

# Evidence-Based ONCOLOGY™

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## ALSO IN THIS ISSUE



SP45

**PAYING FOR CANCER CARE.** Leaders from employer coalitions discuss the challenges of getting a handle on the cost of oncology care during a focus group held at the Community Oncology Alliance Payer Exchange Summit, [SP45](#).

**THE VALUE OF TESTING.** Stuart Goldberg, MD, discusses the clinical value and cost-effectiveness of genomic profiling, as well as findings that not all doctors are staying current on the right mutations to include in screening, [SP47](#).



GOLDBERG

**NEXT-GENERATION SEQUENCING.** Clinical pathways cannot achieve their potential without access to broad-based testing to match therapies to the right patients, [SP50](#).

**CANCER DEATHS FALL.** Amid the overall good news from the American Cancer Society, troubling signs that cancers related to obesity are on the rise, [SP52](#).

**SAVINGS SEEN.** The Employers' Prescription for Affordable Drugs seeks changes to improve uptake of biosimilars, which the group says could save \$150 billion over the next decade, [SP53](#).

## PATHWAY DEVELOPMENT

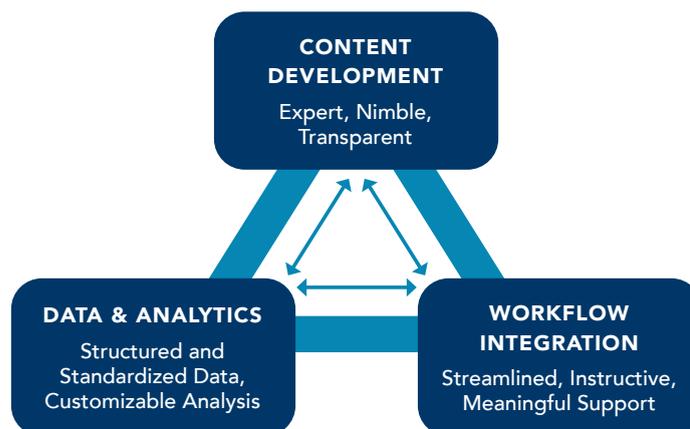
### Lessons From the Front: Designing and Implementing Clinical Pathways by and for Clinicians

David M. Jackman, MD; Joanna Hamilton, MA, MS; Emily Foster, MPH; Craig A. Bunnell, MD, MPH, MBA; Louis Culot, MA; Carole Tremonti, RN, MBA; Joseph O. Jacobson, MD, MSc

**OVER THE PAST DECADE**, the use of clinical cancer pathways has increased. In its 2017 State of Cancer Care in America report, the American Society of Clinical Oncology (ASCO) noted a 42% increase from 2014 to 2016 in practices using a clinical pathways program.<sup>1</sup> This growing trend reflects a need for structured decision support among clinicians, clinical practices, and payer systems. As cancer care becomes more complex and more expensive, these decision-support algorithms offer a mechanism to define best practice, reduce unwarranted variation, and control costs across growing networks.<sup>2-4</sup>

At the heart of the pathways movement lies a desire to improve treatment—its outcomes, its tolerability, its efficiency, and its value. Achieving these goals requires commitment not just to an electronic platform but also to a broader pathways program. At the Dana-Farber Cancer Institute (DFCI), we believe that this requires a tripartite dedication to expert content development; integration into physician and practice workflow; and the capture, analysis, and practical use of data (**Figure 1**). These are, in fact, the same 3 areas identified as key for high-quality pathways programs by the ASCO Pathways Committee.<sup>5</sup> Ultimately, the successful creation and implementation of a pathways program within any institution or network depends on understanding the interdependence of these 3 areas and using each to improve the others.

**FIGURE 1.** The Interdependence of Content Development, Workflow Integration, and Data and Analytics.



CONTINUED ON SP57 »

## PATHWAY ADOPTION

### Clinical Pathways: Reducing Costs and Improving Quality Across a Network

Marcus Neubauer, MD

**TODAY, AS ONCOLOGISTS STRIVE** to meet the needs of a growing population of patients with cancer in 2020,<sup>1</sup> they must remain abreast of rapidly emerging treatments to deliver positive patient outcomes, while meeting increasing demands from government and private payers. To do so, clinical pathways have emerged as a key tool driving informed decision making and providing more efficient, cost-effective, value-based care.

