Development and Implementation of Oncology Care Pathways in an Integrated Care Network: The Via Oncology Pathways Experience

By Peter G. Ellis, MD

UPMC CancerCenter, Pittsburgh, PA

UPMC CancerCenter offers outpatient cancer care at more than 40 sites spanning a 150-mile radius from its flagship site, the Hillman Cancer Center in Pittsburgh. The size and geographic breadth of this network, with its 218 academic and community-based providers treating more than 70,000 patients a year, necessitated a program to ensure that all patients received high-quality, evidence-based care, and that the appropriate patients were accrued to clinical trials. To do this, in 2004, UPMC developed clinical pathways, a program designed to drive standardization of care around best evidence in order to measure and improve patient outcomes, safety, and practice efficiency. This program is now marketed externally as Via Pathways. The success of this program has caused UPMC to adopt pathways as a foundation for its overall health care reform strategy for compliance with the Patient Protection and Affordable Care Act. With continually updated and expanding clinical content, Via Pathways has proven to be useful for physicians in providing evidence-based recommendations with the most efficacious, least toxic, and most cost-effective therapies available.

The Program

The Via Pathways program consists of an interactive software tool that allows for real-time decision making based on clinical content developed by the disease committees. These committees, each led by a community oncologist and an academic oncologist, meet quarterly to discuss and interpret new literature and research, assess feedback from the Via Pathways network of users, and review physician-use data to determine whether any updates, additions, or deletions need to be made for the respective pathway. The co-chairs of these committees are selected for their disease-specific domain expertise. They are assisted by staff with experience in translating medical decision support into software language used at the point of care by treating physicians. The vast majority of the chairs also use Via Pathways daily in their own care and so are familiar with the end product of their deliberations (although some co-chairs are from outside the network, chosen for their expertise). Any physician who uses the pathway is a welcome member of the disease committees and may participate in the deliberations. The co-chairs are responsible for guiding the discussion of the meetings to a consensus decision and ultimately have the final say in any changes that will be made to the respective pathway. There are currently 18 separate medical oncology disease committees covering approximately 90% of the oncology presentations.

In the quarterly disease committee meetings, the committees define the most appropriate evaluation, therapy, and surveillance for designated patient scenarios. Keeping in mind that no algorithm will anticipate every unique patient presentation or morbidity, the goal of the committee is to cover 80% of patient scenarios and to leave open the option for the clinician to treat off pathway when necessary. To attain 80% coverage, the committees break down the pathways by stage and state of disease, including categories for histology, biomarkers, performance status, and any other relevant information that may influence treatment decisions. In addition, after selecting a single best treatment option for a particular patient scenario, the committees may add further recommendations in the event that the patient cannot receive the recommended therapy due to a common comorbidity or contraindication (Figure 1).

When selecting a single best therapy for a given stage and state of disease, the committee uses a three-component hierarchy to determine the recommended treatment option. The first decision point is efficacy; if there is a clear choice that is more effective than any other possible option, this respective treatment will be the Via Pathway recommendation. In many instances, the literature would suggest that multiple different treatments may result in similar efficacy for a given presentation. In these circumstances, the committee then considers toxicity to select the treatment option. Treatments with the least toxicity are selected when efficacy is equal, in order to improve quality of life and reduce hospitalizations and emergency department visits. Finally, if there is not a clear choice after efficacy and toxicity are analyzed for a treatment option, the committee turns to cost effectiveness to make a decision. Standard Medicare allowable costs for drug and administration are used in these instances. As part of the commitment to clinical research, appropriate clinical trials are imbedded in the applicable branches of the Via Pathways. The clinical trials are presented ahead of the standard Via Pathways treatments; are always counted as on pathway if selected; and, if not selected, require a reason for nonaccrual.

In addition to selecting the best treatment option for a given patient scenario, the committees seek standardization through consensus in cases where the data could suggest multiple options. This is particularly salient when deciding appropriate disease evaluation, surveillance, and late-line treatment options. The committees also provide recommendations on appropriate length of therapy, supportive care, and advanced care planning.

Figure 1. Example of clinical pathway algorithm: non-small-cell lung cancer stage IV, first line, nonsquamous, good performance status. AJCC, American Joint Commission on Cancer; PS, performance status; ALK, anaplastic lymphoma kinase; EGFR, epidermal growth factor receptor.

Figure 2. Medical oncology visits captured at UPMC CancerCenter, February 2010–October 2012. Data are reported “as is” from clinicians using Via Pathways. N represents number of outpatient patient visits.

Providing recommendations for patients from before the start of treatment through post-treatment surveillance allows for a more complete plan that is evidence based and cost effective.

