SPECIAL CONTRIBUTIONS

Profiles in Patient Safety: Emergency Care Transitions

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Abstract

A 59-year-old man presented to the emergency department (ED) with the chief complaint of “panic attacks.” In total, he was evaluated by 14 faculty physicians, 2 fellows, and 16 residents from emergency medicine, cardiology, neurology, psychiatry, and internal medicine. These multiple transitions were responsible, in part, for the perpetuation of a failure to accurately diagnose the patient’s underlying medical illness. The case illustrates the discontinuity of care that occurs at transitions, which may threaten the safety and quality of patient care. Considerable effort must be directed at making transitions effective and safe. Recommendations to improve transitions include a heightened awareness of cognitive biases operating at these vulnerable times, improving team situational awareness and communication, and exploring systems to facilitate effective transfer of relevant data. Key words: patient safety; leadership; transitions; medical error; psych-out error. ACADEMIC EMERGENCY MEDICINE 2003; 10:364–367.

CASE SCENARIO

A 59-year-old man presented to triage at 1256 hours with the complaint of panic attacks and requested a psychiatric evaluation. He also complained of vomiting, insomnia, agitation, and difficulty breathing. He had had several similar episodes since discontinuing sertraline two weeks ago. The “panic attacks,” marked by episodes of hyperventilation and difficulty breathing, had escalated to six to seven times per day. His past medical history was notable for panic disorder, hypertension, non-insulin-dependent diabetes, hemorrhagic stroke, and coronary artery disease with coronary artery bypass grafting. His medications included aspirin and simvastatin.

Review of systems was notable only for slightly worsening dyspnea on exertion. Vital signs, physical examination, and laboratory tests revealed no significant abnormalities. At 1735 hours, the patient was cleared medically and referred for psychiatric evaluation. However, due to a large influx of psychiatric patients, he remained in the emergency department (ED) awaiting an open psychiatric evaluation room.

At 2052 hours, the patient became tachycardic (heart rate = 110 beats/min) and tachypneic (respiratory rate = 28 breaths/min), and described restlessness and difficulty breathing. Lorazepam 1 mg was given intravenously and was repeated at 2140 hours for the same reason. Each attack was associated with premature ventricular contractions (PVCs), which were documented in the nursing notes. At 2205 hours, the patient was noted to be hypoxic (sat = 85%), ripped off his monitor leads, and threatened to leave. His skin was cool and pale and the nurse noted rales on lung examination. The departing ED attending transferred care to the oncoming attending at 2300 hours, having ordered an electrocardiogram (ECG), furosemide, and an indwelling urinary catheter “to get things started” without affecting a disposition. The patient remained hypertensive and hypoxic until metoprolol and lorazepam were administered. Further episodes of agitation necessitated the use of soft wrist restraints. Concurrently, additional therapeutic interventions included the application of a 50% ventimask and administration of aspirin. The new attending (2300–0400 hours) focused attention on the report of the patient’s altered mental status and ordered a head computed tomography (CT) without personally re-evaluating the patient. At 0300 hours, a CT scan of the head was completed and the previously ordered ECG was noted to be unremarkable.

The present attending transferred care to another attending from 0400 to 0600 hours. Due to pressing clinical needs that created goal conflicts, this attending did not reassess or treat the patient during this time.
time. A neurology consult, requested around 0100 hours, was completed around 0600 hours. No new changes were appreciated and the consultants suggested psychiatric evaluation for panic disorder and selective serotonin reuptake inhibitor withdrawal syndrome. Between 0600 and 0700 hours, a new ED attending for the daytime shift reported for duty and did not document any further therapy or evaluation. At 0700 hours, the final attending assumed responsibility for care and recognized a troponin I of 0.54 (normal < 0.03 ng/mL), which had been reported at 0045 hours. The patient was subsequently admitted to a telemetry bed and, upon arrival there, had another brief sensation of a “panic attack” associated with hypoxia. He was immediately transferred to the critical care unit (CCU) was treated with maximal medical therapy for a non-Q-wave myocardial infarction and congestive heart failure. He was discharged 10 days after presenting to the ED, in stable medical and psychiatric condition.