Across the practice of oncology, there is often a high variation of choices available to physicians in how best to treat patients. Adopting evidence-based clinical pathways helps align patient care and reduce unnecessary variation. These pathways provide a succinct, clinically proven list of treatment options that offer increased value to the healthcare system and the patient through a careful balance of cost sensitivity, treatment toxicity, and clinical outcomes.

CONTINUED ON SP60 »

## COMMENTARY

### Clinical Pathways: A Critical Component of Success in Episodes of Care

Lili Brillstein, MPH, and Brian Currie

**THE EPISODES OF CARE MODEL** is a value-based model that incorporates all the care rendered to an individual patient over the course of treatment for a particular procedure, diagnosis, or healthcare event, across the full continuum of care. This construct gives clinicians and their interdisciplinary partners a framework to explicitly and consciously collaborate in treating individuals who are clinically similar and therefore would be expected to have clinically similar outcomes. It is a model that focuses on consistently achieving the best of those outcomes.

CONTINUED ON SP62 »

## PATHWAY DEVELOPMENT

# Lessons From the Front: Designing and Implementing Clinical Pathways by and for Clinicians

David M. Jackman, MD; Joanna Hamilton, MA, MS; Emily Foster, MPH; Craig A. Bunnell, MD, MPH, MBA; Louis Culot, MA; Carole Tremonti, RN, MBA; Joseph O. Jacobson, MD, MSc

## CONTINUED FROM COVER

Over the course of our own nearly decade-long experience with pathways, we have learned a lot from our stumbles and successes. We come to the pathways table bearing many perspectives—as creators of dynamic and expert content, as codevelopers of a wholly new pathways platform with Philips, as managers of care delivery across an academic institution and a larger network, and as clinical oncologists seeking to deliver the best care to the patient seated before us. The following are some of the key elements we deem worth sharing with others on their own journey down this road.

## Development of Clinical Content

The quality of clinical content is the foundational component of any pathways platform. Content must be expert, it must be nimble, and it must be trusted.

**Expert.** Clinical pathways content requires the input of a diverse collection of providers with a wealth of clinical experience and mastery of the published evidence in a specific disease. To adequately compare clinical outcomes, toxicity, and costs, our clinical pathways committees comprise physicians and pharmacists with expertise in the clinical care and research of that disease, along with team members who provide up-to-date drug costs. Furthermore, to achieve content that is not only expertly sourced but also expertly applied in a pathways platform, it is critical that the creators of pathways content also be users of that same content. When physicians are contributing to a tool that they will use themselves, they have a vested interest in ensuring accurate, nuanced, and usable content.

**Nimble.** Keeping up with the staggering rate of new medical information—including FDA approvals, prominent publications and presentations, and safety alerts—is becoming increasingly difficult for an individual physician. Doing so across multiple cancer types while also managing a busy oncology practice is nearly impossible. Even at a programmatic level, keeping pathways up to date requires a commitment to infrastructure and process.

First, pathways need to be reviewed frequently enough to remain relevant. Within the DFCI pathways program, we conduct scheduled review meetings 2 to 4 times per year depending on the disease. For diseases with high rates of new approvals and changes, review meetings are scheduled 4 times per year. We intentionally time these reviews to follow major conferences including ASCO, the American Society of Hematology (ASH), and the European Society for Medical Oncology (ESMO) annual meetings or key disease-specific meetings such as the San Antonio Breast Cancer Symposium or the World Conference on Lung Cancer.

Second, we have designated medical directors for each pathway. If there is a major clinical breakthrough or a critical safety alert outside of the planned meeting schedule, we approach the corresponding director to triage the clinical urgency. If an ad hoc meeting is required instead of waiting for the next scheduled review, we proceed appropriately.

