

US Care Pathways: Continued Focus on Oncology and Outstanding Challenges

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In the last decade, the use of care pathways—designed to provide evidence-based treatment options for disease management, improve quality of care, reduce unnecessary variation, and lower costs—has expanded rapidly in the United States.¹⁻⁴ Although pathway use is increasingly prevalent for chronic diseases,⁵⁻⁷ use in oncology is well known, with 58% of oncology practices reporting use of pathways in 2016,⁸ 42% higher than in 2014.⁹ Best practices to guide pathway development, implementation, and evaluation have been established in oncology, and the American Society of Clinical Oncology (ASCO) has issued a policy statement and a set of detailed criteria to ensure the integrity and quality of oncology pathways.^{10,11}

At the same time, other value-based healthcare initiatives and alternative payment models (APMs) are being adopted. In 2016, approximately 31% and 28% of physicians across specialties participated in bundled payment programs and medical homes, respectively.^{8,12} Overall, 43% of physicians received some form of value-based reimbursement. With the goals of improving quality of care while reducing cost, care pathways not only have objectives similar to those of other value-based initiatives but also may be critical in the transition to value-based care.^{8,13-17}

A January 2016 landscape assessment of care pathways revealed a wide range of development, implementation, and evaluation methods but a critical absence of transparency.¹⁸ In this follow-up study, we assessed changes in development, implementation, and evaluation of pathways and reviewed the latest evidence on integration of pathways with value-based care initiatives in the United States.

METHODS

Similar to the 2016 study, a targeted review of published literature was followed by an online survey and in-depth interviews. Results were compared with those of the prior study, providing a perspective on the state of care pathways today and direction for the future.

Targeted Literature Review

Our search covered the PubMed and Cochrane Reviews databases and selected conferences' websites. Publications, posters, and

ABSTRACT

OBJECTIVES: To update an ongoing assessment of care pathway development, implementation, and evaluation, and to evaluate the emerging relationship between care pathways and other components of value-based care.

STUDY DESIGN: Targeted literature review followed by an online survey and in-depth interviews.

METHODS: The PubMed/Cochrane databases and gray literature were searched for publications on care pathways (January 1, 2014, to March 3, 2017); a supplemental targeted search was completed in October 2017. Qualitative data were collected via an online survey and semistructured, in-depth interviews with payers, providers, pathway vendors, and opinion leaders.

RESULTS: A total of 112 articles or posters were identified in recently published research. The survey and interviews included 32 and 19 respondents, respectively. Care pathways are increasingly driven by providers and provider networks. Overall, we found increased awareness of and adherence to codified best practices or standards, and prioritization of high-quality evidence during development. Research findings suggest stronger links between outcomes-based measures and both physician reimbursement and care pathway evaluation. Integration with other value-based care initiatives, including alternative payment models, is also gradually emerging.

CONCLUSIONS: This study identified growing use of high standards of evidence and adoption of other best practices in the development, implementation, and evaluation of care pathways. As the influence of care pathways on patient care continues to expand, additional efforts are needed to increase transparency, disclose conflicts of interest, engage with patients, effectively align care pathways with improvements in patient outcomes, and integrate efficiently with other value-based care initiatives.

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abstracts discussing care pathways in US healthcare settings that were in English and published between January 1, 2014, and March 3, 2017, were reviewed. We further searched trade journals and websites of professional organizations, pathway vendors, payers, and major provider groups. A supplemental search was completed in October 2017.

In screening materials identified in our search, we again required that a care pathway have stated objectives defining goals or key elements of care and was limited to specific disease states in defined patient populations, used evidence-based medicine or clinical guidelines to develop treatment recommendations, included a monitoring and evaluation mechanism, and included criteria for the use of pharmacologic therapies.

Primary Research

Subjects. Between June and September 2017, we conducted online surveys (n = 32) followed by in-depth interviews (n = 19). Respondents were selected to represent a mix of payers, providers from a range of specialties and practices, commercial care pathway vendors, and opinion leaders. Although all respondents were screened for involvement in pathway development, implementation, evaluation, or use, questions were administered only to those with experience and knowledge relevant to given sections (rated ≥ 3 on a 5-point scale). Respondents were offered honoraria for survey and interview participation.

Survey. The survey was structurally similar to the 2016 study, with new sections on value frameworks and APMs. Descriptive analyses were conducted in Microsoft Excel.

Interviews. Interviewers administered an hour-long, semistructured discussion guide with open-ended questions. Interviews were designed to supplement information from the survey with additional detail on key areas of interest.

RESULTS

Phase 1: Literature Review

We identified 750 unique citations. Full-text review was conducted for 138 publications; 68 full-length articles and 44 abstracts and posters matched the selection criteria. Key themes and gaps in the literature informed the design of the survey and interviews. We found more transparency and codification of the development process, particularly in oncology, where pathway use has matured and more research has been published.^{11,13,19} More studies documented pathway adherence, resource use, and patient outcomes,^{5,19-23} but implementation and evaluation are still inconsistently documented or communicated. Engagement with stakeholders, particularly patients, remains inadequate.²⁴⁻²⁸ Efficacy and toxicity still supersede cost as key considerations during pathway development, yet pathways

TAKEAWAY POINTS

As the use of care pathways has expanded in the United States, development, implementation, and evaluation processes have evolved.

