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Diagnostic errors in medicine: A critical role for diagnostic imaging in finding and facilitating solutions

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A decade has passed since the Institute of Medicine (IOM) drew widespread attention to the tremendous costs—in terms of morbidity, mortality, and financial impact—of medication-related errors and medical adverse events in its landmark report *To Err is Human*.¹ An upcoming IOM study focused on diagnostic errors is reportedly on the horizon. Though the actual prevalence of diagnostic error (cases in which the diagnosis was missed, delayed, or wrong²) remains unknown, some estimates suggest an incorrect diagnosis in as many as 10% to 15% of cases, resulting in 40,000 to 80,000 deaths in U.S. hospitals each year.³ How can diagnostic imaging (DI) take a proactive role in solving the ongoing “crisis” of diagnostic error?

First we must measure

The scant data regarding error in medical imaging suggest that the incidence of imaging reports that provide wrong or misleading information is in the range of 2% to 4%.³ These data likely underestimate total imaging-related errors as delays or mistakes in communication of results that are not

included. As DI continues to evolve, developing ever more sophisticated imaging technologies and new biomarkers for improved diagnoses, the field must quantitatively evaluate the relative contributions of the test, its interpretation, and the communication of results to diagnostic error. Identification of all errors related to diagnostic imaging and their clinical impact requires access to data from the entire continuum of care. By going beyond standard peer review processes and actively working with IT vendors to develop and implement methods of monitoring the EHR for errors potentially arising from the DI product, radiologists can both understand the magnitude and source of diagnostic errors in a system-specific manner and enhance their credibility among their referring community.

Then we must take action

At the point of care, DI physicians must begin to look at areas where we can help our clinical colleagues sift through the myriad findings generated by our studies to identify what is of utmost importance. In addition to

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ensuring transparency and clarity in our reporting, we should take greater responsibility for delivering study results to our colleagues and for ensuring proper follow-up of these results. Even with automated systems in place, many reports remain misunderstood or not received.

At a practice level, DI is perfectly situated to lead a systems-based approach to decrease diagnostic error. Quality circles have recognized that the idea of “blame” triggered by the phrase “diagnostic error” must be eradicated in order to make progress in addressing diagnostic error. Instead of focusing on individual cognitive error with punitive consequences, improvement in quality is now sought through building highly reliable systems to prevent system-based error with the idea that one or more failures of the system generally account for the occurrence of preventable errors.^{1,2} Despite the central position of DI in the diagnostic process, few evaluations of specific systems-based interventions to reduce diagnostic error have been made in imaging and none has been widely applied.

DI has experienced a rapid progression of technology used for viewing, storing, and transmitting data, evolving from stand-alone PACS to integrated RIS-PACS solutions to EHR-RIS-PACS integration. Each of these steps introduces new challenges and complexities as well as new opportunities for more efficient and effective communication of results. DI can advocate for and help to implement automated systems to alert ordering physicians of

abnormal results, structured reporting solutions to decrease and sort information in regards to its importance in the patient’s care, computer-based decision-support systems to help ordering physicians identify the next best test, and diagnosis-generating systems that utilize a combination of clinical and imaging data.

In addition to optimizing medical imaging systems that interface with our clinical colleagues, we must learn to communicate more effectively with patients. A new era of patient-centered medicine, hastened by the focus of policy makers on altering healthcare quality measures and reimbursement strategies, emphasizes patient education and engagement, as well as increased system transparency. Many larger imaging practices have instituted “patient portals” and other patient-facing IT solutions, enabling patients to play a more active role in their own care and (ostensibly) in the prevention of errors that might otherwise occur in the course of their care.

A need for broad cooperation

DI incorporates several fields represented by a vast array of societies and colleges, each of which could positively affect the problem of medical misdiagnosis by seeking research funding to investigate methods to improve systems of DI reporting and communication. Each could contribute to the development of DI leaders in quality and diagnostic error reduction as an integral part of DI training, continuing medical education, and formal leadership development.

The need for radiologists to be involved in the movement to reduce errors, both diagnostic and otherwise, is urgent. Clearly, as healthcare providers, we are in a time of great transition and tension brought on by the struggle to meet a number of broadly competing demands. Can we provide personalized care *and* care for the entire population? Can we improve quality of care *and* decrease cost? The answers to these questions cannot be relegated to others, such as the IT infrastructure of the institution or other clinical specialties. We radiologists need to insert ourselves into the operations of our institutions and to position ourselves as central integrators of patient data, not simply image-readers. We must actively engage with all stakeholders in medicine’s future to find tenable solutions to medical misdiagnosis and thereby maintain the relevance of DI in clinical medicine’s future.⁴ Diagnostic errors are in the spotlight and will soon trigger more paradigm-shifting health policy changes. We in the DI community need to act promptly to ensure these changes are in the best interests of our patients, our practices, and our specialty.

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