Third, timeliness applies not only to the decision-making process but also to the subsequent validation and implementation of content in the pathways platform. To reduce the time required to push content into production, Philips and Dana-Farber have

designed the platform to be self-authoring. This allows our internal pathways project management team to model proposed changes, validate them with our physicians and pharmacists, and push them into production more quickly.

**Trust.** Trust in pathways content is derived from the expertise of the people and institutions creating the content, although that alone is not sufficient. To win the trust of physician users, a pathways program must provide a consistent and transparent decision-making process and succinct messaging about both the decisions made and the supporting rationale.

Contemporary references to transparency are often focused on conflicts of interest. Providers using a pathways platform deserve to know who is in the room when decisions are made and if and how they might be conflicted by ties to industry and other entities.

Transparency regarding what information is included in the decision-making process is just as important but often receives less attention. Providing this level of transparent data review requires significant programmatic commitment. To achieve this, Dana-Farber's disease-specific pathways medical directors, pharmacists, and pathways staff prepare extensively in advance of an upcoming review. These meetings start with a display of the current pathway selections, followed by a review of the trial design, outcomes, and adverse effects found in the publications and presentations supporting the proposed change. These results are then compared to those of the existing standard. Finally, before discussion and decision making, we present the drug costs of the proposed and existing regimens, calculated from the most recent Centers for Medicare & Medicaid Services Average Sales Price files.<sup>6</sup>

To achieve an additional level of transparency, we create succinct meeting minutes that summarize each agenda item, the sources cited, the decisions made, and the supporting rationale. The meeting slides and minutes are shared with all relevant users, and web-based recordings of the meetings are made available.

## Integration Into Clinical and Institutional Workflow:

The success of a pathways program relies on physician adoption, and physician adoption in turn hinges significantly on integration into workflow. To optimize the user experience, the Philips Healthcare development team has involved DFCI physicians from the early planning stages in every aspect of the platform: medical content, design and layout, navigation, and workflow. To create a system that is sensitive to the clinical demands of busy practitioners, these collaborating teams have identified and addressed a number of areas for focus:

- **Accessing the platform from within an Electronic Medical Record (EMR)** rather than having to search for a separate application
- **Opening the pathway tool with a single sign-on (SSO)** from within a specific patient's chart. This not only expedites access but also potentiates the transfer of data among the pathways platform, the EMR, and other medical databases and applications.
- **Visually displaying the treatment-support algorithms as a road map to be traversed.** This allows the platform to present choices in the order and manner in which »



