

CAN TRIAGE NURSES ACCURATELY PREDICT PATIENT DISPOSITIONS IN THE EMERGENCY DEPARTMENT?



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Introduction: Contemporary emergency departments experience crowded conditions with poor patient outcomes. If triage nurses could accurately predict admission, one theoretical intervention to reduce crowding is to place patients in the admission cue on arrival to the emergency department. The purpose of this study was to determine if triage nurses could accurately predict patient dispositions.

Methods: This prospective study was conducted in a tertiary academic hospital's emergency department using a data collection tool embedded in the ED electronic information system. Study variables included the predicted and actual disposition, as well as level of care, gender, age, and Emergency Severity Index level. Data were collected for 28 consecutive days from September 17 through October 9, 2013. Sensitivity and specificity, positive and negative predictive values, and accuracy of prediction, as well as the associations between patient characteristics and nurse prediction, were calculated.

Results: A total of 5,135 cases were included in the analysis. The triage nurses predicted admissions with a sensitivity of 71.5% and discharges with a specificity of 88.0%. Accuracy was significantly higher for younger patients and for patients at very low or very high severity levels.

Discussion: Although the ability to predict admissions at triage by nurses was not adequate to support a change in the bed procurement process, a specificity of 88.0% could have implications for rapid ED discharges or other low-acuity processes designed within the emergency department. Further studies in additional settings and on alternative interventions are needed.

Key words: Disposition; Emergency department; Throughput, Triage; Triage nurse

Introduction

Many emergency departments experience crowded conditions with long wait times. In the United States, the number of visits to emergency departments increased from 102.8 million in 1999 to 136.1 million in 2009.¹ The Institute of Medicine reports ED crowding threatens the quality, safety, and timeliness of emergency care.² ED crowding has shown

a negative impact on morbidity and mortality rates, delays to pain control, inability to achieve compliance with national safety goals, and limited responsiveness to disasters.³ Much of the cause of ED crowding has been attributed to a practice called *boarding*, whereby admitted patients stay in the emergency department until an inpatient bed is available.³ Boarding can last for hours and sometimes even days.

There are several metrics used as proxy markers for the efficient operation of an emergency department. Waiting time and the rate of patients leaving without being seen are two of the most common performance indicators. The Emergency Nurses Association's position statement relays that ED crowding results in the inability to triage and treat patients in a timely manner.⁴ This, in turn, has been associated with increased rates of patients leaving without being seen. Furthermore, 11% of patients who leave without being seen require a hospital admission within 1 week of their initial ED visit.⁵

ED crowding has received attention at the regulatory level. Hospitals are now assessed in part by their ability to operate efficiently, as measured by throughput measures such as length of stay for admitted and discharged ED

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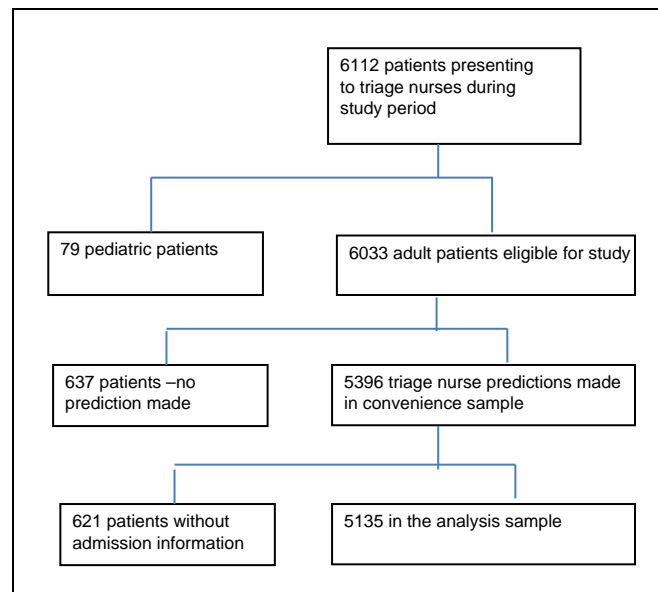


FIGURE
Study sample flow diagram.

patients. The Joint Commission has added a new standard for hospital accreditation that directs hospital leaders to identify and address barriers to efficient patient flow.² Reduced payment rates under Medicare are an additional pressure for a hospital's operating margin.⁶ The Centers for Medicare & Medicaid Services Value-Based Purchasing Program, in which hospitals will be reimbursed based on clinical quality and patient experience, is anticipated to incentivize maximizing patient throughput.¹

Theoretically, throughput could be increased, and boarding decreased, if the triage nurse could accurately predict admission patients and request a reservation for an inpatient bed when the patient arrives at the emergency department.⁷ Several studies have examined the ability of a triage nurse to predict patient disposition. The studies have found only moderate sensitivity and positive predictive values ranging from 54% to 76%.⁷⁻⁹ Furthermore, evidence indicates that triage nurses were more successful in predicting admissions for higher-acuity patients, as well as predicting discharges for patients with injuries or febrile illnesses.¹⁰ Whereas current evidence is available from studies performed in the United States, United Kingdom, and Australia, no studies have taken place in large, urban teaching hospitals in the United States using the current Emergency Severity Index (ESI). Methodologic limitations of the existing studies, such as using limited times of the day, excluding patients arriving by ambulance, and/or not tracking high-acuity patients, warrant ongoing investigation. Therefore, the purpose of this

study was to determine if triage nurses in an urban, tertiary care academic emergency department could accurately predict patient dispositions.

Methods

This was a prospective study conducted in an urban, tertiary care academic emergency department in the Northeast over a period of 28 consecutive days from September 17 through October 9, 2013. This study was reviewed and approved by the hospital's Institutional Review Board. Each triage nurse was preassigned to the triage area by the ED scheduler and nurse manager to ensure equal time at triage. The nurse completed an electronic survey for a convenience sample of patients presenting at triage. This electronic survey contained 2 questions: "Do you think the patient will be admitted?" "If admitted, what level of care do you predict: floor, telemetry, step-down or intensive-care?" In this case, an "admitted" patient is defined as any patient who is transitioned from being under the care of the ED staff to being under the care of an inpatient service. Those patients who died were not included in the analysis. All patients aged 18 years or older entering the emergency department through triage and discharged alive were eligible for inclusion in the study.

Fifty-two nurses worked in the triage area during the study period. Each was trained during an informational session on the

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