki E, Schleicher S, Mullangi S, et al. Alternative Payment and Care-delivery Models in Oncology: A Systematic Review. Cancer 2018; 124(16): 3293-3306. doi: 10.1002/cncr.31367

**Subtopic(s)**: Issues in payment policy

**Type of Source**: Journal Article

**Objective**: To describe the landscape of new alternative payment and care-delivery models in cancer care.

**Main Findings**: Six bundled payment models, four accountable care organizations, nine patient-centered medical homes, and three "other" interventions were identified. Twelve interventions reported outcomes, with four having no impact.

**Strengths/Limitations**: Heterogeneity of outcomes precluded a meta-analysis, and limited evidence exists to evaluate true model efficacy.

**Generalizability to Medicare Population**: Strong; CMS intends to tie 50 percent of traditional FFS payments to value – these initiatives all represent alternatives to consider.

**Methods**: Systematic review of the literature.

Baumgardner J, Shahabi A, Zacker C, Lakdawalla D. Cost Variation and Savings Opportunities in the Oncology Care Model. American Journal of Managed Care 2018; 24(12): 618-623.

**Subtopic(s)**: Issues in payment policy

**Type of Source**: Journal Article

**Objective**: To identify service categories that present the greatest opportunities to reduce spending in oncology care episodes as defined by the Oncology Care Model.

**Main Findings**: Chemotherapy and acute inpatient hospital care demonstrate the greatest variation. The OCM defines episodes as 6-month periods of time and the total cost of care metric is broken into 16 subcategories.

**Strengths/Limitations**: Patient outcomes were not tied to low-spending hospital referral regions, so while low-spending HRRs may present a model to reduce cost, evidence is needed to support the preservation of patient outcomes.

**Generalizability to Medicare Population**: Strong; The OCM is a CMMI model that draws many comparison to the proposal of interest.

**Methods**: OCM-defined episodes were identified for patients with five included cancers, and episode-level spending was standardized across total cost subcategories for each HRR to assess interregional variation and opportunities to reduce cost.

Bersani K, Fuller TE, Garabedian P, et al. Perceived Usability, and Barriers to Implementation of a Patient Safety Dashboard Integrated within a Vendor EHR. Appl Clin Inform. 2020 Jan;11(1):34-45. doi: 10.1055/s-0039-3402756.

**Subtopic(s)**: Problems in care delivery

**Type of Source**: Journal article

**Objective**: To describe providers' use and perceived usability of the Patient Safety Dashboard and discuss barriers and facilitators to implementation.

**Main Findings**: The Dashboard was used 70% of days the tool was available, with use varying by role, service, and time of day.

**Strengths/Limitations**: Findings limited to brief observation period in one health system.

**Generalizability to Medicare Population**: Somewhat; Article does not discuss Medicare populations or policies specifically but findings could be translated to the Medicare context.

**Methods**: Cluster-randomized stepped wedge trial tool adoption.

Brown DA, Himes BT, Kerezoudis P, et al. Insurance correlates with improved access to care and outcome among glioblastoma patients. *Neuro Oncol*. 2018;20(10):1374–1382. doi:10.1093/neuonc/noy102

**Subtopic(s):** Epidemiology

**Type of Source:** Journal article

**Objective:** To compared patients with GBM based on insurance status using a national, surgeon-endorsed cancer registry with the hypothesis that the latter is a sensitive indicator of actual access to accepted standards of care with ramifications for outcome.

**Main Findings:** Insurance status and type of insurance coverage appear to impact treatments rendered for GBM, independently of other variables.

**Strengths/Limitations:** A retrospective study, and there is a risk for coding misclassification.

**Generalizability to Medicare Population:** Limited; study included all insurance types.

**Methods:** The National Cancer Database was queried for patients with diagnoses of GBM in 2006–2014. Patients were grouped according to insurance status: private insurance, Medicare, Medicaid, or uninsured. Treatments provided were compared between groups in univariate and multivariable logistic regression analysis.

Centers for Medicare & Medicaid Services. Medicare Utilization and Payment Section. https://www.cms.gov/research-statistics-data-systems/cms-program-statistics/2018-medicare-utilization-and-payment Published February 2020. Accessed March 20, 2020.

**Subtopic(s)**: Epidemiology of cancer

**Type of Source**: Website with data

**Objective**: The CMS Program Statistics' Medicare Utilization and Payment Section provides summary charts of utilization in all Medicare categories and Parts A and B payments.
**Main Findings**: Inpatient stays, rates, and days have declined in the Medicare population between 2013 and 2018.
**Strengths/Limitations**: N/A
**Generalizability to Medicare Population**: Strong; all data presented is for the Medicare population
**Methods**: Descriptive analysis of Medicare claims data

Centers for Medicare and Medicaid Services. Chronic Conditions. https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/Chronic-Conditions/CC_Main Published November 2019. Accessed February 12, 2020.

> **Subtopic(s)**: Epidemiology of cancer
> **Type of Source**: Website with data
> **Objective**: To present prevalence and Medicare utilization and spending for the 21 chronic conditions.
> **Main Findings**: Nationally, nine percent of Medicare beneficiaries had been diagnosed with cancer.
> **Strengths/Limitations**: N/A
> **Generalizability to Medicare Population**: Strong; all data presented is for the Medicare population
> **Methods**: Descriptive analysis of Medicare claims data.

Centers for Medicare & Medicaid Services. Medicare Coverage of Cancer Treatment Services. https://www.medicare.gov/Pubs/pdf/11931-Cancer-Treatment-Services.pdf Published November 2019. Accessed February 12, 2020.

> **Subtopic(s)**: Issues in payment policy
> **Type of Source**: Informational brochure
> **Objective**: To provide information on the Medicare coverage of cancer treatment services.
> **Main Findings**: Provides a high-level overview of cancer-related services and treatments that are currently covered under Medicare Parts A, B, C, and D. Medicare Part B is a key payer for provider-administered drugs for chemotherapy.
> **Strengths/Limitations**: N/A
> **Generalizability to Medicare Population**: Strong; CMS Report.
> **Methods**: N/A

Centers for Medicare and Medicaid Services. 2020 Medicare Parts A & B Premiums and Deductibles. https://www.cms.gov/newsroom/fact-sheets/2020-medicare-parts-b-premiums-and-deductibles Published November 2019, Accessed April 2, 2020.

> **Subtopic(s)**: Epidemiology in cancer care
> **Type of Source**: Website with data
> **Objective**: To provide information on the Medicare coverage of cancer treatment services.
> **Main Findings**: Provides a high-level overview of cancer-related services and treatments that are currently covered under Medicare Parts A, B, C, and D. Medicare Part B is a key payer for provider-administered drugs for chemotherapy.
> **Strengths/Limitations**: N/A

**Generalizability to Medicare Population**: Strong; all data presented is for the Medicare population.
**Methods**: N/A

Centers for Medicare & Medicaid Services. Rural-Urban Disparities in Health Care in Medicare. https://www.cms.gov/files/document/rural-urban-disparities-health-care-medicare-national-report Published November 2018. Accessed February 14, 2020.

> **Subtopic(s)**: Epidemiology of cancer
> **Type of Source**: Informational report published by CMS
> **Objective**: To provide information on the Medicare coverage nationwide, and any rural-urban and racial/ethnic differences in healthcare experiences and clinical care.
> **Main Findings**: Provides a high-level overview of sociodemographic disparities in cancer incidence and mortality.
> **Strengths/Limitations**: N/A
> **Generalizability to Medicare Population**: Strong; CMS Report.
> **Methods**: N/A

Chawla A, Westrich K, Dai A, et al. US Care Pathways: Continued Focus on Oncology and Outstanding Challenges. American Journal of Managed Care. 2019; 25(6):280-287.

> **Subtopic(s)**: Quality and performance
> **Type of Source**: Journal article
> **Objective**: To assess care pathway development, implementation, and evaluation, and implications for value-based care.
> **Main Findings**: The authors found increased awareness of and adherence to official best practices or standards, and prioritization of high-quality evidence during their development. Pathways can be linked to outcomes-based measures and physician reimbursement, and are emerging in value-based care initiatives including alternative payment models.
> **Strengths/Limitations**: N/A
> **Generalizability to Medicare Population**: Fair; Medicare population is not mentioned specifically but may be affected by initiatives discussed in this paper.
> **Methods**: Targeted literature review and key informant interviews.

Chen CT, Li L, Brooks G, Hassett M, Schrag D. Medicare spending for breast, prostate, lung, and colorectal cancer patients in the year of diagnosis and year of death. *Health Serv Res*. 2018;53(4):2118-2132. doi:10.1111/1475-6773.12745

> **Subtopic(s):** Epidemiology of cancer
> **Type of Source:** Journal article
> **Objective:** To characterize spending patterns for Medicare patients with breast, prostate, lung, and colorectal cancer.
> **Main Findings:** Mean spending was $35,849 (breast), $26,295 (prostate), $55,597 (lung), and $63,063 (colorectal), and over the year of death, spending was similar across different cancer types or state at diagnosis. Inpatient care accounted for the significant majority of the initial spending increase in the months after diagnosis for lung and colorectal cancer patients, whereas outpatient spending was the biggest source of spending for breast and prostate cancer patients.
> **Strengths/Limitations:** Analysis limited to Medicare data.
> **Generalizability to Medicare Population:** Strong, study focused on Medicare population
> **Methods:** Calculated per-patient monthly and year mean and median expenditures using 2007–2012 data from SEER Program linked with Medicare FFS claims.

Chiang AC, Ellis P, and Zon R. Perspectives on the Use of Clinical Pathways in Oncology Care. 2017 ASCO Educational Book. American Society of Clinical Oncology Educational Book. 2018;37:155-159. doi: 10.1200/EDBK_175533

**Subtopic(s)**: Quality and performance
**Type of Source**: Journal article
**Objective**: To explain the difference between clinical guidelines and clinical pathways and the
**Main Findings**: Pathways are focused on the process of selecting the most appropriate guidelines through team-based care and patient preferences. Pathways may be more restrictive than guidelines as they focus on reducing variation in care and increasing efficiency.
**Strengths/Limitations**: This is a perspective piece and provides no original analysis.
**Generalizability to Medicare Population**: Strong; all three models served Medicare beneficiaries.
**Methods**: N/A

Chollete, et al., 2017 Health Information Systems Approach to Managing Task Interdependence in Cancer Care Teams. JOP. 2017;13(3): 154-156. doi: 10.1200/JOP.2016.020156.

**Subtopic(s)**:  Problems in care delivery
**Type of Source**: Journal article
**Objective**: To discuss how Health IT can support care coordination in cancer care.
**Main Findings**: Future research and legislation is required to improve Health IT systems to facilitate coordination of cancer care.
**Strengths/Limitations**: Editorial
**Generalizability to Medicare Population**: Somewhat generalizable; issues discussed could reasonably apply to the Medicare population.
**Methods**: N/A

Colligan EM, Ewald E, Ruiz S, et al. Innovative Oncology Care Models Improve End-Of-Life Quality, Reduce Utilization and Spending. Health Affairs. 2017;36(3):433-440. doi:10.1377/hlthaff.2016.1303

**Subtopic(s)**: Problems in care delivery
**Type of Source**: Journal article
**Objective**: To compare quality and cost findings among patients in three CMMI initiatives: The Community Oncology Medical Home (COME HOME), the Patient Care Connect Program (PCCP), and CARE track.
**Main Findings**: The oncology medical home and patient navigation models were associated with decreased costs and fewer hospitalizations.  The patient navigation model was also associated with fewer ED visits and increased hospice enrollment.
**Strengths/Limitations**: Estimates across the three models were not comparable because they each served a different segment of the Medicare cancer population.  Power to detect significance for the CARE Track model were limited because the program served only 60 participants.
**Generalizability to Medicare Population**: Strong; all three models served Medicare beneficiaries
**Methods**: Analysis of claims data for Medicare enrollees in each of the three programs and selected comparison groups.

Craddock Lee SJ, Clark MA, Cox JV, et al. Achieving Coordinated Care for Patients With Complex Cases of Cancer: A Multiteam System Approach. JOP. 2016;12(11):1029-1038. doi:10.1200/JOP.2016.013664

**Subtopic(s)**: Problems in care delivery
**Type of Source**: Journal article

**Objective**: To outline the challenges of care coordination in a multiteam system.
**Main Findings**: Further research should investigate shared care management, transfer to and from specialty care, treatment compliance, barriers to care, as well as cancer surveillance.
**Strengths/Limitations**: Case study of one individual patient.
**Generalizability to Medicare Population**: Limited; case study focused on individual ineligible for Medicare, however experience with multiple care teams could be applicable to Medicare population.
**Methods**: Case study

Cubanski J, Swoope C, Boccuti C, Jacobson G, Casillas G, Griffin S, Neuman T, 2015. A Primer on Medicare: Key Facts About the Medicare Program and the People it Covers - How do Medicare beneficiaries fare with respect to access to care? *The Henry J Kaiser Family Foundation*. March 2015. https://www.kff.org/report-section/a-primer-on-medicare-how-do-medicare-beneficiaries-fare-with-respect-to-access-to-care/. Accessed February 19, 2020.

**Subtopic(s):** Epidemiology
**Type of Source:** Report
**Objective:** To provide key facts about the Medicare program and characteristics of Medicare beneficiaries. This report also provides findings on the current access to care issues among Medicare beneficiaries.
**Main Findings:** A relatively small share of Medicare beneficiaries (6%) report that they had trouble accessing needed medical care. A somewhat larger share (11%) report delaying care due to cost burdens.
**Strengths/Limitations:** N/A
**Generalizability to Medicare Population:** Yes
**Methods:** 2012 Medicare Current Beneficiary Survey access to care data were used to produce the statistics. The study excluded new enrollees and decedents.

Daly B, Zon RT, Page RD, et al. Oncology Clinical Pathways: Charting the Landscape of Pathway Providers JOP. 2018;15(3):193-198. doi: 10.1200/JOP.17.00033.

**Subtopic(s)**: Quality and performance
**Type of Source**: Journal article
**Objective**: To describe ASCO's process for evaluating clinical pathways and provide assessments of six established pathways.
**Main Findings**: ASCO's task force identified four clinical pathways that met most of their criteria: Anthem Cancer Care Quality Program, New Century Health, Value Pathways Powered by NCCN, and Via Pathways.
**Strengths/Limitations**: ASCO applied strong criteria that were relevant to the cancer population but only started with six options and did not endorse any one pathway over another.
**Generalizability to Medicare Population**: Somewhat generalizable; the recommendations are not specific to age or insurance status but could be applied in Medicare.
**Methods**: Expert consensus panel

Ellis PG, O'Neil BH, Earle MF, et al. Clinical Pathways: Management of Quality and Cost in Oncology Networks in the Metastatic Colorectal Cancer Setting. JOP. 2017;13(5):e522-e529. doi:10.1200/JOP.2016.019232

**Subtopic(s)**: Quality and performance, Issues in payment policy
**Type of Source**: Journal article

**Objective**: To evaluate the impact of a change to metastatic colorectal cancer pathways in two health networks.
**Main Findings**: The change in the pathway substantially changed prescribing habits and produced an estimated annual cost savings of $711,021 for the two health networks.
**Strengths/Limitations**: Data could not confirm that providers adhered to pathway decisions.
**Generalizability to Medicare Population**: Somewhat generalizable; cost estimates used the Medicare average sales price, however study not limited to Medicare beneficiaries.
**Methods**: Cost analysis using CMS average sales data before and after pathway implementation.

