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Preparations enable children's EDs to effectively handle H1N1 surge

Meetings began in early summer to be ready by the fall

If the term "be prepared" works for the Boy Scouts, it works even better for EDs facing potential surge situations.

Tabletop exercises during the summer of 2009 were among the strategies used by the Minneapolis and St. Paul EDs of Children's Hospitals and Clinics of Minnesota to prepare themselves for a fall surge of H1N1 patients. Apparently, they did their job. Although the EDs' staffs saw 50%-60% more patients in the peak month of October, the average length of stay remained unchanged.

In early summer, before the first formal tabletop meeting, "The entire group — physicians from the ED, management from the pediatrics clinic, anesthesia inpatient services, radiology, environmental services, and resource management — all gathered in a big room, and we discussed what it was that we needed to do to see a potentially unexpectedly large number of patients," recalls **David Hirschman**, MD, FACEP, FAAP, medical co-director for the group's emergency departments.

The actual tabletop exercise involved "everyone who might have an effect on the patient visit through the ED: registration people, environmental services, nurses, physicians, security, materials management, and IT," he says. The exercise involved thinking about all the possible scenarios where varying numbers of patients would

Executive Summary

Tabletop exercises can be an effective strategy preparing for situations that involve numerous hospital departments, such as a pandemic surge. Here are some highlights of the successful tabletop exercises used by the Minneapolis and St. Paul EDs of Children's Hospitals and Clinics of Minnesota to prepare for last fall's H1N1 outbreak.

- Every unit that interfaces with the ED was involved in the discussions.
- Participants were given "homework assignments" to outline their role in the overall response process.
- Department heads made in-person visits to overflow spaces to ensure they had adequate resources should they be required to accommodate patients.

IN THIS ISSUE

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have to be seen, and how to create processes that would handle those increasing numbers. "It covered everything from having adequate scanning machines for registering people and enough forms for them and places for them to be, to computer access, including computers on wheels or laptops, and so on," says Hirschman. "We talked about nursing — how to get adequate numbers of nurses involved; where the patients would sit if we had overwhelming numbers; having a party tent type of setup that needed to be heated; supervision of the patients; who would do the vital signs, and how often they should get done."

Although there was not a designated leader, all the participants agreed that for homework, they would think about how each of their departments could contribute to seeing exceedingly large and unusual numbers of patients. "We did not know how sick they would be or what their needs could be," he says.

The physicians came up with threshold numbers of patient that would trigger additional staffing and additional space requirements. "We used our standard staffing for up to 160 patients in a 24-hour period," says Hirschman. "If the hourly numbers appeared to be heading in the wrong direction, we'd activate additional space and staffing." Alternatively, he says, if the number of patients reached 150 for two days or more, because it was difficult to sustain care for a long time, additional resources also would be triggered. **(Despite these complex preparations, there were some surprises when the plan was put into action. See the story on p. 27.)**

If the first threshold was reached, one physician and two nurses would be added on both campuses. "If we went up to around 200, we'd increase again," adds Hirschman. Staff members signed up for additional shifts with the potential of being called, and "there were few days when they weren't called," he says. However, only the first part of the plan was exercised, Hirschman says. "We did exceed 200 patients for a short period of time, but we just managed with the staffing we had," he notes.

As one subset of the tabletop exercise, the entire group went physically to each of the proposed overflow locations to look, measure, and see what needed to be changed. "They considered functionality like code buttons, airway cards, and resuscitation equipment," says Hirschman. "We designed the [overflow] space so it was truly an extension of the ED." For example, the spaces involved areas that typically were used as clinics, he says.

The tabletop exercises for the Minneapolis facility didn't take place until early October, notes **Claudia Hines**, RN, BSN, patient care manager of the ED there. The group in Minneapolis had a double challenge, Hines says.

"[The tabletop exercises] happened right before we were about to move into new space," she says. In previous exercises, they had identified three satellite areas where patients could be seen when volumes increased, Hines says. "We already had mechanisms in place. In our tabletop discussion, we talked about expanding to another area in the clinics, so we would have four different areas we could expand to," she says.

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Thus, that tabletop exercise was highly focused on processing needs. "In the ED, we have patients coming in with various presentations of symptoms," Hines says. "We tried to walk through what these patients would need and what each next step would be."