- ▶ Research findings support notable increases in process transparency, codification of standards, and prioritization of high-quality evidence.
- ▶ Provider groups emerged as the driving force behind development and implementation, although physician resistance and administrative burden remain barriers to adoption.
- ▶ Despite efforts, patient education and engagement remain inadequate.
- ▶ There are indications of stronger links between outcomes-based measures, rather than traditional compliance measures, and both physician reimbursement and care pathway evaluation.
- ▶ The movement toward value-based care may significantly affect the development and expansion of care pathways.

are viewed as a means to provide downward pressure on rising drug prices.^{13,17,19,26-30} Nevertheless, closer linkages with features of value-based care have emerged. As payers experiment with linking pathways and APMs,^{14,31-37} barriers to such integration need to be further understood. Interest is also growing in incorporating value frameworks in pathway development.^{27,38}

Phase 2: Primary Research

Twenty-five providers and 7 payers completed the survey. Eleven providers, 4 opinion leaders, 3 payers, and 1 pathway vendor were interviewed (Table).

Selection of therapeutic areas. Among all respondents with knowledge of pathway development, cost of care was the most frequently identified consideration for therapeutic area selection when care pathways are developed (77% [20/26]), followed by clinical outcomes, variation in treatment patterns, and prevalence rates (Figure 1). In 2016, the internal selection process was most cited, followed by cost of care. Pathways for relatively prevalent cancers, such as breast, colon, and lung, remain common; however, interviewees noted that rare cancers with high treatment costs are being identified for pathway development, citing recent FDA approvals of chimeric antigen receptor T-cell therapies and advances in precision medicine. Over the next 5 years, most survey respondents expect pathway use to expand in both oncology (78% [25/32]) and nononcology (84% [27/32]) areas. Pathways have also broadened to cover the care continuum, including symptom management and palliative care. Further, respondents had experience with pathways for common or high-cost chronic diseases, particularly in the areas of rheumatology, diabetes, asthma, and cardiology.

Providers as drivers of care pathways. Nearly all provider respondents (96% [24/25]) had a role in developing, implementing, evaluating, or using 2 or more pathways. Among respondents who addressed pathway development, 92% (24/26) identified clinicians as stakeholders, with fewer indicating a role for health plans (46% [12/26]) or pathway vendors (12% [3/26]). Most providers with development experience (74% [14/19]) indicated that their practice develops or implements pathways separate from those developed by payers or vendors.

METHODS

TABLE. Characteristics of Primary Research Participants^a

Payers									
Current Title/Role	Geographic Coverage	Line(s) of Business			Size (covered lives)			Implemented Care Pathways for Providers Affiliated With	
		Commercial	Medicare (Part D/Advantage)	Medicaid	Small (<1 million)	Medium (1-5 million)	Large (>5 million)	ACO	IDS
Medical director	National	•	•	•			•	•	•
Medical director	Regional	•	•	•			•		
Pharmacy director	Regional	•	•		•			•	•
Pharmacy director	Regional	•	•	•	•				•
Pharmacy director	Regional		•			•		•	
Medical director	National	•	•	•			•	•	•
Pharmacy director	Regional	•	•	•	•			•	•
Providers									
Current Title/Role	Practice Setting(s)		Practice Size		Practice Affiliated With		% of Patients Treated With Care Pathways		
	Group ^b	Hospital/ Clinic-Based	Physicians, n	Unique Patients per Physician per Month, n	ACO	IDS			
Chief nursing officer		•	>100	51-100			51-75		
Chief nursing officer	•	•	26-50	>250	•	•	76-90		
Medical director	•	•	>100	51-100	•		11-25		
Medical director	•		1-5	101-250	•		26-50		
Medical director	•		11-25	>250	•	•	26-50		
Medical director		•	11-25	>250	•		11-25		
Section head	•		6-10	>250	•		51-75		
Physician	•		1-5	101-250			11-25		
Physician	•		51-100	101-250			11-25		
Physician		•	11-25	>250			1-10		
Medical director	•		>100	51-100	•		26-50		
Physician	•		1-5	11-50			11-25		
Medical director	•		1-5	>250	•		91-100		
Medical director		•	>100	>250	•		26-50		
Medical director	•		26-50	101-250	•		26-50		
Physician	•		1-5	101-250			76-90		
Physician	•		6-10	101-250			26-50		
Medical director	•		6-10	>250	•		91-100		
Medical director		•	11-25	51-100	•		11-25		
Chief nursing officer		•	>100	>250		•	26-50		
Medical director	•	•	>100	>250		•	26-50		
Medical director	•	•	26-50	>250	•	•	91-100		
Medical director		•	11-25	101-250	•		51-75		
Medical director	•		>100	>250	•	•	76-90		
Section head	•		26-50	101-250	•	•	26-50		

(continued)

Evidence considerations and transparency in care pathway development. Treatment guidelines (88% [23/26]) and published systematic literature reviews (73% [19/26]) were identified as key data sources for pathway development (Figure 2). Fewer identified retrospective or observational studies than in 2016. Providers were

less likely than payers to identify prospective studies (53% [10/19] vs 100% [7/7]) or randomized controlled trials (58% [11/19] vs 86% [6/7]) as influential.