Eppers S, Sweenet K, et al. "Leveraging the Electronic Health Record to Help Nursing Staff Implement Changes for Participation in the Oncology Care Model." ONS 42nd (2017) Annual Congress.

**Subtopic(s)**: Problems in care delivery
**Type of Source**: Conference abstract.
**Objective**: Describes the changes the operations and EHR team made to implement and track workflow changes related to the Oncology Care Model.
**Main Findings**: Practice worked with the EHR vendor to make workflow and reporting changes required for OCM.
**Strengths/Limitations**: Limited to the experience of one practice.
**Generalizability to Medicare Population**: Moderate, changes described are for a Medicare APM.
**Methods**: N/A

Fitch K, Pelizzari P, Pyenson B. Cost Drivers of Cancer Care: A Retrospective Analysis of Medicare and Commercially Insured Population Claim Data 2004-2014. https://media.gractions.com/30C7DA55D97D60D413BB88DFD63AC98051872562/5178b499-02d9-4f72-bb39-5ef051b4fc17.pdf. Published April, 2016. Accessed February 11, 2020.

**Subtopic(s)**: Issues in payment policy
**Type of Source**: Report
**Objective**: To identify trends in the overall and component costs of cancer care from 2004 to 2014 and to create comparisons to cost trends in the non-cancer population.
**Main Findings**: Per-patient cost of chemotherapy drugs is increasing at a much higher rate than other cost components of actively treated cancer patients, driven largely by biologics.
**Strengths/Limitations**: Authors used multiple databases, but study was funded by Pharmaceutical companies
**Generalizability to Medicare Population**: Strong; Medicare five percent (5%) sample claim database was used for analysis
**Methods**: Analysis of prevalence and per-patient costs of actively treated cancer patients and non-actively treated cancer patients using Medicare 5 percent (5%) sample claim database and Truven MarketScan commercial claim database.

Gautam S, Sylwestrzak G, Barron J, et al. Results From a health Insurer's Clinical Pathway Program in Breast Cancer. JCO. 2018; 14(11): e711-e721. doi: https://doi.org/10.1200/JOP.18.00157

**Subtopic(s)**: Quality and performance
**Type of Source**: Journal article
**Objective**: To compare the quality-of-care and cost outcomes for patients with breast cancer treated with on-pathway regiments versus off-pathway regiments.

**Main Findings**: Pathway regimens for breast cancer exemplify high-value care and are associated with reduced cost of care ($16,176 lower in on-pathway cohort) without compromising quality.

**Strengths/Limitations**: Patients were not randomly assigned to receive on or off-pathway regimens. Information on tumor size and grade was not available.

**Generalizability to Medicare Population**: Weak; study population limited to commercial health plans

**Methods**: Case-control method with case treated as on-pathway treatment, comparison of 6-month quality of care outcomes.

Goldman LE, Walker R, Hubbard R, et al. Timeliness of Abnormal Screening and Diagnostic Mammography Follow-up at Facilities Serving Vulnerable Women. Med Care. 2013;51(4):307-314. doi:10.1097/MLR.0b013e318280f04c

**Subtopic(s)**: Problems in care delivery

**Type of Source**: Journal article

**Objective**: To examine whether the timeliness of follow-ups after abnormal mammography differs at facilities serving vulnerable populations.

**Main Findings**: Follow-up rates were slightly lower and time to follow-up was slightly longer at facilities serving vulnerable populations.

**Strengths/Limitations**: Methodology for characterizing facilities serving vulnerable populations has not been externally validated.

**Generalizability to Medicare Population**: Strong; study population limited to Medicare population

**Methods**: Used Breast Cancer Surveillance Consortium-linked Medicare claims to compare whether time to recommended breast imaging or biopsy depended on whether women attended facilities serving vulnerable populations, including low-income, limited education, rural areas, and racial and ethnic minorities.

Gorin SS, Haggstrom D, Han PKJ, et al. Cancer Care Coordination: a Systematic Review and Meta-Analysis of Over 30 Years of Empirical Studies. Ann Behav Med. 2017;51(4):532-546. doi:10.1007/s12160-017-9876-2

**Subtopic(s)**: Problems in care delivery

**Type of Source**: Journal article

**Objective**: To synthesize findings of studies addressing cancer care coordination and estimate the effect of interventions in cancer care coordination on process and health outcomes.

**Main Findings**: Cancer care coordination interventions led to improvements in 81 percent of outcomes, including screening, patient experience, and end-of-life care.

**Strengths/Limitations**: Review limited by the methodological quality of the cancer care coordination literature.

**Generalizability to Medicare Population**: Limited; systematic review not limited to the Medicare population.

**Methods**: Systematic review and meta-analysis of 1,241 abstracts identified through MEDLINE, EMBASE, CINAHL, and the Cochrane Library.

Grant S, Motala A, Chrystal JG, et al. Describing Care Coordination of Gynecologic Oncology in Western Healthcare Settings: A Rapid Review. Transl Behav Med. 2018;8(3):409-418. doi:10.1093/tbm/ibx074

**Subtopic(s)**: Problems in care delivery

**Type of Source**: Journal article

**Objective**: To review literature on care coordination for gynecological malignancies.
**Main Findings**: Decision-making processes was best documented for teams that had periodic scheduled meetings with consistent procedures.  Communication strategies varied, but included shared medical records, integrated treatment plans, and phone-based communication.
**Strengths/Limitations**: Limited information on the impact of care coordination strategies.
**Generalizability to Medicare Population**: Limited; systematic review not limited to the Medicare population.
**Methods**: Search for studies on coordinated care models for females with gynecologic malignancies on five electronic databases.

Hanley N, Schuchter L, Bekelman J. "Best Practice for Reducing Unplanned Acute Care for Patients with Cancer." Journal of Oncology Practice 14, no. 5 (May 2018) 14:5, 306-313.

**Subtopic(s)**: Problems in care delivery.
**Type of Source**: Peer reviewed paper.
**Objective**: Reviews five strategies for reducing acute care for patients with cancer.
**Main Findings**: Strategies to reduce acute care require significant upfront spending.
**Strengths/Limitations**: N/A.
**Generalizability to Medicare Population**: Strong, focuses on proposed Medicare reimbursement reforms.
**Methods**:  Systematic Review.

Hashibe M, Oh J, Herget K, et al. Feasibility of Capturing Cancer Treatment Data in the Utah All-Payer Claims Database. JCO Clinical Cancer Informatics. 2019;3:1-10. doi: 10.1200/CCI.19.00027.

**Subtopic(s)**: Problems in care delivery
**Type of Source**: Journal article
**Objective**: To evaluate how the linkage of the Utah Cancer Registry (UCR) records and Utah's statewide APCD let to improvements in the capture of cancer treatment information.
**Main Findings**: Linkage rates varied by treatment varied by treatment type (hormonal, immunotherapy, and radiation) and APCD alone did not achieve as high specificity for treatment data as did the data collected through traditional registry methods. Together, linked cancer registry and APCD data can improve comprehensiveness of cancer registry treatment data.
**Generalizability to Medicare Population**: Strong; uses Medicare data.
**Methods**: Statistical analysis using UCR with Utah APCD claims for the calendar years 2013 and 2014 using LinkPlus.

Healthcare Cost and Utilization Project (HCUP). HCUP Fast Stats. www.hcup-us.ahrq.gov/faststats/national/inpatienttrends.jsp?measure1=06&characteristic1=01&time1=10&measure2=&characteristic2=01&time2=10&expansionInfoState=hide&dataTablesState=hide&definitionsState=hide&exportState=hide. Published December 2019. Accessed March 20, 2020.

**Subtopic(s)**: Epidemiology of cancer
**Type of Source**: Website
**Objective**: To display summary statistics of hospitalizations and other utilization measures from the NIS.
**Main Findings**: The rate of inpatient stays declined in the US between 2007 and 2016.
**Strengths/Limitations**: Descriptive analysis, no multivariate regression

**Generalizability to Medicare Population**: Somewhat generalizable; Medicare hospital stays are included in the database.
**Methods**: Descriptive analysis using data from the Nationwide Inpatient Sample (NIS).

Hoverman JR, Cartwright TH, Patt DA, et al. Pathways, Outcomes, and Costs in Colon Cancer: Retrospective Evaluations in Two Distinct Databases. JOP. 2011;7(3s): 52s-59s. doi: 10.1200/JOP.2011.000318

**Subtopic(s)**: Quality and performance
**Type of Source**: Journal article
**Objective**: To use two separate databases - iKnowMed (iKM) electronic health records (EHR) system and the MedStat MarketScan database – to assess the impact of adherence to Level I Pathways, an evidence-based oncology treatment program, on cost outcomes in colorectal cancer patients.
**Main Findings**: Patients treated according to Level I Pathways (on-Pathway) had lower overall costs, shorter duration and therapy, and a lower rate of compared with patients not treated according to Level I Pathways. Use of pathways was also chemotherapy-related hospital admissions. Survival rates were similar for on-Pathway and off-Pathway patients.
**Strengths/Limitations**: This is one of few studies to directly link adherence to guidelines to cost outcomes. Claims analysis only approximated pathway adherence and the EHR analysis tracked orders and could not confirm that pathway-concordant care was actually delivered. The authors did not perform multivariate logistic regression thus other factors associated with the use pathways and cost outcomes cannot be ruled out.
**Generalizability to Medicare Population**: Somewhat generalizable; the EHR study contained Medicare beneficiaries but the claims analysis did not.
**Methods**: Retrospective analysis using Wilcoxon rank sum test for statistical significance.

Hussain T, Chang H-Y, Veenstra CM, et al. Fragmentation in Specialist Care and Stage III Colon Cancer. Cancer. 2015;121(18):3316-3324. doi:10.1002/cncr.29474

**Subtopic(s)**: Problems in care delivery
**Type of Source**: Journal article
**Objective**: To examine how often oncology care of stage III colon cancer patients occurred across more than one hospital and whether this was associated with mortality and costs.
**Main Findings**: Thirty-seven percent of the study population received care from different hospitals.  Care from the same hospital was not associated with mortality, but did result in lower costs, or patients may have purposefully sought out care from two different providers.
**Strengths/Limitations**: Some patient receiving care from multiple hospitals may have been part of a health system that coordinates care.
**Generalizability to Medicare Population**: Strong; study focused on Medicare population.
**Methods**: Retrospective cohort study of stage III colon cancer patients who received both surgical and medical oncology care.

Jackman DM, Zhang Y, Dalby C, et al. Cost and Survival Analysis Before and After Implementation of Dana-Farber Clinical Pathways for Patients With Stage IV Non–Small-Cell Lung Cancer. JOP. 2017;13(4):e346-e352. doi:10.1200/JOP.2017.021741

**Subtopic(s)**: Quality and performance
**Type of Source**: Journal article
**Objective**: To observe how clinical pathways support decision making and resource management.

**Main Findings**: Adjusting for demographic and illness conditions, pathway implementation was associated with a savings of about $15,000 per patient over 12 months.
**Strengths/Limitations**: Study limited to patients at the Dana Farber Cancer Institute.
**Generalizability to Medicare Population**: Unknown; insurance status of patients not reported.
**Methods**: Pre-post study of patients diagnosed before and after pathway implementation.

Jung J, Feldman R, McBean A. The Price Elasticity of Specialty Drug Use: Evidence from Cancer Patients in Medicare Part D. Forum for Health Economics & Policy 2017; 20(2). doi: 10.1515/fhep-2016-0007

**Subtopic(s)**: Issues in payment policy
**Type of Source**: Journal article
**Objective**: To estimate total demand for specialty cancer drugs among older adults Medicare Part D enrollees with no low-income subsidies as a function of initial price.
**Main Findings**: Older adult beneficiaries are less likely to use a Part D specialty drug when the initial cost is high, and use of Part B-covered drugs was not responsive to Part D specialty cancer drug price.
**Strengths/Limitations**: Detailed information on stage of disease, which may influence specialty drug use, was not available in the dataset. Utilization of specialty drugs in the sample was very low, therefore price responsiveness was estimated from a very small sample. Pharmaceutical assistance programs were not accounted for, which may provide another avenue for patients to obtain specialty drugs.
**Generalizability to Medicare Population**: Strong; the study was focused on Medicare Part D enrollees.
**Methods**: Four quantitative analyses to examine price-responsiveness among the older adult Part D population with cancer, and additional background discussion on Part D drug policy.

Kaiser Family Foundation. Medicare Advantage Fact Sheet. https://www.kff.org/medicare/fact-sheet/medicare-advantage/. Published June 2019. Accessed February 11, 2020.

**Subtopic(s)**: Issues in payment policy
**Type of Source**: Fact Sheet
**Objective**: To describe the enrollment, plan types, and payment systems within Medicare Advantage
**Main Findings**: Unlike Medicare Medigap plans, Medicare Advantage plans have a beneficiary out-of-pocket maximum. (Among other findings)
**Strengths/Limitations**: N/A
**Generalizability to Medicare Population**: Strong; data exclusive to Medicare population.
**Methods**: N/A

Kedia SK, Chavan PP, Boop SE, Yu X. Health Care Utilization Among Elderly Medicare Beneficiaries With Coexisting Dementia and Cancer. *Gerontology and Geriatric Medicine*. 2017;3:1-9. doi:10.1177/2333721416689042

**Subtopic(s):** Epidemiology of cancer
**Type of Source:** Journal article
**Objective:** To provide insight into the health care utilization among Medicare beneficiaries with diagnoses of dementia and cancer compared to those with dementia or cancer alone, or those with neither diagnosis.
**Main Findings:** Beneficiaries with diagnoses of cancer and dementia had higher rates of hospitalizations, hospital readmissions within 30 days, intensive care unit use, and emergency department visits compared to the other populations.

**Strengths/Limitations:** The study is limited by using administrative data of the Medicare claims, which have no clinical information (i.e., disease severity, symptoms, other health issues).
**Generalizability to Medicare Population:** Strong; study focused on Medicare population.
**Methods:** Multivariate regression analyses on a population of Medicare enrollees in 2009.

Kirkwood MK, Hanley A, Bruinooge SS, Garrett-Mayer E, Levit LA, Schenkel C, Seid JE, Polite BN, Schilsky RL. The State of Oncology Practice in America, 2018: Results of the ASCO Practice Census Survey. American Society of Clinical Oncology. 2018: 14(7). https://doi.org/10.1200/JOP.18.00149.

