

# *ED Leadership Monthly*

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## Surge Capacity Planning

**Featured Topic:** We know that 79% of EDs in the country spend at least part of every day over capacity -- more patients than treatment spaces. Most EDs staff for 80% of volume which means 20% of the time you will not have capacity in your department for all who arrive. Most EDs do not have a plan for the surges that will present with some regularity. The influenza epidemic in the winter of 2009 taught us, through trial and error, how daily surges (not disasters) might be managed. We want to suggest that you develop a surge plan and identify triggers for its activation. Some of the ideas that might be employed in a SURGE CAPACITY PLAN:

- 1) **Identify triggers for implementing the plan:** These may include overall wait times, the number of patients in the waiting room, door-to-doc times exceeding a threshold, boarded patients, overall acuity in the department or, as we discuss later, the CUR (Care Utilization Ratio). The ED should have a clear policy for activating the plan including a subjective one when the physician feels the department is unsafe.
- 2) **Call a Team Huddle:** Congregate the Physicians, Nurse Leaders, House Supervisor, Triage, Admitting, etc. to review the elements of the plan and begin activation.
- 3) **Identify Bottlenecks:** By running the board it should become apparent where the bottlenecks are and what temporary processes may be employed to remedy the situation. It is important to remember that the bottlenecks are a moving target. Constraints to smooth patient flow at triage/intake will create bottlenecks with lab and x-ray later on.
- 4) **Intake Bottleneck:** Remedies might include setting up a secondary triage, performing team triage and sending patients back to the waiting room, using paramedics temporarily to perform intake assessments, and using medical screening to triage out non-acute patients, making them appointments.
- 5) **Space Constraints:** Remedies might include setting up a chair section for vertical patients, creating a results waiting area and moving all likely-to-be-discharged patients into a designated space to await test results, double-bunking patients with extra stretchers being brought to the ED and using hallway stretchers.
- 6) **Admission Constraints:** Remedies might include an express admission unit with all admitted patients being sequestered in one area waiting to go upstairs, a "no refusal policy" for admissions for a set period of time, and bridge orders that allow patients to go upstairs with temporary, time-limited orders.
- 7) **Discharge Bottleneck:** Remedies include a temporary discharge team, preprinted generic discharge instructions and a discharge kiosk. Quickly move all patients likely to be going home out of treatment spaces to a designated area for outflow processing.
- 8) **Radiology Bottlenecks:** Assign a temporary transport tech, perform some x-rays with the portable machine in a set area and have an on-call x-ray tech or use cross-trained personnel.
- 9) **Laboratory Bottlenecks:** Remedies might include pulling a phlebotomist from the lab to help collect specimens, pushing results to providers and using transport runners to the lab.

- 10) **Staffing:** Most emergency physician groups balk at having a physician on-call. When the surge capacity plan is activated it should be understood that all physicians working will stay (we recommend two hours) after the end of the shift. This is better accepted if there is a financial incentive for staying over. If the department is caught up, physicians can be allowed to leave before the two-hour interval. Nursing and other staff should be held accountable in the same way.
- 11) **Sign-Overs:** When a surge plan is activated, sign-overs should be virtually forbidden. Some of the worst sentinel events we have seen in the ED have involved sign-overs when the department is over capacity and there are lapses in care. Hand-offs should be rare in emergency medicine for safety reasons, but during a surge they should not be tolerated.

**CUR (Care Utilization Ratio):** A related topic, published in the May 2012 issue of *Academic Emergency Medicine*. This study investigated whether emergency department (ED) variables could be used in mathematical models to predict a future surge in ED volume based on recent levels of use of physician capacity. The models may be used to guide decisions related to on-call staffing in non-crisis-related surges of patient volume. The ratio of new patients requiring treatment over total physician capacity (termed the care utilization ratio [CUR]) was deemed a robust predictor of the state of the ED (with a CUR greater than 1 indicating that the physician capacity would not be sufficient to treat all patients forecasted to arrive). The CUR is a new and robust indicator of an ED system's performance. Current practice would have been improved by using the proposed models and would have identified the surge in patient volume earlier.