The Via Pathways recommendations are delivered to the physicians in a point of care, patient-specific decision support tool called the Via Pathways Portal. This portal is interfaced with the management system of the practice to allow for the presentation of right patient at the right time and to seamlessly collect clinical data regarding both on and off pathway decisions. These data are of use in the management of quality of care, in working toward standardization, and in designing and improving clinical research programs.

Usage Results

Over 150 medical oncologists, radiation oncologists, surgeons and hematologists at the UPMC CancerCenter currently use Via Pathways for their patients. These physicians have been

Figure 3. On-pathway rates of the most commonly selected medical oncology diseases, February 2010–October 2012. Data are reported “as is” from clinicians using Via Pathways. Numbers in parentheses are unique patient treatment decisions

successful in incorporating the Via Pathways into their daily workflows at their practices, both in the community and academic setting. Because the pathways have the ability to directly interface with a respective practice’s practice management system, patients on the practice management schedule are pulled over to the pathways schedule. This allows for pathways to collect data on every scheduled visit. A visit is considered captured when the attending physician charts the pathway status for that patient in the pathways schedule for that day. A total of 488,170 visits were scheduled in the Medical Oncology Portal of Via Pathways at the UPMC CancerCenter (excludes radiation oncology visits) from February 2010 through October 2012. (February 2010 is the point at which a new version of pathways was launched. This upgrade included advances in reporting capabilities.) Of these visits, nearly 96% (n = 466,984) were captured by Via Pathways (Figure 2).

On-pathway rates are also measured. This rate documents the number of decisions made on a given Via Pathway that were in compliance with the pathway recommendation as compared with the total number of decisions (on pathway rate = number of decisions made in compliance with recommendation ÷ total decisions). For the same time period, February 2010 through

Table 1. Example of Detailed Breakdown for Specific Patient Presentation: Non–Small-Cell Lung Cancer, Stage IV, First Line, Squamous Cell*†

Performance Status	Treatment	Selected (%)
0,1 (n = 73)	Carboplatin/taxol (n = 41)	56
	Carboplatin/gemcitabine (if taxane toxicity concerns; n = 16)	22
	Clinical trial (n = 6)	8
	Off pathway (n = 10)	14
≥ 2 (n = 38)	Carboplatin/taxol (n = 8)	21
	Carboplatin/gemcitabine (if taxane toxicity concerns; n = 4)	11
	Taxol (unable to tolerate a doublet; n = 13)	34
	Gemzar (unable to tolerate a doublet and taxane toxicity concerns; n = 7)	18
	Clinical trial (n = 0)	0
	Off pathway (n = 6)	16

NOTE: N = 111; on pathway rate, 86%.
*Data are reported “as is” from clinicians using Via Pathways.
†Nos. in parentheses are unique patient treatment decisions.

October 2012, on-pathway rates in the five most commonly selected diseases ranged from 82.9% to 88.7% (Figure 3) for medical oncology (excludes radiation oncology). In addition to these higher level statistics, the Via Oncology Database also includes specific breakdowns by disease for each patient presentation, reasons the physician selected for going off pathway, and trial accrual rates (Table 1).

Summary

Physician involvement is integral to a successful clinical pathways program. The Via Pathways model used at the UPMC CancerCenter, in which the oncologists developing the clinical content are ultimately the oncologists who use the Pathways Portal, has proven to be successful in ensuring physician participation. In addition, an agile user interface and pragmatic layout of the tool are essential for incorporating pathways into the daily workflow of physicians. When appropriately developed and implemented, clinical pathways are an effective tool for standardizing care and ensuring quality.

Acknowledgment

Presented at the ASCO Quality Care Symposium, San Diego, CA, November 30-December 1, 2012.

Author’s Disclosures of Potential Conflicts of Interest

Although all authors completed the disclosure declaration, the following author(s) and/or an author’s immediate family member(s) indicated a financial or other interest that is relevant to the subject matter under consideration in this article. Certain relationships marked with a “U” are those for which no compensation was received; those relationships marked with a “C” were compensated. For a detailed description of the disclosure categories, or for more information about ASCO’s conflict of interest policy, please refer to the Author Disclosure Declaration and the Disclosures of Potential Conflicts of Interest section in Information for Contributors.

Employment or Leadership Position: Peter G. Ellis, Via Oncology (U)
Consultant or Advisory Role: None **Stock Ownership:** Peter G. Ellis, D3 Oncology **Honoraria:** Peter G. Ellis, Via Oncology **Research Funding:** None **Expert Testimony:** None **Other Remuneration:** None

Corresponding author: Peter G. Ellis, MD, UPMC Cancer Center at UPMC St. Margaret, 200 Delafield Road, Suite 3050, Pittsburgh, PA 15215; e-mail: ellipg@upmc.edu.

DOI: 10.1200/JOP.2013.001020