The day the new ED opened, "We had the largest volume of patients we had ever had. It was an absolutely crazy period of time," recalls Hines. "Minneapolis saw 54% greater volume than last year at the same time, and St. Paul saw a 66% increase in volume."

The additional spaces enabled the ED to expand its capacity from 16 beds to 26, she says. "We had a lot of patients coming in during that huge surge, and they were mostly worried well," says Hines, "But they still needed to go through triage." On the weekends, she says, there was an extra provider (a doctor or a nurse practitioner) available to see the patients, and one or two RNs were added, depending on the time of day.

Prior to the new ED opening, an orientation program was held, which also helped processes move more smoothly when it opened. "Each member of the RN staff and support staff had to come to orient on the unit," says Hines. A new phone system had to be learned. The new configuration of the department meant that locations changed for important areas such as the ambulance entrance. "Orientation also consisted of different scenarios," says Hines. "We have a results room where patients go when critically ill or injured, and we had people go through the room to make sure they knew where supplies were."

Wait times were easy to track, because "we've been working on process improvement for the ED over the last nine months using Lean principles," she says. The ED saw 1,000 more patients in October 2009 than it did in October 2008, yet length of stay was the same, Hines says. "In 2008, in October, the fall surge length of stay was 158 minutes compared to 138 minutes in 2009," Hines recalls. Without our preparations, "it would have been over 200 minutes," she says. **(Hirschman says that having adequate resources for hand washing and protective equipment also contributed to the success of the response by ensuring more staff stayed on the job. See story, below.)** ■

Surges always bring surprises

While ED managers can make elaborate preparations for possible surge situations, it's virtually impossible to cover all possibilities, says **David Hirschman**, MD, FACEP, FAAP, medical co-director for the Minneapolis and St. Paul EDs of Children's Hospitals and Clinics of Minnesota.

Despite holding very complex tabletop exercises to prepare for the fall 2009 H1N1 outbreak, Hirschman says, "we discovered things we had not foreseen." For example, he notes, "In our overflow area, which was typically used as a clinic, the air handlers and elevator access had been turned off, and cleaning had been discontinued." The air handlers, he notes, are on timers, and his staff discovered on the first day of the surge that there was inadequate ventilation. The hospital quickly remedied the situation. "You may think all of the details are covered, but there's always something missing," says Hirschman.

Nonetheless, the preparations were invaluable, he says. "It would have been a completely different experience had we not been prepared; this way, as the numbers of patients increased we had a contingency plan, and things worked." The facility was not taxed beyond its limits, he says, "and we continued to practice more or less along the same lines as we had been up until then."

In addition to learning that "it could be done," Hirschman also learned the value of the tabletop exercises. "It's not enough to write a plan down on a piece of paper saying what you intend to do," he says. "There has to be a unified effort from administration, nursing, security, physicians, environmental services, and so on. Otherwise things break down." ■

Healthy staff mean healthier patients

One of the key elements of a successful response to last fall's H1N1 surge in the EDs at Children's Hospitals and Clinics of Minnesota was ensuring the

health of the staff, says **David Hirschman**, MD, FACEP, FAAP, medical co-director for the group's Minneapolis and St. Paul EDs.

"You can ensure you will not be taxed beyond capacity by providing encouragement and adequate resources for hand-washing and personal protective equipment," he says. "Had we experienced a significant lack of providers, our experience would have been vastly different. This is a key to the success of managing a pandemic." ■

Are uninsured traumas at a greater risk?

Likely causes for disparity in death rates

A study published in the November 2009 issue of the *Archives of Surgery*[1] has caused a stir in ED circles by asserting that uninsured trauma patients are more likely to die than those patients who have insurance. While the study did not come to any conclusions about the cause for this apparent disparity, the authors offered possible explanations, including those patients experience more delays due to multiple transfers, they have greater difficulty communicating with doctors, and they receive different care.

On the latter point, of course, ED managers say clearly that they treat all patients the same. Some experts, however, concede that you should not rule out the possibility of unconscious biases. "Several things may be at play that cause these individuals to have poorer care and recovery rates," notes **Sandra M. Schneider**, MD, FACEP, president-elect of the American College of Emergency Physicians and professor of emergency medicine at the University of Rochester (NY). "They may be reluctant to seek care even when injured. Many come in with conditions that are not well treated, like diabetes or high blood pressure, which can make recovery worse. Or they may be reluctant to have expensive tests."

