

# Patient Safety Alert: Missed and Delayed Diagnoses in the ED

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Issue 18 | May 2014

The AMC PSO recently convened Emergency Medicine Leaders to share their expertise and opinions regarding patient safety issues relevant to the Emergency Department (ED) setting. Participants discussed case studies, as well as emerging technologies and new strategies that are now available to complement existing patient safety protocols aimed at reducing ED adverse events. The AMC PSO sponsored this meeting to propagate CRICO's established mission of helping health care providers turn credible patient safety data into effective action.

## CASE STUDY

*An elderly patient presented to a regional ED with a complaint of chest discomfort, self-described as "lung pain." The patient had been taking Tylenol for the pain without resolution. On evaluation, her vital signs were stable with the exception of a slightly elevated HR. Diagnostic studies suggested possible early onset pneumonia. The patient was prescribed antibiotics and discharged home. The patient returned to the ED a few days later and was found to have suffered a cardiac event. The patient's family later revealed that the patient had suffered a prior myocardial infarction. This information was not communicated during the initial ED presentation and evaluation.*

*This case is illustrative of similar cases seen in our claims review of missed or delayed diagnosis in the ED setting. Contributing factors often identified in these cases include:*

- Lack of a complete medical history
- Narrow diagnostic focus
- Environmental factors such as ED busyness and high staff caseloads
- Causal factors related to miscommunication, supervision and administrative issues
- Pressure to maximize ED throughput and shorten ED lengths of stay, which are also often used as performance metrics

## LIABILITY IN THE ED

The dynamic environment of emergency medicine in the United States leaves ED clinicians more vulnerable to liability claims (Kostopoulou, Delaney et al. 2008). In general, diagnostic and treatment-related adverse events in the ED are generally composed of a complex interaction between system-related and cognitive factors, with multiple and sometimes unidentifiable root causes (Kostopoulou 2008; Schiff, Hasan et al. 2009; Zwaan, de Bruijne et al. 2010).

In a study of closed ED malpractice claims in a national database of malpractice insurers, investigators identified 11,529 claims arising from an adverse event specific to the ED, representing \$664 million in total liability. The primary sources of these claims are listed in Table 1 (Brown TW, McCarthy ML, Kelen et al. 2010).

Source of Error	Percent of Claims
Diagnosis	37
No specific error defined or provided by insurer	18
Improper performance of a procedure	17
Failure to supervise	7
Failure to perform	4
Delay in performance	3
Medication errors	2
Failure/delay in referral or consultation	2
Other	6

Seventy percent of these claims closed without payment and 29% of claims that did pay out did so through settlement. Only 7% of the 11,529 claims were resolved by verdict, and 85% of those were in favor of the clinician (Brown TW, McCarthy ML, Kelen et al. 2010).

A separate but similar investigation found that 65% of liability claims against EDs involved missed diagnoses.

Forty-eight percent of these missed diagnoses were associated with serious harm, and 39% resulted in death. The leading contributing factors to the missed diagnoses were cognitive factors (96%), patient-related factors (34%), lack of appropriate supervision (30%), inadequate handoffs (24%), and excessive workload (23%) (Kachalia A, Gandhi TK, Puopolo AL et. al., 2007).

## ED PERFORMANCE MEASUREMENT: IMPACT ON PATIENT SAFETY

ED performance measurement and improvement is being uniformly promoted by practitioners, payers (including Medicare and Medicaid), hospitals, administrators, patient organizations, and regulatory environments (Institute of Medicine 2011; Welch, Asplin, Stone-Griffith et. al. 2010). For example, timeliness and efficiency are two core domains of quality care identified by the Institute of Medicine (IOM) that are crucial to patient care in the emergency room, yet there is no consensus on how best to define or gauge these variables (Welch, Asplin, Stone-Griffith et. al. 2010).

It is now common for ED staff to be evaluated, assessed and even monetarily compensated based on quantified performance metrics and, as such, interest in their impact on patient safety and how to improve them is a growing concern for ED personnel and healthcare organizations.

However, agreement upon the details of which specific ED processes should be measured and how these metrics should be quantified and best employed in the clinical realm is still under investigation.

## THE EVOLVING ROLE OF EMERGENCY DEPARTMENTS IN THE UNITED STATES

### CHALLENGES

In 2006, the IOM released an alarming report based on extensive survey research regarding the state of EDs across the nation. In this publication the authors openly concluded that a “national crisis” in emergency care was

about to unfold, and in plain language stated that: “emergency departments across the nation are overcrowded” (Committee on the Future of Emergency Care in the United States Health System, 2007). Supporting this statement was published data indicating that ED visits rose from 90.3 million in 1993 to 113.9 million in 2003. During this same time period the number of EDs in existence decreased from 4,019 to 3,833, and the number of hospitals themselves decreased by 703 (Committee on the Future of Emergency Care in the United States Health System, 2007) often leading to conditions of overcrowding.