Interviewees identified experts and published or validated data from existing pathways as data sources for pathway development;

TABLE. (Continued) Characteristics of Primary Research Participants^a

Current Title/Role	Other Organizations ^c	
	Type	Care Pathway Experience
Vice president of oncology	University	Oncology
President	Private organization	Oncology
Professor of medicine	University	Oncology and nononcology
President	Private organization	Oncology
Account executive	Vendor	Oncology

ACO indicates accountable care organization; IDS, integrated delivery system.

^aBold indicates participation in in-depth interviews. One provider interviewee did not participate in the survey and is not listed in the table.

^bNo providers indicated affiliation with a solo practice.

^cDid not participate in online survey.

survey results also confirmed that data from existing pathways informed development (77% [20/26]). Grading evidence quality appears to be less influential than in 2016 (58% [15/26] vs 81% [17/21]).

Efficacy (96% [25/26]), safety/toxicity (88% [23/26]), pharmaceutical costs (88% [23/26]), and medical resource use and costs (85% [22/26]) were the main factors considered when selecting treatments for the clinical algorithm. All (7/7) payers indicated considering medical resource use and costs versus 79% (15/19) of providers. In 2016, respondents identified safety (95% [20/21]), efficacy (86% [18/21]), and medical costs (81% [17/21]) as main factors. In both studies, efficacy was ranked as the most important. Although all interviewees indicated considering costs, particularly pharmaceutical costs, and clinical outcomes during development, less than half described cost as an initial consideration, and many indicated that clinical benefit precedes cost.

More than half (62% [16/26]) reported that their organizations followed best practices as detailed by ASCO's policy statement; of these, 81% (13/16) noted that best practices, standards, or methodology were available to key stakeholders, including patients and payers. However, access may be restricted through means such as an intranet, patient portal, or membership. Further, awareness of processes for disclosing and managing potential conflicts of interest varied.

Implementation of care pathways. Most (90% [28/31] with knowledge of pathway implementation) reported that pathways typically provide physicians with multiple treatment options for a given diagnosis, and 94% (29/31) reported that physicians have a choice about placing patients on a pathway. Compared with 68% (13/19) in the 2016 study, only 39% (12/31) reported a relationship between pathway compliance and reimbursement (eAppendix A [eAppendices available at ajmc.com]). All of these respondents noted financial penalties or disincentives for noncompliance; 83% (10/12) indicated significant or extremely significant penalties. Interviewees expected incentives for performance, patient satisfaction, and other quality metrics captured in value-based care to receive traction in the near future. Process-oriented indicators, like compliance, were viewed as intermediate, surrogate measures. All payers (7/7) indicated that prior approval is required compared with 58% (14/24) of providers.

Impact of care pathways. Quality metrics (78% [18/23] with knowledge of pathway evaluation) were most commonly used to

evaluate pathway performance, followed closely by readmission rates, compliance, and hospitalization rates (Figure 3). Quality metrics, readmission rates, and adverse event rates were each identified by 43% (10/23) as top 3 metrics. In the 2016 study, compliance was top-ranked and identified by most as a top 3 metric.

Interviewees observed that compliance remains an important measure. Target compliance rates of 75% to 80% were reported in 2016; however, only 43% (10/23) of respondents in the current research experienced 70% or greater compliance. Respondents reported challenges collecting or analyzing pathway data, including 75% (9/12) who encountered data collection issues.

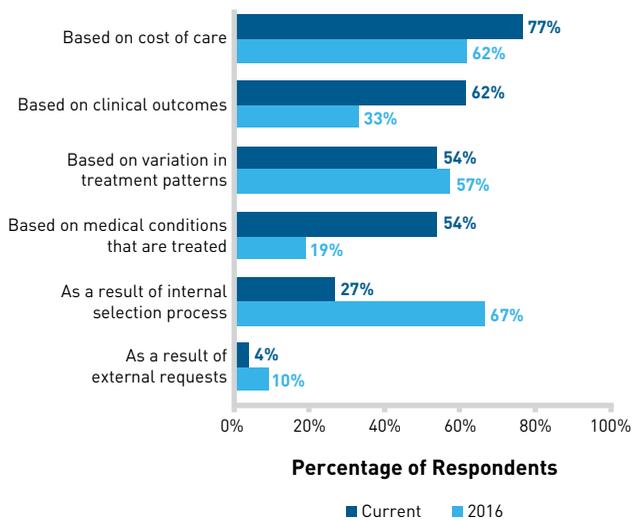
Patient engagement. Some respondents (35% [11/31] with knowledge of pathway implementation) recognized changes in patient engagement over the last 3 years, among whom 91% (10/11) indicated that patients increasingly sought information on care pathways and 64% (7/11) observed increasing involvement of patient advocacy groups. Less than half of respondents (42% [13/31]) reported that on-pathway patients are provided disclosure or education about pathways; this included 46% (11/24) of providers, compared with 20% (1/5) of providers in 2016 (eAppendix B). Interviewees also suggested that treatments may not be described as being part of a pathway. Financial incentives may not be transparent; 38% (5/13) of respondents who reported patient disclosure believed that patients were aware of financial incentives provided to physicians. Moreover, 26% (8/31) indicated that details on financial incentives are publicly available to all stakeholders, including patients.

