Optimizing Physician-Nurse Communication in the Emergency Department: Strategies for Minimizing Diagnosis-related Errors

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Summary: Missed or delayed diagnoses in the emergency department (ED) are the leading cause of malpractice liability in Emergency Medicine. In 2010, CRICO and CRICO Strategies convened the Emergency Medicine Leadership Council (EMLC) to address this challenge. Applying comparative malpractice data and their own experience and expertise, the EMLC participants (including representatives from the Harvard-affiliated hospitals and CRICO Strategies client organizations) worked to identify the underlying factors that contribute to missed or delayed diagnoses, and patient adverse events, in the ED. While diagnosis-related missteps are often attributed to cognitive error on the part of the physician, the group identified communication problems and information gaps as present in many of the malpractice cases. After reaching a consensus that optimal physician-nurse communication at critical junctures in ED care is one key to reducing diagnosis-related errors, each participating organization field-tested one or more communication improvement strategies. Based on feedback from those short-term activities, CRICO has compiled best practices to inform recommendations for optimizing physician nurse communication in the ED. The insights and recommendations of the EMLC are presented in this paper.

BACKGROUND

Missed and/or delayed diagnosis remains the most common cause of medical malpractice in Emergency Medicine.[1] CRICO has a rich history of analyzing the trends in malpractice cases and using comparative data to understand the contributing factors in these cases. Armed with this information, CRICO then partners with frontline leaders to develop relevant initiatives aiming to prevent further occurrences and begin to reduce malpractice risk by advancing patient safety.[2] In 2010, CRICO convened a series of meetings with Emergency Medicine leaders to examine the underlying risk factors in diagnosis-related cases. Representatives included Emergency Medicine chiefs and nursing leadership from each ED at a CRICO-insured hospital as well as ED leadership from the CRICO Strategies network (*see* Table 1).

At the initial meeting, an analysis of the recent malpractice data revealed that missing information or a lack of communication among providers caring for the patient was a frequent theme in ED cases. While cognitive error on the part of the physician may result in a missed diagnosis, in almost every case, essential pieces of information were not available to the physician at the time of decision making. In general, gaps in several key information streams were identified, including:

- the availability of prior historical information from the medical record or referring physician,

- a change in the patient's status or a persistently abnormal vital sign,
- the timeliness of laboratory or radiology data,
- communication from the consultant physician,
- miscommunication at patient hand offs, and
- barriers to effective communication between the nurse and physician caring for the patient (*see* Table 2).

Each participant then returned to his own organization and completed a self assessment looking at the communication patterns in his/her department; the results of this assessment informed the second meeting (*see* Table 3). Participants identified the need to optimize communication among ED physicians and nurses as one of the most pressing challenges to reduce risk and enhance patient safety. In subsequent meetings, the group developed potential strategies to improve nurse-physician communication; many of those strategies were piloted by individual institutions during a four-month interval between meetings (*see* Table 4). This paper serves to outline many of the key themes and insights from those piloted practices. In general, the recommendations fall into three categories: designing structured communication events, operational and organizational change, and staff development and education.

STRUCTURED COMMUNICATION EVENTS

Given the hectic ED environment, communication between physicians and nurses caring for the same patient can be fragmented or, occasionally, absent.[3-4] As each provider has different tasks in caring for the patient, their work often proceeds in parallel; each may have information that would benefit the other—but it may not be exchanged. This can include, but is not limited to, a key piece of historical information, a change in clinical status, an abnormal vital sign, or response to therapy.[5]

Designing specific communication prompts or events during the patient's ED visit can facilitate communication and provide opportunities to share critical information. Additionally, structured updates between the resource nurse and attending physician can allow for communication about critical issues in the department, capacity and patient flow, bed availability, and any number of issues that have arisen during the shift. The implementation of a communication strategy must enhance communication without compromising efficiency in caring for the patients. Below are some specific strategies proposed by the EMLC.

Triggers: A patient who is initially unstable or becomes unstable in the ED needs a rapid coordinated effort by all providers. Often, the triage or primary nurse, or an ED assistant, is the first to know of an abnormal vital sign or change in the patient's status. A trigger system sets specific physiologic parameters that trigger an alert to both the nurse and physician to respond to an unstable patient (e.g., marked tachycardia/bradycardia, hypotension, increased/decreased respiratory rate, hypoxia, nursing concern). In one ED, implementing a trigger alert system cut the time to initial physician contact and the mean time to the first therapeutic intervention by half. Not surprisingly, the length of stay was decreased for these patients as compared to similar patients before the trigger system was implemented.

