

## JAMA Performance Improvement

## Reducing Emergency Department Length of Stay

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## Case Summary

A middle-aged woman injured her wrist during a fall. She went to the emergency department (ED) but left without being seen by a clinician after waiting 4 hours. Three days later, she returned with contin-



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wed wrist swelling and pain but was worried that another long wait could cause her to be late for work. She wondered if her primary care physician's next available appointment in a month would be sufficient to address her injury. She was eventually seen and diagnosed as having a scaphoid fracture. A splint was placed and a follow-up appointment was made with an orthopedic surgeon. The total ED length of stay was 6 hours. The patient was concerned that her delay in receiving treatment may have long-term consequences for her physical function and made a complaint to the hospital.

## What Should Be Done Next?

1. Apologize to the patient and state that ED staff are working hard with limited resources.
2. Explain to the patient that a delay in treatment will not affect her recovery given a low-acuity injury.
3. Instruct the physician who was on duty during the patient's initial visit on how to work more efficiently.
4. Assemble an interdisciplinary team to evaluate the flow of patients through the ED to reduce wait times and improve access to care.

## Consider the Options

Apologizing to the patient helps patients know that concerns they have are important, but it does not address the core problem of long ED wait times. Trauma centers, teaching hospitals, and safety net hospitals may have longer lengths of stay and higher rates of patients leaving without being seen compared with nonteaching, for-profit hospitals.<sup>1</sup>

The second option dismisses the patient's injury as nonurgent, which is neither patient centered nor medically appropriate. Although it recognizes that the needs of critically ill patients must be prioritized, no consideration is given to the broader effect of longer wait times.

The third scenario implies that ED staff are not already working at maximal effort. Targeting individual physicians perpetuates the myth that individual heroics can overcome systemic deficiencies. This approach ignores literature demonstrating that EDs typically have extreme crowding and the reality of increasing demand for acute care.<sup>2,3</sup> Focusing on an individual clinician ignores systemic issues and precludes the ability to achieve lasting change.

A fourth option is to participate in coordinated, interdisciplinary improvement efforts to create efficient, patient-centered processes. This approach has the greatest potential for achieving and sustaining meaningful change.<sup>4</sup>

The ED team chose to pursue this fourth option, recognizing that long wait times affected nearly all patients, with implications for safety and quality of care.

## Analysis of the Case

An interdisciplinary team of front-line physicians, nurses, medical assistants, and executives assembled and used value stream mapping to assess the entire ED care process, from patient arrival to admission or discharge. Value stream mapping uses visual documentation to analyze all repeatable steps in a care delivery process.<sup>5</sup> The team closely observed each step of care (eg, registration through discharge) from the patient perspective and built a schematic representation of each step, including any waits or delays. The finished map helps teams identify opportunities for improvement (eFigure in the Supplement). Executive staff participating in this process spent significant amounts of time in the ED, observing the rapid pace of work and crowded conditions. For the ED staff, the mapping process enabled them to personally experience the delays and crowding from patients' perspectives. By direct observation, the team members noted many inefficiencies and errors experienced by both patients and staff. For example, the team found that it took 75 minutes and 3 different monitors (because of broken equipment) for a nurse to complete the preliminary orders for a patient with chest pain. In addition, a triage nurse and a patient with a simple hand laceration walked to several areas of the ED before finding an open hallway chair to wait to be seen.

Variability in the evaluation and treatment processes for patients was identified as a root cause of delays in care. For patients with low-acuity suspected simple fractures, there was no standard process to determine (1) if x-ray imaging would be ordered in triage or only after clinician assessment; (2) what type of clinician (nurse practitioner, trainee, or physician) would initiate care; or (3) if the patient should follow up in an outpatient orthopedics clinic or receive definitive care with an in-person consultation in the ED.

Comingling patients with high- and low-acuity conditions together throughout the ED exacerbated the variability in care processes. The urgent needs of high-acuity conditions routinely led to long delays in care of patients with lower-acuity conditions. Such delays frustrated patients and resulted in a misalignment of work needed by physicians and nurses to care for all patients in a timely manner.