Patient feedback on pathways is not generally mandated, with 30% (7/23), 43% (10/23), and 26% (6/23) reporting always, sometimes requested, and not formally engaged, respectively, among those with knowledge of pathway evaluation. Increased patient involvement is expected (78% [25/32]) in the next 5 years, particularly in evaluation (50% [16/32]) compared with development and implementation.

Integration with APMs. The majority of survey respondents (93% [26/28] with knowledge of APMs [accountable care organizations, medical homes, and bundled payments]) and interviewees noted that care pathways are very or somewhat likely to be used in APMs; in APMs using pathways, 43% (12/28) estimated that greater than 50% of patients are on-pathway. Some interviewees noted that pathways could be key to value-based contracting and outcomes-based

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FIGURE 1. Selection of Therapeutic Areas for Care Pathway Development^{a,b}



^aCategories above are as provided to survey respondents. No respondents reported “do not know” in either study. No respondents reported “based on other factors” in the current study; 1 respondent reported “based on other factors” (ORYX Criteria) in the 2016 study.

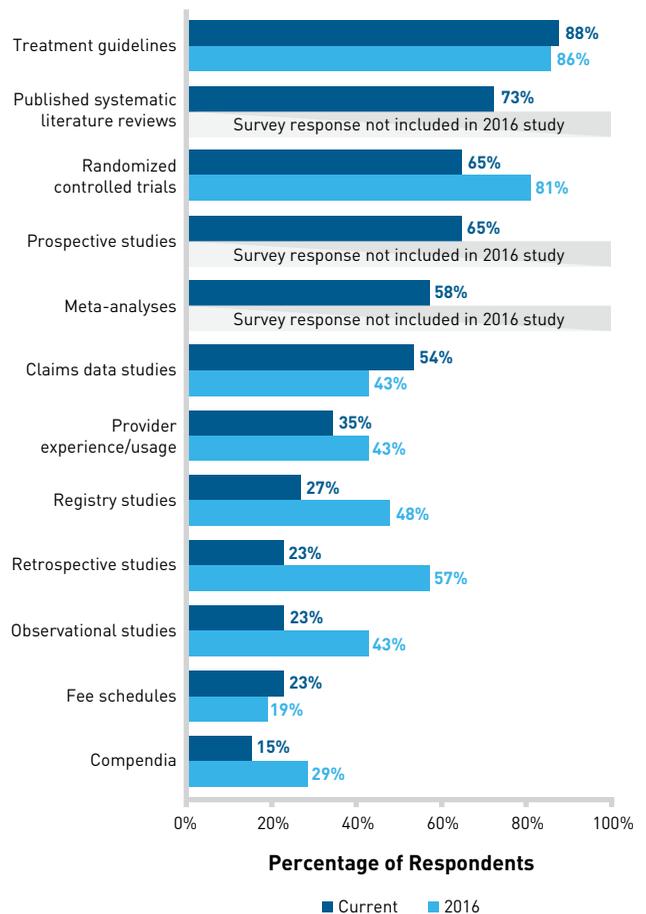
^bSources: Online survey of stakeholders (providers and payers who rated their level of experience/knowledge related to development of care pathways as 3, 4, or 5 [n = 26]) who influence or are affected by care pathways (see Methods section). Provider survey Q20, payer survey Q15, question: “In your [practice/organization], how are disease areas typically selected for care pathway development?” In the 2016 study, stakeholders (payers, providers, and vendors who rated their level of experience/knowledge related to development of care pathways as 3, 4, or 5 [n = 21]) had been asked the same question.

payments but also cautioned that costs could drive clinical care as a result. Even so, 57% (16/28) reported barriers to pathway use in APMs, including administrative burden (81% [13/16]) and lack of technological integration (75% [12/16]).

Application of value frameworks. Most survey respondents (74% [14/19] with knowledge of prominent US value frameworks) reported the use of value assessment frameworks in pathway development. Sixty-four percent (9/14), 57% (8/14), 50% (7/14), and 43% (6/14) noted value frameworks developed by the National Comprehensive Cancer Network (NCCN), American College of Cardiology and American Heart Association, ASCO, and Institute for Clinical and Economic Review (ICER), respectively. Interviewees often mentioned NCCN, ASCO, and ICER and generally advised considering value frameworks during development but not in isolation.