Physician-Nurse Huddle: Several institutions have implemented a structured MD-RN huddle, either at a defined moment in the patient's care to review key information, or at regularly scheduled intervals during the shift. During the huddle, key elements of the patient's course are reviewed and any potential questions clarified. This is particularly important at the time of disposition of the patient, as the decision to admit or discharge often depends on clinical details of which the physician making that decision may not be aware.

One institution is implementing an MD-RN huddle at the time of the admission, using the mnemonic **STOP**: **S**ignificant issues, **T**herapies, **O**xygen and last vital signs, and **P**ending issues. This communication is designed to identify any pending issues that could be missed as the patient transitions from the ED to the inpatient wards. Others have included a structured update between the charge nurse and the attending physician at key points in the shift to review the department as a whole, and to identify any potential issues that may have arisen during the shift. Many leaders from EDs with robust electronic patient tracking and charting systems noted that much of the MD-RN communication occurs electronically, and emphasized the need to supplement electronic information with structured times for closed-loop verbal communication. One institution has implemented bedside rounding with physicians and nurses so that the patient is also included in the update.

Discharge Timeout

At the time of discharge, patients are safest when all providers are aware of their treatment plan and all pending issues have been resolved. At one participating institution, a coordinated discharge process had been implemented that includes a review of all patient information by both the physician and nurse prior to discharge. Preliminary data demonstrate that many near misses have been identified and remedied before discharge of the patient.

Reconciliation of Abnormal Vital signs

A frequent theme in medical malpractice cases is the discharge of a patient from the ED with persistently abnormal vital signs. One of the most important pieces of information to relay at the time of discharge is a persistently abnormal vital sign (e.g., tachycardia despite intravenous fluid therapy), which may be the only indication of a patient at risk for an adverse event upon discharge. Routine communication of vital signs prior to discharge is an effective way to identify some of these patients in which a potentially serious diagnosis has been missed.

OPERATIONS/LEAN STRATEGIES

Improving ED efficiency and minimizing the waste of unnecessary work and delays is also a key part of improving clinician-to-clinician communication. Strategies such as those borrowed from LEAN manufacturing can help improve efficiency and reduce waste. According to LEAN philosophy, processes are standardized as much as possible to eliminate errors, and unnecessary work that does not add value to patient care is eliminated. Direct observation of work and inclusion of all staff in the job of process improvement is also emphasized.[6] Many of the EMLC organizations have introduced LEAN methodology into their EDs to make process improvements. LEAN methods can be used to directly observe communication patterns to identify areas of improvement. As process improvements are introduced into the workflow, unnecessary work (e.g., looking for equipment, redundant paperwork. phone calls) is removed, leaving physicians and nurses more time for relevant communication during the care of patients. In order for LEAN

principles and techniques to be effective in an organization, leaders must create an environment conducive to all staff participating in the continuous improvement process.[7] Critical to the success of these process improvements is the participation of all frontline workers in all disciplines in the design and implementation of these initiatives.

EDUCATION

Team Training/Simulation

In the pressured and chaotic environment of the ED, teamwork among providers, particularly physicians and nurses, is essential for patient safety. High performance teams, including those in health care, function more efficiently and effectively when they have developed and practiced specific communication skills and team behaviors.[8-10] Members of the EMLC recognized the need for formal development and practice of teamwork behaviors in their EDs.

Simulation of critical incidents followed by debriefing and reflection is an effective method for this practice and an opportunity for team members to improve their skills. Simulated incidents allow for practice of skills in a realistic, but low-risk environment. Simulation is of particular value in emergency medicine, as provider teams are rarely if ever constant (due to variable schedules). Simulation scenarios highlight and teach role clarity, leadership skills, effective closed-loop communication, and resource management as teams deliver coordinated care through the exercise. Developing a shared mental model among team members as well as encouraging all team members to speak up is also emphasized.[11-12] One EMLC organization has begun pilot work on an ED-based team training simulation program and several members agreed that formal education to develop team behaviors is critical to improving communication among ED physicians and nurses.