However, she adds, "Studies like this make us examine ourselves to see if there is any bias we're not aware of. We all have some kind of unconscious bias somewhere. That's the importance of this article."

The researchers reviewed nearly 700,000 patients from the National Trauma Data Bank, and they definitely found some disparities for uninsured patients, says **Jeffrey S. Dubin**, MD, vice chair of the Department of Emergency Medicine, Washington (DC) Hospital Center. "It's really surprising from an emergency department standpoint because with major traumas, everything is done for these patients without any thought to cost — at least for initial treatment," he says. "No one checks your insurance if you need a CAT scan."

However, Dubin says, "If anything, for the ED staff it's just a reminder that perhaps even without thinking about it, there may be some subconscious bias that exists and reflect on that, so that all care decisions for the patient are made without regard to cost or insurance."

Eric Lavonas, MD, an emergency physician for Denver Health Medical Center, says the study's findings are provocative and demand to be answered. "The authors chose a good database and used it well. They've measured differences in outcome and tried to speculate on why this is so," Lavonas says. "They offer a series of well thought-out, educated guesses, but this paper cannot tell which of those three is contributing and how much." In addition, he says, "I've *never* worked in a place where we rationed tests that were necessary."

Lavonas adds that "usually you order tests even before they ask for an insurance card, so you usually don't know [if the patient is insured]. The theory is

Executive Summary

While a new study indicating that uninsured trauma patients are at greater risk of mortality did not point a finger at EDs, experts say there are proactive steps ED managers can take that will help reduced the risk for these patients:

- Keep your eyes and ears open for any evidence of bias — where people express concerns about whether patients can pay for treatments.
- If a patient is on one or more medications, ask where they get the meds filled. With the patient's permission, call the pharmacy and get a list of all the meds he or she is taking.
- If language assistance is needed, ensure it's given.

Sources

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that we act differently based on information we not have." **(Nevertheless, Lavonas and others have tips for ED managers to help combat this apparent mortality disparity. See the story, below.)**

He says it's more likely the answer lies in the other options noted by the authors: Patients are transferred when it could be avoided, or they have comorbidities that are not in the record or previously diagnosed. **(When treating trauma patients, notes Lavonas, "standard work" can be a blessing or a curse. See clinical tip, right.)**

Reference

1. Rosen H, Saleh F, Lipsitz S, et al. Downwardly mobile: The accidental cost of being insured. *Arch Surg* 2009; 144:1,006-1,011. ■

Be proactive with uninsured patients

While ED managers and their staffs were not identified as the "bad guys" by the authors of a recent study showing uninsured trauma patients had higher mortality rates than those with insurance, emergency medicine experts agree there are proactive steps ED managers can take to try to offset this disparity.

First, you can address whatever biases might exist within the staff, says **Sandra M. Schneider**, MD, FACEP, president-elect of the American College of Emergency Physicians and professor of emergency medicine at the University of Rochester (NY). "Keep your eyes and ears open for any evidence of bias where people express concerns about whether or not patients can pay for treatments," Schneider says.

Many ED physicians intentionally don't look at a patient's insurance status, she says. "I myself say I never look at it because it keeps me from being biased," shares Schneider, adding that it would be a "very good idea" for the ED manager to encourage the whole staff to do the same.

In addition, she says, when the patients volunteer that they are uninsured, "I would work hard to get these people insured. Many of them actually qualify for government programs. For example, some veterans do not even know they are entitled to care, while others might be encouraged to apply for Medicaid."

Many uninsured patients do not speak English, notes **Jeff Dubin**, MD, vice chair of the Department of Emergency Medicine, Washington (DC) Hospital Center. In such cases, "If language assistance is needed, make sure it happens," he says.

In addition, Dubin says, use all available sources of information, including old records, and be creative." If a patient is on one or more medications, "a very good strategy is to ask where they get the meds filled, and with the patient's permission, call the pharmacy and get all the meds they're on," he says. With this strategy, you might find out they were on blood pressure medicine six months ago and had not refilled the prescription, he says. ■

CLINICAL TIP

Standard work a two-edged sword

"Standard work" can be a force for evil or good in the care of trauma patients, says **Eric Lavonas**, MD, an emergency physician for Denver Health Medical Center.