Expansion of care pathways. Increased cost containment efforts (75% [24/32]), use of bundled payments (66% [21/32]), and applicability beyond oncology (47% [15/32]) may advance care pathway expansion and uptake. Other catalysts included the popularity of value frameworks (44% [14/32]), integration of clinical trials (34% [11/32]) and biomarker testing (25% [8/32]), and proliferation of medical homes (25% [8/32]). Interviewees additionally highlighted the value of standardization. In general, more providers reported the use of value frameworks in development; however, more payers

FIGURE 2. Key Data Sources for Care Pathway Development^{a,b}



^aCategories above are as provided to survey respondents. No respondents reported “do not know” in either study. No respondents reported “other” in the current study; 2 respondents reported “other” (phase 2 studies, internal studies) in the 2016 study.

^bSources: Online survey with stakeholders (providers and payers who rated their level of knowledge/experience related to development of care pathways as 3, 4, or 5 [n = 26]) who influence or are affected by care pathways (see Methods section). Provider survey Q21, payer survey Q16, question: “Care pathway development may be supported by evidence that is published, and different types of evidence or information may be used to develop the clinical algorithm. Please indicate which of the following types of published studies or other sources of information are typically used to develop the clinical algorithm.” In the 2016 study, stakeholders (payers, providers, and vendors who rated their level of experience/knowledge related to development of care pathways as 3, 4, or 5 [n = 21]) had been asked the same question.

felt that the popularity of value frameworks may expand the use of care pathways.

Physician resistance (pushback) remains the largest potential barrier to expansion (84% [27/32]), followed by administrative burden (Figure 4). Payers were more likely than providers to believe that administrative burden (71% [5/7] vs 56% [14/25]) and perceived implementation costs (71% [5/7] vs 32% [8/25]) are greater potential barriers, but more providers than payers found that the failure to demonstrate cost savings was a greater potential barrier (40% [10/25] vs 29% [2/7]). Reports of insufficient information

technology (IT)/tracking systems and failure to demonstrate patient outcomes and cost savings have declined.

DISCUSSION

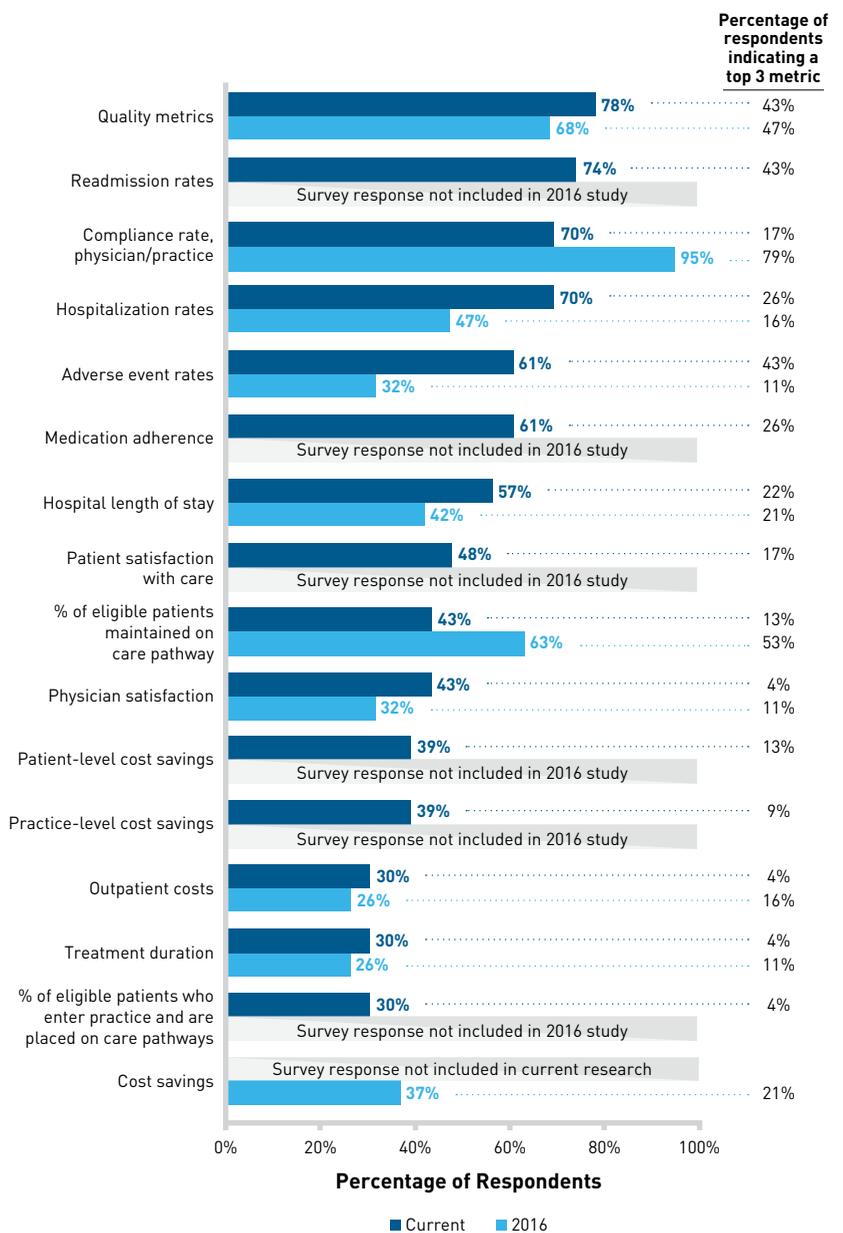
Care pathway development, implementation, and evaluation continue to play a significant role in utilization management in the United States, with cost considerations serving as a core motivation for these activities, collectively. During the development process, however, efficacy and safety continue to be prioritized overall. In large part, this trend continues to reflect efforts to manage care in the treatment of patients with cancer. Although pathways continue to be used in prevalent cancer types, primarily, we found a wider range of therapy areas for which pathways have been implemented, from rare cancers to chronic diseases.³⁹

