

Information Technology Interventions to Improve Cancer Care Quality: A Report From the American Society of Clinical Oncology Quality Care Symposium

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The first American Society of Clinical Oncology (ASCO) Quality Care Symposium (November 30–December 1, 2012, San Diego, CA) offered a unique forum for sharing results in measuring and improving the quality of cancer care. The general session on information technology (IT) interventions united presentations by experts from academia, private practice, and payer organizations, focusing on existing and emerging IT strategies for enhancing cancer care quality. As chairs of this session, we present a summary and commentary.

Michael N. Neuss, MD, of Vanderbilt-Ingram Cancer Center and the ASCO Quality Oncology Practice Initiative (QOPI) Steering Committee, presented a proffered research abstract entitled, “Measuring the Improving Quality of Outpatient Care in Medical Oncology Practices in the United States.” This report on the initial 5 years of QOPI data collection included results from 156 oncology practices in the United States and evaluated the factors associated with improvement in adherence to QOPI quality measures.^{1,2} Improvement was most strongly associated with a new clinical process (such as a newly approved drug or diagnostic test), with the strength of evidence supporting an intervention and with increasing rounds of QOPI data collection. These findings may represent the positive actions taken to address quality and, to some degree, a Hawthorne effect, with participants’ improvement related to their experience of being observed in an experimental setting. Adherence to guidelines for adjuvant chemotherapy in breast, colon, and non–small-cell lung cancers was consistently high (> 90%); by contrast, compliance with recommendations for counseling about smoking cessation and chemotherapy-related infertility was much lower (10% to 35%), and these remain priority areas for improvement.

Allen S. Lichter, MD, Chief Executive Officer of ASCO, presented “ASCO’s Approach to Health IT and Rapid Learning Systems,” introducing the CancerLinQ system. This learning health system aims to fulfill the call by the Institute of Medicine to generate “new knowledge captured as an integral by-product of the delivery experience.”³ CancerLinQ integrates data from multiple sources in real time, enabling measurement of outcomes, data exploration, and hypothesis generation. The development process for CancerLinQ has consisted of broad community engagement, establishment of standards for data quality and governance, and analysis of legal and technologic requirements, resulting in an initial prototype focused on breast cancer. The CancerLinQ proto-

type demonstrates electronic compilation of QOPI measures, opportunities for clinical data evaluation and research, and feasibility of active clinical decision support. Using open-source electronic medical record (EMR) software, CancerLinQ compiles de-identified patient records derived from many different EMR platforms, standardizing results for comparison and analysis. Expansion of the ASCO CancerLinQ prototype is under way, with the ultimate goal of providing a fully functional learning health care system to the oncology community.

Stephen B. Edge, MD, Medical Director of the Breast Center and Chair of Health Services and Outcomes Research at the Roswell Park Cancer Institute, spoke on “Using the American College of Surgeons Registry to Drive Cancer Care Quality.” The Commission on Cancer (CoC), housed by ACS, maintains an aggregated database of hospital registries, comprising approximately 70% of US patient cases of cancer, called the National Cancer Data Base (NCDB).⁴ The objectives of NCDB include cancer surveillance, comparative effectiveness and outcomes research, assessment of patterns of care, and management of care quality. Survival and treatment reports are returned to contributing institutions to enable benchmarking against national standards and auditing of individual patient cases for real-time quality improvement. CoC recently launched a registry-based system called the Rapid Quality Reporting System to track adherence to standards in real time to assist providers in care management.⁵ Approximately 30% of US patients with breast or colon cancer are currently tracked by the Rapid Quality Reporting System, with expansion under way to encompass more cancer centers and cancer sites. CoC is also expanding its panel of quality measures and developing methods to report risk-adjusted outcomes, including survival. CoC is also investigating mechanisms to link NCDB to administrative data such as payer claims. A major pilot project demonstrated substantially enhanced completeness and granularity of treatment data, facilitating quality measurement and public reporting. In future, NCDB may be linked to additional novel data sources, including EMR, QOPI, and CancerLinQ systems; additional plans include results integration back into the EMR, which will enable clinical research, and patient support through informing patient portals and generating survivorship care plans.

