

# Strategies to Improve ED Overcrowding: Data from the National Public Health and Hospital Institute ED Throughput Study

Emergency department (ED) overcrowding is on the rise—48% of EDs within the U.S. are at or over capacity, compared with 65% of urban hospital EDs and 73% of teaching hospital EDs.<sup>1,2</sup> The challenges of managing patient overflows are especially acute in safety net hospitals. The average NAPH member reports that 59% of their admissions originate in the ED,<sup>3</sup> compared with 45% for hospitals nationally.<sup>4</sup> In addition, insurance coverage expansion beginning in 2014 could lead to a greater shortage of primary care doctors, and thus more demand for safety net hospital ED services. Despite these obstacles, NAPH members have achieved extraordinary results navigating the most vulnerable patient populations through overwhelmed EDs. NAPH's research arm, NPHHI, conducted a study to identify NAPH member high performers with respect to ED throughput and determine their strategies for improvement.<sup>5</sup> NPHHI

received grant funding from The Commonwealth Fund and technical and educational support from the University HealthSystem Consortium (UHC) to guide the project.

## Study Methodology

With guidance from an advisory committee,<sup>6</sup> NPHHI and UHC:

- Administered a survey to NAPH members that reflected 13 key metrics of patient flow;<sup>7</sup>
- Identified five high performers based upon this data;
- Examined additional related factors (such as presence of a Level I trauma center and overall hospital occupancy rates) to compare the characteristics of the survey respondents to the overall NAPH membership;
- Conducted interviews and site visits with the top performers; and
- Compiled a list of strategies employed by NAPH members to improve ED patient flow.

In 2009, NAPH members saw almost three times the volume of emergency department visits as the average hospital nationally.

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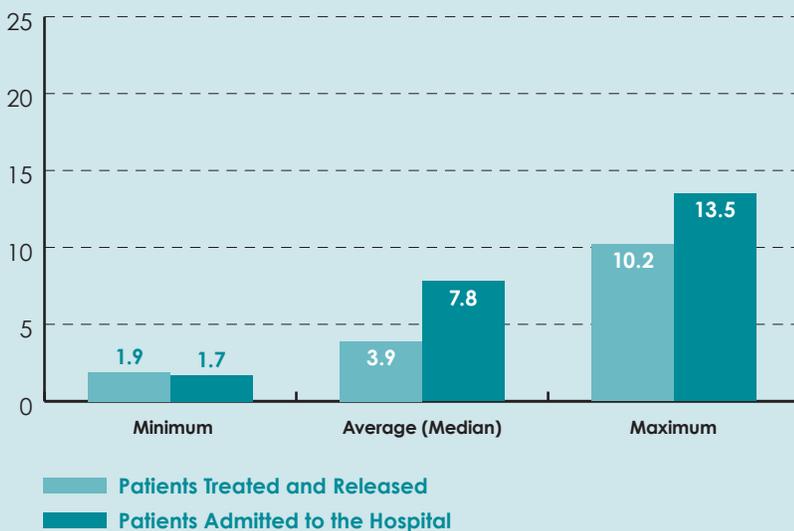
## Survey Findings

- Survey respondents were generally larger and busier than the average NAPH member—respondents saw more patients than other NAPH members as a whole,<sup>8</sup> and their EDs were busier.<sup>9</sup>
- Survey respondents' performance on key metrics of ED overcrowding:

**CHART 1** Percent of Patients Who Left the ED Without Being Seen<sup>10</sup>



**CHART 2** Patient Length of Stay in the ED (in hours)<sup>11</sup>



### SURVEY RESPONDENTS' ED STAFFING RESOURCES

- 96% have residents from other specialty training programs
- 79% employ a social worker in the ED
- 71% employ a case manager in the ED
- 65% employ hospitalists to facilitate the admission process
- 50% of their EDs serve as a primary training site for emergency medicine residents