"Several studies have shown that standardized laboratory or X-ray panels for trauma patients result in overordering and overexposure to radiation without improving diagnostic accuracy," he notes. "However, if you can get your physician and nursing teams to agree on a few ground rules, things generally will go a lot more smoothly."

For example, he says, have your physicians to agree on one combination of drugs to use for intubation and post-intubation sedation most of the time. "This combination won't be appropriate for every patient, but 90% of the time, you can reduce errors by making a complex task routine," Lavonas explains. The key is to strike a balance, he says. Have a consistent approach, but be comfortable departing from it when there's a clear reason to do so. ■

Grant helps ED refer patients to health center

Stabilization follow-up appointments arranged

After the first year of a two-year pilot program, the ED and the community health center participants agree that it has been successful in helping Medicaid

Executive Summary

With the help of a $2 million grant from the Centers for Medicare & Medicaid Services, the ED at Monmouth (NJ) Medical Center, and the Monmouth Family Health Center have created a referral system that had lightened the burden for the ED and found many more patients a health care "home." Whereas in the past, length of stay (LOS) for those patients who went to the fast track has been as high as 90 minutes, the LOS for these patients has been under 70 minutes.

- A shared computer system enables the ED to access the center's schedule and arrange for follow-up visits.
- The ED added 12 hours a day of advanced practice nurses during the busiest hours of the day to treat and refer uninsured patients.
- A primary care-type conditions list is used during triage to help identify referral prospects.

and uninsured patients find the primary care they need. In addition, it has relieved some of the burden on the ED staff; in the past, length of stay (LOS) for those patients who went to the fast track has been as high as 90 minutes, while LOS for these patients has been under 70 minutes.

The ED at Monmouth (NJ) Medical Center, which sees about 54,000 patients a year, reports that 20% of its patients are Medicaid/Medicaid managed care, 20% are Medicare/Medicare managed care, and 20% are self-pay.

With the help of a $2 million grant from the Centers for Medicare & Medicaid Services, the ED was able to staff up to the point where it can refer all such patients to the Monmouth Family Health Center for follow-up visits after they have been screened and stabilized. The ED always had referred patients to the health center, says **Catherine Hanlon**, MD, FACEP, chair of emergency medicine, but in the past they would simply give the patients a phone number and leave it up to them to call. **(The ED had to provide several statistics to have a chance to qualify for the grant. See the story on p. 31.)**

The grant made possible the hiring of a full-time staff of nurse practitioners who handle the intake, evaluation, and treatment, and also coordinate follow-up and education for patients who use the ED for primary care visits. The ED added 12 hours a day of advanced practice nurses during the busiest hours: 9 a.m. to 9 p.m. The grant provided for three FTEs, but Hanlon decided to fill that with four part-time individuals.

"A shared computer database gives us instant access to the health center scheduling so they can arrange the follow-up visit," notes Hanlon. "Then case workers provide additional follow-up, such as arranging for transportation."

Bill Vasquez, FACHE, the project director, says, "The grant also provided not only for project direction, but increased clinical capacity at the health center. It also provided for additional physician hours, family medicine, nursing, and case management."

The triage process at the ED works like this: Any ambulatory patient has to register. Those with chief complaints that would be considered primary care complaints become candidates for referral. "We worked on a triage list of the most common office diagnoses, such as sore throat, removing stitches, wound checks, and earaches," Hanlon explains. "Whether the patient has insurance or not, they are still seen and taken care of by midlevel staff."

Once the patient is identified as having a primary care complaint, those who are uninsured or on Medicaid are seen right in triage by the nurse practitioner, rather than being sent to fast track, she says. "The complaints are addressed, treatment is initiated, and then arrangements can be made for the health center appointment right there," says Hanlon.

The program has streamlined the treatment of ED patients with less urgent problems "and lets the ED staff and doctors primarily focus more on the more seriously ill and injured patients," she says. In the past, length of stay for those patients who went to the fast track has been as high as 90 minutes, Hanlon says. "The last time we looked, the length of stay for these patients has been under 70 minutes," she reports.

