



Patient Safety: Innovation and Critical Thinking

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Preventable medical errors rank as the third most common cause of death in the United States after heart disease and cancer.¹ They are responsible for 400,000 deaths each year (over 1095 per day) and another 10,000 serious complications resulting from medical errors each day.¹ That is the equivalent of two 747 airliner midair crashes per day. The economic cost to our nation is \$1 trillion per year.¹

On July 17, 2014, the US Senate Subcommittee on Primary Health and Aging met to address this crisis. Participants included senators and John James, PhD, Founder, Patient Safety America, Houston, Texas; Ashish Jha, MD, MPH, Professor of Health Policy and Management, Harvard School of Public Health, Boston, Massachusetts; Tejal Gandhi, MD, MPH, President, National Patient Safety Foundation, and Associate Professor of Medicine, Harvard Medical School, Boston, Massachusetts; Peter Pronovost, MD, PhD, Senior Vice President for Patient Safety and Quality, and Director of the Armstrong Institute for Patient Safety and Quality, Johns Hopkins Medicine, Baltimore, Maryland; Joanne Disch, PhD, RN, Professor ad Honorem, University of Minnesota School of Nursing, Minneapolis, Minnesota; and Lisa McGiffert, Director, Safe Patient Project, Consumers Union, Austin, Texas. While each speaker suggested various strategies for improving patient safety, they all agreed that information technology is not living up to our expectations for meeting this need. They also agreed that health care has become increasingly “high tech and low touch,” and, as a result, the medical community is leveraging neither technology nor the knowledge accrued from individual patient/physician interactions to improve patient safety and outcomes.¹

Last year my mother had a spinal fusion. The surgery was

a success by all measures. Two days after she was discharged home, she became weak and was unable to walk. She went to the emergency room, where it was noted that she was severely hyponatremic, weak, and experiencing severe back pain. For the next 36 hours she was not seen by a physician or physician assistant (PA), as the PA who admitted her to the hospital had not notified the “team” that she was admitted. My father, who is a vascular surgeon, notified her

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spine surgeon, who came to see her. Her hyponatremia was markedly worse, and she was transferred to the intensive care unit (ICU). She continued to decline and was started on hypertonic intravenous (IV) saline. Over the next several days her hyponatremia improved, and she was transferred out of the ICU but continued to have pain. The spine surgeon examined her several times, and imaging showed no evidence of epidural bleeding, infection, or misplaced hardware.

Over the next several days, I was informed by family members that the nurses were “keeping the pain in check” with IV narcotics and that my mom was heavily sedated most of the time. My dad later informed me that she had a foot drop on the left, and the next day another family member told me the foot drop was on the right. My dad and stepbrother each assured me that they were right. When my mom could talk, she told me how weak she was and that sometimes it was her right leg and other times her left. She was seen by a neurologist on 6 out of the next 10 days and underwent 3 computed tomography scans and magnetic resonance imaging, and the neurologist assured us that she had not had a stroke. On a Friday evening, I called my mom, who was

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Author's Disclosure Statement: Dr. Aboulafia wishes to report that he owns stock in Amgen.

Am J Orthop. 2014;43(12):546-547. Copyright Frontline Medical Communications Inc. 2014. All rights reserved.

progressively short of breath, and she told me that she felt weaker and weaker each day. The “foot drop,” which was now bilateral according to the neurologist, was from “not using it while she was in the ICU.”

My mom, who is an artist, commented that she was having trouble using her hands now and unable to hold a cup. I called the physician on call, who assured me that she was taking care of my mom’s blood pressure (which was labile for the first time ever; she had no history of hypertension) and her pain score was a 5. I explained that I knew that she was not “looking to play mystery diagnosis with an orthopedic surgeon 500 miles away, but I think my mom has Guillain-Barré syndrome.” Fortunately, the doctor said, “Oh my god, I think you’re right.” Monday morning, her diagnosis was confirmed and she has made a remarkable recovery. So how is it that she could be seen by a neurologist and a team of nurses, doctors, therapists, and resident staff and no one made a diagnosis? Certainly contributing factors include a system of multiple medical teams with frequent turnovers and a desire to consult others but no real “quarterback” who was looking at the overall care in a responsible and critical way. A thorough history and physical examination, rather than a multitude of expensive and unnecessary imaging studies, could certainly have led to a quicker diagnosis and avoidance of a protracted hospital stay and rehabilitation.

To be sure, there are many factors that lead to delays in diagnosis. The reliance on advanced imaging, the lack of a simple physical examination, and the lack of critical thinking played prominently in the failure to make a diagnosis in my mom’s case. Some would argue that we need information

technology (IT) systems that will allow us to better diagnose and treat patients. They believe that with electronic medical records (EMRs) data points will be entered and a diagnosis will be made. Major corporations like IBM and GE are working to make this a reality. Although Watson (the artificially intelligent computer system created by IBM) may be able to win on *Jeopardy* and may move the needle forward to improving patient care, 2 things are certain: (1) Appropriate data will need to be input by people, and (2) without critical thinking, the appropriate data can’t be entered or interpreted correctly.

The fact remains that EMR has fallen short of expectations. We have more data at our fingertips but this has not translated into a significant improvement in patient safety. The human factor remains critical. Even though industry and health care workers strive to innovate and merge technological advances with improved patient outcomes, technology will continue to fall short of expectations without the input of critical thinking. There are things that computers and technological advances can do that people can’t, and there are things that people can do that computers can’t.

We cannot become a profession reliant on technology to substitute for critical thinking, and we cannot become a profession that doesn’t recognize what technology can bring to us and our patients. Like a railroad track that needs 2 parallel tracks to move trains, we must continue to build on 2 tracks: innovation and critical thinking. ■

Reference

1. McCann E. Deaths by medical mistakes hit records. *Healthcare IT News*. <http://www.healthcareitnews.com/news/deaths-by-medical-mistakes-hit-records>. Published July 18, 2014. Accessed November 17, 2014.

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