**Subtopic(s)**: Background
**Type of Source**: Journal article.
**Objective**: To summarize the methodology and findings of a 2017 ASCO census of oncologists.
**Main Findings**: The census found that over three-quarters (76 percent) of the 2,248 practices employed one to five oncologists, 72 percent were single-site, and 9 nine percent had a site in a rural ZIP code. Among survey respondents, 21 percent practiced in academic settings, 37 percent in hospitals/health system-owned settings and 42 percent were independent. Of the 2,248 practices, two-thirds of which were single-specialty oncology (medical oncology and/or hematology) and one-third of which were multispecialty (gynecologic, radiation and/or surgical oncologists).
**Strengths/Limitations**: N/A
**Generalizability to Medicare Population**: Strong; study focused on Medicare population.
**Methods**: Medicare Physician Compare data was used to analyze trends in oncology practices in the United States.

Kosty, Michael P., Amy Hanley, Veronica Chollette, et al. National Cancer Institute–American Society of Clinical Oncology Teams in Cancer Care Project. JOP. 2016;12(11): 955–58. https://doi.org/10.1200/JOP.2016.018127.

**Subtopic(s)**: Problems in care delivery
**Type of Source**: Journal article.
**Objective**: To introduce case studies of evidence-based approaches to team-based cancer care.
**Main Findings**: N/A
**Strengths/Limitations**: N/A
**Generalizability to Medicare Population**: Somewhat generalizable; issues discussed could reasonably apply to the Medicare population.
**Methods**: N/A

Kreys ED, Kim TY, Delgado A, et al. Impact of Cancer Supportive Care Pathways Compliance on Emergency Department Visits and Hospitalizations. JOP. 2014;10(3):168-173. doi:10.1200/JOP.2014.001376

**Subtopic(s)**: Quality and performance
**Type of Source**: Journal article
**Objective**: To evaluate the effect of pathway compliance on ED visits and hospitalizations.
**Main Findings**: Pathway compliance was associated with a significant decrease in the rate of neutropenia ED visits and hospitalizations and resulting costs.
**Strengths/Limitations**: Data did not include justifications for noncompliance.
**Generalizability to Medicare Population**: Weak; Medicare patients excluded.
**Methods**: Number of ED visits and hospitalizations for neutropenia, anemia, and chemotherapy-induced nausea and vomiting were compared between compliant and noncompliant pathway utilization.

Kreys ED, Koeller JM. Documenting the Benefits and Cost Savings of a Large Multistate Cancer Pathway Program from a Payer's Perspective. JOP. 2013;9(5):e241-e247. doi:10.1200/JOP.2012.000871

> **Subtopic(s)**: Quality and performance
> **Type of Source**: Journal article
> **Objective**: To evaluate the implementation of a multistate oncology clinical pathways program.
> **Main Findings**: Pathways resulted in $10.3 million in savings by participant sites, which translates to $30.9 million for the entire Blue Cross Blue Shield health plan. Savings resulted from decreases in drug costs and hospitalizations.
> **Strengths/Limitations**: Clinical information regarding reasons for hospitalization, adverse events, mortality, and other health-related costs were unavailable.
> **Generalizability to Medicare Population**: Weak; study population was commercially-insured.
> **Methods**: Retrospective single-group pretest-posttest design using claims data.

Kwon H, Lee J-H, Woo J, Lim W, Moon B-I, Paik NS. Efficacy of a clinical pathway for patients with thyroid cancer. Head & Neck. 2018;40(9):1909-1916. doi:10.1002/hed.25175

> **Subtopic(s)**: Quality and performance
> **Type of Source**: Journal article
> **Objective**: To examine whether a clinical pathway is effective for thyroid cancer.
> **Main Findings**: Mean length of stay was 0.8 days shorter in the clinical pathway group than the control group. Cost per patient was also lower in the pathway group than the control group ($3,953 and $4,636, respectively). Nurses satisfaction scores improved from 72% to 82.5% after implementation.
> **Strengths/Limitations**: The two cohorts received care at different time, although the clinicalpathological features were similar.
> **Generalizability to Medicare Population**: Weak; study took place in South Korea.
> **Methods**: Subjects included 216 patients who were managed after clinical pathway implementation and 145 control patients. Length of stay, cost per patient, and nurses' satisfaction were compared in the two groups.

Lam MB, Figueroa JF, Zheng J et al. Spending Among Patients With Cancer in the First 2 Years of Accountable Care Organization Participation. JCO. 2018;36(29):2955-2961. https://doi.org/10.1200/JCO.18.00270

> **Subtopic(s)**: Problems in care delivery
> **Type of Source**: Journal article
> **Objective**: To evaluate the impact on cancer care costs for cancer patients in accountable care organizations (ACOs).
> **Main Findings**: There were no differences in spending in any category for any of the 11 cancers examined between beneficiaries aligned to Medicare Shared Savings Program (SSP) ACOs and the comparison group.
> **Strengths/Limitations**: Authors were unable to assign cancer stage using claims data and providers who participate in SSP may be systematically different than those participating in traditional Medicare.
> **Generalizability to Medicare Population**: Strong; study limited to Medicare population.
> **Methods**: Difference-in-differences analysis of outcomes before and after ACO participation for Medicare beneficiaries with cancer.

Lam MB, Zheng J, Orav EJ, Jha AK. Early Accountable Care Organization Results in End-of-Life Spending Among Cancer Patients. JNCI J Natl Cancer Inst. 2019;111(12):1307-1313. doi:10.1093/jnci/djz033

> **Subtopic(s)**: Problems in care delivery
> **Type of Source**: Journal article
> **Objective**: To evaluate the impact on end-of-life (EOL) spending and utilization for cancer patients in accountable care organizations (ACOs).
> **Main Findings**: There were no differences in EOL spending or utilization between beneficiaries aligned to Medicare Shared Savings Program (SSP) ACOs and the comparison group who died during the study period.
> **Strengths/Limitations**: Authors were unable to assign cancer stage using claims data and providers who participate in SSP may be systematically different than those participating in traditional Medicare.
> **Generalizability to Medicare Population**: Strong; study limited to Medicare population.
> **Methods**: Difference-in-differences analysis of outcomes before and after ACO participation for Medicare beneficiaries with cancer who died during the study period.

Lash RS, Bell JF, Reed SC, et al. A Systematic Review of Emergency Department Use Among Cancer Patients. Cancer Nurs. 2017;40(2):135-144. doi:10.1097/NCC.0000000000000360

> **Subtopic(s)**: Quality and performance
> **Type of Source**: Journal article
> **Objective**: To summarize frequency, predictors of, and reasons for ED visits among oncology patients.
> **Main Findings**: The literature reviewed suggests higher rates of ED use among cancer patients than in the general population; however reasons for ED visits have not been well studied.
> **Strengths/Limitations**: Systematic approaches to identifying preventable ED visits among oncology patients are understudied.
> **Generalizability to Medicare Population**: Limited; systematic review not limited to the Medicare population.
> **Methods**: Literature review of 15 studies.

Levey N. Primary Care Transformation: Can Competitors Collaborate? Millbank Memorial Fund Issue Brief. https://www.milbank.org/wp-content/uploads/2019/05/IssueBriefPerspectives-from-Three-CPC-Markets.pdf. Published December 2019. Accessed March 20, 2020.

> **Subtopic(s)**: Quality and performance
> **Type of Source**: Report
> **Objective**: To discuss the experience of convening multiple payers in the Comprehensive Primary Care Plus (CPC+) Model.
> **Main Findings**: The participating payers' engagement remains strong but federal participation and leadership are critical. Payers have learned lessons that could speed alignment elsewhere but sustaining momentum in the future will be challenging.
> **Strengths/Limitations**: Convenience sample of CPC+ leaders, small sample size.
> **Generalizability to Medicare Population**: Strong; CPC+ is a Medicare model.
> **Methods**: Key informant interviews with representatives from three CPC+ regions.

Liang PS, Mayer JD, Wakefield J, Ko CW. Temporal Trends in Geographic and Sociodemographic Disparities in Colorectal Cancer Among Medicare Patients, 1973-2010. *J Rural Health*. 2017;33(4):361–370. doi:10.1111/jrh.12209

> **Subtopic(s):** Epidemiology of cancer

**Type of Source:** Journal article
**Objective:** To provide trends in the association between geographic and sociodemographic factors and colorectal cancer outcomes.
**Main Findings:** The study concluded that Medicare beneficiaries resided in rural areas associated with increased CRC incidence and mortality. In addition, study also found growing disparities between blacks and whites and a reversal relationship between socioeconomic status and CRC outcomes.
**Strengths/Limitations:** The study was unable to account more subtle geographic and sociodemographic changes since the contextual data were only available from 2000 and 2010 Census.
**Generalizability to Medicare Population:** Strong; study focuses on Medicare population.
**Methods:** The study used 1973-2010 SEER-Medicare files to identify patients aged 65 and older with and without CRC. Multivariable logistic regression models were used to evaluate CRC incidence and mortality using geographic and sociodemographic variables

Lin C, Heron D, Connelly K. Does Medicare HMO Reimbursement Policy Hinder Clinical Trial Participation? International Journal of Radiation Oncology, Biology, and Physics. 2008. 72(1) S138. doi: 10.1016/j.ijrobp.2008.06.453

**Subtopic(s)**: Issues in payment policy
**Type of Source**: Journal article
**Objective**: To estimate monthly financial cost per treatment cycle for selected clinical trials and examine the proportion of cancer patients with Medicare HMO coverage who have been treated in the author's facilities.
**Main Findings**: An increasing number of aging cancer patients are enrolled in Medicare HMOs. Medicare HMO reimbursement policy hinders clinical trial participation at ROCOG facilities.
**Strengths/Limitations**: Old study, limited to a single inner-city hospital
**Generalizability to Medicare Population**: Strong; examines Medicare HMOs.
**Methods**: Identification of patients billed through UPMC EPIC system.

Mathematica Policy Research. Independent Evaluation of Comprehensive Primary Care Plus (CPC+): First Annual Report. https://downloads.cms.gov/files/cmmi/cpcplus-first-ann-rpt.pdf. Published April 2019. Accessed February 11, 2020.

**Subtopic(s)**: Results of proposed or similar models
**Type of Source**: Report
**Objective**: To summarize findings from the first year of CPC+ for the practices (2,905) that implemented the model in 2017.
**Main Findings**: During the first year of CPC+ implementation, payer and practice participation remained stable, practices received significant support but also cited areas of inadequate support (e.g., health IT), and CPC+ practices began changing their care delivery systems. Due to the short timeframe and time needed to implement changes, the evaluation found minimal statistically significant impacts of the model on Medicare FFS beneficiaries.
**Strengths/Limitations**: Results were limited due to the short timeframe, and time and/or investments needed to create primary care changes.
**Generalizability to Medicare Population**: Strong; study focuses on Medicare population
**Methods**: Mixed methods evaluation, including interview, survey, program, and claims data.

Mariotto A, Yabroff K, Shao Y, et al. Projections of the Cost of Cancer Care in the United States: 2010-2020. Journal of the National Cancer Institute 2011; 103(8): 699. doi: 10.1093/jnci/djq495

> **Subtopic(s)**: Issues in payment policy
> **Type of Source**: Journal Article
> **Objective**: To update cost of cancer care in the United States for the 2010s decade
> **Main Findings**: Cost of cancer care is projected to reach $173 billion in 2020 based on a two percent annual increase in initial and end-of-life phases of care, a 39 percent increase from 2010.
> **Strengths/Limitations**: Older analysis, more recent projections may not necessarily match the exact $173 billion estimate, however a rigorous financial projection process was followed.
> **Generalizability to Medicare Population**: Strong; SEER-Medicare data used to project annualized net costs
> **Methods**: Financial analysis linking cancer prevalence to Medicare expenditure with control random sample adjusting for expenditure not related to cancer.

Martin J, Halm EA, Tiro JA, et al. Reasons for Lack of Diagnostic Colonoscopy After Positive Result on Fecal Immunochemical Test in a Safety-Net Health System. The American Journal of Medicine. 2017;130(1):93.e1-93.e7. doi:10.1016/j.amjmed.2016.07.028

> **Subtopic(s)**: Problems in care delivery
> **Type of Source**: Journal article
> **Objective**: To examine factors contributing to lack of follow-up colonoscopies in racially diverse and socioeconomically disadvantage cohorts.
> **Main Findings**: Forty-two percent of patients with abnormal fecal immunochemical tests (FIT) did not undergo a colonoscopy within one year. Failure was attributable to patient-level factors in 57 percent of cases.
> **Strengths/Limitations**: Study conducted in a single safety-net health system with a small sample size.
> **Generalizability to Medicare Population**: Weak; study population was under 65 years of age.
> **Methods**: Medical record review of patients with abnormal results on FITs.

Medicare Payment Advisory Commission (MedPAC). Report to Congress: Medicare and the Health Care Delivery System.
http://www.medpac.gov/docs/defaultsource/reports/jun17_reporttocongress_sec.pdf. Published June 2017. Accessed February 12, 2020.

> **Subtopic(s)**: Issues in payment policy
> **Type of Source**: Report to Congress
> **Objective**: To provide an overview and update regarding Medicare and the Health Care Delivery System.
> **Main Findings**: The report includes recommendations to the Secretary to implement a prospective payment system (PPS) for post-acute care, lower aggregate payments by five percent and begin aligning setting-specific regulatory requirements, and to revise payments to the current cost of care
> **Strengths/Limitations**: N/A
> **Generalizability to Medicare Population**: Strong; MedPAC is a Medicare-centric organization
> **Methods:** N/A

Medicare Payment Advisory Commission (MedPAC). Report to Congress: Medicare and the Health Care Delivery System Chapter 5: Medicare Part B drug and oncology payment policy issues. http://www.medpac.gov/docs/default-source/reports/chapter-5-medicare-part-b-drug-and-oncology-payment-policy-issues-june-2016-report-.pdf?sfvrsn=0. Published June 2016. Accessed February 11, 2020.