The computer connection has been invaluable, Vasquez says. "It gives you the ability to make a real-time appointment at the moment the person is still in front of you," he says. "If you want an appointment that is available at, say, 3:15 on a Wednesday, that information is electronically communicated to the health center and then blocked out." The next morning, the case manager will pick up the appointments and contact the patients to ensure they can get there, he

Sources

For more information on referring patients to a local community health center, contact:

- **Catherine Hanlon**, MD, FACEP, Chair of Emergency Medicine, Monmouth (NJ) Medical Center. Phone: (732) 923-7300.
- **Bill Vasquez**, FACHE, Project Director, Monmouth (NJ) Family Health Center. Phone: (732) 923-7100.

says. The software also has the benefit of including all of the patient's clinical information, he says.

Hanlon says, "That makes for very good continuity of care." **(Even without a $2 million grant, there is a good deal you can do to find your patients a primary care "home." See the story, right.)** ■

Where do you find $2 million?

Any ED would be thrilled to have $1 million to improve its staffing and processes. How did the ED at Monmouth (NJ) Medical Center get "lucky" enough to split a $2 million grant from the Centers for Medicare & Medicaid Services (CMS) with the Monmouth Family Health Center to create a referral program for Medicaid and uninsured patients with primary care complaints?

Actually, luck had little to do with it, explains **Catherine Hanlon**, MD, FACEP, chair of emergency medicine. "I was approached to provide demographic data that would show how many Medicaid or uninsured patients we were seeing per month in the ED for primary care needs, how many use the health center, and how many would have access to it," Hanlon says. "We submitted the data from our side, and the health center submitted their availability for appointments."

Bill Vasquez, FACHE, the project director, says, "The source of funding originated with CMS, which created a pool of dollars they made available to 15 or 18 different states. New Jersey Medicaid, along with the Health Research and Education Trust of New Jersey, developed a proposal to create two demonstration projects in counties that had a high percentage of Medicaid visits per 1,000." The Monmouth facilities, and two in Newark, won the competitive bid process, he notes.

The million-dollar question

The pilot program is halfway through its two-year term. What happens when the money runs out? Hanlon says, "That seems to be the million-dollar question. From a productivity standpoint, if you only see 12-15 patients in a day, it's not really cost-effective. We may look at continuing the concept of seeing these patients, but maybe they'll be identified through extra general staffing."

Vasquez says, "Do the savings to the Medicaid program in fact result in an ability to continue to support a model like this? That will be one of challenges when the grant is done." ■

Referral program ensures follow-up

Good Shepherd Medical Center in Longview, TX, didn't have the benefit of a multimillion-dollar grant to help ensure ongoing care for its patients who lacked a medical "home," but it nonetheless has implemented a program that seems to be working.

"Our ED sees just fewer than 90,000 visits per year, and approximately 30,000 are by patients who do not have a primary care physician," says **Ron Short**, PT, MBA, FACHE, vice president of operations. "We wanted to find some way to be able to not only, hopefully, reduce ED volume of patients coming in for episodic care of routine complaints, but to also be able to establish these patients with a primary care physician to ensure continuity of care for conditions like diabetes and hypertension."

Joey Sutton, coordinator of CareDirect, the program that coordinates the referral system, has an office located around the corner from the ED. Sutton says, "It's a service for the patients and the community. We do not just treat people and release them, but we take intentional steps to help them get follow-up."

The idea was pitched by the hospital CEO, Short says. Then he, Sutton, and **Crystal Thornton**, BSN, the ED clinical director, designed the program. It works like this: When patients are identified as not having a primary care physician — usually in the pre-triage check-in or by the triage nurse — it is noted in their charts. "I also have access to MEDHOST [software, www.medhost.com/Home.aspx], which manages the patient records, so I keep lists of which patients I see that do not have a primary care physician listed, and I make it a point to visit those patients," says Sutton. "Also, the ED doctor or staff member can page me directly through MedHost and order a consult."

Sutton tries to see all patients before they are discharged to verify that they don't have a primary care physician and, if not, find out whether they are open to referral assistance.

Nurses educated

Before the program was launched in late October, the triage nurses were educated about the program.

