Charting the Course: Use of Clinical Pathways to Improve Value in Cancer Care

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INTRODUCTION

The last 2 decades have produced unparalleled innovation in oncology, with approximately 143 new drugs or indications approved by the US Food and Drug Administration (FDA) from January 1, 2013, to July 31, 2018.[1] However, the cost of these new therapies has outstripped the benefits, with the launch price of new therapies increasing 12% per year, controlling for improvements in clinical benefit.[2] Cancer-directed therapeutics and supportive care drugs now make up 37% of the total cost of cancer care for commercially insured UnitedHealthcare members and is even greater for the Medicare and Medicaid population with cancer. Among individuals who receive a drug as part of the cancer treatment plan, cancer drug costs represent over two thirds of the cost of treating their cancer.

Although some new therapies have provided real improvement in survival and quality of life for patients with cancer,[3] not all have delivered meaningful benefits, leading some to question the value that these therapies are providing. A review of 47 cancer therapies approved by the FDA between April 1, 2014, and February 29, 2016, found that only 53% met standards proposed by the ASCO Clinically Meaningful Outcomes Working Group for a clinically meaningful improvement in progression-free survival (PFS), and just 19% met the standards for overall survival (OS; criteria vary by tumor type but generally correspond to 3-5 months of improvement in PFS and OS).[4] A study by Mailankody and Prasad[5] found no significant relationship between cost and the percentage of improvement in PFS and OS, with the correlation between the monthly cost of a cancer drug and PFS and OS being $R^2 = 0.132$ and $R^2 = 0.165$, respectively, such that when displayed graphically, the results were essentially a scatter plot, highlighting the lack of relationship between the manufacturer's price and benefit to patients.

Studies have reported wide variation in the quality and cost of cancer care.[6,7] For example, a recent study of patients with metastatic breast cancer reported that one third of those with human epidermal growth factor receptor 2 (HER2)–positive disease did not receive anti-HER2 therapy.[8] So-called off-label use of therapy—that is, use of a drug for a specific clinical situation that has not been reviewed and approved by the FDA—has been cited as one factor in the variation of quality and cost of prescribing drug regimens for cancer, with up to 30% of therapies found to be off label.[9] Clinicians and payers generally rely on consensus guidelines, such as those developed by the National Comprehensive Cancer Network (NCCN), which also form the basis of the only oncology-specific pharmaceutical compendium, to help inform decisions regarding therapy that is not for an FDA-approved indication, although Conti et al[9] reported that approximately half of off-label use was not supported by NCCN guidelines. A recent review of NCCN guidelines found that drug recommendations that were not FDA approved nevertheless were generally supported by high-quality evidence and often subsequently did go on to receive FDA approval.[10] However, given the clinical focus of guidelines, it should not be a surprise that tremendous variation in cost exists, even among guideline-recommended therapies.

CLINICAL PATHWAYS IN ONCOLOGY

Clinical pathways have emerged as one of the key approaches to decrease unwarranted variation in care and improve both the quality and efficiency of care. Originally proposed as a tool to help in the management of hospitalized patients, with a focus on decreasing length of stay, clinical pathways have been implemented to support optimal patient care delivery, ranging from the postoperative management of patients after complex surgeries, such as carotid endarterectomy or liver transplantation, to the evaluation of patients presenting with acute chest pain.[11-13] Pathways provide a strategy to translate guidelines, which generally provide the full range of options that are supported by the evidence, to a set of actions that can be implemented at the point of care, with the goals of improving efficiency and health outcomes by decreasing unwarranted variation. In 2005, a Cochrane collaborative research group, based on a review of previous literature, defined a clinical pathway as an intervention that is a structured multidisciplinary plan of care and meets at least 3 of the following criteria: (1) the intervention is used to translate guidelines or evidence into local structures; (2) the intervention details the steps in a course of treatment or care in a plan,

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pathway, algorithm, guideline, protocol, or other "inventory of actions"; (3) the intervention has time frames or criteria-based progression; and (4) the intervention aims to standardize care for a specific clinical problem, procedure, or episode of health care in a specific population.[14] Pathways are designed to be actionable and to support the busy clinician or clinical team at the bedside with an approach that has been optimized to improve patient outcomes, increase the efficiency of care, and lead to higher-value care.