### ED OVERCROWDING IS A HOSPITAL WIDE-PROBLEM, NOT AN ED-SPECIFIC ISSUE<sup>12</sup>

Respondents indicated that the top three reasons for ED overcrowding were having:

1. No available inpatient beds;
2. Too many patients arrive in the ED for care; and
3. No available ICU beds.

## NAPH Top Performers

The survey also identified five top performers among responding NAPH members.<sup>13</sup> These institutions were innovators in developing solutions for improving patient flow:

- Bellevue Hospital Center, New York, NY
- Cambridge Health Alliance, Cambridge, MA
- Lee Memorial Health System, Fort Myers, FL
- Memorial Hospital-Pembroke, Pembroke Pines, FL
- Nassau University Medical Center, East Meadow, NY

### NAPH TOP PERFORMER STRATEGIES

#### **BELLEVUE HOSPITAL CENTER, NEW YORK, NY**

Bellevue was selected as a top performer partly due to low average length of stay times and the percentage of patients that left the ED without being seen. During a site visit to their ED, NPHHI learned of several innovative strategies Bellevue has implemented to improve patient flow:

- Establishment of a "discharge center." Although not yet staffed 24/7, the center is open part-time 5 days a week, currently processing 1,000 patients per month. (Plans are in progress to expand center hours.) This gives ED staff an avenue for freeing up beds and sending patients to a more private area for step-down clinical care, as well as dispensation of discharge instructions. The discharge coordinator also has full access to the team of 29 certified, in-house interpreters to assist with LEP patients.
- Mobilization of the Hospital Incident Command Center (HICS), a hospital-wide disaster readiness protocol generally used to coordinate care in times of crisis, when the hospital is beyond capacity and patients are waiting for beds. Bellevue's executives reported that they began implementing HICS two years ago to address situations when the hospital is over capacity. HICS has been mobilized approximately

ten times over the course of the two year period to assist with patient flow in the emergency department.

- Establishment of a six-bed chest pain center nearly one year ago, enabling ED clinicians to send chest pain patients who do not appear to have a heart attack but should require monitoring to a step-down area, thereby freeing up critical ED beds.

#### **CAMBRIDGE HEALTH ALLIANCE (CHA), CAMBRIDGE, MA**

The NPHHI survey revealed that CHA excelled at average length of stay in the ED among respondents, as well as the average time patients spent waiting to see a physician. CHA's status as a top performer may be due in part to a patient flow improvement project they began in 2008. CHA shared with NPHHI several processes they implemented as part of that project:

- Use of a multilingual "greeter" in the ED waiting room who registers all ED patients immediately upon entry.
- Highly tailored EPIC software to meet the specific needs of the ED. For example, CHA's EPIC software contains fields for preferred patient language; whether the patient is at a heightened risk of falling; if a psychological consultation was requested while the patient is in the ED,

and more. These data are presented in a spreadsheet that is visible on a large screen facing the clinicians' desk inside the ED that can be referenced by ED personnel from any laptop.

- Inclusion of ED throughput metrics on dashboards that are presented to hospital leadership.

#### **NASSAU UNIVERSITY MEDICAL CENTER (NUMC), EAST MEADOW, NY**

According to the NPHHI survey, NUMC performed particularly well on the average amount of time ED patients waited to be admitted into the hospital, as well as the time ED patients waited to be treated and released from the ED. During a site visit to their facility, NPHHI staff learned about two strategies NUMC has employed to improve flow:

- Expansion of board-certified emergency medicine physicians in the ED, which eases dependency on consults to determine the clinical course of action.
- Heightened awareness by hospital executives of turn-around time for lab and radiology results to the ED. Hospital leadership intervenes when lab and radiology fail to meet timeliness standards established by the hospital's executives.