Thornton says, "They are usually the people who will let Joey know when to see the patient, although he knows the flow of ED and the best time to go in and talk around nurse and physician care." The physicians also were briefed during a staff meeting and via e-mail,

Sources

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- **Joey Sutton**, CareDirect Coordinator, Good Shepherd Medical Center. Phone: (903) 315-2037.
- **Crystal Thornton**, BSN, ED Clinical Director, Good Shepherd Medical Center. Phone: (903) 315-2020.

she says.

Sutton talks with the patients about finances and insurance. About one-third of the patients who do not have primary care physicians have insurance. He will make arrangements if they are needed. "Occasionally, the ED doctor feels they need follow-up with a specialist like an orthopedist or a cardiologist. I can help make those appointments for patients as well," Sutton says. "Some patients indicate preferences [for specific kind of doctor], and I try to honor that request as best I can."

Sutton makes the appointments and then goes back in with the patients. "They get a folder that contains all the new patient paperwork for the office as well as the appointment information, so when they leave they have all they need to know," he explains. The day before the appointment, the patients receive a reminder call from the hospital's "Healthy Hotline," which confirms that they can keep the appointment or reschedules for them. "After the appointment, they get a follow-up call to see if everything went well," Sutton says. "I also contact the clinics to make sure the patient showed up."

Thornton has seen a decrease in minor emergency visits (she has not yet pulled length-of-stay data), but she is not yet ready to give all the credit to the new program. "The last couple of months have been strange for ED visits," she says. "Nationally, most EDs saw a drastic drop in volumes in November and December." Short confirms that observation. "Most places were down 12%-15%," he says. "We were down about 10%."

"Although it is too early to attribute a decline in ED volumes to the new program, Good Shepherd leaders will monitor volumes over the next quarter to identify causes and make necessary improvements to the CareDirect program," adds Sutton. ■

'Split flow' slashes statistics for LWT, LOS

More staff required to implement new strategy

The ED at Baptist Medical Center in San Antonio has slashed its left without treatment (LWT) rate from a high of 9.5% in spring 2009 to 2.2% at present, thanks to a "split flow" strategy it adopted in August 2009. During the same time period, total length of stay (LOS) has gone from 393 minutes to 120 minutes in January 2010.

"We had a lot of problems with patient satisfaction and wait times," recalls **Jim Davidson**, MD, the medical director. "We very frequently had [Press Ganey] numbers in lower than the 10th percentile, but now we typically hit numbers at least in the 70s, and had one month where it was in the 99th." This program has been implemented at four of the five EDs in the Baptist Health System. "We have seen comparable improvements across all EDs utilizing split flow," notes **Samuel Spencer**, director, operational excellence.

In addition, notes **Gina Grnach**, RN, administrative director of emergency services, "Our average door-to-provider time was around 93 minutes. Now our best time has been 56 minutes."

The new process was modeled after the one used in Houston Memorial Hospital and Banner Health in Arizona, notes Grnach. "Our [Six Sigma] black belt used to work at Houston Memorial, so she knew about it," she explains.

ED representatives went to Houston, and came back and customized the model to meet their specific needs and resources. "We have a very old ED, and we had to make adjustments," she explains. For example, the Houston ED has two entrances through which patients

Executive Summary

A "split flow" program in the ED at Baptist Medical Center in San Antonio not only has slashed the left-without-treatment (LWT) rate from a high of 9.5% in spring 2009 to 2.2% at present, but it dramatically has improved patient satisfaction rates as well.

- An Emergency Severity Index (ESI) score determines which of the two areas is most appropriate for the patient.
- The "intake" area has an additional physician assistant or nurse practitioner for the 12 peak hours of each day.
- There is always a tech in triage in the event the nurse is required to leave the area.

can access the ED, while Baptist only one. "We have one door, not separate ones for EMS and ambulatory patients," Grnach explains, "so all our patients come through the same way." To deal with that shortcoming, several rooms were redesigned, and acute care was put up front, Grnach says.

Under the new system, patients with an emergency severity index (ESI) score of 1, 2, or 3 (3 can go either way) are higher-acuity patients and are taken to the front or acute side of the ED, while 4 and 5 are lower acuity or less urgent and are taking to the "intake and procedure" rooms. Grnach explains. "We do a quick look, asking five questions, and then the triage nurse makes the determination as to where (which track or flow model) they will go," she says. The questions cover vital signs, complaints, allergies, name, and date of birth.

