THE ISSUE
Hospitals and staff are overwhelmed with an influx of patients. Overcrowding and long wait times continue to be problematic as hospitals struggle to get patients in and out of the emergency department (ED). Using creative strategies to design flexibility into the built environment, hospital EDs can optimize operations and improve throughput while continuing to put the patient first.

CONTENT OVERVIEW
To assist healthcare organizations, designers, suppliers and others involved in the planning, design, construction and operation of emergency departments, The Center for Health Design has developed the Emergency Department Throughput Toolbox, containing a library of newly-created and Center staff-curated content – research findings, expert insights, strategies, tools and other useful resources.

The Toolbox is available to members of The Center’s Corporate Affiliate+ program.

Contents Include
Issue Brief & Executive Summary
2 Expert Interviews • 3 Case Studies
10 Design Strategies
ED Throughput Strategies Considerations Checklist
8 Key Takeaways (Lessons Learned)
Related Resources • 2 Blogs

Accompanying this profile you will find short excerpts from select toolbox resources, providing brief insights into the content developed exclusively for this topic toolbox.

* Additional toolbox resources will be added in the future.
AUDIENCE
This toolbox has been developed for use by executives, professionals and staff involved in the planning, design, and operation of emergency departments, or those with financial, patient care, compliance, and staff satisfaction responsibilities, specifically including:
- Emergency department directors, physicians, nurses and managers
- Healthcare facilities and planning executives
- Hospital executives with emergency department oversight
- Healthcare architects, planners, designers, and consultants

ABOUT CORPORATE AFFILIATE+
Corporate Affiliate+ members have have access to in-depth, high-value, leading-edge content, organized into top- ical “toolkits” to address the most pressing facility design issues impacting health outcomes and healthcare costs. Each contains a library of expert insights, case studies, research data, strategies and tools – actionable resources which can be shared and used by your entire organization.

In addition, Affiliate+ members receive the full complement of our standard Affiliate benefits – electronic and print publications, networking event invitations, assessment and evaluation tools, and industry recognition on our website and at our events – plus larger discounts on EDAC certification, learning and networking events, books and multimedia, and more.

OTHER AVAILABLE TOOLBOXES
- Communication
- Healthcare Reform
- Impact of Aging
- Infection Control
- Noise
- Patient-Centered Medical Home
- Perception of Cleanliness
- Population Health
- Safety
- Technology

UPCOMING TOOLBOXES
- Behavioral Health
- Process-Led Design
- Flexibility and Adaptability
- Patient Experience

ABOUT THE CENTER FOR HEALTH DESIGN
The Center for Health Design advances best practices and empowers healthcare leaders with quality research that demonstrates the value of design to improve health outcomes, patient experience of care, and provider/staff satisfaction and performance. Learn more at www.healthdesign.org
Emergency Department Throughput: Strategies to Improve Care Efficiency and Effectiveness

Increasingly, the emergency department is becoming the face of the healthcare system, generating approximately one-half of all hospital admissions (Morganti, Bauhoff, Blanchard, Abir, & Iyer, 2013; Pitts, Carrier, Rich, & Kellermann, 2010). Efficiency and safety are top priorities in every healthcare setting, but they are especially crucial in the emergency department. Long stays in the ED may indicate insufficient staff, inadequate space, or poor coordination among hospital departments. Overcrowding in the ED is cited by numerous sources (Centers for Medicare & Medicaid Services, n.d.; McHugh, VanDyke, McClelland, & Moss, 2012; Rabin et al., 2012) as a cause for several interconnected consequences, such as delays in treatment, increased stress for patients, families, and staff, decreased patient satisfaction, increased costs, and increased mortality rates.

A review of the literature shows that throughput issues are typically evaluated by breaking down patient flow into three time intervals:

- Arrival to provider;
- Provider to decision to admit; and
- Decision to hospital inpatient admission.

These intervals serve as the structure for the following section. While these categories of patient flow offer a helpful and concise way to present throughput strategies, the information should not be interpreted within strict boundaries of application to certain intervals. Instead, strategies should be considered through a systems view—within and beyond the ED.

REFERENCES
Exploring Emergency Department Trends and Best Practices to Improve Throughput

Behavioral health and chemical dependency patients often take up precious ED space for extended periods of time. Can you describe any examples of ways to effectively manage this population so as not to tax the emergency department staff and other patients?

Emergency Departments must be designed with safe areas to manage behavioral health and chemical dependency patients. Whether those patients are brought in by the police, their family, or EMS, they remain in the ED for hours—and, in some cases, for days. This becomes a real issue and a significant drain on ED resources. If we don’t have safe spaces designed for these patients, they can get into trouble and impact the care of other medical patients who are being managed in the ED. The ED nursing staff often bears the negative effects of behavioral health patients.

There are some hospital systems that are doing a good job of addressing the problem. For instance, Cincinnati has two hospitals designated for behavioral health patients: the University of Cincinnati Medical Center and Mercy Health-Clermont Hospital. They both have well-designed behavioral health evaluation centers where patients can be managed safely.

Another good example is the Carolinas Medical Center-Mercy in Charlotte, North Carolina, which uses a telemedicine consult service to manage behavioral health crisis patients in the ED through a mobile computer. This allows the behavioral health staff to do an evaluation remotely, which improves efficiency and helps ensure that patients with behavioral emergencies can be discharged, admitted, or transferred more quickly.