J. Russell Hoverman, MD, PhD, of Texas Oncology and Medical Director of Managed Care for the US Oncology Network, presented “Communication and Decision-Making Tools.” A key benefit of EMRs has been to enable communication of informa-

tion among practitioners; however, EMRs also offer opportunities to facilitate communication and shared decision making between patients and physicians, which have not been fully explored. Within the US Oncology Network, analyses have demonstrated that care consistent with evidence-based pathways is associated with superior survival and lower costs.⁶ EMRs can be used to prompt discussion and administration of patient questionnaires about end-of-life care, which may enable evidence-based and timely transition to hospice care. An EMR system that integrates clinical care pathways, patient support services, advanced-care planning, physician engagement, and reporting has been developed for use in the US Oncology Network, and a study of its impact on outcomes is ongoing. An additional feature of this EMR is the patient portal, providing approximately 15,600 patients of 37 affiliated oncology practices with online access to their medical records. Emerging EMR system features include Web-based learning centers that enable physicians to improve their communication skills and electronic prompts that remind physicians to initiate advanced-care planning.

Jennifer Malin, MD, PhD, Medical Director of Oncology Care Management for WellPoint, spoke on “Using Watson As a Rapid Learning System.” Current approaches to quality measurement, as used in the ASCO QOPI program, require time-consuming manual medical record abstraction; although electronic data are rapidly increasing in volume, they remain largely unstructured. Emerging IT systems offer a cognitive computing approach, characterized by ease in extracting structured and unstructured data, natural language processing, discovery orientation, and probabilistic simulations. The IBM Watson application exemplifies a cognitive computing system, which is under development for clinical decision support in oncology, in collaboration with Memorial Sloan-Kettering Cancer Center. Uses of Watson for processes such as drug administration approval are currently under evaluation within the WellPoint Network. In future, WellPoint will use Watson to develop flexible clinical decision support tools, which will employ machine learning and artificial intelligence technology to analyze and incorporate the growing medical evidence base in patient care decisions.

Discussion of these five presentations highlighted the following themes:

Patient Centeredness

A major topic was the imperative to incorporate patients centrally in the use of IT measures to improve care. It will be essential to collect information on outcomes reported by patients in real-world treatment settings so as to broaden the evidence base beyond the highly selected population of patients who enroll onto clinical trials. Patient advocates expressed enthusiasm about the opportunity to read their physicians’ notes to absorb information that they may have missed during a brief clinical encounter and to compare different treatment options; this interest emphasizes the need to provide a detailed treatment outline and survivorship plan to all patients with cancer. Novel approaches to sharing information between providers and patients should be studied in concert with experts from the behavioral sciences, including the potential of emerging technologies such as social networking. Refocusing on

the teaching of communication skills to oncologists will play an important role, as will incentives by payers that reward and facilitate a multidisciplinary team approach to the complicated problem of advanced-care planning.

System Complementarity and Value

As analogous systems such as CancerLinQ, the ACS registry, Watson, and other clinical decision support and pathway tools develop and expand, an important priority will be to ensure their ability to communicate and enhance one another through compatible interfaces that do not require extensive re-engineering. Concerns were raised about quality assurance with implementation of cognitive computing systems such as Watson, which will warrant testing through randomized clinical trials and other validation study designs. Future roles for cognitive computing systems may include assumption of administrative tasks such as documentation and billing, thereby liberating physicians to focus on personalizing care through communication and elicitation of patient preferences. Cognitive computing systems may also add value through analysis of accumulating clinical practice data as a component of comparative-effectiveness research.

Refining Quality Measures

The accurate assessment of quality in cancer care remains challenging; there is a widely recognized need to move beyond process measures, such as QOPI, toward outcome measures, which should be more multifaceted and informative than overall survival. Patients’ voices should be directly incorporated into the development of outcome measures for quality in cancer care. Existing quality measures may be most valuable in identifying low-performing outliers, and there is consensus that 100% guideline adherence is neither feasible nor desirable, given the significant variability in comorbidities and preferences among individual patients.

Emerging IT approaches to quality improvement must encompass data integration across diverse EMR systems and practice settings, demonstration of sufficient added value to justify their development and implementation, and enhancement, rather than obstruction, of patient-provider communication. The ASCO Quality Care Symposium enabled an exciting and productive exploration of these imminent challenges and opportunities.

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