> **Subtopic(s)**: Issues in payment policy
> **Type of Source**: Report to Congress
> **Objective**: To describe and provide an overview of Medicare Part B drug policies and their issues within the context of oncology.
> **Main Findings**: Medicare spending on cancer drugs is disproportionately high, and the current ASP+6 percent payment methodology may be creating perverse incentives for providers. Alternatives may include wider implementation of clinical pathways, however these too come with their own concerns.
> **Strengths/Limitations**: N/A
> **Generalizability to Medicare Population**: Strong; MedPAC is a Medicare-centric organization
> **Methods**: N/A

Miller AM, Omenn GS, Kean MA. The Impact of Alternative Payment Models on Oncology Innovation and Patient Care. Clin Cancer Res. 2016;22(10):2335-2341. doi:10.1158/1078-0432.CCR-16-0892

> **Subtopic(s)**: Quality and performance, Problems in care delivery
> **Type of Source**: Journal article
> **Objective**: To summarize the findings of the Turning the Tide Against Cancer roundtable on oncology-focused APMs.
> **Main Findings**: The roundtable discussion arrived at five key policy considerations for oncology APMs, including 1) incentivizing the adoption of medical innovations; 2) encouraging patient participation; 3) transparency of clinical pathways; 4) patient education; and 5) integration of clinical data into provider workflows.
> **Strengths/Limitations**: Findings reflect the discussions of just one roundtable discussion.
> **Generalizability to Medicare Population**: Article does not discuss Medicare populations or policies specifically; however, findings could be easily translated to the Medicare context.
> **Methods**: Summary and assessment of a roundtable discussion.

Miller JW, Plescia M, Ekwueme DU. Public Health National Approach to Reducing Breast and Cervical Cancer Disparities. Cancer. 2014;120(S16):2537-2539. doi:10.1002/cncr.28818

> **Subtopic(s)**: Problems in care delivery
> **Type of Source**: Journal article
> **Objective**: To describe the National Breast and Cervical Cancer Early Detection Program's (NBCCEDP) approach to improve access to breast and cervical cancer screenings for medically underserved women.
> **Main Findings**: NBCCEDP's approach includes public education and outreach, quality assurance and improvement processes, case management and patient navigation, professional development, data evaluation, and partnerships.
> **Strengths/Limitations**: N/A
> **Generalizability to Medicare Population**: Fair; NBCCEDP's programs could be used with the Medicare population.
> **Methods**: N/A

Moss H, Havrilesky L, Wang F, et al. Simulated Costs of the ASCO Patient-Centered Oncology Payment Model in Medicare Beneficiaries with Newly Diagnosed Advanced Ovarian Cancer. Journal of Oncology Practice 2019; 15(12): e1018-1027. doi: 10.1200/JOP.19.00026

**Subtopic(s)**: Issues in payment policy
**Type of Source**: Journal article
**Objective**: To evaluate ASCO's PCOP model in existing fee-for-service Medicare beneficiaries to understand the magnitude of potential cost savings.
**Main Findings**: PCOP may provide a reasonable payment structure if model payments are used to improve coordination of care. FFS costs can be reduced with either a large reduction in imaging or a modest reduction in hospitalizations.
**Strengths/Limitations**: Study population was limited to women newly diagnosed with advanced ovarian cancer
**Generalizability to Medicare Population**: Somewhat generalizable; SEER-Medicare data was used but study population was limited to those newly diagnosed with advanced ovarian cancer.
**Methods**: Medicare payments were used to compare FFS and PCOP payment methodologies to estimate potential for cost savings.

Muldoon L, Pelizzari P, Lang K, et al. Assessing Medicare's Approach to Covering New Drugs in Bundled Payments for Oncology. Health Affairs: Precision Medicine 2018; 37(5): 743-750. doi: 10.1377/hlthaff.2017.1552

**Subtopic(s)**: Issues in payment policy
**Type of Source**: Journal Article
**Objective**: To simulate the Oncology Care Model novel therapies adjustment to assess financial impact on participating practices.
**Main Findings**: The adjustment reduced average loss per treatment episode by $758 for large practice using novel therapies often. The adjustment may provide valuable protections for such practices.
**Strengths/Limitations**: Datasets were used from different time periods, and analysis did not include Part D prescriptions drugs. Regional variation and case-mix were not accounted for.
**Generalizability to Medicare Population**: Strong; The OCM is directly applicable to the Medicare population.
**Methods**: Financial simulation using Medicare claims files and historical FDA drug approvals.

Narang AK, Nicholas LH. Out-of-Pocket Spending and Financial Burden Among Medicare Beneficiaries With Cancer. *JAMA Oncol*. 2017;3(6):757–765. doi:10.1001/jamaoncol.2016.4865

**Subtopic(s):** Epidemiology of cancer
**Type of Source:** Journal article
**Objective:** To measure the out-of-pocket (OOP) costs among Medicare beneficiaries with cancer and identify factors that contribute to these high OOP expenditures.
**Main Findings:** Study concluded that nearly 10% of elderly cancer patients with Medicare coverage only spent more than 60% of their annual household income on OOP expenditures after a cancer diagnosis. Among those expenditures, costs associated with inpatient hospitalization accounted for the largest amount of the OOP costs,
**Strengths/Limitations:** The study is limited by using patient self-reported data, which is subject to recall bias. Survey data are also subject to misclassification and incomplete reporting.
**Generalizability to Medicare Population:** Yes.
**Methods:** This study analyzed data from 2002-2012 Health and Retirement Study. A multivariable generalized linear model was constructed to assess mean OOP expenditures using

a log link function and gamma family distribution. Multivariable logistic regression was also performed to determine which factors were associated with incurring costs in the highest decile of OOP expenditures. All models were adjusted for demographic factors and other covariates.

National Cancer Institute. Cancer of Any Site - Cancer Stat Facts. SEER (2012-2016). https://seer.cancer.gov/statfacts/html/all.html. Published April, 2019. Accessed February 14, 2020.

> **Subtopic(s):** Epidemiology of cancer
> **Type of Source:** Database
> **Objective:** To provide cancer incidence rates and death rates for cancer of any site by race/ethnicity, age group and gender.
> **Main Findings:** Cancer of any site is most frequently diagnosed among people aged 65-74. The median age at diagnosis is 66. The percent of cancer of any site deaths is highest among people aged 65-74.
> **Strengths/Limitations:** N/A
> **Generalizability to Medicare Population:** Yes.
> **Methods:** N/A

National Committee for Quality Assurance. Patient-Centered Specialty Practice (PCSP) Recognition. https://www.ncqa.org/programs/health-care-providers-practices/patient-centered-specialty-practice-recognition-pcsp/. Published 2020. Accessed February 28, 2020.

> **Subtopic(s)**: Background on the submitter
> **Type of Source**: Website
> **Objective**: To explain the PCSP model and recognition process.
> **Main Findings**: The PCSP Recognition program builds on the success of the Patient-Centered Medical Home (PCMH) Recognition program and targets specialty practices. The elements of PCSPs are patient-centered care, proactive coordination with primary care and other clinicians, information sharing, and referrals to community resources and secondary services.
> **Strengths/Limitations**: N/A.
> **Generalizability to Medicare Population**: Reasonable. PCSPs are not age specific but Medicare beneficiaries would be included.
> **Methods**: N/A

National Institutes of Health. State Cancer Profiles. Incidence Rates Tables. https://statecancerprofiles.cancer.gov/incidencerates/index.php. Accessed February 14, 2020.

> **Subtopic(s):** Epidemiology of cancer
> **Type of Source:** Database
> **Objective:** Provide national cancer statistics.
> **Main Findings:** Incidence rates of cancer in the United States.
> **Strengths/Limitations:** National database.
> **Generalizability to Medicare Population:** Yes.
> **Methods:** N/A

National Institutes of Health. State Cancer Profiles. Death Rates Tables. https://statecancerprofiles.cancer.gov/deathrates/index.php. Accessed February 14, 2020.

> **Subtopic(s):** Epidemiology of cancer
> **Type of Source:** Database
> **Objective:** Provide national cancer statistics.
> **Main Findings:** Death rates of cancer in the United States.

**Strengths/Limitations:** National database.
**Generalizability to Medicare Population:** Yes
**Methods:** N/A

National Quality Forum (NQF). Cancer 2015-2017. Technical Report.
https://www.qualityforum.org/Publications/2017/01/Cancer_2015-2017_Technical_Report.aspx.
Published January 2017. Accessed February 28, 2020.

**Subtopic(s)**: Quality and performance
**Type of Source**: Technical Report
**Objective**: To assess the National Quality Forum's (NQF)'s portfolio of measures for cancer including measures for cancer screening, appropriate treatment, morbidity, and mortality.
**Main Findings**: The Cancer Standing Committee evaluated three newly submitted measures and 15 measures undergoing maintenance review against NQF's standard evaluation criteria. They endorsed 13, endorsed two inactively with reserve status, and declined to endorse three measures.
**Strengths/Limitations**: NQF conducts a thorough evaluation of evidence for measures as well as their validity and reliability.
**Generalizability to Medicare Population**: Somewhat generalizable; measures are not specific to the Medicare but can be applied in this population.
**Methods**: Expert consensus panel and evidence review.

Nejati M, Razavi M, Harirchi I, et al. The Impact of Provider Payment Reforms and Associated Care Delivery Models on Cost and Quality in Cancer Care: A Systematic Literature review. PLoS ONE 2019;14(4): e0214382. doi: 10.1371/pjournal.pone.0214382

**Subtopic(s)**: Quality and performance
**Type of Source**: Journal article
**Objective**: To assess the impact of payment reforms and care delivery innovations on cost and quality in cancer care.
**Main Findings**: Alternative payment models and the adoption of clinical pathways were significantly associated with lower utilization and spending.
**Strengths/Limitations**: Authors used Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines
**Generalizability to Medicare Population**: Strong; most included studies used Medicare claims data.
**Methods**: Systematic literature review.

Neubauer MA, Hoverman JR, Klododziej M, et al. Cost Effectiveness of Evidence-Based Treatment Guidelines for the Treatment of Non–Small-Cell Lung Cancer in the Community Setting. JOP. 2010;6(1):12-18.

**Subtopic(s)**: Quality and performance
**Type of Source**: Journal article
**Objective**: To evaluate the cost-effectiveness of Level I Pathways for outpatient treatment of patients with non–small-cell lung cancer (NSCLC).
**Main Findings**: Outpatient costs were 35% lower for on-Pathway versus off-Pathway patients and there was no difference in survival.
**Strengths/Limitations**: Authors coupled EHR with claims data, but they could only observe outpatient costs.

**Generalizability to Medicare Population**: Somewhat generalizable; most patients included in the analysis were ages 60 and older.
**Methods**: Retrospective cohort study.

Newcomer LN, Gould B, Page RD, Donelan SA, Perkins M. Changing Physician Incentives for Affordable, Quality Cancer Care: Results of an Episode Payment Model. JOP. 2014;10(5):322-326. doi:10.1200/JOP.2014.001488

**Subtopic(s)**: Problems in care delivery
**Type of Source**: Journal article
**Objective**: To examine the impact of an episode payments to improve quality and reduce costs.
**Main Findings**: Costs for the episodes cohort was substantially lower than the FFS predicted costs. The cost for chemotherapy drugs was substantially higher than the predicted costs. There were no differences in quality measures between the episode and FFS groups.
**Strengths/Limitations**: Limited to five medical groups.
**Generalizability to Medicare Population**: Weak; patients were commercially insured.
**Methods**: Analysis of costs and quality for patients of oncologists who were paid a single fee (instead of any drug margin) and a comparison group.

Nikpay SS, Richard MR, Penson D. Hospital-Physician Consolidation Accelerated In The Past Decade In Cardiology, Oncology. Health Affairs. 2018;37(7): 1123-1127. 10.1377/hlthaff.2017.1520

**Subtopic(s)**: Background
**Type of Source**: Journal Article
**Objective**: To explore changes in the rate of vertical integration within medical specialties between 2007 and 2017.
**Main Findings**: Vertical integration increased among all specialties, but especially among oncology and cardiology, which had a growth rate of 34%.
**Strengths/Limitations**: Vertical integration measures based on physician self-report; SK&A only covers 75% of practices in the US.
**Generalizability to Medicare Population**: Somewhat generalizable; physicians in the sample presumably serve Medicare patients.
**Methods**: Authors used the SK&A physician and practice survey and conducted a multivariate regression to model vertical integration as a function of time, medical specialty, and interactions between the two.

NORC at the University of Chicago. Next Generation Accountable Care Organization (NGACO) Model Evaluation: First Annual Report. August 2018 https://innovation.cms.gov/Files/reports/nextgenaco-firstannrpt.pdf. Published August 2018. Accessed February 11, 2020.

**Subtopic(s)**: Issues in payment policy
**Type of Source**: Report
**Objective**: To summarize model performance of the NGACO model after the first year of implementation.
**Main Findings**: Participating practices tended to adopt the lower-risk track in addition to smaller savings/risk caps in order to protect against potential losses.
**Strengths/Limitations**: Results limited to the first year of model implementation.
**Generalizability to Medicare Population**: Strong; NGACO model focuses on the Medicare population
**Methods**: Mixed methods evaluation, including claims, survey data, and interviews.

Obeng-Gyasi S, 2019. Impact of insurance and socioeconomic status on clinical outcomes in therapeutic clinical trials for breast cancer. 2019 San Antonio Breast Cancer Symposium. December 10-14, 2019. https://www.abstractsonline.com/pp8/#!/7946/presentation/1950. Accessed February, 24, 2020

> **Subtopic(s):** Epidemiology of cancer
> **Type of Source:** Conference abstract
> **Objective:** To evaluate insurance status and SES with respect to protocol treatment completion and survival among participants in two large randomized adjuvant breast cancer clinical trials.
> **Main Findings:** patients with government type insurance appeared to face barriers in trial treatment completion and had a lower survival compared to their privately insured counterparts
> **Strengths/Limitations:** N/A
> **Generalizability to Medicare Population:** No
> **Methods:** The data sources for this study were the ECOG-ACRIN (EA) clinical trials E1199 and E5103. Logistic regression models and Cox proportional hazard models were used to estimate odds ratios and hazard ratios for the association between insurance type and with overall survival respectively. The models adjusted for SES, race, age, tumor size, nodal status, hormone receptor status, and primary surgery at randomization.

Office of the National Coordinator for Health Information Technology. 'Office-based Physician Electronic Health Record Adoption.' Health IT Quick-Stat #50. https://dashboard.healthit.gov/quickstats/pages/physician-ehr-adoption-trends.php Published January 2019. Accessed February 20, 2020.

> **Subtopic(s)**: Problems in care delivery, health IT.
> **Type of Source**: Data brief.
> **Objective**: Describes EHR adoption in office based practices.
> **Main Findings**: Increase in EHR adoption over time.
> **Strengths/Limitations**: N/A.
> **Generalizability to Medicare Population**: Strong.
> **Methods**: N/A

Office of the National Coordinator for Health Information Technology. 'Percent of Hospitals, By Type, that Possess Certified Health IT,' Health IT Quick-Stat #52. https://dashboard.healthit.gov/quickstats/pages/certified-electronic-health-record-technology-in-hospitals.php   Published September 2018. Accessed March 20, 2020.

> **Subtopic(s)**: Problems in care delivery, health IT.
> **Type of Source**: HHS public dashboard.
> **Objective**: Provides access to analysis, reporting, and datasets that monitor health information technology trends and Office of the National Coordinator for Health Information Technology programs and policies.
> **Main Findings**: EHR adoption over time.
> **Strengths/Limitations**: N/A.
> **Generalizability to Medicare Population**: Strong.
> **Methods**: N/A

Page R, Newcomer L, et al. "The Patient-Centered Medical Home in Oncology: From Concept to Reality." American Society of Clinical Oncology Education Book (2015).