**CASE INVESTIGATION**

Care within the ED was transferred through five separate attending physicians and six residents over a 20-hour period. Eight separate nurses were documented as caring for this patient during his ED stay. Care was eventually transferred from the ED to an internal medicine resident on telemetry, who immediately recognized the need for intensive care and transferred the patient to the CCU. The high frequency of care transitions in this case resulted in discontinuation of pre-existing care plans, but good turnovers may help develop shared cognition or facilitate clarification in the participants to promote recovery.

A number of transitions of care occurred during this patient’s stay in the ED. Within the ED, documentation of this patient’s evolving process was inconsistent, cryptic, and, at times, unreadable. Psych-out error, assuming a psychiatric cause for the patient’s complaint without a careful medical assessment, presumably influenced many physicians who assessed this patient. The first attending recognized a change in the patient’s condition after medical clearance, ordered testing, initiated treatment for presumed pulmonary edema, but apparently failed to effectively communicate a probable new diagnosis and change in disposition. As a result, the second attending remained anchored on a central nervous system etiology and subsequently ordered a head CT to exclude a structural etiology for the patient’s altered mental status. Notably, the report of the elevated troponin level was placed on the chart mixed in with other documentation, but was not communicated to the clinicians or actively sought after by the treating team. The relevance of these data may have received lower priority because the patient was perceived as a “psychiatric patient.” No documentation by the third or fourth attending was made, nor were there attempts at further treatment or appropriate disposition. The fifth attending finally recognized the cardiac etiology of the patient’s symptoms and admitted the patient to a telemetry floor.

**DISCUSSION**

Transitions in care are ubiquitous in ED settings, and will likely increase as attempts to limit failures due to fatigue require more frequent shift changes. These transitions at shift changes have long been thought to be sources of error in emergency care, likely related to poor communication and inconsistency in care. Despite this general belief that transitions are a common source of system failure, surprisingly little attention or research has been directed at this dynamic period of care and, therefore, the process remains highly variable and a threat to patient safety.

This case is illustrative of several error-producing conditions (EPCs) and violation-producing behaviors (VPBs) that typify ambient conditions in many EDs, and that pose threats to patient safety and quality of care. An overlying EPC in this case is transition error, describing error that arises through transitions of care of the patient from one physician to another, one nurse to another, or any health care worker to another. Transitions are interruptions or “gaps” in the continuity of care and present opportunities for a variety of errors to occur.

Error-producing conditions and VPBs are common in a variety of other workplaces. In medicine, the situation might be expected to be considerably worse for several reasons. Medicine is an ill-structured domain with poorly defined concepts and boundaries, and little agreement on clinical and operational solutions. Emergency medicine exemplifies this even more so than other medical specialties by virtue of its unique operating characteristics: multiple and often overlapping patient encounters, unscheduled care, incomplete historical data, unpredictable patient presenting conditions, and variable practice settings. All of these are exacerbated during transitions. While ED practitioners routinely preserve coherence in care by bridging the gaps and discontinuities that occur at transitions, prevailing EPCs and associated VPBs may militate against and overwhelm these safeguards, leading to the failures seen in the present case.

The effective transfer of knowledge from one care provider to another is an essential component of safety culture. Communication breakdown has been identified as a critical component of treatment delays and poor outcomes, and is characterized by insufficient or inaccurate data, mistimed or delayed information, poorly organized data, the insertion of “pseudo-information,” and cognitive overload.
Transitions in the ED are a natural and dynamic occurrence of the system as it is presently structured, and communication is an essential component of this process. Typically, it occurs across varying levels of experience, knowledge, and roles. In addition, the nature of the communication may vary from chaotic during periods of stress and multitasking, to organized and deliberate under controlled conditions. Beyond these immediate ambient factors, information transfer may also vary due to a lack of standardization in the transition process, and from inherent difficulties with the degree of certainty attached to particular diagnoses. At the time of each transition in this case, the physician followed the pre-existing assessment and plan, with little inclination to formally re-evaluate the patient and reassess the working diagnosis. With every transfer of knowledge and authority, the opportunity to correct previous misconceptions or flawed patient care plans. As one of the most commonly performed tasks in emergency medicine, transitions play a vital role to continuity of care. It is surprising to note that, aside from some observations in nursing and the intensive care unit, there are very few medical reports describing transitions or promoting safe transition methods. There is a distinct need for both quantitative and qualitative data on the nature of ED transitions.