Further examination of the health system revealed broader issues that impeded ED flow. For example, limited patient access to same-day primary care and urgent care contributed to increasing low-acuity ED patient volume. Limited hospital bed capacity resulted in frequent boarding of patients in the ED, reducing the availability of treatment space for new acute care patients.

## Correct the Errors

1. **Creating a fast-track care pathway for patients with low-acuity conditions.** In this hospital, more than 65 patients per day (30% of ED patient volume) had low-acuity conditions. The team developed a uniform care pathway called Fast Track that in-

- cluded strict inclusion and exclusion criteria of low-acuity conditions such as dysuria or cough in patients with normal vital signs. There was a standardized workflow for managing these patients throughout the ED stay that included assigned roles and actions for each staff member from rooming the patient to delivering discharge instructions (eFigure in the Supplement). By cohorting patients with low-acuity conditions and implementing a standard workflow, the staff could estimate the resources needed to accommodate patient demand. It was determined that 6 treatment spaces and a flexible treatment team were needed, a solution that had been successful at other institutions.<sup>5,6</sup>
- Standardized processes.** After designation of a treatment area and team, a daily team huddle was developed. At the start of each shift, expectations for each staff member were reviewed. For example, medical assistants reviewed specific procedures for wound care preparation, while physicians and nurse practitioners reviewed the standard approach to charting and discharge practices. Standard processes for rooming, documentation, procedures, and discharges were reinforced through coaching by departmental leaders, which included managers, peer nurses, medical assistants, and physicians who participated in the new process design and testing. The daily huddle provided opportunities for staff to ask questions, offer feedback for improvement, and troubleshoot issues in real time.
  - Dissemination of real-time performance metrics.** After standard processes were implemented, daily data reports were shared with frontline and executive staff, facilitating adjustments of the new processes. For instance, when the team moved Fast Track to a different physical location within the ED, rates for length of stay and patients leaving without being seen worsened by 30%. This real-time data allowed the team to address the new problems efficiently.
  - Staffing to maintain team consistency.** Data analysis revealed that 30% of patient volume could be managed by a small interdisciplinary team. This improvement was best achieved by positioning the Fast Track team in a separate geographical area of the ED, which enabled increased capacity for managing more complex patients in other parts of the ED.
  - Engagement and alignment with executive strategic plan.** Engagement of hospital executive sponsors, including the chief of

staff, chief quality officer, chief nursing officer, chief medical officer, and chief executive officer, via daily data-driven huddles, weekly planning sessions, and quarterly workshops helped accelerate ED improvement efforts. Through these interactions, the executive team developed a clearer understanding of ED improvement needs and were able to facilitate integration of ED issues into hospital-wide strategic objectives, such as reducing ED boarding and ambulance diversion. This executive-level involvement also facilitated qualitative improvements in ED patient and staff experience. For example, observing the burden of nonclinical work asked of ED staff to manage after-hours visitors for the entire hospital resulted in increasing the main hospital building's security hours and the addition of a patient navigator available to the ED.

### Outcomes

After the initiation of the Fast Track process in December 2015, and without making any other changes to ED workflow or staffing, there was a 25% decrease in the length of stay of patients with low-acuity conditions (from 190 minutes to <150 minutes) and the rate of patients leaving without being seen decreased from 8% to 4% in just 5 months. At the same time, patients with moderate- and high-acuity conditions who were discharged had reduced length of stay in the ED and stable or reduced rates of leaving without being seen because of increased capacity in high-acuity treatment areas.

### Bottom Line

- Multidisciplinary engagement of both frontline and executive staff by ED leadership, coupled with clear standards and real-time data, are essential to the success and sustainability of any improvement work.
- Separating patients with low- and high-acuity conditions in the ED can enhance the efficiency of managing both groups.
- Frequent review of performance metrics by frontline staff and hospital leadership facilitates real-time recognition of problems and evaluation of changes.

### ARTICLE INFORMATION

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