> **Subtopic(s)**: Problems in care delivery, Implementation science.

**Type of Source**: Peer reviewed publication.
**Objective**: Advocating for the implementation of the oncology medical home framework.
**Main Findings**:
**Strengths/Limitations**: The COME HOME model was tested in independent small to medium sized community oncology practices, not health-system or academic medical center affiliated practice.
**Generalizability to Medicare Population**: Strong; Medicare model an study utilized Medicare claims data.
**Methods**: Review.

Paradise J and Garfield R. What is Medicaid's Impact on Access to Care, Health Outcomes, and Quality of Care? Setting the Record Straight on the Evidence - Issue Brief. *The Henry J Kaiser Family Foundation*. https://www.kff.org/report-section/what-is-medicaids-impact-on-access-to-care-health-outcomes-and-quality-of-care-setting-the-record-straight-on-the-evidence-issue-brief/. Published August 2013. Accessed February 21, 2020.

**Subtopic(s):** Epidemiology of cancer
**Type of Source:** Issue brief
**Objective:** To assess Medicaid's impact on access to care, health outcomes, and quality of care. This assessment first reviewed the purpose of health insurance and the distinctive profile of the Medicaid population, and looked at what the literature shows overall regarding the difference Medicaid makes.
**Main Findings:** 1) Medicaid beneficiaries and the privately insured have comparable access to preventive and primary care; 2) Specialists are less willing to accept Medicaid patients than privately insured patients.
**Strengths/Limitations:** N/A
**Generalizability to Medicare Population:** Yes
**Methods:** N/A

Park J, Look KA. Health Care Expenditure Burden of Cancer Care in the United States. Inquiry. 2019;56:1-9. doi:10.1177/0046958019880696

**Subtopic(s):** Epidemiology of cancer
**Type of Source:** Journal article
**Objective:** To compare annual health care expenditures between cancer and noncancer patients, as well as among patients with the 4 most commonly diagnosed cancers.
**Main Findings:** Medicare was the largest source of payment for all adult cancer patients, and had the highest mean expenditure for those aged 65 and older. Study also concluded that Medicare paid nearly 10 times higher for elderly prostate cancer patients compared to private insurance and 3 times higher for breast cancer.
**Strengths/Limitations:** The study only included noninstitutionalized patients, which may underestimate cancer patients with particular types of cancer, and health care expenditures associated with cancer.
**Generalizability to Medicare Population:** Strong;
**Methods:** The study used 2010-2014 Medical Expenditure Panel Survey. Health care expenditures were estimated based on the total annual direct payments for all health care services by payer types. Chi-square tests were used to test the statistical difference for each comparison group.

Patel K, Thoumi A, Nadel J, et al. Transforming Oncology Care: Payment and Delivery Reform for Person-Centered Care. The American Journal of Managed Care 2015; 21(5): 388-93.

> **Subtopic(s)**: Issues in payment policy
> **Type of Source**: Journal article
> **Objective**: To examine four alternative payment models for oncology care that shift from fee-for-service to value-based care.
> **Main Findings**: Preliminary experience with APMs in the oncology setting suggests these novel models may be adopted by a variety of payer and provider types and may offer significant benefits regarding cost of care and patient outcomes.
> **Strengths/Limitations**: More evidence is needed to fully understand the impact of the presented APMs, as anecdotal evidence from small-scale testing does not imply success on a broader scale.
> **Generalizability to Medicare Population**: Strong; all of the APMs presented are of high interest to Medicare, especially bundled payments
> **Methods**: Analysis of four distinct APMs to illustrate the continuum of payment incentives that may influence care delivery in oncology.

Patt D. Understanding Utilization Management Policy: How to Manage This Increasingly Complex Environment in Collaboration and With Better Data. Am Soc Clin Oncol Educ Book. 2018; 38:135-138. doi: 10.1200/EDBK_200891.

> **Subtopic(s)**: Issues in payment policy
> **Type of Source**: Journal article
> **Objective**: To explore opportunities for utilization management that ensure appropriate patient access and minimize administrative burden.
> **Main Findings**: Opportunities for utilization management are best explored in collaboration with payers. This collaboration is facilitated by modern information systems that allow for data sharing. Clinical pathways are an option to achieve the goals of utilization management while adhering to evidence and value-based choices.
> **Strengths/Limitations**: Limited evidence exists for wide scale efficacy of clinical pathways.
> **Generalizability to Medicare Population**: Somewhat generalizable; clinical pathways are often considered in the context of the Medicare population.
> **Methods**: Secondary data analysis and review of the literature

Polite B, Ward JC, Cox JV, et al. A Pathway Through the Bundle Jungle. JOP. 2016;12(6):504-509. doi:10.1200/JOP.2015.008789

> **Subtopic(s)**: Quality and performance
> **Type of Source**: Journal article
> **Objective**: To explain how pathways may be preferred to bundled payment in oncology reimbursement policy.
> **Main Findings**: Provider-driven pathways may be more effective at incentivizing the most effective, least costly drug treatments while still allowing for provider flexibility.
> **Strengths/Limitations**: N/A
> **Generalizability to Medicare Population**: Somewhat generalizable; payment policies discussed could apply to Medicare policies.
> **Methods**: N/A

Prabhu Das I, Baker M, et al. Outcomes of multidisciplinary treatment planning in US cancer care settings. Cancer. 2018;124(18):3656-3667. doi:10.1002/cncr.31394

**Subtopic(s)**: Problems in care delivery
**Type of Source**: Journal article
**Objective**: To evaluate evidence of the effects of multidisciplinary treatment planning (MTP) on cancer care quality, health services outcomes, and survival
**Main Findings**: MTP was associated with favorable effects on several indicators of care quality, including delivery of guideline concordant treatment and improvements in diagnostic accuracy, staging completeness, surgical technique and timeliness. Effects on survival and clinical trials enrollment were mixed.
**Strengths/Limitations**: Delivery formats for MTP were generally not well described, and study designs were nonrandomized.
**Generalizability to Medicare Population**: Yes; however, review does not focus on insurance or age categories.
**Methods**: Literature review of studies conducted in US cancer care settings from 2000 to 2017.

Price A, Stranges E, Elixhauser, A. (Agency for Healthcare Quality and Research). Cancer Hospitalizations for Adults, 2009. HCUP Statistical Brief #125. February 2012. Agency for Healthcare Research and Quality, Rockville, MD. http://www.hcupus.ahrq.gov/reports/statbriefs/sb125.pdf

**Subtopic(s):** Epidemiology of cancer
**Type of Source:** Statistical brief
**Objective:** To provide data from the Healthcare Cost and Utilization Project (HCUP) Nationwide Inpatient Sample on hospital stays for cancer care among adults age 18 and older in 2009.
**Main Findings:** In 2009, cancer hospitalization rates among those 65 and older were 16 times higher than among 18–44 year olds and 2.5 times higher than among 45-64 year olds.
**Strengths/Limitations:** N/A
**Generalizability to Medicare Population:** Yes
**Methods:** The estimates in this Statistical Brief are based on data from the HCUP NIS 2009. Historical data were drawn from the 2000 NIS.

Rivera DR, Gallicchio L, Brown J. Trends in Adult Cancer–Related Emergency Department Utilization: An Analysis of Data from the Nationwide Emergency Department Sample. JAMA Oncol. 2017;3(10):e172450. doi:10.1001/jamaoncol.2017.2450

**Subtopic(s)**: Epidemiology of cancer
**Type of Source**: Journal article
**Objective**: To estimate the proportion of US ED visits made by adults with a cancer diagnosis by cancer type and other clinical and sociodemographic factors.
**Main Findings**: MTP was associated with favorable effects on several indicators of care quality, including delivery of guideline concordant treatment and improvements in diagnostic accuracy, staging completeness, surgical technique and timeliness. Effects on survival and clinical trials enrollment were mixed.
**Strengths/Limitations**: Attributing ED visits to cancer in claims data is inexact.
**Generalizability to Medicare Population**: Somewhat; Medicare pays for a large portion of cancer-related ED visits.
**Methods**: Authors used the Nationwide Emergency Department Sample and multivariate logistic regression to examine the associations between inpatient admission and key demographic and clinical variables for adult cancer–related ED visits.

Robinson, J. Value-Based Physician Payment in Oncology: Public and Private Insurer Initiatives. The Milbank Quarterly 2017; 95(1): 184-203. doi: 10.1111/1468-0009.12249

**Subtopic(s)**: Issues in payment policy
**Type of Source**: Journal article
**Objective**: To examine oncology payment initiatives across the nation's largest public and private health insurance plans
**Main Findings**: Both public and private payers currently supplement existing fee-for-service structure with payment methods incentivizing coordination of care and value-based resource utilization
**Strengths/Limitations**: Private payers limited to three major companies, descriptive case-study analysis does not include results of novel payment methodologies.
**Generalizability to Medicare Population**: Strong; public payer is a substantial focus.
**Methods**: Case study analysis.

Rocque GB, Williams CP, Jackson BE, et al. Concordance With NCCN Treatment Guidelines: Relations With Health Care Utilization, Cost, and Mortality in Breast. Cancer Patients With Secondary Metastasis. Cancer 2018;124(21):4231-4240. doi: 10.1002/cncr.31694

**Subtopic(s)**: Quality and performance
**Type of Source**: Journal article
**Objective**: To evaluate concordance of first treatment with NCCN Guidelines for women with secondary metastatic breast cancer.
**Main Findings**: Guideline concordance was associated with lower Medicare costs. The effect on mortality depended on the category of non-concordance. Health care utilization rates were similar for patients receiving concordant and non-concordant therapy.
**Strengths/Limitations**: Authors used SEER Medicare data, which contains more clinical data than Medicare claims alone, and conducted multivariate analysis. Study is limited to women diagnosed with early-stage breast cancer that turned metastatic
**Generalizability to Medicare Population**: Strong; authors used SEER Medicare data.
**Methods**: Retrospect cohort study. Authors evaluated then effect of guideline concordance on mortality using a Cox proportional hazards model and on costs and utilization generalized log-linear models with Poisson distribution and log-link function.

Rocque GB, Williams CP, Jackson BE, et al. Impact of Nonconcordance with NCCN Guidelines on Resource Utilization, Cost, and Mortality in De Novo Metastatic Breast Cancer. J Natl Compr Canc Netw. 2018;16(9):1084-1091. doi: 10.6004/jnccn.2018.7036

**Subtopic(s)**: Quality and performance
**Type of Source**: Journal article
**Objective**: To evaluate concordance of first treatment with NCCN Guidelines for women with Stage IV metastatic breast cancer.
**Main Findings**: Guideline concordance was associated with lower Medicare costs. The effect on mortality depended on the category of non-concordance. Health care utilization rates were similar for patients receiving concordant and nonconcordant therapy.
**Strengths/Limitations**: Authors used SEER Medicare data, which contains more clinical data than Medicare claims alone, and conducted multivariate analysis. Study is limited to women diagnosed with metastatic breast cancer.
**Generalizability to Medicare Population**: Strong; authors used SEER Medicare data.

**Methods**: Retrospect cohort study. Authors evaluated then effect of guideline concordance on mortality using a Cox proportional hazards model and on costs and utilization using linear mixed-effects and generalized linear models.

Rocque GB, Partridge EE, Pisu M, et al. The Patient Care Connect Program: Transforming Health Care Through Lay Navigation. JOP. 2016;12(6):e633-e642. doi:10.1200/JOP.2015.008896

**Subtopic(s)**: Problems in care delivery
**Type of Source**: Journal article
**Objective**: To describe the implementation of a lay patient navigator program.
**Main Findings**: The Patient Care Connect Program (PCCP) navigators were trained in health promotion, empowerment, palliative care, caregiver interactions, motivational interviewing, and identifying personal and community resources to address care barriers.  Patient satisfaction with the program was high, with almost 90 percent of patients reporting that they would recommend the program to others.
**Strengths/Limitations**: N/A
**Generalizability to Medicare Population**: Strong; program is focused on Medicare FFS beneficiaries.
**Methods**: Description of navigation services, infrastructure, physician engagement, navigator training, and patient identification strategies.

Rocque GB, Pisu M, Jackson BE, et al. Resource Use and Medicare Costs During Lay Navigation for Geriatric Patients With Cancer. JAMA Oncol. 2017;3(6):817-825. doi:10.1001/jamaoncol.2016.6307

**Subtopic(s)**: Problems in care delivery
**Type of Source**: Journal article
**Objective**: To examine the impact of the PCCP program on spending and resource use.
**Main Findings**: The average total costs for navigated patients declined by $781 per quarter per patient, compared with the comparison group.  ED visits, hospitalizations, and intensive care unit admissions also decreased.
**Strengths/Limitations**: Patients not randomly assigned to the program.
**Generalizability to Medicare Population**: Strong; program is focused on Medicare FFS beneficiaries.
**Methods**: Propensity score-matched regression analysis comparing quarterly changes in Medicare costs and resource use between navigated and non-navigated patients.

RTI International. Evaluation of the Multi-Payer Advanced Primary Care Practice (MAPCP) Demonstration: Final Report. https://downloads.cms.gov/files/cmmi/mapcp-finalevalrpt.pdf. Published June 2017. Accessed March 18, 2020.

**Subtopic(s)**: Quality and performance
**Type of Source**: Report
**Objective**: To assess the impacts of the MAPCP demonstration and determine how contextual factors influenced these impacts.
**Main Findings**: The eight states, over 6,000 providers and 800 practices provided advanced primary care services to more than 3 million individuals, including more than 700,000 Medicare FFS beneficiaries.  Each state had between three and seven other payers participate in their PCMH initiatives, in addition to Medicare and Medicaid. Practices sought to expand patient access and emphasize care management.  The most common challenges faced were health IT and data sharing.

**Strengths/Limitations**: Poor balance across evaluations. Comparative case study was not exhaustive, and interviews were not necessarily representative of all states', payers', and providers' experiences.
**Generalizability to Medicare Population**: Strong; Medicare is involved in the MAPCP demonstration.

RTI International. State Innovation Models (SIM) Initiative Evaluation: Model Test Year Five Annual Report; 2017. https://downloads.cms.gov/files/cmmi/sim-rd1-mt-fifthannrpt.pdf. Published December 2018. Accessed March 18, 2020.