**Big Brother: Patient Engagement and the Right IT Tools.** As most healthcare providers know, the federal government is insisting that hospitals and practices improve their e-patient engagement strategy in order to meet stage 2 meaningful use criteria. "Patient engagement is a process in which patients become invested in their own care. Engagement develops naturally when there is regular, focused communication between patient and provider, and it leads to behaviors that meet or more closely approach treatment guidelines." So, how do you get patients more invested in their own care? Technology is only part of the answer. Some IT vendors are suggesting that apps can have a role in patient engagement. Can you imagine an iPhone app that reminds diabetics to check their sugars? One that reminds patients to take their meds? Eliza Corporation uses interactive voice response (IVR) technology to motivate patients and improve compliance with prescribed medical regimens. Although many consumers don't like talking to a computerized voice over the phone, Eliza's sophisticated algorithms have, to some extent, overcome that resistance. Be aware that this type of technology may become part of our practice too and offload some healthcare coaching and reminders to non-humans!

**ED Quality and Safety: Sepsis Bundles.** The focus on sepsis has undoubtedly improved awareness and has certainly had a positive impact on patient outcomes. However, the early goal directed therapy (EGDT) sepsis bundle may be a bit overrated. As with many quickly adopted therapies and concepts, once time is taken to further study them, we discover that limitations exist. With regard to EGDT, it is unlikely that all of its elements are responsible for the mortality benefits associated with this strategy. Early recognition, volume resuscitation and early broad-spectrum antibiotics are likely to be responsible for the majority of benefit, while items such as central venous oxygen saturation measurements and central venous pressure measurements are not. Authors such as Marik and Crowe have published recent articles calling certain components of EGDT into question. Kevin's opinion piece on sepsis bundles, published in *Emergency Physicians Monthly* is available at <http://www.epmonthly.com/columns/in-my-opinion/sepsis-unbundling-the-bundle/>

**Patient Centered Evidence.** In an interesting article in the April 18, 2012, issue of *JAMA*, the authors discuss the concept of risk stratification models and their limitations. They suggest that application of the data from such models should be more patient centered. Although risk models deal with probabilities, they don't give us a 0% or a 100% likelihood, which would be most helpful. In addition, different investigators can apply the same data to a different model and patients will make dramatic movements from one category to another, which demonstrates that equally valid tools may yield different risk allocations to patients. Aggregate data are very difficult to apply to individual patients. Thus, such tools should be cautiously applied to individual cases, and should be only one factor in the medical decision-making process. (Kent DM, Shah ND. Risk Models and Patient-Centered Evidence: Should Physicians Expect One Right Answer?. *JAMA*. 2012;307(15):1585-1586.)

### **News You Can Use:**

**Head Injury and Blood Thinners European Style.** From the June 2012 issue of *Annals of Emergency Medicine*. For patients receiving warfarin who experience minor head injury and have a negative initial head CT scan result, a protocol of 24-hour observation followed by a second CT scan will identify most occurrences of delayed bleeding. An initial international normalized ratio greater than 3 suggests higher risk. This study was from an Italian medical school.

**The Growing Role of Emergency Departments in Hospital Admissions:** Jay Schuur at the Brigham has written a perspectives piece in the *New England Journal of Medicine* about how the ED is an increasing source of hospital admissions. While there are fewer admissions for heart attack (he showed trends for almost the past two decades), admissions for heart failure, pneumonia and all diagnoses are rising. He predicts that demographics alone will continue this trend, and this paper further emphasizes emergency medicine's unique position to be an integral resource for hospitals and systems regarding hospital admissions. The editorial is available at <http://www.nejm.org/doi/full/10.1056/NEJMp1204431>

**Operational Improvements: Boosting Clinical Productivity.** An article in the *NEJM* in October 2011 titled "Rethinking Health Care Labor" shows that healthcare workers are among the least productive workers when compared with other job sectors. The authors suggest that we need to use less-skilled workers to do the less-skilled work, pointing out that the legal profession has done this over the past 15 years. According to these data, healthcare workers had a decline in productivity. The authors suggest that the reimbursement schemes by healthcare policy makers do not promote productivity. They make the pitch for coding rules that are appropriate regardless of how providers achieve their clinical goals. (Think about the current documentation burden on ED physicians!) They feel that this would unleash innovation. In a related article about boosting the productivity of knowledge workers (in *Strategy Practice* September 2010), it is pointed out that knowledge work involves more diverse and amorphous tasks than production or clerical positions, where relatively clear-cut, predictable activities make jobs easier to automate or streamline. Likewise, performance metrics are hard to come by in knowledge work, making it challenging to manage improvement efforts. These authors recommend identifying constraints to efficient work: physical and technical barriers and social and contextual/cultural barriers.

