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EMERGENCY DEPARTMENT RAPID MEDICAL ASSESSMENT: OVERALL EFFECT AND MECHANISTIC CONSIDERATIONS

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☐ **Abstract—Background: Although the use of a physician and nurse team at triage has been shown to improve emergency department (ED) throughput, the mechanism(s) by which these improvements occur is less clear. Objectives: 1) To describe the effect of a Rapid Medical Assessment (RMA) team on ED length of stay (LOS) and rate of left without being seen (LWBS); 2) To estimate the effect of RMA on different groups of patients. Methods: For Objective 1, we compared LOS and LWBS on dates when we utilized RMA to comparable dates when we did not. For Objective 2, we utilized patient logs to divide patients into groups and estimated the effects of the RMA on each. Results: Objective 1. LOS fell from 297.8 min pre-RMA to 261.7 min during RMA, an improvement of 36.1 (95% confidence interval 21.8–50.4) min; LWBS did not change significantly. Objective 2. Patients seen and dispositioned by the RMA had an estimated decrease in LOS of 117.8 min (estimated decrease in LOS of 45%), but patients seen by the RMA whose care was transitioned to the main ED had an estimated increase in LOS of 25.0 min (estimated increase in LOS of 8%). Conclusions: On a system level, the addition of an RMA shift at a single facility was associated with an improvement in LOS, but not LWBS. On a mechanistic level, it seems that improvements occurred as a result of the rapid disposition component of the RMA rather than placing advanced orders at triage.** © 2015 Elsevier Inc.

☐ **Keywords—advanced triage; physician in triage; rapid medical assessment; throughput**

INTRODUCTION

Improving emergency department (ED) throughput is an important area for hospital process improvement. Poor ED throughput has been associated with increased 28-day mortality from pneumonia, delays to percutaneous coronary intervention in patients with acute myocardial infarction, adverse cardiovascular outcomes in patients with chest pain, increased medication errors, and increased mortality (1–5). Poor ED throughput and the waits associated with it are a source of general patient dissatisfaction, and patients with longer waiting room times believe that they receive inferior care (6–8). For these and other reasons, the Committee on Medicare and Medicaid Services has added several ED throughput metrics to its list of publicly reported measures aimed at evaluating quality of care.

One potential process improvement in the ED consists of using a physician and nurse at triage as a Rapid Medical Assessment (RMA) team (9). The major responsibilities of such a team are usually twofold: seeing patients in the waiting room and achieving disposition (usually discharge) when possible, and placing advanced care orders to begin the diagnostic work-up of patients who will ultimately be placed into a bed in the main ED and whose care will be transitioned to a second

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physician. This configuration has alternatively been described as physician in triage, triage liaison physician, triage rapid initial assessment by doctor, and supplemented triage and rapid treatment (10–14). Most of the reported experience is with an attending physician as part of the team, although physician assistants and Emergency Medicine residents have also been utilized in this role (15,16).

We report the results of an RMA intervention at our facility, and describe the effects of RMA on length of stay (LOS) and percentage of patients who left without being seen (LWBS). We also estimate the relative effect of RMA on the LOS of different patient groups, and discuss what these results might suggest about the mechanism(s) of the intervention.

METHODS

Study Design

This was a retrospective analysis of routinely gathered ED operational data. This project was part of a quality improvement effort, and as such, was classified as expedited/exempt by our institutional review board process with a waiver of the requirement for informed consent.

Study Setting and Population

The Mayo Clinic Arizona ED is a 24-bed ED located in a suburban tertiary care teaching hospital in Phoenix, AZ. The annual ED census was approximately 24,500 during the time of the study, and the admission rate was approximately 30%. The ED is staffed 24 h per day with board-certified emergency physicians. There is no Emergency Medicine residency training program, although residents from multiple services occasionally rotate through the department. There is no dedicated ED observation unit, and no "Fast Track." During the period of the study, the ED did not use point-of-care blood testing other than fingerstick glucose.

We reviewed data for Mondays and Friday from 10:00 a.m.–10:00 p.m. for November 2010–April 2011. There was a baseline of 34–35 h of attending physician coverage on Mondays and Fridays from 10:00 a.m.–10:00 p.m. from November 2010 to January 2011 (hereafter, "pre-RMA"). We added an additional 9 h of physician and nurse coverage on Mondays and Fridays from February–April 2011, except for April 15 (hereafter, "RMA"), from 11:00 a.m. to 8:00 p.m., for a total of 44 h of attending physician coverage. The additional physician and nurse together comprised the RMA team. April 15 was excluded from analysis because a provider illness made it impossible to staff the RMA position.

We chose to compare Mondays and Fridays during RMA to Mondays and Fridays during pre-RMA, rather than to Tuesdays, Wednesdays, Thursdays, Saturdays, and Sundays of the same period. We did this because there are reliable and significant increases in volume (of approximately 8–9%) that occur on Monday and Friday at our facility, rendering these days quantitatively and qualitatively different from midweek and weekend days.

We chose to analyze registrations from 10:00 a.m.–10:00 p.m., rather than 11:00 a.m.–8:00 p.m., due to a belief that the RMA might influence the throughput of patients who registered for some period of time both prior to and after the formal start and stop times of the shift.

Study Protocol

During the RMA period, we stationed a physician/nurse RMA team in a room next to our triage booth.

The goal of this team was to facilitate the disposition of patients, usually via the discharge of patients from the waiting room or by placing advanced orders at triage. The team was given wide discretion as to which patients they should see, and how best to utilize resources to accomplish their goal. All physicians in our core physician group were scheduled into the RMA position; physicians who occasionally worked per diem were not.

The RMA room was equipped with a gurney, adequate supplies for minor procedures (such as incision and drainage and suturing), two computers (one each for the physician and the nurse), and printers for prescriptions and discharge instructions.

Patients were chosen for evaluation by the RMA at the discretion of the RMA team and the triage nurse. There were no set criteria (such as Emergency Severity Index or chief complaint). Patients chosen for evaluation by the RMA were generally those who, after triage, would have to wait prior to being brought immediately to a room (owing either to reasons of ED crowding or high acuity).

General workflow of the RMA team was to see a patient in the RMA room and perform a focused history and physical examination. The RMA team was asked to keep hand-created patient logs of who they evaluated. Patients were discharged immediately if possible, and returned to the waiting room if not. Generally, patients who returned to the waiting room were subsequently discharged by the RMA team when their work-up was completed, or placed into a bed in the main ED when one became available. A small number of patients were admitted directly by the RMA team. The administration of medications was limited to nonnarcotic analgesics and 5-HT_3 receptor antagonists (i.e., ondansetron), which were felt to be safe for administration to patients in the waiting room.