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## PATHWAY DEVELOPMENT



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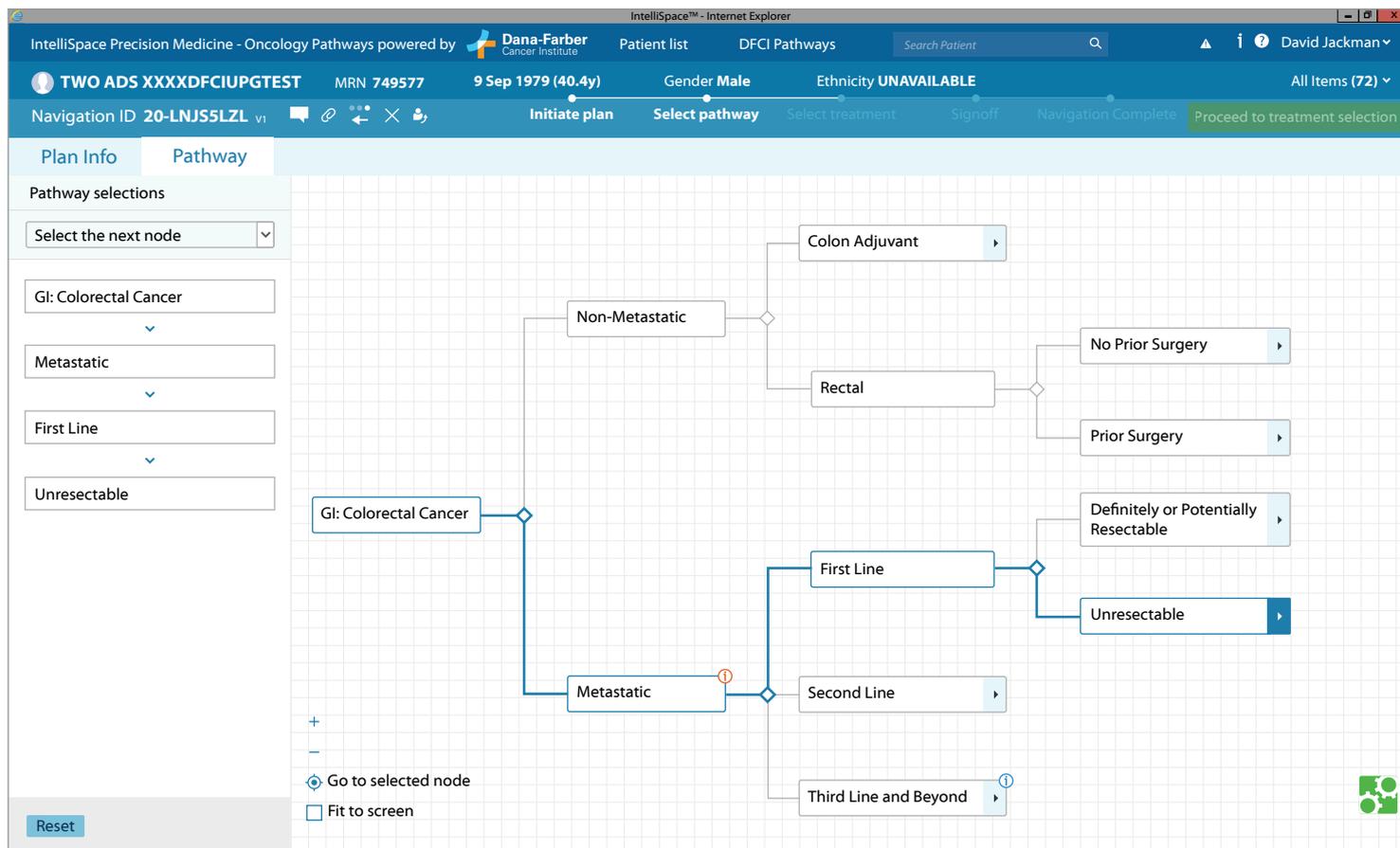


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**FIGURE 2.** User Interface for Colorectal Cancer Within the Philips IntelliSpace Precision Medicine–Oncology Pathways Powered by the Dana-Farber Cancer Institute.



Source: Dana-Farber Cancer Institute

a clinician would consider them, and it allows users to understand how and why each successive choice leads to the next (Figure 2).

- **Minimizing clicks wherever possible**, while ensuring safety and maintaining data integrity. Current medical practice risks “death by a thousand clicks,”<sup>7</sup> but we have sought to minimize these without compromising the platform’s ability to impart medical nuance, provide critical information, or capture important data.
- **Listing on-pathway treatment recommendations and clinical trial options in a single digestible page**, with supporting information, warnings, and other medical guidance clearly displayed.
- **Creating lists of treatment-associated adverse effects for every regimen in our library.** For a multidrug treatment plan, these adverse effects represent the potential toxicities of the combination, not of each individual drug. They are curated by our pharmacists and physicians, are in patient-friendly language, and are incorporated into a consent form that is generated upon treatment selection. Automatically creating a consent form with regimen-specific adverse effects can result in significant time saved, in some cases winning back more than the time spent navigating the platform itself.

Although integrating a pathways platform into a provider’s workflow is critical, it is equally important to integrate into institutional workflow. Beyond decision support, pathways can help to streamline operations and improve care delivery. For example, the data captured in the process of pathway navigation—histology, stage, line of therapy, performance status, genomic alterations, and other molecular biomarkers—are precisely the information that can support the prior authorization process. Pathways navigations in the Philips platform

automatically generate treatment summary reports that outline the treatment selections and recapitulate the data elements that drove those selections.

