

# Valuing Value

## The Changing Role of Pathologists

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*Am J Clin Pathol* November 2014;142:000

DOI: 10.1309/AJCPH1MW8YPKPLAR

The field of pathology, often considered a cornerstone of modern medicine, has seen monumental changes in recent years. With the advent of personalized medicine and understanding the molecular basis of disease, health care has been transformed. This has dramatically changed the landscape of clinical practice, allowing for personalization of a patient's treatment specific for his or her unique disease characteristics. This has led to improvements in care, but at what cost? These tests often cost several thousands of dollars. Providing the opportunity to order such a tempting (and costly) test on a requisition sheet is an important intervention point that pathologists have unique skills in which to assist the ordering clinician.

Complex molecular profiling tests are also available to offer prognostic and therapeutic guidance. Pathologists routinely test breast cancers for estrogen, progesterone, and human epidermal growth factor receptor 2. Actionable mutations have been found in several genes for lung cancer (ie, *EGFR*, *KRAS*, *ALK*, *ROS1*, and others). For colon cancer, testing for *EGFR* and *BRAF* mutations is routinely done along with Lynch syndrome screening. Personalized medicine has revolutionized cancer care for patients and families.

Approximately 30% of health care spending in the United States (\$800 billion a year) is spent on inappropriate testing and care.<sup>1</sup> Measures such as the Choosing Wisely campaign were launched to combat this waste. In an effort to shift the cost curve down and change its slope, emphasis has been placed on a more "frugal" approach to health care spending.<sup>1</sup>

Pathologists intersect with all major medical specialties, positioned at the hub of laboratory testing where diagnosis meets treatment, assisting clinicians with selecting the right test for the right patient at the right time. Inappropriate test

ordering wastes money, delays diagnosis and treatment, and negatively affects patient care. It can cause patient harm through unnecessary phlebotomy, resulting in iatrogenic anemia, an increased risk of infection, and patient dissatisfaction.

Many health care systems employ computerized physician order entry (CPOE) to improve efficiencies. Pathologists are integral to the successful implementation and functioning of CPOE systems. Sophisticated algorithms and programming can be combined with CPOE to optimize test ordering to provide high-quality care in a cost-effective manner. An example is shown in **Figure 1**, where pathologists at the Massachusetts General Hospital (Boston, MA) have leveraged the CPOE to both educate ordering clinicians and control utilization.

Since all patient testing flows through the laboratory, pathologists have access to not only individual patient data but that of communities. This presents a unique opportunity for designing systems to monitor and improve care at the population level. As a result, health care systems are able to monitor disease and health of populations.

Pathologists are experts in monitoring test utilization. This is an important checkpoint in any cost control measures. Costs savings can come from systems to monitor and assist with ordering everyday tests (high volume, low cost) and esoteric tests (low volume, high cost). Each intervention strategy has the potential for significant cost savings.

Recently, pathologist-initiated blood bank utilization management interventions at the Massachusetts General Hospital resulted in a \$1.735 million annual cost savings.<sup>2</sup> Another recent study showed the use of CPOE in combination with a clinical decision support tool blocked 11,790



**Figure 1** An interruptive alert in computerized physician order entry requiring the ordering clinician to enter an indication. Courtesy of Jason M. Baron, MD, and Anand S. Dighe, MD, Department of Pathology, Massachusetts General Hospital.

unnecessary duplicate tests over 2 years, resulting in a cost savings of \$183,586 with no adverse effects.<sup>3</sup>

Not only is overutilization a problem, but underutilization is also problematic. Zhi et al<sup>4</sup> found overall mean rates of over- and underutilization of 20.6% and 44.8%, respectively. Overutilization during initial testing (43.9%) was six times higher than during repeat testing, so there is a definite need to get things right the first time.<sup>4</sup>

With health care reform, there is a renewed emphasis on providing high-quality care in a cost-effective manner. Many of the principles of quality assurance and management have a solid foundation in the laboratory. Pathologists are critical in monitoring performance measures, patient outcomes, safety, and errors—in essence, providing value. A simple way to depict value is the following formula:

Value = quality ÷ cost + patient experience.

Pathologists factor into this equation at multiple points. Since 70% of information in the medical record is laboratory generated, pathologists are purveyors of big data and thus can measure quality and cost. For many patients, the phlebotomy experience may be their only interaction with the hospital. Optimizing this experience adds further value.

Cost-effectiveness should be taught to physicians. The concept of “ethical physician advocacy,” balancing the good of the patient in the face of limited resources, needs to be openly debated.<sup>5</sup> Appropriate use of evidence-based medicine can lead to high value care that is cost-effective.

Downstream costs savings are an important area that pathologists can affect. By making small adjustments, one can realize big downstream savings in the overall testing process (ie, one less daily laboratory test or blood draw on every inpatient adds up quickly). But what about the true

costs of those procedures, tests, and hospitalizations that initial appropriate testing serves to prevent? There needs to be research into the consequences of laboratory test utilization interventions.

Equally important are patient outcomes. This is the real measure of health care reform (ie, improving quality of care in a cost-conscious manner). Inappropriate laboratory tests can negatively affect patient care and lead to costly errors. Further study into ordering behaviors and the use of clinical decision support tools is needed.

Pathologists and laboratory medicine professionals are facing a dynamic health policy landscape. Pathologists are key members of the health care team and are responsible for important medical decisions about a patient’s diagnosis, treatment, hospital admission, and discharge. Awareness of the pathologist’s role in test utilization is essential for high-value, cost-effective care. Hospital groups need to include pathologists when tasked with decreasing costs and improving quality of care to ensure successful health care reform. Recognizing this value is critical for achieving successful evidence-based health policy.

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*Dr Misialek is a member of the Pathology Advisory Board of Foundation Medicine and an expert witness in pulmonary pathology.*

*Acknowledgments: The author thanks Jason M. Baron, MD, and Anand S. Dighe, MD, for providing the figure.*

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