In the present case, the patient was the unfortunate victim of both poor transfer of information and transfer of poor information. The EPC began with inaccurate patient assessment, and repeated failures to re-evaluate the patient or assess the acute changes in his condition. There was inadequate discussion between residents, nurses, and other care providers, and ultimately a poorly formulated clinical care plan. Inaccurate patient assessment in those who present with primary psychiatric complaints may lead to poor outcomes. Acknowledging that the diagnosis of “anxiety and hyperventilation” is fraught with risk and recognizing that the patient had a change in his clinical condition should have set off alarms in successive attending physicians. Diligence on the part of the care providers is critical in evaluating medical conditions that may mask as psychiatric ones. The recently described cognitive forcing functions are useful in this context. Key skills for providers include the ability to avoid attributing a psychiatric condition to the patient unless the diagnosis is unequivocal. Patients who frequently visit the ED with psychiatric complaints are especially vulnerable to this type of error, a form of posterior probability error.

An important component of transitions—acquiring the correct information at the right time—did not occur in this patient’s care. Laboratory results, evidence of cardiac irritability (PVCs), hypoxia during “anxiety” attacks, and the patient’s unchanged neurologic status were not easily available to the attending. Ultimately, the design of the system bears the responsibility of ensuring effective communication and, thus, safety and quality. However, in daily clinical care, it is often the shift-to-shift culture fashioned by each clinician leader that ensures safety and quality.

In the present case physicians had to log on, await password clearance, find the patient, and look up laboratory results on a computer to find the troponin test. This interruption in flow is complex and inefficient, and removes the decision maker from patient care—a direct threat to the fundamentals of clinical practice. The attending had to sift through numerous illegible nursing notes to find the report of hypoxia, and no rhythm strips were attached. Had a “psychologically safe” environment been fostered, perhaps there would have been a better flow of verbal communication from nurse or resident to attending—and back. Lastly, inappropriate diagnostic workup with neurology consultation delayed disposition and proper treatment. The responsible clinician must determine reasons for altering an established diagnostic and therapeutic plan. The second attending, despite documenting findings of heart failure, pursued a neurological diagnosis without documenting a neurologic assessment; the third and fourth attendings never questioned or assessed the reason for this. The last attending in the ED recognized the need to focus on the critical, life-threatening issue of heart failure.

Standards for physician-to-physician transition must be determined. Ultimately, the transfer of authority and responsibility demands each physician individually direct the therapeutic and diagnostic plan. This can occur—in overcrowded, increasing-acuity departments—only when information is consistently and efficiently delivered to the decision makers. It is important that the team leader be supported and supportive. With an environment of cooperative and joint responsibility, flow of information can be seamless. Creating and sustaining a milieu where this occurs is vital to safety and excellence. Refining the system to operate efficiently, particularly with transitions and information accessibility, demands administrative thoughtfulness.

**PROPOSED SYSTEM CHANGES AND EDUCATIONAL RECOMMENDATIONS**

1. Educate ED staff to recognize the potential hazards of transitions, and see them as opportunities to initiate corrective actions, not merely transfer responsibility.
2. Study transitions in the ED and report the best techniques of successful knowledge transfer between practitioners.
3. Foster a culture that encourages communication and joint accountability through team and leadership training.
4. Recognize the biases associated with possible psychiatric presentations. Utilize forcing strategies to avoid missed diagnoses.

5. Implement information technology that supports team situational awareness, and create a notification system to reliably alert treating clinicians of critical laboratory data.

References


