

Patient Safety Alert: Delayed Diagnosis

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Introduction

The Academic Medical Center Patient Safety Organization (AMC PSO) held a Collaborative convening session for Emergency Department (ED) Leaders from member regional hospitals to offer their expertise and opinions regarding issues relevant to the ED setting. An analysis of delays in diagnosis in the ED setting was discussed to illustrate risks and vulnerabilities specific to this clinical area. The AMC PSO's goal in sponsoring this meeting was to help propagate the natural progression of CRICO's established mission of helping health care providers turn credible patient safety data into effective action.

It was noted that individuals who work in emergency medicine need increased awareness that community hospital ED's have increasingly become a portal for hospital admissions, resulting in more patient "ownership" and subsequently, far more liability and potential litigation issues for ED staff. As such, ED personnel need to be progressively educated in techniques to increase patient safety and cognizant of best practices to reduce their own risk.

The AMC|PSO members performed an in-depth analysis of patient safety issues identified in the ED setting. These root cause analysis highlighted distinct areas in the patient care delivery process where errors were most likely to occur leading to missed and delayed diagnosis:

- during patient hand-offs
- inter-departmental consultation

Missed and Delayed Diagnosis in the ED

In 2006, U.S. EDs were the portal of admission for 50.2% of all non-obstetric hospital admissions (an increase from 36.0% in 1996). With the rise in hospital admissions stemming from EDs, emergency physicians are now increasingly responsible for a larger portion of hospital patient management

(Niska RW 2010; Pollack, Amin et al. 2012). Part of the responsibility of "owning" more patients awaiting admission is being responsible for the patient's successful handoff to the next appropriate department.

A 2007 published study examined 122 closed malpractice claims from 4 different insurers in which a missed or delayed diagnosis from the ED was alleged (Kachalia, Gandhi et al. 2007). A total of 79 (65%) claims were determined to contain a missed or delayed diagnosis that resulted in a patient adverse event (AE) with the top 5 contributing factors involved presented in Table 1.

Table 1.

Contributing Factors to Missed or Delayed Diagnosis	n/N	Percent (%)
Cognitive	76/79	96
Patient-related	27/79	34
Lack of appropriate supervision	24/79	30
Inadequate handoff	19/79	24
Excessive workload	18/79	23

Adapted from Kachalia et al , 2007.

Similarly, the top four most frequently identified areas of clinical breakdown for missed and delayed diagnosis are presented in Table 2.

Table 2.

Area of Breakdown in Diagnosis	n/N	Percent (%)
Failure to order appropriate diagnostic test	46/79	58
Failure in taking history or physical examination	33/79	42
Incorrect diagnostic test interpretation	29/79	37
Failure to order appropriate consultation	26/79	33

Adapted from Kachalia et al , 2007.

Diagnostic errors have become the most prevalent type of malpractice claim over the last decade in the United States (Phillips, Bartholomew et al. 2004; Chandra A 2005). ED staff are particularly challenged in making accurate and timely diagnoses for the following reasons (Kachalia and Studdert 2004):

- Patients frequently present with high-acuity illnesses
- Emergency care steps such as triage, consultations, admission and discharge are operationally complex and must be executed under tight time constraints
- ED staff typically have no relationship or history with patients they treat
- The continuous nature of an ED requires a perpetual cycle of shift changes and handoffs

Cognitive errors revolving around diagnosis and treatment are more likely to occur when (a) the level of uncertainty is high (b) the patient is unfamiliar to the clinician, and/or (c) when there are atypical or non-specific presentations of a common disease or “distracting” comorbid conditions (Kostopoulou, Delaney et al. 2008). In general, diagnostic and treatment-related AEs are generally composed of a complex interaction between system-related and

cognitive factors with multiple and identifiable root causes (Kostopoulou 2008; Schiff, Hasan et al. 2009; Zwaan, de Bruijne et al. 2010). A reduction in cognitive errors is possible through (Croskerry 2003) focusing on improved physician training in context-specific situations as well as improved organization of knowledge, and information transfer. Other potential interventions to reduce diagnostic error (Graber, Kissam et al. 2012) include: improved knowledge, improved clinical reasoning and “getting help” (Table 3).

Table 3.

Intervention Target	Possible Tools
Improved knowledge and experience	simulation-based training; improved education and feedback focused on a single disease
Improved clinical reasoning and decision making skills	reflective practice; active metacognitive review
Providing interventions that facilitate cognitive “help”	informaticians; integrated decision support; facilitating access to information; second opinions and specialists

Patient Handoffs

As patients are transferred from EDs to other departments, more clinical personnel become involved in a single patient’s care. This increases the probability of deficits in collaboration and often results in missed opportunities to optimize care, engage in measures that reduce health care costs (Lofgren, Gottlieb et al. 1990; Pollack, Amin et al. 2012), and minimize patient morbidity and mortality (Solet, Norvell et al. 2005). Surveys of hospital residents indicate that the average handoff

lasts 18.7 minutes (Solet DJ 2004), however, patient handoffs are not always treated as critical care steps (Volpp and Grande 2003).