We observed a higher bar for evidence during development, including greater emphasis on prospective studies and clinical guidelines, compared with the lack of codified standards and transparency in development we noted in our 2016 research. Although transparency has improved, access to specific development methodology remains limited to internal stakeholders, and disclosure of potential conflicts of interest is inconsistent. To some extent, challenges with transparency contribute to the difficulty in presenting a more definitive picture of conflicts or tension between pathways that guide medical care versus initiatives motivated by the imperative to manage expenditures, particularly in oncology.

Efforts to improve patient engagement with care pathways were among the most notable recent trends. About one-third of respondents observed changes over the past 3 years, noting increases in patient requests and patient advocacy group involvement, and more providers reported informing patients about pathway use. Most respondents anticipated future increases, with respondents also suggesting that patient engagement is becoming a feature of pathway evaluation, although this was not formally assessed in the prior study. Despite these efforts, a fundamental lack of patient awareness remains regarding the use of, and financial incentives associated with, pathways.^{27,40,41}

We observed trends toward provider-driven pathways, the use of value frameworks during pathway development, and the

FIGURE 3. Commonly Used Evaluation Metrics^{a,b}



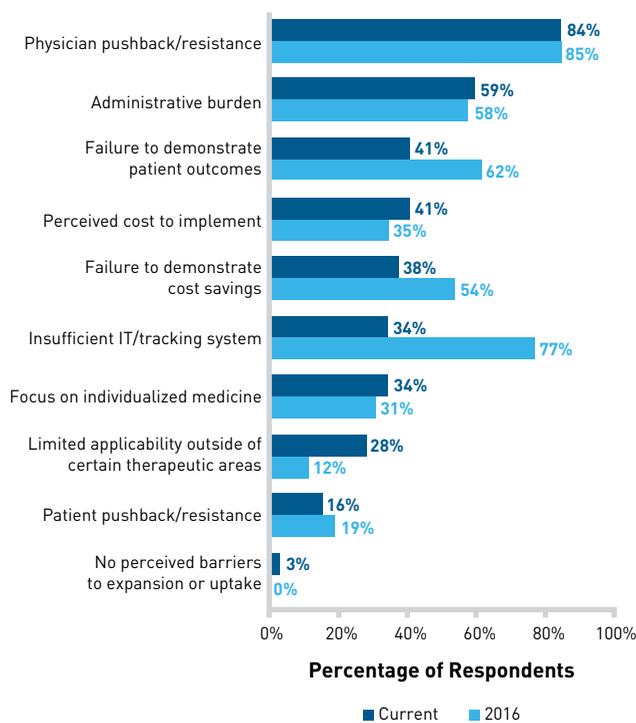
^aCategories above are as provided to survey respondents. No respondents reported "none of the above" in either study.

^bSources: Online survey with stakeholders (providers and payers who rated their level of experience/knowledge related to evaluating care pathway performance as 3, 4, or 5 [n = 23]) who influence or are affected by care pathways (see Methods section). Provider survey Q52, payer survey Q42, question: "Which of the following measures (if any) are typically collected, reviewed, and used to evaluate care pathway performance? For the measures that you selected, please indicate the 3 most important measures when it comes to evaluating care pathway performance." In the 2016 study, stakeholders (payers, providers, and vendors who rated their level of experience/knowledge related to evaluating care pathway performance as 3, 4, or 5 [n = 19]) had been asked the same questions.

growing relationship between pathways and APMs. Providers are increasingly central to the development and implementation of care pathways.^{9,42} In the 2016 study, providers were consistently identified as critical stakeholders, but the role of payers was often

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FIGURE 4. Potential Barriers to Pathway Expansion^{a,b}



IT indicates information technology.

^aCategories above are as provided to survey respondents. No respondents reported "other" in the current study; 1 respondent reported "other" (changing physician compensation models) in the 2016 study.

^bSources: Online survey with stakeholders (all providers and payers [N = 32]) who influence or are affected by care pathways (see Methods section). Provider survey Q72, payer survey Q62, question: "What do you see as potential barriers to the expansion or uptake of care pathways?" In the 2016 study, stakeholders (all payers, providers, and vendors [N = 26]) had been asked the same question.

dominant. Pathway vendors still play an important role—particularly in serving payers that use pathways to manage plan member benefits—but providers are becoming the key drivers. Although we observed some trends distinguishing payer and provider behavior (data sources for pathway development, consideration of medical resource use and costs, requirement of prior approval, views on value frameworks, and barriers to expansion), further research in this area must be conducted.