Clear Roles and Responsibilities/Charge Nurse Professional Development

In addition to improving teamwork skills of all providers, many EMLC participants felt that better professional development of the resource or charge nurse was important to consider when optimizing the coordination between ED physicians and nurses. A skilled resource or charge nurse is essential to the flow of patients through an ED. The many responsibilities of this role include providing leadership and support to staff, bringing essential information to the physicians, assisting in patient care, and overseeing many functions in the department. Recognizing the critical role of the charge nurse in the overall functioning of the ED, many members have implemented specific charge nurse training to develop these essential leadership skills. Others have begun to assign team leaders to assist the charge nurse in given areas of the ED to oversee the flow of patients and enhance communication of critical information. Many emphasized the need to clearly define the responsibilities of the charge or resource nurse, and to free him or her from excessive clinical work to provide oversight of the department and better identify and address critical issues. Ongoing professional development is also essential.

CONCLUSION

In summary, a busy ED provides care for multiple sick, undifferentiated patients at once and providers often work with limited time, information and resources. Therefore, missed or delayed diagnosis is the most common contributor to ED medical malpractice cases. Optimizing communication between ED physicians and nurses is an effective strategy to address this risk.

This can be done through process improvements, structured communication events, and ongoing professional development and education.

KEY RECOMMENDATIONS

1. Structured communication events between physicians and nurses should be included at critical points in the patient's course through the ED and at key points in the shift. This includes evaluation of the unstable patient, a change in clinical status, during diagnosis and the formulation of treatment plan, at the time of disposition or discharge, and at shift change or transitions in care.
2. Effective process improvement in the ED involves continuous collaboration between physician and nurse leadership and involvement of frontline workers from all disciplines.
3. Ongoing staff education, in the form of teamwork training and professional development, is essential to optimize communication between ED physicians and nurses.

TABLE 1: 2010 CRICO STRATEGIES EMERGENCY MEDICINE LEADERSHIP COUNCIL

Abington Memorial Hospital, PA
Sue Cissone, RN

Beth Israel Deaconess Medical Center, MA
Larry Mottley, MD
Leon Sanchez, MD
Phillip Anderson, MD
Richard Wolfe, MD

Brigham and Women's Hospital, MA
Ali Raja, MD
Jay Schuur, MD
Michael Wilson, MD
Richard Zane, MD

Brookdale Hospital, NY
Lewis Marshall, MD, JD
Mary Hayes, RN

Cambridge Health Alliance, MA
Assaad Sayah, MD
Luis Lobon, MD

Children's Hospital Boston, MA
Catherine Perron, MD

Faulkner Hospital, MA
Richard Larson, MD

Massachusetts General Hospital, MA
Alasdair Conn, MD
David Brown, MD
Theodore Benzer, MD

Milton Hospital, MA
Ashley Yeats, MD

Mount Auburn Hospital, MA
Gary Setnik, MD
Michelle Heatley, RN

Newton-Wellesley Hospital, MA
Anthony Berner, MD
Ellen Leiter, RN, BSN
Mark Lemons, MD

New York University Hospital, NY
Jessica Kovac
Maureen Gang, MD
Ronald Keller, RN

North Shore Medical Center, MA
Everett Lyn, MD

Palisades Medical Center, NJ
Dominic Ruocco, MD

South Jersey Health System, NJ
Scott Wagner, MD

St. Luke's Regional Medical Center, ID
Neeraj Soni, MD

St. Luke's Roosevelt Hospital, NY
Gabriel Wilson, MD

Taylor Hospital, PA
Gregory Cuculino, MD
Nicole Alesi, RN

Valley Hospital, NJ
Joseph Yallowitz, MD
Marc Dreier, MD

CRICO
Ann Louise Puopolo, RN
Carrie Tibbles, MD
Dana Siegal, RN
Heather Riah
Jane Gagne
Jock Hoffman
Robert Hanscom

TABLE 2: COMMON COMMUNICATION FACTORS IN ED DIAGNOSIS-RELATED CASES

Historical information gaps: Missing information from referring MD or medical record

Reconciliation of abnormal vital signs: Patient discharged without MD adequately addressing an abnormal vital sign

Communication of lab and X-ray results: Delayed or inadequate reporting of abnormal lab or X-ray finding

MD-RN communication: Work often proceeds in parallel without opportunity to communicate adequately

Communication with consultants: Lack of clear communication between MD and consultant

Patient Handoffs: Transfer of care between providers at shift change, or from ED to inpatient ward

TABLE 3: EMLC SELF ASSESSMENT OF CLINICIAN-TO-CLINICIAN COMMUNICATION

Following the first EMLC meeting, participants were asked to assess the clinician-to-clinician communication effectiveness in their EDs related to:

- access to patient information
- tracking/trending vital signs
- critical patient information
- diagnostic test results, and
- consultants

The results/comments are shown at right and below.