**Subtopic(s)**: Quality and performance
**Type of Source**: Report
**Objective**: To evaluate the first five years of the State Innovation Models (SIM) initiative
**Main Findings**: All ACO models and one episode of care model showed comparatively lower rates of ED visits, and two ACO models also showed lower rates of inpatient admissions. Only Vermont's ACO Shared Savings Program had statistically significant slower increase in total Medicaid expenditures. Two Arkansas episode of care models demonstrated significant improvements in quality.
**Strengths/Limitations**: There are limitations of comparing outcomes across different models. States had different starting points with regard to pre-SIM transformation efforts, and comparison groups not touched by other health reform efforts are impossible to select, so results may not show the full impact of the model.
**Generalizability to Medicare Population**: Strong; Medicare is involved in the SIM Initiative.

Ruiz ES, Seiger K, Mostaghimi A, Schmults C. National cancer expenditure analysis in the United States Medicare population, 2013. *JCO.* 2019;37(15_suppl):6647-6647. doi:10.1200/JCO.2019.37.15_suppl.6647

**Subtopic(s):** Epidemiology of cancer
**Type of Source:** Journal article
**Objective:** To provide a comprehensive analysis evaluating total cost of cancer by cancer type and treatment modality.
**Main Findings:** In 2013, cancer accounted for 5% of Medicare spending, and chemotherapy accounted for approximately one-third of total spending.
**Strengths/Limitations:** Limited Medicare Data Set
**Generalizability to Medicare Population:** Strong; study focused on Medicare population.
**Methods:** ICD-9 code analysis

Runyan A, Banks J, Bruni DS. "Current and Future Oncology Management in the United States." *Journal of Managed Care & Specialty Pharmacy* 25, no. 2 (February 2019): 272–81.doi: 10.18553/jmcp.2019.25.2.272.

**Subtopic(s)**: Problems in care delivery
**Type of Source**: Journal article
**Main Findings**: Commercial payers are concerned with the high cost of oncology drugs and are prioritizing their management through traditional (limits) and innovative (pathways) methods.
**Strengths/Limitations**: Quality of findings limited by methodologies of reviewed studies, and survey limited to 21 payers.
**Generalizability to Medicare Population**: Limited; systematic review not limited to the Medicare population.
**Methods:** Systematic literature review and mobile survey.

Sarfati D, Koczwara B, Jackson C. The Impact of Comorbidity on Cancer and its treatment. CA: A Cancer Journal for Clinicians. 2016;66(4):337-350. doi:10.3322/caac.21342

> **Subtopic(s)**: Problems in care delivery
> **Type of Source**: Journal article
> **Objective**: To summarize the current literature about the prevalence of comorbidities among cancer patients and its impact on diagnosis, treatment, and patient outcomes.
> **Main Findings**: Patients with a comorbidity have poorer survival rates, poorer quality of life, and higher health care costs.
> **Strengths/Limitations**: Quality of findings limited by methodologies of reviewed studies.
> **Generalizability to Medicare Population**: Systematic review not limited to the Medicare population.
> **Methods**: Medline search of terms such as "cancer", "comorbidity", and "concomitant disease"

Shah S, Reh G: Value-based payment models in oncology: will they help or hinder patient access to new treatments? Am J Manag Care 23(5 Spec No.), SP188-SP190, 2017

> **Subtopic(s)**: Quality and performance
> **Type of Source**: Journal article
> **Objective**: To understand what approaches in value-based oncology payment models are perceived to be working, what the early results are, and their potential impact on innovation.
> **Main Findings**: Early experiments with value-based models demonstrate promise and providers' willingness to participate will likely expand along with their analytic capabilities. Investing in data analytics may help providers identify opportunities to reduce variability in cost and outcomes. Payment models should incorporate quality measures that assess value so financial incentives alone do not drive prescribing.
> **Strengths/Limitations**: Evidence based on qualitative interview data
> **Generalizability to Medicare Population**: Somewhat generalizable; recommendations hold relevance to APMs focused on the Medicare population
> **Methods**: Deloitte interview of 18 individuals from health plans, provider groups, and clinical pathway developers who are supporting, participating in, or evaluating oncology payment models.

Siddiqui S, Cruz I. A Cancer Patient Journey: Complete Review During Acute Treatment Phase. Health Equity, 2019.l 3.1. doi: 10.1089/heq.2019.0046

> **Subtopic(s)**: Problems in care delivery
> **Type of Source**: Journal article.
> **Objective**: To demonstrate gaps in acute cancer care.
> **Main Findings**: Limitations in shared care for cancer management during acute treatment.
> **Strengths/Limitations**: Discussion limited to one patient.
> **Generalizability to Medicare Population**: Case study focused on individual ineligible for Medicare; however, experience with multiple care teams could be applicable to Medicare population.
> **Methods**: Case study approach.

Song X, Tian J, Cui Q, et al. Could Clinical Pathways Improve the Quality of Care in Patients with Gastrointestinal Cancer? A Meta-analysis. Asian Pacific Journal of Cancer Prevention. 2014; 15(19): 8361-8366. doi: http://dx.doi.org/10.7314/APJCP.2014.15.19.8361

> **Subtopic(s)**: Quality and performance
> **Type of Source**: Journal article

**Objective**: To assess the implementation effects of clinical pathways in patients with gastrointestinal cancer.

**Main Findings**: Shorter average length of stay, reduction in inpatient expenditure, and increased patient satisfaction were observed with the utilization of clinical pathways as opposed to usual care.

**Strengths/Limitations**: High heterogeneity existed within several pooled results, which could be due to level of hospital, methodology of recording inpatient expenditure, and difference between Japanese and Chinese hospitals.

**Generalizability to Medicare Population**: Limited; study examines hospitals in China and Japan but does examine clinical pathways which are of great interest to CMMI and represent a critical component of the PCOP model.

**Methods**: Meta-analysis

Sprandio J. Oncology Patient-Centered Medical Home. Journal of Oncology Practice. 2012 (supplement); 8(3S): 47s-49s.

**Subtopic(s)**: Problems in care delivery

**Type of Source**: Perspective Piece

**Objective**: To provide perspective on the role of oncologists and payers in preserving the impact and scope of the oncology medical home model.

**Main Findings**: Oncologists must move to define, measure and maximize value to become responsible, accountable, and able to achieve goals of better care. Payers must develop a contractual platform around the model so it may be expanded and verified.

**Strengths/Limitations**: N/A

**Generalizability to Medicare Population**: Reasonably strong; discussion on reproducibility focuses on Medicare demonstrations.

**Methods**: N/A

Tirodkar MA, Acciavatti N, Roth LM, et al. Lessons From Early Implementation of a Patient-Centered Care Model in Oncology. JOP. 2015;11(6):456-461. doi:10.1200/JOP.2015.006072

**Subtopic(s)**: Problems in care delivery

**Type of Source**: Journal article

**Objective**: To describe the implementation of new standards for patient-centered oncology practices in five pilot practices.

**Main Findings**: Referral coordination and care management were the most demonstrated functions, while functions related to tracking and coordination of tests and medications were less commonly demonstrated.

**Strengths/Limitations**: Results limited to the early months of the intervention, and impacts of new standards take time to fully implement.

**Generalizability to Medicare Population**: Weak; study population not focused on Medicare population.

**Methods**: Auditor review of workflows and documentation, as well as interviews of clinicians, staff and patients.

Unger JM, Cook E, Tai E, Bleyer A. The Role of Clinical Trial Participation in Cancer Research: Barriers, Evidence, and Strategies. *Am Soc Clin Oncol Educ Book*. 2016;35:185–198. doi:10.1200/EDBK_156686

**Subtopic(s):** Epidemiology

**Type of Source:** Review article

**Objective:** To determine the clinical trials barriers and propose global and local strategies for reducing barriers.

**Main Findings:** The study concluded that structural barriers preclude patients enroll in trials for nearly half of all cancer patients. A clinical trial system that enrolls patients at higher rates produces treatment advances at a faster rate and corresponding improvements in cancer population outcomes. Structural barriers preclude patients enroll in trials for nearly half of all cancer patients

**Strengths/Limitations:** N/A

**Generalizability to Medicare Population:** Weak;

**Methods:** A comprehensive review to the current literature to understand the nature of trial enrollment patterns and barriers.

Valuck T, Blaisdell D, Dugan D, et al. Improving Oncology Quality Measurement in Accountable Care: Filling Gaps with Cross-Cutting Measures. Journal of Managed Care & Specialty Pharmacy. 2017; 23(2): 174-181.

**Subtopic(s)**: Quality and performance

**Type of Source**: Journal article

**Objective**: To analyze gaps in oncology measures in accountable care and to discuss challenging measurement issues and offer strategies for improving oncology measurement.

**Main Findings**: The primary recommendation for enhancing measure sets was to prioritize and develop effective cross-cutting measures that assess clinical and patient-reported outcomes including standard decision making, care planning, and symptom control.

**Strengths/Limitations**: Results limited to the early months of the intervention, and impacts of new standards take time to fully implement.

**Generalizability to Medicare Population**: Reasonable; cross-cutting measures are indicated to be of interest to CMS for use within the Medicare population.

**Methods**: Review of clinical practice guidelines and identification of measure gaps based on discrepancies between high-evidence recommendations (from the National Comprehensive Cancer Network) and available quality measures.

Walker GV, Grant SR, Guadagnolo BA, et al. Disparities in stage at diagnosis, treatment, and survival in nonelderly adult patients with cancer according to insurance status. J Clin Oncol. 2014;32(28):3118–3125. doi:10.1200/JCO.2014.55.6258

**Subtopic(s)**: Epidemiology of cancer

**Type of Source**: Journal article

**Objective**: To explore the association of insurance status with disease stage at presentation, treatment, and survival among the top 10 most deadly cancers.

**Main Findings**: Patients with Medicaid and the uninsured were more likely to present with advanced disease, were less likely to receive cancer-directed surgery and/or radiation therapy, and experienced worse survival.

**Strengths/Limitations**: Large, national sample but SEER data custodians caution that insurance information is unreliable for Medicare recipients.

**Generalizability to Medicare Population**: Weak; authors excluded people age 65 and older.

**Methods**: Authors used SEER data and a Cox proportional hazards model to explore the association between sociodemographic factors and tumor characteristics on mortality

Walling AM, Keating NL, Kahn KL, et al. Lower Patient Ratings of Physician Communication Are Associated With Unmet Need for Symptom Management in Patients With Lung and Colorectal Cancer. JOP. 2016;12(6):e654-e669. doi:10.1200/JOP.2015.005538

> **Subtopic(s)**: Problems in care delivery
> **Type of Source**: Journal article
> **Objective**: To assess the prevalence of unmet symptom management needs.
> **Main Findings**: Fifteen percent of newly-diagnosed lung and colorectal cancer patients reported unmet needs for symptom management. Patients who rated their physician's communication lower had twice as high rates of unmet need as patients who rated their physician's communication as "perfect."
> **Strengths/Limitations**: Cross-sectional study, so cannot determine the direction of association between unmet needs and communication ratings.
> **Generalizability to Medicare Population**: Study results break out results by insurance population, allowing for analysis of Medicare population.
> **Methods**: Evaluated surveys of patients in the Cancer Care Outcomes Research and Surveillance cohort with lung and colorectal cancer. Conducted logistic regression with random effects to account for clustering within study sites.

Warren J, Butler E, Stevens J, et al. Receipt of Chemotherapy Among Medicare Patients With Cancer by Type of Supplemental Insurance. Journal of Clinical Oncology 2015. 33(4) 312-318. doi: 10.1200/JCO.2014.55.3107

> **Subtopic(s)**: Issues in payment policy
> **Type of Source**: Journal article
> **Objective**: To examine the association between type of supplemental insurance coverage and receipt of chemotherapy among Medicare patients with cancer who should generally receive chemotherapy.
> **Main Findings**: Dual-eligible beneficiaries receive recommended cancer chemotherapy less frequently than other beneficiaries. Patient navigators and sufficient reimbursement are necessary to ensure low-income patients have access to oncologists and needed treatment.
> **Strengths/Limitations**: The SEER population is not generalizable to US population, and information reported in the medical records may be incomplete.
> **Generalizability to Medicare Population**: Strong; Direct analysis of the Medicare/MA population
> **Methods**: Adjusted logistic regression to evaluate association of type of supplemental insurance with oncologist consultation and receipt of chemotherapy.

Warsame R and D'Souza A. Patient Reported Outcomes Have Arrived: A Practical Overview for Clinicians in Using Patient Reported Outcomes in Oncology. Mayo Clin Proc. 2019;94(11):2291-2301.

> **Subtopic(s)**: Quality and performance
> **Type of Source**: Journal article
> **Objective**: To describe patient-reported outcomes (PROs) and how to incorporate into oncology practices.
> **Main Findings**: There are several valid, reliable, and easily interpretable PROs developed in comparable populations and various ways that PROs can be used successfully in oncology.
> **Strengths/Limitations**: Not a systematic literature review.
> **Generalizability to Medicare Population**: Somewhat generalizable; cancer PROs can be used in the Medicare population.
> **Methods**: PubMed and Google searches.

Waters TM, Kaplan CM, Graetz I, et al. Patient-Centered Medical Homes in Community Oncology Practices: Changes in Spending and Care Quality Associated With the COME HOME Experience. JOP. 2018;15(1):e56-e64. doi:10.1200/JOP.18.00479

> **Subtopic(s)**: Problems in care delivery, Issues in payment policy
> **Type of Source**: Journal article
> **Objective**: To assess the Community Oncology Medical Home (COME HOME) model with regard to quality, health outcomes, and Medicare spending.
> **Main Findings**: Compared with propensity score-matched concurrent controls from geographically similar areas, post-intervention spending decreased by eight percent per patient. ED visits also improved.
> **Strengths/Limitations**: Patients and practices were not randomly assigned to the COME HOME program.
> **Generalizability to Medicare Population**: Strong; program focused on Medicare population.
> **Methods**: Difference-in-difference evaluation of Medicare beneficiaries served by COME HOME practices before and after implementation versus propensity score-matched beneficiaries.

Weaver SJ, Jacobsen PB. Cancer Care Coordination: Opportunities for Healthcare Delivery Research. Transl Behav Med. 2018;8(3):503-508. doi:10.1093/tbm/ibx079

> **Subtopic(s)**: Problems in care delivery
> **Type of Source**: Position paper
> **Objective**: To discuss issues and opportunities related to cancer care coordination during screening, active treatment, and survivorship.
> **Main Findings**: Numerous opportunities still exist for reducing care fragmentation and improving coordination during cancer screening, treatment and survivorship.
> **Strengths/Limitations**: N/A
> **Generalizability to Medicare Population**: Fair; issues discussed could reasonably apply to the Medicare population and opportunities mentioned could apply to Medicare policy.
> **Methods**: N/A

Whitney RL, Bell JF, Tacredi DJ et al. Unplanned Hospitalization Among Individuals With Cancer in the Year After Diagnosis. JCO. 2017;35(30):3610-3617. doi:10.1200/JCO.2017.72.4963

> **Subtopic(s)**: Epidemiology of cancer
> **Type of Source**: Journal article
> **Objective**: To examine the rate of hospitalization for patients with advanced cancer in the after diagnosis.
> **Main Findings**: In the year after diagnosis, 71% of individuals with advanced cancer were hospitalized, 16% had three or more hospitalizations, and 64% of hospitalizations originated in the emergency department.
> **Strengths/Limitations**: Study population limited to California.
> **Generalizability to Medicare Population**: Somewhat generalizable; study included general population in California but Medicare beneficiaries were included.
> **Methods**: Multistate and log-linear Poisson regression models used to calculate hospitalization rates and to model rehospitalization in the year after diagnosis, accounting for survival.