## Strategies to Improve ED Overcrowding

The survey asked respondents “What are the most significant changes your organization has made to improve ED patient flow?” The specific strategies identified by survey respondents fell into one of two categories:

1. ED specific, internal strategies; and
2. Broader strategies affecting multiple departments

TABLE 1 ED SPECIFIC, INTERNAL STRATEGIES	
Strategy Categories	Specific Strategy
Strategies Around Triage Redesign	<p><b>Creating a Rapid Assessment Process</b></p> <ul style="list-style-type: none"> <li>Establishing or Refining Triage Protocols</li> <li>Adding More Staff (additional RNs, mid-level staff, or physicians)</li> <li>Creating a “Straight-back” Process that Bypasses Triage</li> </ul>
Alternatives to Treating in the Main ED	<p><b>Creating or Expanding Fast Track/Express Care/Rapid Treatment Area*</b></p> <ul style="list-style-type: none"> <li>Creating Triage Intake Area</li> <li>Assigning Boarder Patients to Non-ED Staff from Float Pool</li> </ul>
ED Operational Changes	<ul style="list-style-type: none"> <li>Expanding ED Resources (i.e., beds, clinical staff*, or observational space)</li> <li>Creating the ED Flow Coordinator or New Case Manager Positions (Note: 71% of responding hospitals employ case managers.)*</li> <li>Introducing New Technologies*</li> </ul>

TABLE 2 BROADER STRATEGIES AFFECTING MULTIPLE DEPARTMENTS	
Strategy Categories	Specific Strategy
Handling Patients Admitted from the ED	<p><b>Implementing a “Rapid” or “Express” Admit Process</b></p> <ul style="list-style-type: none"> <li>Creating Space Outside the ED, for example: <ul style="list-style-type: none"> <li>“Clinical Initiation Unit”</li> </ul> </li> </ul> <p><b>Adding Inpatient Beds</b></p> <p><b>Adding Hallway Beds*</b></p> <ul style="list-style-type: none"> <li>Adding Hospitalists</li> </ul>
Hospital-Wide Strategies	<p><b>Establishing Medical Surge Capacity/Census Management Protocol*</b></p> <ul style="list-style-type: none"> <li>Centralizing Bed Management* <ul style="list-style-type: none"> <li>Creating a “Capacity Command Center”</li> <li>Hiring a Patient/Bed Flow or Discharge Facilitator*</li> </ul> </li> <li><b>Creating an Electronic Inpatient Bed Management Tracking System*</b></li> <li>Holding Daily Multidisciplinary Bed Meetings*</li> <li>Establishing Hospital-Wide, or Multidisciplinary Flow Committee or Team</li> <li>Creating a Discharge Lounge*</li> <li><b>Sharing ED Throughput Data on All Leadership Report cards</b></li> <li><b>Promoting Early Discharge (e.g., by 2PM)*</b></li> </ul>

**NOTE** Bold indicates the strategy is used by NAPH members identified as high performers on ED throughput

\*Denotes strategies validated by UHC Benchmarking Studies

## Conclusion

ED overcrowding is a hospital-wide problem, and there is no single solution to improving ED patient throughput for all safety net hospitals. That said, prior to this study, there has been limited research on effective strategies for ED patient flow improvement, particularly strategies that were validated at large, urban safety net hospitals. Through this study, NPHHI was able to identify replicable strategies that NAPH members as a whole, and these five high performers in particular, have found effective in improving patient throughput in their EDs. NPHHI is grateful to The Commonwealth Fund for the opportunity to describe tangible, replicable strategies safety net hospitals can use to ease ED overcrowding and to showcase the excellent work being done by NAPH members to improve both ED and hospital-wide patient flow. ■