**The Director's Chair: Spread of Leadership Outside the ED Walls, Clinical Excellence.** Emergency medicine is uniquely positioned to provide support and many solutions in our evolving health care system. If our leaders are engaged, the opportunities to participate are virtually limitless. A very strong argument can be made that emergency physicians, and the perspective we have gained by our interactions with consultants, administration and the public, position us to be most helpful in many leadership roles. We need to take this opportunity to secure our rightful place in steering the health care ship, as opposed to just going along for the ride.

**Gadgets and Gizmos: AV 300 Vein Viewing System.** In use in more than 1000 hospitals, the AccuVein AV300 is a revolutionary tool for helping to locate veins for medical procedures. It is portable and lightweight, weighing only 10 ounces (280g). It is as simple to use as pointing the device at an area of the skin and clicking to display the peripheral veins beneath. Since the device has been designed to be non-contact, no sterilization between uses may be needed. Because it runs on a rechargeable battery, it doesn't need to be plugged in to an electrical outlet. The AccuVein AV300 is useful for a variety of patients in many settings and serves to supplement existing venipuncture techniques. Features of the AccuVein AV300: easy to learn and use, small and handheld, movement tolerant, has a hands-free option, does not require direct contact with the patient so no need to sterilize, works in the light or dark and has a rechargeable battery. It sticks at \$1763, and you can rent or buy it. Kevin just says "NO!" His experience is that this illuminates some veins very well, those that you can already see, but is less than helpful in identifying those you can't. See Addendum 1 on the *EDL* website for more information on this device.

**Hot Topic: Frequent Flyers:** In the July 2012 issue of *Annals of Emergency Medicine*, there is an interesting article from a group of researchers in Manitoba about frequent flyers (FF). The authors divided patients into frequent flyers (7 to 17 visits a year) and highly frequent flyers (HFF more than 18 visits). They found the FF group accounted for 2.1 % of patients, and almost 10% of visits were not elderly patients, they had mental health issues and lived nearby. The HFF group accounted for 0.2% of patients, but 3.6% of visits. They were extremely poor, younger and more than two thirds had substance abuse problems. Dr. Ellen Weber who wrote the companion editorial for this article cautions "Frequent use is only 'too frequent' if the patient could have been served better in a different setting. She also notes "Though we have expanded the technical abilities of medical care, how we deliver that care has not kept pace."

**Short Takes: New Use for an Old Drug: Ibuprofen for Mountain Sickness.** The exact pathophysiology of acute mountain sickness remains uncertain. Vasodilation and altered blood-brain permeability have been implicated along with inflammatory mediators. Acetazolamide has been the drug of choice for prevention and treatment of mountain sickness. Ibuprofen has many advantages over acetazolamide. Acetazolamide can cause nausea, dizziness, and fatigue, which are usually mild but can be debilitating but, more importantly, these symptoms can complicate the diagnosis of acute mountain sickness. Acetazolamide used for prophylaxis has been associated with paresthesias in 76 percent to 91 percent of patients. In addition, for acetazolamide to be effective, it must be taken 24 hours prior to ascent, which may make it a useless prophylactic agent in time-sensitive situations. Ibuprofen is also inexpensive, familiar and safe, especially in short courses. Its wide availability without a prescription makes it much more likely to be used. The next time your patient decides to head for the hills, be certain he takes ibuprofen with him. Its minimal cost and minimal risk are likely to make his ascent much less symptomatic and much more pleasurable. It could even save his life.

Where are timely, innovative ideas regarding ED operational efficiency to be made available? Right here in *ED Leadership Monthly*, of course! And please remember, we welcome your comments, letters, e-mails and suggestions.

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