Our goal is to reduce unwarranted variation throughout our practice—not just in treatment decision making but also in physician work itself. Forcing an individual provider to navigate different pathways platforms for each patient threatens to subvert some of the very goals that pathways aim to achieve. Working with multiple systems reduces individual and operational efficiency. Pathways cease to function as an effective learning system when navigations and data are dispersed among multiple platforms. Working with different sets of content—with different decisions, different review schedules, and varying degrees of transparency—adds an additional level of difficulty to the decision-making complexity that pathways should be seeking to minimize. If a high-quality pathways system with a transparent review process and sound decision making can gain broad acceptance from all necessary parties, the uniformity of the system can potentiate the true benefits to care delivery that clinical pathways were intended to address.

### Data and Analytics

Data inform every part of a robust pathways program. Measurement ultimately facilitates management. A pathways platform should strive to capture and meaningfully analyze every discrete interaction with the system. In our platform, we accomplish this by building a data model that parses every component of the pathways navigation process into discrete, fundamental elements. This database enables many important functions:

- **Data Capture and Analysis.** By breaking each successive node in the pathway decision tree into its component elements, we are able to learn from each click in a pathways navigation. Furthermore, we are able to extract and

## PATHWAY DEVELOPMENT

analyze this information in great detail across patients, users, and pathways.

- **Data Import.** A platform-wide data model potentiates importing of existing, discrete data elements. Bringing in elements like stage, performance status, or genomic alterations from an EMR or other source could help drive assisted navigation of the pathways platform.
- **Standardization.** Wherever possible, the database is tied to accepted, existing standards (eg, tying histology to the International Classification of Diseases of Oncology, third revision or tying solid tumor staging to the American Joint Committee on Cancer, version 8). In addition, wherever appropriate, common data elements are used consistently across multiple pathways in the platform. This standardization enables analysis of data across institutions and across pathways.

Data derived from the pathways platform informs every other element of the program. Usage of the platform and on-pathway rates can be analyzed across our network by site, by department, by individual user, and by each branch of the pathway.

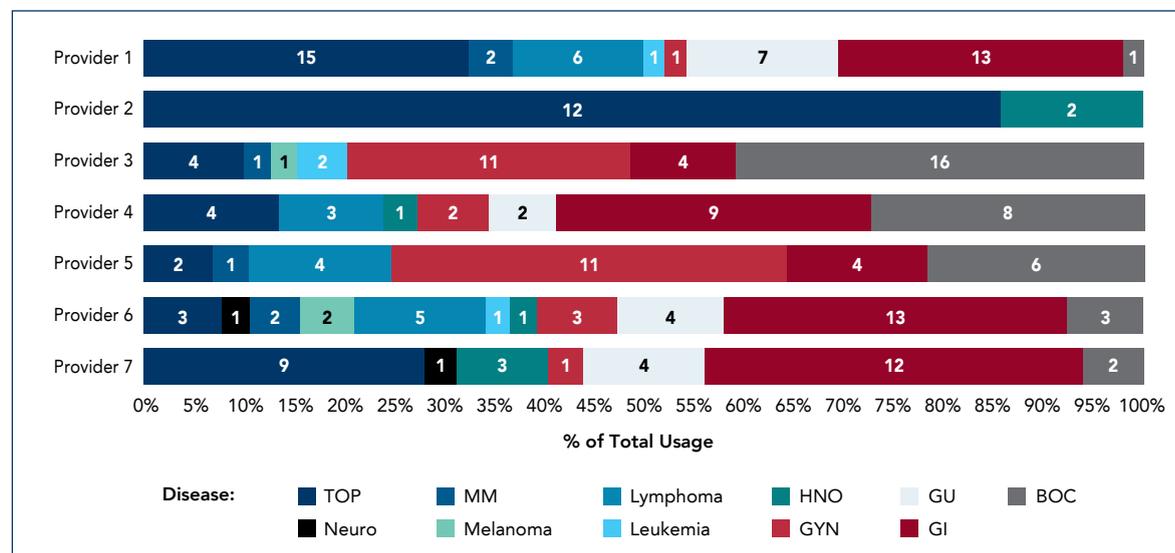
- This can provide a snapshot of institutional and provider case mix (**Figure 3**), helping to determine if this is the optimal use of physician resources.
- On-pathway data by disease, by physician, and by branch can help monitor the quality of care across our network. By analyzing each branch for where and why our physicians go off pathway and what they use in such situations, we can identify instances of potentially suboptimal care. Furthermore, repeated, similar off-pathway navigations at a specific branch may provide a signal that content for this branch may need to be re-evaluated.
- Analysis of a biomarker-based subset within different parts of a pathway can support research operations (**Figure 4**). For instance, knowing how many patients with breast cancer who have hormone-sensitive disease are treated with third-line therapy can inform grant applications or decisions about supporting trial enrollment in that setting.