There is also a new trend to develop sites called Sobering Centers, which are developed with the assistance of multiple community organizations, including hospitals and Emergency Medical Service providers. Right now these are operating in Providence, Rhode Island, and Denver, Colorado, and are funded in a variety of ways. The concept is that these give police and EMS a place to bring people whose primary need is sobering and detox rather than taking them to the ED.

James Augustine, MD, FACEP, is an emergency physician and clinical professor in the Department of Emergency Medicine at Wright State University in Dayton, Ohio, who speaks, writes, and consults on issues related to emergency department operations and design. He also serves as Chairman of the National Clinical Governance Board for U.S. Acute Care Solutions in Canton, Ohio. He is a member of numerous national organizations and groups that oversee emergency medical care, quality, and best practices. He is the Vice President of the ED Benchmarking Alliance, and a member of the Board of Directors of the American College of Emergency Physicians. In the past, James has served as Chair for The Joint Commission Hospital Professional Technical Advisory Committee and on the Board of Commissioners.
Maximize Space, Manage Volume, and Improve Communication in the Emergency Department

Seattle Children’s Hospital, Seattle, Washington

THE CHALLENGE
The previous emergency department was becoming obsolete because it could not accommodate the increasing patient volume. It was 20 years old, and it was built at a time when the ED census was about 15,000 patients per year. Volume had increased by 30 percent since 2003, and it was evident that the emergency department was in dire need of an update to deal with the crowded conditions.

But the swelling patient visitation wasn’t the sole concern. An inefficient use of the workspace was heavily impacting the care workflow. The team cared for emergency patients in three separate spaces, which limited productivity of some of the teams. The team also considered some models that would require the patients move from place to place in the emergency department. "That model is efficient for the provider, but it wasn’t very friendly to a single mom who had three kids with a cold," says Dr. Russell Migita, clinical director of emergency services at Seattle Children’s Hospital.

Additionally, families were required to explain their situations multiple times before receiving appropriate treatment. This time consuming and repetitive process started to cause a rift between the doctors and patients. "In the traditional model, patients are seen by a nurse, then someone from registration," says Migita. "Then they are seen by a medical resident who will perform their full evaluation and state their plans. Then the resident has to find an attending physician for a second opinion. And we may have to see the patient and ask more questions because the resident didn’t ask the right ones. By this point, the family has told their story to about five different people. This caused some frustration."

Acknowledging that the new emergency department could not mimic the former model, the care team at Seattle Children’s Hospital created a list of guiding principles to ensure that patient needs were addressed in the new emergency department. Some of those ideas were to: rectify the crowded conditions, improve communication between patients and health providers, maximize visibility, reduce wait time, and provide a safe environment of care for patients.

Before any construction took place, physicians, architects and caregivers attended a visioning session to develop design concepts that would improve workflow and communication within the expansion. Former patients and families were invited to offer feedback about improving the hospital experience. In addition, families and staff assessed full scale cardboard mockups and tested design simulations. They were adamant about crafting a patient-friendly space that provided a sense of safety, efficiency, comfort, and normalcy during a stressful time.

"They were our reality check," explains Migita. "We went through a process of including patients and families to provide a model that we would want for our loved ones. And from that visioning session came the guiding principles for the design. The building was designed to be family and patient centered. The process from the very start considered the experience of the family and patient through their eyes and used that information to decide which guiding principles would provide the best possible experience. For many people, visiting an emergency department can be a difficult moment, so we wanted the space to be welcoming, friendly and safe."
Exploring ED Planning and Design Strategies to Meet Current and Future Needs

Can you offer advice for designers and architects to consider when planning and programming the space needs for emergency services?

At the moment I’m seeing significant interest in lean operations. I think this is healthy, but I have concerns about the time it takes to develop a good solution. I’m in the middle of doing some research that documents that the traditional brainstorming approach to creativity and decision-making is typically not effective. I’ve found in my experience (and data supports my findings) that we need to give everyone involved time to reflect on new ideas and to get comfortable with rapid cycle improvements (meaning improvements that are not only more efficient, but also more effective in leading to results). My recommendation is to allow time for a non-linear process so people will be able to step back and think.

Another recommendation is to use scenario planning. This can vary from using a relatively simple set of assumptions to creating a one-page narrative about what may happen in the future. I typically encourage picking three scenarios that are outside of the scope of the ER that could occur. I suggest people determine which scenarios are most likely and then scale them and determine whether each scenario could have a big impact on design.

When we get to the design solutions, if there are time or budget constraints that prevent us from meeting the scenario that accommodates the highest volume or biggest demand on the emergency room, we can still use this information to position the ED to grow it in the future as the need arises.

What is one example of how scenario planning might be used to guide the design of an emergency room?

One specific example that comes to mind is CHI St. Vincent in Little Rock. This ED is laid out in a linear configuration with an inner core model. (The staff works on the inside, and patients move along the perimeter.) It was designed so the last piece was the administrative offices, which could be used as expansion space in the future if needed. But what actually happened was that, during construction, the volume was growing so quickly that more capacity was needed right away. Therefore, we moved the administrative offices elsewhere and reallocated that space for patients right from the beginning.