In addition to overcrowding, a number of secondary effects are a result of the increased use of EDs across the nation. U.S. emergency departments are now the primary portal for 50.2% of all non-obstetric hospital admissions (an increase from 36.0% in 1996). With this 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).

Along with increased patient responsibility, ED staff and their parent organizations have also found themselves accountable for a number of other novel tasks over the last decade. These consist of, but are not limited to (IOM, 2008):

- Tending to patients without medical insurance
- For insured patients, EDs have become the “go-to” treatment choice when their primary care physicians (PCPs) are unavailable or PCPs are unable to evaluate them in their offices
- Playing a key role in disaster response and preparedness
- Providing primary health care services for some communities, particularly in rural settings

## METRICS AND BENCHMARKS IN THE EMERGENCY DEPARTMENT

Patients with acute disease processes, such as myocardial infarction, stroke, trauma, sepsis, etc. are the increasing sector of the population utilizing the ED in the United States. For these individuals in particular, timely, evidence-based treatment can have a substantial

positive effect on patient outcomes (Glickman, Schulman, Peterson et al. 2008).

However, the most commonly used metrics to assess, gauge, and grade ED quality and staff performance, such as patient satisfaction scores and technical measures, such as ED patient waiting times, do not adequately address the more complex issues of quality ED care (Institute of Medicine of the National Academies, 2006).

The call by clinicians, hospitals, payers, and patient organizations to create more efficient systems to measure and gauge EDs, and to have that system based on evidence-based medicine, has created a compelling need for a standard set of definitions about the measurement of ED operational performance. In February of 2010, 32 emergency medicine leaders convened for the Second Performance Measures and Benchmarking Summit and were tasked with the review, expansion, and update of key definitions and metrics for ED operations derived from the First Summit in 2006. The vision was to standardize language for Emergency Medicine and, when possible, align these terms with performance measures and definitions put forth by the Centers for Medicare & Medicaid Services (CMS), the Emergency Nurses Association (ENA) Consistent Metrics Document, and the National Quality Forum (Welch, Asplin, Stone-Griffith et. al. 2010):

- (1) To develop a core set of metrics for ED patient flow and operations
- (2) To define those metrics clearly, using timestamps, time intervals, and proportions
- (3) To standardize the vocabulary relevant to the practice of emergency medicine operations, including operating characteristics, processes, and utilization (service units)

The Second Summit provided operational definitions and/or metrics in the following categories: operating characteristics, time metrics, proportion metrics, process definitions and utilization data. For a list of complete terms, definitions, and a detailed methodology on how these metrics were derived, please see: Welch SJ, Asplin BR, Stone-Griffith S, Davidson SJ, Augustine J, and Schuur J. Emergency Department Operational Metrics, Measures and Definitions: Results of the Second Performance Measures and Benchmarking Summit. *Ann Emerg Med.* 2011; 58(1):33-40.

## LIMITS AND CONTROVERSIES

Even with the current limitations, the authors hope that with the current internal and external motivation to improve ED operations common definitions of key terms, timestamps, and metrics will enable better clinical comparisons of ED operations, as well as setting standard terms for research and publications.

While there are several ways in which the adoption of standard operational definitions and metrics can reduce liability, perhaps the three most apparent are:

- Creating workflow continuity
- Providing performance measures from which potentially adverse events can be pre-emptively identified
- Generating clinical data that can be used for evidence-based care

## CONCLUSIONS

In conjunction with these new metrics, new research initiatives are needed to assess the efficacy of these measures. Emergency medicine is in the early stages of conducting formal quality improvement research to face these challenges. Research will have to be conducted in an operationally complex environment that deals with overcrowding, treating patients with undifferentiated acute disease states, and staff who face cost issues originating from payers and administrators. Some specific suggestions for research that yield improved efforts in emergency care include (Glickman, Schulman, Peterson et al. 2008):

- Facilitating large, emergency medicine-led research networks
- Developing quality improvement registries to measure and benchmark national adherence to ED performance measures
- Specifically addressing how ED structural and operational factors, such as health care information, treatment algorithms, structure, and culture affect patient outcomes
- A better understanding of these metrics is essential to the development of improved evidence-based emergency and acute care

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