In oncology, propelled by an abundance of treatment options for many of the common cancers and wide variation in cost, efforts to develop pathways have been primarily focused on drug treatment regimens. As summarized in the ASCO Policy Statement on Clinical Pathways in Oncology, "When appropriately designed and implemented, oncology pathways are detailed, evidence-based treatment protocols for delivering quality cancer care for specific patient presentations, including the type and stage of disease. Oncology pathways balance the considerations of clinical efficacy, safety, toxicities, cost, and scientific advances, including the growing personalization of therapy based on molecular diagnostics."[15(p261)] The US Oncology Network, a large independent physician health care network that provides practice management services to over 45 oncology practices, led one of the earliest efforts to develop and implement pathways in oncology practices.[16] Use of pathways has increased over the last decade, with the ASCO State of Cancer Care in America 2017 reporting that 58% of practices were using pathway program in 2016, a 42% increase from 2014.[17] Sources of pathways used by oncology practices include third-party vendors that develop pathways for physician practices (McKesson Value Pathways, Via Oncology) or payers (Anthem/AIM, New Century), as well as practices' own pathways. Pathways products for physician practices are primarily focused on decreasing variation in care and may not explicitly include cost in their development. Additionally, some may be integrated into the practice's electronic health record (eg, McKesson) or provide customization to identify clinical trial options available at the practice for an individual patient (eg, Via Oncology). Pathways developed or purchased by payers generally provide a platform to support their value-based care initiatives.

ASCO PATHWAYS TASK FORCE REVIEW OF PATHWAYS

Given their increasing use in oncology practice, ASCO established a Pathways Task Force to define standards for high-quality pathways.[18] ASCO's Pathway Task Force proposed criteria for high-quality clinical pathways in 3 key areas: Development, Implementation and Use, and Analytics. To meet the criteria for Development, pathways should be (1) expert driven, (2) reflect stakeholder input, (3) transparent, (4) evidence based, (5) patient focused, (6) clinically driven, (7) timely, (8) comprehensive, and (9) promote participation in clinical trials. To meet the criteria for Implementation and Use, pathways should have (1) clear and achievable expected outcomes, (2) integrated, cost-effective technology and decision support, and (3) efficient processes for communication and adjudication. To meet the criteria for Analytics, pathways should (1) provide efficient and public reporting of performance metrics, (2) have outcomes-driven results, and (3) promote research and continuous quality improvement. Additionally, ASCO called for "implementation of a system to assess and improve the integrity and quality of pathways coming to market and to ensure they support efficient, patient-centered, high-quality patient care."[18(p210)] The Task Force then sought to compare vendors who had developed pathways that were in use by practices against those standards.[19] They initially identified 7 organizations; however, it was determined that 2 did not have pathways but had developed decision support tools to support prior authorization processes for health plans, and 1 was no longer maintaining their pathways. This resulted in 4 pathway vendors being included in the ASCO Pathways Task Force assessment: Anthem/AIM Cancer Care Quality Program (AIM), New Century Health, Value Pathways powered by the NCCN, and Via Oncology. AIM and New Century Health partner with payers to provide pathways for clinician decision support, quality tracking, and coverage determination. Value Pathways powered by NCCN and Via Oncology focus on the provider market, with pathway products for use by community and academic practices at the point of care. The Task Force found that there was variation across pathway vendors in meeting all of the criteria and concluded that "vendors target different customers, including payers and providers. The target audiences inform their product development decisions, and this in turn may affect how they perform on the criteria."[14(p197)]

EVIDENCE THAT PATHWAYS IMPROVE THE QUALITY AND VALUE OF ONCOLOGY CARE

Even as pathways have been broadly adopted and their use can decrease variation in care at both a practice level or across a population, less is known about whether they deliver on the promise of improving value in care. In one of the earliest evaluations of Pathways, Neubauer et al[16] reported that patients with non–small-cell lung cancer treated on their pathway had the same OS, with 35% lower outpatient costs than those who were not treated according to the pathway over the 12 months after initiation of chemotherapy. In another retrospective study, patients with colorectal cancer receiving an on-pathway treatment regimen had improved survival compared with those receiving with an off-pathway regimen, although these were not adjusted for potential differences in patient characteristics that could have influenced treatment selection and outcomes.[20] In addition, patients with a pathway regimen had lower overall costs, shorter therapy duration, and a lower