Biggest Concerns

Each participant listed the top patient safety concerns they had for their ED (items in red were mentioned repeatedly)

Communication

Documentation of vital signs by nurses

Re-evaluation of abnormal vital signs

Responsiveness of consultants and medical staff involvement in critical cases

Wait times

Boarding

Care of psychiatric/suicidal patients; lack of space/sitters, plus long wait times creates high risk for patient harm

Communication between staff/consultants

Timeliness of treatment, and LOS in ED

Handoff to admitting (other than our hospital)

Lab/X-ray results and follow-up

Nurse/patient ratio and delays in care

Other services equally overworked

Physical environment

Radiology rereads

Staffing issues due to physical plant layout

Timeliness of movement of patient to inpatient area

Triage: recognition of a patient who is failing

Clinician-to-clinician Communication (1= high risk, 5= low risk)	Average
Historical medical information	
Medical Information	3.4
Primary Care MD	2.2
Referring MDs	3.2
Prior ED Visits	4.2
Prior Medical Records	3.5
Test Results	
Laboratory	4.0
Timeliness	3.6
Abnormal Results	4.6
Follow up	3.2
Radiology	3.6
Timeliness	2.9
Accuracy	3.5
Follow up	3.3
Consults	
Consultant Physicians	2.9
Availability	2.9
Timeliness	2.9
Communication	2.9
MD/RN communication	
Abnormal VS/ Patient Status Changes	3.0
Initial response to unstable patients	3.7
Reconciliation of abnormal VS	2.8
MD/RN Communication	2.4
Assessments	3.8
Initiation of Interventions	4.3
Closed Loop Communication	2.6
Diagnostic Plan / Disposition	3.5
Patient handoffs	3.3
Shift Change	3.0
Admissions	3.8
Triage and tracking systems	
Triage /Waiting Room	4.0
MD awareness of WR patients	3.4
Standard Triage of Unstable VS	3.8
Patient Tracking System	4.3
Patients providers identified clearly	4.0
Updated routinely	4.5
Key Information Clearly Identified	4.3

TABLE 4: EMLC CLINICIAN-TO-CLINICIAN COMMUNICATION PROJECTS (2010)

ED Location	Current Initiatives or Strategies	Communication Gaps Addressed
Abington Memorial Hospital	Charge nurse and team leader development 360 degree evaluations	MD/RN communication
Beth Israel Deaconess Medical Center	Triggers-physiologic parameters that trigger team response	MD/RN communication Reconciliation of vital signs
Brookdale Hospital	Triage process with standard triggers MD involvement	MD/RN communication Reconciliation of vital signs
Brigham and Women's Hospital	ED team training simulation course	MD/RN communication
Cambridge Health Alliance	MD/RN discharge rounds Hard stop for abnormal vital signs on discharge record	MD/RN communication Reconciliation of vital signs
Children's Hospital Boston	Evaluation of MD/RN discharge process with checklist	MD/RN communication Abnormal vital signs
Faulkner Hospital	Increased nursing hours each shift	MD/RN communication
Mount Auburn Hospital	Communication competencies for nurses Bedside rounding using SBAR format	MD/RN communication Hand-offs
Newton-Wellesley Hospital	ED/RN behavior survey Vital sign check at discharge	MD/RN communication
North Shore Medical Center	New electronic medical record Huddle	MD/RN communication
NYU /Bellevue	Developed Director of Nursing role Improved access to information from PCP with dedicated call-in number	MD/RN communication Missing Historical Information
Palisades Medical Center	Rapid evaluation unit SBAR	MD/RN communication
South Jersey Health System	Discharge rounds Charge nurse development	MD/RN communication Reconciliation of vital signs
Taylor Hospital	MD/RN huddle Electronic notification of any nursing concerns Flag for abnormal vital signs at discharge	MD/RN communication Reconciliation of abnormal vital signs
Valley Hospital	Hard stop on certain vital sign parameters in chart Critical lab results now to charge nurse MD/RN huddle Closed loop communication on orders	MD/RN communication Reconciliation of vital signs Transmission of critical lab values

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