Continued pressure to reduce costs has the potential to further expand the scope and development of care pathways. Value frameworks are often integral in the development process, ranging from being the primary approach for pathway construction to a reference for a component of treatment selection. The influence of value-based care was also noted in pathway implementation, with some respondents pointing to a shift in incentive structures. Now, fewer respondents indicated physician reimbursement being tied to pathway compliance; instead, reimbursement may become more directly linked to patient outcomes. Additionally, respondents believed that patient outcomes and other quality measures may

eventually become standard pathway evaluation metrics. Pathways can be an effective tool in the delivery of value-based care, particularly in oncology.^{43,44} There is potential for more integration between pathways and APMs, which have similar objectives.⁴⁵ Moreover, catalysts for pathway uptake include use of bundled payments and medical homes.

However, care pathways continue to face barriers to adoption. Although prior concerns with IT/tracking systems and the demonstration of patient outcomes and cost savings have decreased, concerns with physician pushback and administrative burden persist. Such concerns could be mitigated with provider-driven pathways and availability of evidence on patient outcomes, long-term efficiency, and reduced practice costs.

Limitations

We utilized a hybrid approach with a targeted literature review followed by qualitative primary research, entailing survey and interview components, similar to the 2016 study. The survey and interview findings aligned with those of the literature review; however, the literature review findings are not exhaustive and are subject to the limitations of keyword-based searches of publication databases and ad hoc searches of the gray literature. Although survey and interview respondents had oncology and nononcology experience, the samples are not necessarily representative, and findings may not be generalizable to the wide diversity of care pathways. Several factors also limited our ability to cross-validate responses between the current and prior studies and perform statistical tests. The samples' size and composition differed, and both the survey structure and responses to questions were updated to adapt to changes in the pathway landscape.

CONCLUSIONS

Care pathway use continues to expand rapidly in the United States, a trend that is likely to continue in concert with the movement toward value-based reimbursement models. Providers are becoming the driving force behind key aspects of pathway development and implementation. Overall, research findings support notable increases in process transparency, codification of standards, and prioritization of high-quality evidence. Yet, additional process improvements remain crucial as the influence of pathways on patient care continues to expand and pathways integrate with other value-based care initiatives.

We propose several options for improving practices. First, although improved, development of care pathways remains variable. Pathway developers should be held accountable to disclose methods of development and potential conflicts of interest. Furthermore, patient engagement with pathways, particularly in development and implementation, still has room for improvement. Patient awareness and patient input should be explicit considerations in order to achieve outcomes that are relevant to and valued by patients. Second, we anticipate that the trend linking outcomes-based measures to

physician reimbursement and pathway evaluation will strengthen, especially as, over time, more data on patient outcomes associated with pathway use become available. As a means to improve patient care, pathways should be assessed and refined based on their impact on outcomes, and efforts should be made to leverage IT systems and introduce technology solutions to regularly collect and analyze these data. Third, pathways promise to improve value, but integration with other value-based care initiatives remains limited. When pathways are linked with value-based contracting and outcomes-based payments, they can ultimately result in a more efficient allocation of scarce resources. Nevertheless, concerns about cost overshadowing efficacy and safety considerations in pathway development remain even with the promise of increasing efficiency that such integration may bring. ■