Williams CP, Azuero Kenzik KM, et al. Guideline Disconcordance and Patient Cost Responsibility in Medicare Beneficiaries With Metastatic Breast Cancer. Journal of the National Comprehensive Cancer Network. 2019; 17(10): 1221-1228. doi: 10.6004/jnccn.2019.7316

> **Subtopic(s)**: Quality and performance

**Type of Source**: Journal article
**Objective**: To assess the knowledge gap regarding the impact of guideline-disconcordant care on patient-cost responsibility.
**Main Findings**: Deviations from current treatment guidelines may have implications on patient health care cost responsibility.
**Strengths/Limitations**: Inherent limitations present when using administrative claims data: inability to see what was recommended by the physician, unable to evaluate patients who did not receive treatment for breast cancer.
**Generalizability to Medicare Population**: Strong; study utilized Medicare claims data
**Methods**: Retrospective cohort study

Williams CP, Kenzik K, Azuero A, et al. Impact of Guideline-Disconcordant Treatment on Cost and Health Care Utilization in Older Adults with Early-Stage Breast Cancer. The Oncologist. 2019; 24: 31-37. doi: 10.1634/theoncologist.2018-0076

**Subtopic(s)**: Quality and performance
**Type of Source**: Journal article
**Objective**: To assess the impact of guideline disconcordance on cost and health care utilization.
**Main Findings**: One in six patients with early-stage breast cancer received guideline-disconcordant care, predominantly related to undertreatment. This was associated with higher costs and higher rates of utilization.
**Strengths/Limitations**: Claims analysis is limited by inability to identify who paid for patient-specific costs, and estimates likely underestimate the true patient out-of-pocket costs of cancer-related care.
**Generalizability to Medicare Population**: Strong; Study utilized SEER-Medicare database for analysis
**Methods**: Retrospective cohort study

Zuchowski JL, Chrystal JG, Hamilton AB, et al. Coordinating Care Across Health Care Systems for Veterans With Gynecologic Malignancies: A Qualitative Analysis. Medical Care. 2017;55:S53. doi:10.1097/MLR.0000000000000737

**Subtopic(s)**: Problems in care delivery
**Type of Source**: Journal article
**Objective**: To assess Veterans Affairs (VA) women's health providers' and administrators' perceptions of care coordination challenge for gynecological care and potential options for addressing these challenges.
**Main Findings**: Care coordination challenges included lack of role clarity and care tracking and difficulties associated with VA and community provider communication, patient communication, and records exchange.
**Strengths/Limitations**: Interviews conducted just before the implementation of the Veterans Access, Choice, and Accountability Act of 2014, which changed the mechanism for authorizing community care.
**Generalizability to Medicare Population**: Weak; study population confined to veterans using VA facilities.
**Methods**: Semi structured key informant interviews with 23 VA gynecologists, women's health medical directors, and other staff at 15 VA facilities.

## III.    Research Questions, Data Sources, Key Words, Search Term Exhibit, and Methods

The environmental scan includes a review of information from existing peer-reviewed and non-peer-reviewed publications. We conducted a formal search of major medical, health services research, and general academic databases. We also conducted targeted searches of content available in the grey literature. We reviewed the websites of professional associations/societies and CMS for relevant evaluation reports and program documentation. The exhibit below lists the full list of research questions motivating this environmental scan, search terms, and sources used.

**Exhibit 2. Search Strategy**

| Research Questions | Preliminary Search Terms | Sources |
|---|---|---|
| **Background on Submitter** | | |
| Background on proposal Submitter (ASCO) and related programs (e.g., Oncology Medical Home, Accreditation Program and Standards, QOPI) | ASCO including:<br>• Oncology Medical Home Standards and Accreditation<br>• Any other Oncology Medical Home Standards and Accreditation<br>• QOPI Program and Participants | ASCO Website<br>NCQA Website |
| **Epidemiology of Cancer** | | |
| 1. What are patterns/trends in cancer prevalence and access to cancer care among Medicare FFS beneficiaries?<br>   a. ASCO assumes that there will be 40 new Medicare oncology beneficiaries per year per hematologist/oncologist, totaling a pool of over 540,000 beneficiaries (proposal p.1).<br>2. What are the characteristics (socio-demographic [including geography, e.g., area deprivation index], dual eligibility, comorbidity) of Medicare (and other payer types) beneficiaries with these conditions?<br>3. What portion of Medicare (and other payer types) costs are associated with cancer care?<br>   a. Based on ASCO's assumptions associated with beneficiary participation, this yields an annual spend of $46.8 million annually (proposal p.1). | Medicare Fee-for-Service (FFS) + prevalence/incidence (AND):<br>• Cancer<br><br>Medicare Fee-for-Service (FFS) + access to care/barriers (AND):<br>• Cancer<br><br>Medicare Fee-for-Service (FFS) + cancer (AND):<br>• Hospitalization<br>• Emergency department (ED) visits<br>• Readmission<br><br>Payment/reimbursement + cancer (AND):<br>• Medicare Fee-for-Service (FFS)<br>• Medicaid<br>• Medicare Advantage<br>• Private insurance<br><br>Medicare Fee-for-Service (FFS)/Medicaid/Medicare Advantage + cancer (AND): | PubMed<br>Google Scholar<br>Centers for Disease Control and Prevention (CDC)<br>State Cancer Profiles<br>Environmental scans for other oncology models submitted to PTAC<br>American Community Survey (ACS)<br>National Health Interview Survey (NHIS)<br>Sources cited in proposal<br>National Cancer Institute (for general population statistics)<br>Healthcare Cost and Utilization Project (HCUP)<br>Centers for Medicare & Medicaid Services (CMS) Program Statistics and |

| Research Questions | Preliminary Search Terms | Sources |
|---|---|---|
| b. ASCO assumes a maximum cost savings potential of up to 8 percent of total cost of care or $2.8 billion in Medicare program savings.<br>4. Since PCOP is proposed as a multi-payer and stakeholder model, what are the patterns/trends in access to cancer care among Medicare Advantage, Medicaid, commercially insured, and employer self-insured beneficiaries?<br>   a. What are the variations in these benefits as they relate to access?<br>5. What are the utilization rates for cancer care among Medicare FFS beneficiaries?<br>   a. How do rates differ across subpopulations (e.g., age, race, eligibility, disease status)?<br>   b. How do rates vary geographically (e.g., rural vs. urban, across geographic regions)?<br>6. What are prevalence and utilization rates for cancer care among Medicaid, privately insured, and employer self-insured beneficiaries? | • Sociodemographic<br>• Comorbidities<br><br>Cancer Care and/or more specifically Hematologic Oncology Care, Services, and Drugs Included in PCOP +<br>• Fee-for-service (FFS)<br>• Medicare<br>• Medicare Advantage<br>• Medicaid<br>• Commercially Insured (for under 65)<br>• Employer Self-Insured (for under 65)<br><br>Cancer + hospitalizations | Innovation Center Website |
| **Quality and Performance** | | |
| 1. What clinical guidelines would practices adhere to (NCCN, private payer/GPO pathways), and how might compliance affect quality of care?<br>   a. Is there any evidence that providing guideline-concordant care improves quality and saves costs? Which guidelines?<br>2. What quality measures are available to assess cancer care and care management? Which are endorsed by NQF? What is known about the specific cancer measures proposed and their ability to differentiate practice performance (e.g., topped | Clinical pathways + cancer<br>Clinical guidelines + cancer<br>Quality measures + cancer | PubMed<br>Google Scholar<br>ASCO/QOPI Website<br>NQF Website<br>AHRQ Website<br>Millbank Memorial Fund Website<br>Center for Medicare & Medicaid Innovation (CMMI) Website |

| Research Questions | Preliminary Search Terms | Sources |
|---|---|---|
| out or not) and the ASCO's QOPI program, including number/types of oncology practices participating, and burden?<br>  a. What kinds of patient-reported outcomes measures are available relating to cancer care and care management?<br>3. What are the implications for local communities who have selected their own quality metrics?<br>4. Are ED and observation visits, as well as acute care hospital admissions for considered care, considered ambulatory sensitive?<br>5. What do we know about the QOPI program, including how many and what types of practices participate in it? Are there hospital-based vs. community-based practices? How difficult is it for practices to provide the data and other information? Who's using QOPI now, and how representative would the comparison group be? For instance, what is the geographical distribution of practices participating in QOPI, and how many are urban vs. rural?<br>6. How might the adoption of a single pathway affect payer/provider negotiation?<br>7. Are there unintended consequences to adopting a single pathway for treatment of certain cancers?<br>8. How might practices gather the necessary information/data needed to inform their best practices across payer types? | | |
| **Issues in Payment Policy** | | |
| 1. Describe the current landscape of Medicare Fee-for-Service cancer care services coverage and reimbursement, including:<br>  • hematology/oncology services<br>  • oncology medical homes | Oncology Alternative Payment Models<br><br>Oncology Payment Mechanisms<br><br>Episodic/Bundled Payment | ASCO Proposal Documents<br>Other PTAC<br>Environmental Scans<br>PubMed<br>Google Scholar |

| Research Questions | Preliminary Search Terms | Sources |
|---|---|---|
| • care management services<br>• drugs<br>2. How does the treatment of oncology drugs differ across payers (pharmacy/Part D or medical/Part B benefit)? How might the different classifications affect cost and utilization (e.g., ASP add-on payments)?<br>3. To what extent is Total Cost of Care used in oncology payment models? Are there limitations to doing so?<br>4. How does this model address potential challenges and complexities of previous oncology focused models (e.g. OCM)?<br>5. How might the multi-provider aspect of this model affect incentives tied to differential reimbursement across sites of care? What are the different incentives across sites of care?<br>6. What are Medicare Advantage payment rules on cancer care and related care management services and drugs?<br>7. What are Medicaid rules on cancer care and related care management services and drugs?<br>8. What are the commercially insured and/or employer self-insured cancer care payment rules?<br>   a. How might restrictive formularies or the variation in manufacturer/payer contracts affect the ability for practices to follow uniform guidelines?<br>9. What issues do the proposed Cancer Care Communities and role for Steering Committee raise? What do other evaluations of CMS/CMMI demonstrations or other multi-payers show in terms of their feasibility and implications? Were there any unanticipated impacts? If so, what were they? | Total Cost of Care<br><br>Oncology Care Model<br><br>Oncology Payment<br>• Medicare Fee-for-Service<br>• Medicare Advantage<br>• Medicaid | NORC Subject Matter Experts |

| Research Questions | Preliminary Search Terms | Sources |
|---|---|---|
| 10. How feasible is it for local communities to involve all major payers and raise required seed funding?<br><br>11. What, if any, other payment models exist to address cancer care services and reimbursement, and what is the evidence regarding their impacts on costs/expenditures and quality?<br>    a. Adhering to ASCO's Criteria for High-Quality Pathways in Oncology results in lower anti-cancer and supportive care drug costs (proposal p.2).<br>    b. On-pathway prescribing for cancer care can be up to 63 percent lower than off-pathway regimens (proposal p.2). | | |
| **Problems in Care Delivery and Proposed Solutions** | | |
| 1. Is there evidence that current care coordination practices negatively affect quality, patient safety, or patient experience of care?<br><br>2. How robust or strong is the evidence ASCO presents to support its claims that oncology medical homes and this payment model can produce the desired care delivery changes, cost reductions, and quality/safety improvements? Are there any unanticipated impacts?<br>    a. Is there any evidence that if practices meet oncology medical home standards, they can reduce cost and have the same or better quality?<br>    b. Are there certain provider and/or beneficiary characteristics that have been found to be consistent with lower costs and better quality in oncology medical home models?<br>    c. Is there evidence specifically supporting ASCO's previous PCOP models? | Care coordination +<br>  • Quality<br>  • Patient experience<br>  • Cost<br><br>Oncology medical homes +<br>  • Quality<br>  • Patient experience<br>  • Cost<br>  • Beneficiary characteristics<br>  • Provider flexibility<br>  • Patient choice<br><br>PCOP | Other PTAC Cancer Proposal Environmental Scans<br>Cochrane Review<br>NCQF<br>CMS Measures<br>PubMed<br>Google Scholar<br>CMMI Website |

| Research Questions | Preliminary Search Terms | Sources |
|---|---|---|
|    d. What are the implications for individual provider flexibility and patient choice?<br>3. What health consequences are associated with inadequate care management (e.g., cost of air/ambulance transfer, treatment time delay)?  How does this differ across subpopulations?<br>4. What are the challenges of consolidating care for beneficiaries in acute cancer episodes?<br>5. What are barriers that may prevent the expansion/adoption of oncology medical homes?<br>   a. Number and types of hematology/oncology practices<br>   b. ASCO estimates that the total available pool of PCOP qualifying practices is 2,169 practices (proposal p.1).<br>   c. Structure of possible cancer care communities<br>6. What potential HIT considerations and infrastructure would practices need to have in order to report on quality and cost measures effectively? What is the state of oncology-specific EHRs or oncology information in EHR?<br>   a. Regional health information exchanges (HIEs)<br>   b. All-payer claims databases<br>   c. Cancer/tumor registries | | |
| **Results of Proposed or Similar Models** | | |
| 1. What other models are relevant and/or what other models should this model be compared to?<br>   a. Prior PTAC Models, Key Features, Recommendations to Secretary and Secretary's response<br>   b. Other CMMI Models (CPC+, OCM, Oncology Care First, in development) | CMMI<br>Oncology Care Model<br>Oncology Care First | Google Scholar<br>PubMed<br>CMMI Evaluation Report<br>PTAC reports on other cancer proposals |

| Research Questions | Preliminary Search Terms | Sources |
|---|---|---|
| 2. What are the results of the other CMMI models, or Medicare Advantage or commercial plan programs that include an oncology medical home or medical home component?<br>3. Is the level of flexibility this model calls for allowed in CPC+ or OCM? What about OCF? In MAPCP, there was variation at the state level since CMMI joined states (Medicaid) and public-private multi-payer efforts with Medicaid and private plans.<br>4. How similar or different is PCOP from other prior PTAC models focused on cancer care? What was PTAC's recommendation on those models, and what was the response from the Secretary?<br>5. What are the results of the other CMMI models that include efforts to align quality measures across payers? | | |