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## Notes

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1. According to the Institute of Medicine's 2003 series, "Future of Emergency Care", the number of patients visiting EDs rose to 113.9 million in 2003 from 90.3 a decade earlier.
  2. This data was obtained from the American Hospital Association's "The 2007 State of America's Hospitals—Taking the Pulse: Findings from the 2007 AHA Survey of Hospital Leaders." PowerPoint slide presentation published on the American Hospital Association's website, July 2007. See [www.aha.org/aha/content/2007/PowerPoint/StateofHospitalsChartPack2007.ppt](http://www.aha.org/aha/content/2007/PowerPoint/StateofHospitalsChartPack2007.ppt), last accessed April 20, 2010.
  3. Zaman OS, Cummings LC, and Siegel-Spieler S. America's Public Hospitals and Health Systems, 2008: Results of the Annual NAPH Hospital Characteristics Survey. Washington, DC: National Association of Public Hospitals and Health Systems, February 2010.
  4. "The Emergency Department as Admission Source." Published by Healthcare Financial Management, November 1, 2007. See [www.allbusiness.com/health-care/medical-practice-orthopedics/5504499-1.html](http://www.allbusiness.com/health-care/medical-practice-orthopedics/5504499-1.html), last accessed April 20, 2010.
  5. NPHHI conducted the study "Safety Net Hospitals and Emergency Department Throughput: Best Practices from High Performers" from June 1, 2008–December 31, 2009.
  6. The project was vetted with a six-member advisory committee composed of ED flow experts, comprised of:
    1. Michael Belzer, MD, Medical Director/Chief Medical Officer, Hennepin County Medical Center, Minneapolis, MN
    2. Lynda Curtis, MS, Senior Vice President, Bellevue Hospital Center, New York, NY
    3. Leon Haley, MD, Deputy Senior Vice President of Medical Affairs & Chief of Emergency Medicine, Grady Health System, Atlanta, GA
    4. Christine Martin, RN, Director of Emergency Services, Harborview Medical Center, Seattle, WA
    5. Anna Roth, RN, Chief Executive Officer, Contra Costa Health Services, Martinez, CA
    6. Chris Weaver, MD, Associate Professor, Emergency Medicine, Wishard Health Services, Indianapolis, IN
  7. The final survey contained 13 key metrics of flow. Measures were grouped into three categories: general measures, measures specific to patients with chest pain, and measures of time lapsed before admitted. **General Measures** used data from the last 12-month period for which data is available. These measured included: 1) Percent of ED patients who left without being seen; 2) Number of ED patients that left without being seen; 3) Average length of ED stay (in hours) for all patients; 4) Average length of ED stay (in hours) for admitted patients; 5) Average length of ED stay (in hours) for patients that were treated and released; 6) Percentage of patients whose length of stay was over six hours. **Measures Specific to Patients with Chest Pain** used data that respondents collected on cycle times for 30 adult patients complaining of chest pain. These measures included: 1) Number of minutes from patient entry until patient was triaged; 2) Number of minutes from patient entry until patient was directed into exam area; 3) Number of minutes from patient entry until initial physician evaluation began; 4) Number of minutes from patient entry until patient left the ED. **Measures of Time Lapsed before Admitted** used data that respondents collected on cycle times for 30 adult patients complaining of chest pain. These measures included: 1) Number of minutes from when the admitting order was communicated to when the bed was ready; 2) Number of minutes from when the bed was ready to when the patient left the ED; 3) Number of minutes from when the physician's admitting order was communicated to the nurse to when the patient left the ED.
  8. The average daily census at NAPH member hospitals responding to the survey was 361 patients compared with 308 for NAPH members overall.
  9. Respondents reported a median of 65,212 annual ED visits versus 54,649 for NAPH members as a whole.
  10. On average, six percent of patients left the ED without being seen over a 12-month period. The minimum was 1 percent; the maximum was 21 percent.
  11. The average length of stay in the ED for admitted patients was 7.8 hours (minimum was 1.7 hours; maximum was 13.5 hours) and for "treated and released" patients was 3.9 hours (minimum was 1.9 hours; maximum was 10.2 hours).
  12. NPHHI first reported that ED overcrowding was the result of hospital-wide patient flow problems in their 2005 publication *Perfecting Patient Flow: America's Safety Net Hospitals and Emergency Department Overcrowding*.
  13. The top performers were selected based on their performance on the 13 key metrics of patient flow included in the survey.
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