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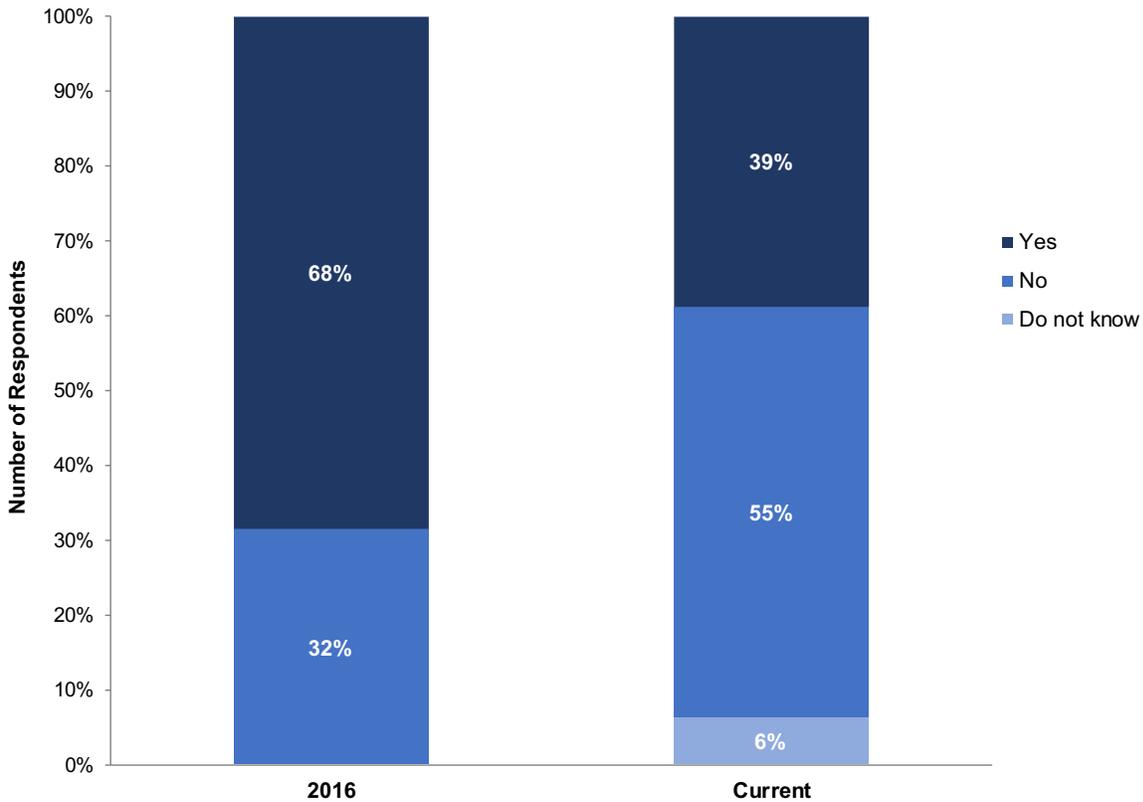
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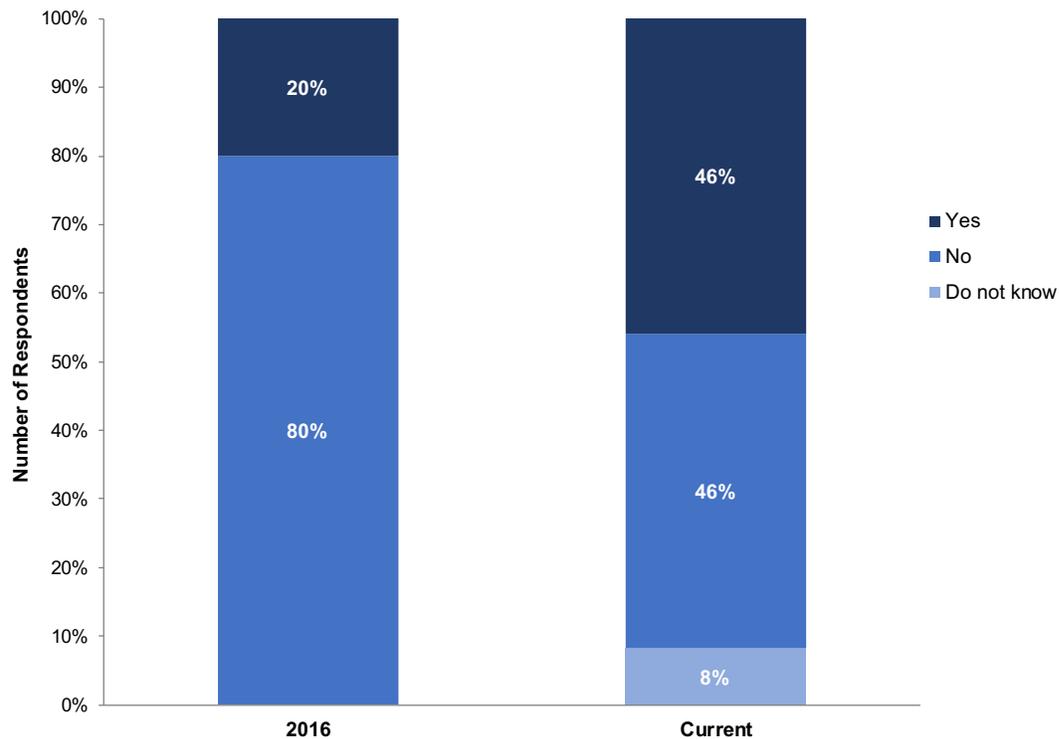
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eAppendix A. Shifting Links Between Reimbursement and Physician Compliance



Sources: Online survey with stakeholders (providers and payers who rated their level of experience/knowledge related to implementation and/or use of care pathways as 3, 4, or 5 [N = 31]) who influence or are affected by care pathways (see Methods section). Provider survey Q33, payer survey Q28, question: “[To encourage physician use of care pathways when making treatment decisions,] are compliance or adherence requirements typically tied to reimbursement?” In the 2016 study, stakeholders (payers, providers, and vendors who rated their level of experience/knowledge related to implementation and/or use of care pathways as 3, 4, or 5 [N = 19]) had been asked the same question.

eAppendix B. Disclosure of Care Pathway Details to Patients (Providers Only)



Sources: Online survey with stakeholders (providers who rated their level of experience/knowledge related to implementation and/or use of care pathways as 3, 4, or 5 [N = 24]) who influence or are affected by care pathways (see Methods section). Provider survey Q43, question: “*Are patients who are treated on a care pathway provided disclosure or education about the care pathway?*” In the 2016 study, providers who rated their level of experience/knowledge related to implementation and/or use of care pathways as 3, 4, or 5 (N = 5) had been asked the same question.