### Conclusion

When fully implemented, a clinical pathways program can affect and influence care delivery in a number of important ways. A rigorous and transparent review process of new clinical data affords an opportunity to consider not only what can be done but what should be done. A well-designed platform integrates those recommendations in a model that can be embraced by physicians not only for its ease of use but also for the support and tools that it can provide. And a carefully curated, clinical data model can transform a pathways platform from a decision support tool to a continuous learning system.

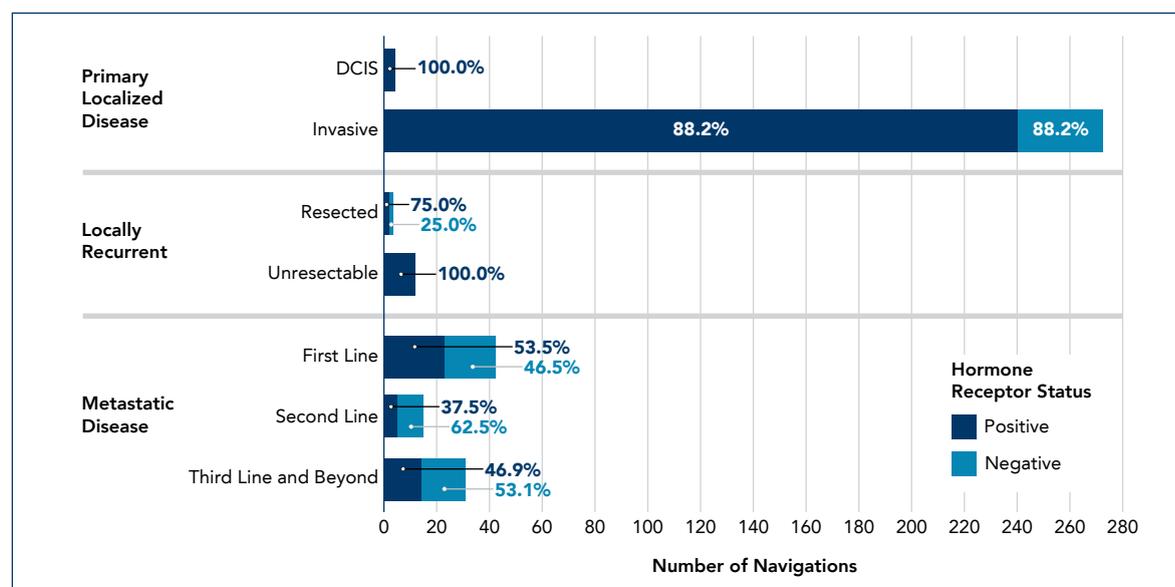
As Dana-Farber and Philips have collaborated over the last year and a half to design, build, and implement a new pathways platform, we have learned many key lessons. Perhaps the most important and fundamental is how we listen to each other. Improvement comes when developers, data

**FIGURE 3.** Pathways Navigations by Disease Type Among Physicians at a Satellite Practice, September-December 2019



Source: Dana-Farber Cancer Institute

**FIGURE 4.** Number of Navigations by Clinical Context and Hormone Receptor Status, September-December 2019



Source: Dana-Farber Cancer Institute

analysts, and physicians (both as clinical experts and product users) communicate and appreciate each other's needs and limitations. Consistent and concerted efforts to bring these stakeholders together have allowed us to develop and evolve content, platform, and analytics in a way that can move oncology care forward. ♦

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