**Patient-Centered Oncology Payment (PCOP) Proposed Model: Analysis for the PRT**

**Requirements of the American Society of Clinical Oncology (ASCO) Patient-Centered Oncology Payment (PCOP) Model, Center for Medicare & Medicaid Innovation (CMMI) Comprehensive Primary Care Plus Model (CPC+) and CMMI Oncology Care Model (OCM)[1][2]**

| Component/ Requirement | American Society of Clinical Oncology (ASCO) Patient-Centered Oncology Payment (PCOP) Model | Center for Medicare & Medicaid Innovation (CMMI) Comprehensive Primary Care Plus (CPC+) | Center for Medicare & Medicaid Innovation (CMMI) Oncology Care Model (OCM) |
|---|---|---|---|
| **Participants** | Hematology/oncology practices and multispecialty practices with hematology and oncology providers may participate. | Primary Care or multispecialty practices operating as a CPC+ practice site within one of the CPC+ regions | Oncology or multispecialty practice providing chemotherapy |
| **Care Delivery Requirements** | Participating practices must meet "care delivery requirements" (pp. 8-10) in the areas of:<br><br>• Patient Engagement<br>• Availability and Access to Care<br>• Comprehensive Team-Based Care<br>• Quality improvement (e.g., patient satisfaction)<br>• Patient Safety<br>• Evidence-Based Medicine, including treatment pathways<br>• Certified electronic health record technology (CEHRT)<br><br>While practice participants are required to meet the care delivery requirements, it is not required that they do so through any specific formal accreditation. ASCO and the Community Oncology Alliance are working on an optional Oncology Medical Home Certification program. | Of the primary care functions that participating practices must execute:<br><br>**Similarities to PCOP:**<br><br>• Access and Continuity<br>  • Beneficiaries have 24/7 access to care<br>• Quality improvement<br>• Comprehensiveness and Coordination<br>• Patient and Caregiver Engagement<br>• CPC+ requires CEHRT<br><br>**Differences from PCOP:**<br><br>• Care Management<br>• Planned Care and Population Health<br>• No requirement to follow clinical pathways or guidelines*<br>• No specific requirements regarding patient safety* | Of the enhanced services practices must provide:<br><br>**Similarities to PCOP:**<br><br>• Beneficiaries have 24/7 access to a clinician who has real-time access to medical records<br>• Core functions of patient navigation<br>• OCM requires CEHRT<br>• Therapies consistent with nationally recognized clinical guidelines<br><br>**Differences from PCOP:**<br><br>• Care plan documentation, with the 13 components in the Institute of Medicine (IOM)'s Care Management Plan<br>• No specific requirements regarding patient safety* |

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[1] This table provides a comparison of key components/requirements of the American Society of Clinical Oncology's (ASCO's) Patient-Centered Oncology Payment (PCOP) Model with the Center for Medicare & Medicaid Innovation's (CMMI's) Comprehensive Primary Care Plus Model (CPC+) and Oncology Care Model (OCM). The PCOP model builds on some aspects of the CPC+ payment model and medical home care delivery model, and also has some similarities with the OCM model. Information in the table is based on the PCOP proposal and additional information provided by the submitter, as well as descriptions of the CPC+ and OCM models on the CMMI website.

[2] Note: Differences marked with a bold asterisk * indicate areas where the PCOP Model could potentially make a unique contribution.

| Component/ Requirement | American Society of Clinical Oncology (ASCO) Patient-Centered Oncology Payment (PCOP) Model | Center for Medicare & Medicaid Innovation (CMMI) Comprehensive Primary Care Plus (CPC+) | Center for Medicare & Medicaid Innovation (CMMI) Oncology Care Model (OCM) |
|---|---|---|---|
| **Care Management and Coordination** | Multi-disciplinary hematology/oncology teams with clinicians and researchers would conduct Community Case Conferences (p. 8). <br><br> Care delivery requirements have a domain for comprehensive team-based care (p. 9), which includes: <br><br> • Care coordination, led by oncologist <br> • Patient navigation (Track 2) <br> • Risk stratification (Track 2) <br> • Survivor Care Planning (Track 2) <br> • Advanced Care Planning (Track 2) <br><br> Monthly Care Management Payment (CMP) to support practice transformation (p. 11) | **Similarities to PCOP:** <br><br> • Core functions include comprehensiveness and coordination as well as care management <br> • Monthly Care Management Fee (CMF) <br> • Engages a subpopulation of beneficiaries and caregivers in advance care planning <br><br> **Differences from PCOP:** <br><br> • Practices provide multi-disciplinary services to patients with complex medical, behavioral, and psychosocial needs (Track 2) <br> • No community case conferences**\*** | **Similarities to PCOP:** <br><br> • Enhanced services include patient navigation <br> • Monthly Enhanced Oncology Services (MEOS) payment to support care coordination <br> • Advanced care planning and survivorship plan reflected in IOM care plan components <br><br> **Differences from PCOP:** <br><br> • Other components of IOM care plan are not reflected in PCOP. <br> • No community case conferences**\*** |
| **Attribution Methods** | Each episode is assigned to a provider or practice group based on the billing provider for the Cancer Treatment CMP; the billing of an antineoplastic, endocrine therapy; or select immunosuppressive agent. If more than one provider bills one of the previously listed services, all are attributed the treatment month and measures (p. 19), weighting each provider equally. <br><br> Providers will be assigned to practice groups – defined as one or more Tax Identification Numbers (TINs) (p. 19). Alignment is ongoing after the initial episode attribution as long as a patient is treated, though providers can only claim the CMP for active monitoring patients for up to 12 months. | **Similarities to PCOP:** <br><br> • CPC+ uses a prospective attribution methodology to identify the Medicare Fee for Service (FFS) beneficiaries in CPC+ practices. <br> • CPC+ attribution is ongoing rather than confined to a six-month episode <br><br> **Differences from PCOP:** <br><br> • Beneficiary attribution is conducted quarterly. <br> • Beneficiaries are assigned to practices based on billings for Chronic Care Management (CCM) services, Annual Wellness Visits (AWVs) or Welcome to Medicare Visits (WMVs). <br> • All remaining beneficiaries are attributed to practices on the basis of the plurality of eligible primary care visits. | **Similarities to PCOP:** <br><br> • Episodes are defined by identifying potential "trigger events" in the claims data that indicate the provision of Part B or Part D chemotherapy and a beneficiary's inclusion eligibility. <br><br> **Differences from PCOP:** <br><br> • Attribution is limited to the six months after each trigger event.**\*** <br> • Each six-month episode is attributed to the TIN (in the case of non-OCM practices) or OCM ID (in the case of OCM practices) associated with the most qualifying evaluation and monitoring (E&M) visits during the six-month episode; this is known as the plurality approach. |

| Component/ Requirement | American Society of Clinical Oncology (ASCO) Patient-Centered Oncology Payment (PCOP) Model | Center for Medicare & Medicaid Innovation (CMMI) Comprehensive Primary Care Plus (CPC+) | Center for Medicare & Medicaid Innovation (CMMI) Oncology Care Model (OCM) |
|---|---|---|---|
| **Quality Measures** | Two performance categories: 1. Adherence to clinical pathways, which consider prioritized factors: efficacy, potential toxicities, affordability, and patient circumstances (pp. 5-6). The Steering Committee will select pathways and target adherence rates. Criteria for high quality pathways is available in Appendix C. Providers are required to justify off-pathway treatment. 2. Participants will collect and report on an Oncology Steering Committee-selected subset of six quality measures from ASCO's Quality Oncology Practice Initiative (QOPI®) (p. 17). A list of measures is provided in Appendix B in the proposal. PCOP requires use of health information exchanges (HIEs) and all-payer claims databases (APCDs) | **Similarities to PCOP:** Patient experience of care, which will likely be incorporated into PCOP practice quality measures. **Differences from PCOP:** <br>• The 2019 CPC+ Measure Set contains two electronic clinical quality measures (eCQMs): controlling high blood pressure and hemoglobin A1c poor control >9%. <br>• All practices report and are assessed on the same quality measures, set by the Centers for Medicare & Medicaid Services (CMS) rather than local steering committees.* <br>• Adherence to clinical guidelines is not factored into quality score* <br>• No expectation to use HIEs, clinical repositories, or APCDs* | **Similarities to PCOP:** OCM quality measures are similar to those that will likely be used in PCOP practices, including: <br>• Proportion of patients who died and had been admitted to hospice for three days or more <br>• Medical and Radiation – pain intensity quantified <br>• Medical and Radiation – plan of care for pain <br>• Preventive Care and Screening: screening for depression and follow-up plan <br>• Patient-reported experience of care **Differences from PCOP:** <br>• All practices report and are assessed on the same quality measures, set by CMS rather than local steering committees.* <br>• Adherence to clinical guidelines is not factored into quality score* <br>• No expectation to use HIEs, clinical repositories, or APCDs* |
| **Utilization** | • Accountability for "cost-of-care" metrics which help to inform Performance Incentive Payment (PIP) adjustments, including unplanned acute care hospital admissions, unplanned emergency and observation care visits, and supportive and maintenance care drug costs (see next row) (pp. 18-20), calculated relative to a comparator population. <br>• Cost-of-care measures will be adjusted based on cancer type, treatment stage, and clinical and sociodemographic characteristics (p. 20). <br>• For Track 2, Consolidated Payments for Oncology Care (CPOC) with monthly bundled payments adjusted 10% downward or 4% upward based on performance | **Similarities to PCOP:** <br>• The 2019 CPC+ measure set requires two claims-based utilization measures: Inpatient Hospital Utilization and Emergency Department Utilization <br>• Utilization measures are risk-adjusted for beneficiary demographics and comorbidities. **Differences from PCOP:** Utilization measures are not assessed relative to a comparator population.* | **Similarities to PCOP:** Risk-adjusted proportion of patients with all-cause emergency department (ED) visits or observation stays that did not result in a hospital admission **Differences from PCOP:** Utilization measures are not assessed relative to a comparator population.* |

| Component/ Requirement | American Society of Clinical Oncology (ASCO) Patient-Centered Oncology Payment (PCOP) Model | Center for Medicare & Medicaid Innovation (CMMI) Comprehensive Primary Care Plus (CPC+) | Center for Medicare & Medicaid Innovation (CMMI) Oncology Care Model (OCM) |
|---|---|---|---|
| **Cost or Expenditure Measures** | • Supportive and maintenance care drug costs per treatment month, calculated relative to a comparator population (pp. 18-20).<br>• Cost-of-care measures will be adjusted based on cancer type, presence of a secondary malignancy, bone marrow or stem cell transplant, and clinical trial participation, at minimum, with the option to control for additional factors (p. 20)<br>• For Track 2, CPOC with monthly bundled payments adjusted 10% downward or 4% upward based on performance | **Differences from PCOP:**<br><br>No cost measures for CPC+[3] | **Similarities to PCOP:**<br><br>• Risk-adjusted and adjusted for geographic variation<br><br>**Differences from PCOP:**<br><br>• Relative to setting of benchmark by CMS, based on historical data and trended to the applicable performance period: a discount is applied to the benchmark to determine a target price for OCM-FFS episodes.<br>• Cost measures are not assessed relative to a comparator population.*<br>• No specific measure for supportive drug care costs.* |

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[3] CPC+ practices are required to both forecast their spending of the CPC+ Payments, and at the end of the performance year, provide an accounting of actual CPC+ expenditures.

| Component/ Requirement | American Society of Clinical Oncology (ASCO) Patient-Centered Oncology Payment (PCOP) Model | Center for Medicare & Medicaid Innovation (CMMI) Comprehensive Primary Care Plus (CPC+) | Center for Medicare & Medicaid Innovation (CMMI) Oncology Care Model (OCM) |
|---|---|---|---|
| Payment | Multipayer Model<br><br>For Tracks 1 and 2:<br><br>• **CMPs** are a monthly non-visit-based fee paid to practices to support enhanced care delivery which varies by track and the beneficiary's phase of care.<br>• **PIPs** are monthly and based on performance on quality and cost of care measures and adherence to clinical pathways.<br>• If a provider fails to achieve minimum expectations for CMP activities and adherence to pathways, CMP and PIP amounts may be suspended until an improvement plan is developed (p. 12).<br><br>For Track 2:<br><br>• **CPOCs** for practices bundling 50 or 100 percent of FFS payments into the CMP (pp. 13-14).<br>• Under CPOC, practices face up to 10 percent downside risk and 4 percent upside risk depending on their aggregate performance score (pp. 13-14).<br><br>The CMP and CPOC have set values for new patients, cancer treatment, and active monitoring. The CPOC is also adjusted for disease treated.<br><br>Track 1 practices that do not advance into Track 2 within two years will potentially be subject to discontinuation or extension of CMPs and PIPs.<br><br>CMP and PIP require seed funding from payers, grants, and donations in years 0-2 (p. 12). Payers considering participations should factor initial model costs (2-3% of total cost of care for care management payments, and up to 2-3% of total cost of care for performance incentive payments beginning in Year 2). | **Similarities to PCOP:**<br><br>Multipayer Model<br><br>For Tracks 1 and 2:<br><br>• **CMF** is a non-visit-based fee paid to both practices quarterly, and is determined by: the number of beneficiaries per practice per month, case mix, and CPC+ track.<br>• **Performance-based incentive payments (PBIPs)** are based on patient experience, clinical quality, and utilization; practices retain all or a portion of the PBIP based on performance.<br>• Track 1 practices under regular Medicare Physician Fee Schedule<br><br>For Track 2:<br><br>• Reduced FFS with prospective "Comprehensive Primary Care Payment" (CPCP) paid prospectively on a quarterly basis; Medicare FFS claim is submitted normally but paid at reduced rate<br><br>Practices that do not meet the annual performance thresholds for clinical quality/patient experience or utilization are "at risk" for repaying all or a portion of the PBIP.<br><br>**Differences from PCOP:**<br><br>• PBIP is paid prospectively for the entire subsequent year based on the prior year's performance<br>• No seed funding – Medicare pays CMF and PBIP<br>• No payment differentiation for new, treated, and monitored patients**\*** | **Similarities to PCOP:**<br><br>Multipayer Model<br><br>Two-Part Payment Approach:<br><br>• **MEOS:** Real-time payments that pay for enhanced services for beneficiaries combined with usual Medicare FFS payments.<br>• **Performance Based Payment (PBP):** Potential for a retrospective PBP based on quality and savings. The PBP is calculated retrospectively on a semi-annual basis based on the practice's achievement on quality measures and reductions in Medicare expenditures below a target price.<br><br>**Differences from PCOP:**<br><br>• MEOS is not tied to PBP<br>• No option for partial capitation<br>• No seed funding – CMS pays MEOS and PBPs<br>• One-sided risk arrangement options: OCM practices are NOT responsible for Medicare expenditures that exceed the target price.<br>• Two-sided risk arrangement option: OCM practices are responsible for Medicare expenditures that exceed target price.<br>• No payment differentiation for new, treated, and monitored patients**\*** |