

Diagnostic Failure: The Growing Deficit

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The Case

A 65-year-old woman with a history of diabetes and hypertension was admitted to a hospital's telemetry floor for management of uncontrolled hypertension and palpitations. She was seen by a hospitalist, who ordered an echocardiogram, instituted treatment for hypertensive urgency, and consulted a cardiologist. On the afternoon of the first hospital day, the patient complained of right arm numbness and weakness. The nurse found the patient to be oriented but with new difficulty answering questions. The nurse found no objective evidence of arm weakness.

The nurse called the hospitalist to relay the new symptoms of arm weakness, along with her assessment that the patient had normal strength in her arm. She did not report the new speech difficulty. The hospitalist asked the nurse to call for a neurology consultation and told the nurse that he would come by to see the patient later.

Four hours later, the patient's weakness had progressed; she was now completely unable to move her right arm. The hospitalist had not yet evaluated the patient in person, and the neurology consultant also had not seen the patient. The nurse called the hospitalist and a stat CT head was ordered, which revealed large ischemic stroke. A Code Stroke was called. On review of telemetry, the patient was noted to be in paroxysmal atrial fibrillation, which was felt to be the likely cause of her stroke.

The patient was urgently transferred to the ICU and received thrombolytic therapy, with some improvement in her symptoms. She was eventually discharged to a long-term facility for neurorehabilitation.

The telemetry floor charge nurse referred the case to the hospital's risk management department due to the delay in physician assessment. Formal review confirmed that the initial symptoms of arm weakness were not acted upon by the hospitalist, and that the patient had not been seen for more than 4 hours by either the hospitalist or neurologist despite the new symptoms. The telemetry tracing had also not been formally reviewed by a physician.

Following this case, the hospitalist group instituted new policies mandating a face-to-face assessment by the hospitalist within 1 hour of patients being admitted to the floor and mandated that subspecialty

consultants should be contacted directly by the hospitalist instead of by nursing staff.

The Commentary

by Robert Chang, MD, and Scott Flanders, MD

Despite being underreported, diagnostic error is common (1), occurring in 5%–20% of emergency department, inpatient, and ambulatory visits.(2) In-hospital stroke, as occurred in this patient, is particularly susceptible to this error (3), with fewer than 5% of patients receiving timely imaging (4) and two-thirds ultimately being deemed to be ineligible for thrombolytic therapy, often due to diagnostic delay.(5) Faulty detection of symptoms, failure to act on an identified concern, and poor communication are frequently detected in cases of diagnostic error (6) and were likely at play in the case presented.

The Root Causes

In a newly admitted patient experiencing new symptoms, the hospitalist did not perform an appropriate bedside assessment and instead relied on the nursing assessment for the interval history and physical examination. The early signs of stroke can be subtle, so without a hands-on evaluation, most hospitalists in this scenario would struggle to reliably and rapidly make the diagnosis and assess the acuity of the patient.

In retrospect, a solution that calls for routine bedside assessment and less reliance on symptoms and signs communicated by phone may seem obvious. However, in our experience, management by phone (or remotely via electronic health record [EHR] systems) is both common and increasingly necessary. Our volume-driven reimbursement system often necessitates that hospitalists manage large numbers of patients and juggle many competing roles and responsibilities. The implementation of EHRs, in addition to attendant inefficiencies (7), may also move providers from the bedside to computers in remote locations. The hospitalist in this case may have been managing another high-acuity patient, running a code, or managing a large number of admissions, forcing him or her to use the EHR and phone in the early phases of this patient's care.

In such circumstances, effective communication with nursing and other providers is critical. Poor communication is an underlying cause in 65%–70% of safety events with three types of errors occurring frequently—absent, ineffective, or content-poor communication.(8-10) In this case, the nurse did not notify the physician of new word-finding difficulty nor the finding of atrial fibrillation on telemetry; either observation might have counterbalanced her reported finding of normal strength and prompted a different response from the physician. Irrespective of the nurse's communication, the absence of concrete and urgent communication by the physician to either the nurse or the neurology consultant was another significant contributor to the delay in diagnosis.