A review of published literature focusing on handoffs (Solet et al., 2004) identified four major barriers to effective handoffs and offer recommendations for best practices to avoid these pitfalls (Table 4).

Table 4.

Barrier	Best Practice
Physical setting	An area that: ensures patient confidentiality; is quiet with minimal background noise; a location with a low chance for interruption; has good lighting with room to take notes
Social setting	A locality where clinicians of different status and/or rank can feel comfortable to express their opinions and freely exchange ideas
Language barriers	Colloquialisms should be avoided and only accepted abbreviations used in both written and oral transmission. Repeating back verbal orders to ensure accuracy for both speaker and recipient.
Medium of Communication	Direct (face-to-face) communication is optimal and preferred for handoffs so all the nuances of the message are available. When possible, direct communication is paired with written.

Inter-departmental and Consultation Miscommunication

The American College of Emergency Physicians (CEPD) guidelines states that diagnostic image evaluation should occur contemporaneously with the patient’s visit, and that if the ED physician believes that an urgent consultation is required, the consultant should be immediately available (ACEP, 2006). Similarly, the Joint Commission has published National Patient Safety Goal (NPSG)

guidelines and procedures for reporting of critical test results and diagnostic procedures (Table 5).

Table 5.

NPSG Guidelines for Results of Critical Tests
<p>1. Institute clear written procedures for managing critical results of diagnostic tests and procedures that directly address the following:</p> <ul style="list-style-type: none"> • The definition of critical results of diagnostic procedures and tests • By whom and to whom these critical results are reported • The acceptable timeframe between the availability and reporting of critical results of diagnostic procedures and tests <p>2. Implement procedures for effective and efficient management of critical results of diagnostic procedures and tests.</p> <p>3. Evaluate the timeliness of reporting the critical results of diagnostic procedures and tests.</p>

Improved peer-to-peer communication in healthcare leads to improved patient outcomes (Baggs, Schmitt et al. 1999). Poor communication is a cause of medical error and a threat to patient safety and the transmission of clinical information is often complicated by issues such as evaluation, learning agendas and professional association (Lingard, Garwood et al. 2003; Wadhwa and Lingard 2006; Lester and Tritter 2001; Lingard, Espin et al. 2004). This certainly applies to inter-departmental communications as well as physicians seeking consultations with other physicians (Kennedy, Regehr et al. 2009).

Critical Radiology Results Notification (CRRN)

In response to data demonstrating an unacceptable frequency of cases with miscommunication of critical radiology results, CRICO challenged the Radiology chiefs to bridge the communication gap. In response, Brigham and Women’s Hospital developed and successfully implemented the Alert Notification of Critical Radiology Results (ANCR) system. Subsequently, CRICO approved a grant to fund implementation of this public domain software—or alternate systems that meets the same business rules—for all CRICO Radiology departments. ANCR

enables automated graded notification of referring providers when results from imaging exams are deemed critical or unexpected by a radiologist at the time of interpretation. It is accompanied by a policy for critical radiology results communication based on urgency level; a. immediate (life-threatening,) b. urgent, or c. not immediate or life- threatening and incorporates an acceptable time to notification and expected mode of communication for providers of these results. Additionally, it provides a mechanism for secure web-enabled acknowledgement of the alerts. ANCR tracks alerts that are generated until they are acknowledged. It enables closing of the communication loop and measurement of performance.

- Providing both verbal and written instructions in a quiet area, with two-way feedback, during patient handoffs greatly reduces communication errors
- Guidelines for relaying critical test results should contain clear instructions regarding chains of communication with specialist availability and contact information, as well as set timelines for feedback, similar to those designed by the Joint Commission on Accreditation of Healthcare Organizations (JCAHO)
- Establishing valid and reliable supervisory systems for evaluating staff case work is essential for patient safety.

Urgency Level	Short Description	Notification Time Line	Mode of Communication
Red Alert	Immediately life-threatening	<= 60 minutes	Face to Face Phone contact
Orange Alert	Urgent	<= 3 hours	Face to Face Phone contact
Yellow Alert	Not Immediately life-threatening or urgent	<= 15 days	Face to Face Phone contact Other verifiable method

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Conclusions and Take Home Messages

- ED’s are increasingly becoming a portal for hospital admissions, resulting in more patient “ownership” and liability issues for ED staff
- Cognitive errors around diagnosis and treatment are the most common source of ED patient adverse events
- Improving clinical knowledge, improving clinical reasoning and “getting help” are three effective strategies for reducing cognitive errors

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