rate of chemotherapy-related hospitalization. More recently, researchers at the Dana-Farber Cancer Institute (DFCI) evaluated the effect of implementing a clinical pathway for stage IV non–small-cell lung cancer in 2014 with patients treated in 2012 before the pathways were implemented.[21] They found that the clinical outcomes did not change when comparing OS times 10.7 months before versus 11.2 months after pathways; $P = .08$), and mean 12-month total cost of care, adjusted for age, sex, race, distance to DFCI, clinical trial enrollment, and EGFR and ALK status, decreased by $15,013 ($67,050 before pathways *v* $52,037 after pathways). In the first study of pathways implemented nationally by a health plan, 6-month outcomes of patients with breast cancer receiving a pathway regimen (on-pathway cohort) were propensity score matched to those who did not receive a pathway regimen (off-pathway cohort) after the launch of Anthem's Cancer Care Quality Program.[22] The on-pathway and off-pathway cohorts had similar rates of hospitalization (28.2% off pathway *v* 25.2% on pathway; odds ratio [OR], 0.86; $P = .15$), avoidable hospitalization (2.4% off pathway *v* 2.5% on pathway; OR, 1.04; $P = .88$), emergency department visits (20.8% off pathway *v* 19.5% on pathway; OR, 0.93; $P = .49$), and avoidable emergency department visits (3.2% off pathway *v* 3.4% on pathway; OR, 1.07; $P = .80$); however, the rate of granulocyte colony-stimulating factor use was significantly lower in the on-pathway cohort (72.5% in the on-pathway cohort *v* 82.8% in the off-pathway cohort; OR, 0.55; $P \leq .001$). The average post–6-month cost of care was $16,176 lower (95% CI, −$24,291 to −$8,061; $P \leq .001$) in the on-pathway cohort. Although additional evidence is needed across broader patient populations and comparing different pathways, these studies provide evidence that the care of patients treated on a pathway-identified cancer treatment regimen may have better, or at least comparable, clinical outcomes, at a lower cost.

ADOPTION OF PATHWAYS

Although ASCO's annual survey of oncology practices suggests that the use of pathways in increasing, with over half of practices reporting using some form of pathways in 2016,[17] there are no national data regarding the adoption of pathways in oncology practices. For practices that report using pathways, it is not known whether they are using pathways for all of their patients or just specific populations because of payer value-based payment programs or other initiatives. In addition, there are limited data regarding adherence rates to pathways. Without a program in place to promote adherence to pathways, approximately 40%-50% of patients seem to be treated on regimens that have been identified by as "on pathway."[9] Adherence to pathways when promoted within practices has been reported to be approximately 83% in several studies.[9,23] Eighty percent is often cited as a target adherence rate for pathways programs, although this does not seem to be based on any empirical data. Given that pathways vary substantially in the range of treatment regimen options that are included, it is likely that the desired optimal adherence could vary on the basis of the characteristics of the cancer treatment pathway, with higher adherence expected for those with more treatment options.

A variety of payer programs exist to encourage adoption and adherence to pathways.[24] For example, through Anthem BlueCross BlueShield's Cancer Care Quality Program, oncologists are eligible to bill for an additional reimbursement for care management of $350 per patient per month when a patient is treated on a regimen on Anthem's pathway.[25] Although programs that directly encourage pathway adoption and adherence have primarily come from private payers, providers participating in alternative payment models that include shared savings or downside risk, such as UnitedHealthcare's Cancer Episode Program or the Center for Medicare and Medicaid Services Oncology Care Model, are also finding pathways important to their success and these programs.[26] Studies are needed to evaluate the impact of various incentives on pathway adoption and adherence, and ultimately, whether these programs achieve their goals of improving patient outcomes and delivering higher-value care.

IMPROVING THE VALUE OF PATHWAYS

With multiple pathway programs available with different requirements for participation, oncology practices often face additional administrative burden and cost. Without the necessary technology to enable seamless integration of these programs into the practices' workflow, staff time is needed to enter data into tools that track pathway compliance, although payer pathway programs are generally integrated into their prior authorization platforms. Nevertheless, integration of pathways, as well as other administrative requirements such as a prior authorization, into electronic health record systems will be critical to achieving the quadruple aim—achieving better quality care at lower cost while enhancing patient experience and supporting the professional satisfaction of physicians and the health care team.

Despite numerous sources for cancer treatment pathways, there is consistency in the approach described in their development. Using an evidence-based approach, pathway developers review the published clinical literature and then prioritize cancer treatment regimens on the basis of their efficacy and toxicity; subsequently, drug costs are considered in selecting the final pathway regimens. Potential opportunities to improve the value of pathways include using real-world evidence to understand the toxicity of treatment regimens in actual practice and comparing actual cost of delivering the treatment rather than just drug costs. As it implements a pathways program for its health plans later this year, UnitedHealthcare will be supplementing published clinical trial data with real-world evidence derived from its

cancer treatment registry linked to claims data,[27,28] specifically including hospitalization rates, duration of treatment, and total cost of care during treatment. It will be important to understand how the addition of real-world evidence affects not only the treatment options available on pathway, but also the adoption of the pathway program by clinicians, adherence to the pathways, and ultimately clinical and cost outcomes of the effort.

Given skyrocketing drug prices and wide variation in costs for different treatment regimens, clinical pathways have become important instruments for oncology practices to navigate in the new world of value-based care. Future research is needed to understand how to optimize clinical pathways and the programs so that we may determine how best to chart the course to improve the quality and value of cancer care.

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AUTHOR'S DISCLOSURES OF POTENTIAL CONFLICTS OF INTEREST AND DATA AVAILABILITY STATEMENT

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AUTHOR'S DISCLOSURES OF POTENTIAL CONFLICTS OF INTEREST

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