Proposed Solutions

Stopping and thinking about your patients is critical in making challenging diagnoses. Intentional use of type 2 (slow) in favor of type 1 (fast) thinking (so-called cognitive debiasing) has been suggested as method of mitigating diagnostic failure.(11,12) A common example would be the formal creation of a list of differential diagnoses including common, high-risk, or treatable conditions when encountering new unexplained findings. That level of thoughtfulness may have resulted in the consideration of acute stroke as a possible diagnosis, which would have prompted a bedside evaluation. In our experience, after having reviewed many cases with poor outcomes related to missed diagnoses at a large academic medical center, we believe certain red-flag symptoms should routinely trigger a bedside evaluation. The top three (two of which existed in this patient) include (i) clinically critical or time-sensitive symptoms (chest pain, new neurologic symptoms including potential stroke symptoms, or signs of sepsis); (ii) any symptom that prompts an urgent consult (consult for possible surgical abdomen); and (iii) repeated calls for the same patient complaint (which we interpret as a cry for help by the nursing staff).

In circumstances where an in-person evaluation is not feasible, the fallback position must include effective, concrete, and clear communication. While the ubiquity of poor communication in medical error speaks to the difficulty of its cure, structured methodologies to improve communication have shown tangible outcome improvements. The Situation, Background, Assessment, Recommendation (SBAR) model was developed as a reliable means of transmitting critical and urgent information. Adoption of SBAR by nurses to communicate with physicians is associated with an improved perception of communication and decreased frequency of incident reports (13) as well as reduced mortality.(14) Here, the SBAR format may have provided a framework for the nurse to report all relevant information and helped to clarify her expectations regarding the physician's response.

Communication in this case involved not just the nurse, but also a consultant. The 10 commandments of consultation (15), articulated from the perspective of an internal medicine physician consulted by another service, captures timeless rules of communication that would have improved the hospitalist's engagement of the nurse and subspecialty consultant. Key recommendations include:

- Establish the urgency of the situation. If recognized as urgent, all parties would reinforce an active resolution to the situation.
- Provide contingency plans focused on the next step and a plan to reengage if the expected outcome did not occur within a certain timeframe.
- Talk is cheap...and effective. Speaking in person to the neurologist would ensure that critical information is conveyed without misunderstanding and inherently lends urgency to the consult.

Many of these recommendations imply the hospitalist is directly communicating with the specialist. We favor such a model for urgent scenarios like this one but recognize that variability exists between institutions and that in some settings, the hospitalist asks the nurse to call the consult or places an order for a consult to be called. The request for the nurse to call could be structured as "Call the neurologist now and tell them that I am worried about this patient having a stroke. Call me if they don't respond in 15 minutes." If the hospitalist is directly communicating with the neurologist, the page or text might be framed as "Ms. Jones is having new neurologic symptoms—I am concerned about a stroke. Could you call me in the next 5–10 minutes?" Regardless of the model, the principles of effective communication apply.

The care of hospitalized patients occurs in a highly complex environment, which is only becoming more complex. As physicians, we must adapt a framework that creates space to identify difficult diagnoses, defaults to an evaluation of the patient in-person, and includes an emphasis on excellent communication. Within health systems, clinicians should be systematically educated and trained in communication techniques, given the pervasive contribution of inadequate communication to poor outcomes and demonstrable improvements after intervention.

Take-Home Points

- Explicitly build in time and mental space in your clinical practice to create the opportunity to make the right diagnosis.
- In-person evaluation of the patient is necessary for time-sensitive and catastrophic red-flag situations.
- The gold standard of communication with any member of a care team, whether nurse or subspecialist, includes the use of specific and direct communication emphasizing urgency and contingencies
- Clinical leadership should implement well-established methodologies of communication with demonstrable safety benefits (such as SBAR).

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