Patients who are expected to be treated and released are taken to one area of the ED to receive tests and wait for the physician (intake and procedure). Patients who are more urgent and/or are expected to be admitted are taken to a different area for treatment (acute bed). In intake and procedure, the provider sees the patient and orders necessary tests and examinations. The patient then is taken to "results pending" to await results and prepare for discharge. Meanwhile, the intake and procedure bed is opened up for the next patient, thus increasing patient flow.

"We added a PA or an NP in the back for intake 12 hours a day during peak times, and I added another RN and a tech," Grnach says. "We made sure we had a tech in triage so if the nurse had to leave, he was always out there. The other two techs are in the back end."

A "results pending" section is located on the opposite site of the department from acute care, Davidson says. "We had curtained areas for eight patients, so we set up chairs and put a TV in there," he adds.

In the past, when patients presented, the triage nurse would try to see them within five to 10 minutes, says Davidson. "Patients with very low acuity would have to wait around before the doctor could see them," he says. "Frequently, they had been waiting five hours or more when that happened.

While pleased with the performance of the new process, he is not resting on his success. "I don't yet feel comfortable with our consistency, and I want to get the LOS down more," Davidson says.

Daily monitoring has helped the department stay on top of the new process, he says. Grnach says, "I walk around and report daily to administration. So, for example, if I report it takes two hours to get all patients in our department into a bed, we'll work with the other departments to get a quicker discharge." The other departments include the lab (turnaround) to housekeeping (getting beds cleaned more quickly), she says. **(The ED staff played an important role in developing this new process. See the story, below.)** ■

Staff are involved in new process

The ED staff helped develop the new split flow program at Baptist Medical Center in San Antonio. "They helped work on the different processes, for example, how to ensure the chart got from place to place without getting lost," says **Gina Grnach**, RN, administrative director of emergency services.

This involvement was necessary because the department uses paper charts, she reports. "We have the chart in the intake area. When the patient goes to 'results pending,' the chart follows him there because we do not want the doctor running around looking for it," says Grnach, explaining that the nurse will move the chart.

Preparation for the new process was not always easy. It began with a three-hour training class. "It was hard for the nurses, because it was a total change in procedure," she says. In the past, if patients came into a room, they "owned" that room and the nurse. "Now, they may see two or three rooms and nurses," Grnach says.

However, she adds, "Now everyone is on board, and no one wants to go backward." ■

ED was well prepared for no-diversion law

Keys: triage doc, 'in-house' lab, radiology

When the Massachusetts legislature outlawed ambulance diversions effective Jan. 1, 2009, dire predictions were made about how overwhelmed the busy EDs would be. However, although volume has increased by about 13% at Massachusetts General Hospital in Boston, it has continued making improvements on its door-to-doc times, left-without-treatment averages, and lengths of stay, thanks to several processes that it had put in place prior to the announcement.

One of the most effective changes, and one which just became fully implemented shortly before the diversion ban was put in place, was a change in the triage process. "We reinvented our triage system and have made it physician-led," says **Alasdair Conn**, MD, FACEP, FACS, the chief of emergency services. The preparation for the shift began about three years

Executive Summary

When the state legislature gives you four-months' notice of passage of a no-diversion law, it's impossible to get ready in time, unless you've been working for several years on improving flow in your ED. The new triage process at Massachusetts General Hospital hit its stride just in time, and other departments made changes as well.

- The new triage process includes having an attending out front 12 hours a day, a resident in screening eight to 10 hours a day, and a nurse practitioner working 12 hours a day.
- A satellite lab operates in the ED on a 24/7 basis.
- A radiology attending is provided to the ED on a round-the-clock basis.

ago when a team from IBM was contracted to perform computer modeling of the ED.

"The conclusion was that [a physician-led triage is] pretty expensive, but it does decrease flow time," says Conn. The existing length of stay (LOS) for treated and discharged patients was 5.6 hours. IBM staff said that the ED could reduce it to 3.5 hours.

"I couldn't find any place that had done this until I found Corey Slovis [chairman of emergency medicine] at Vanderbilt," he recalls. "He said it was the best thing he had done for his department in 20 years." Conn sent physicians, nurses, and a representative of administration to visit Vanderbilt and come back with a plan.

The protocols and policies were first implemented in 2007, "but not very effectively," admits Conn, noting that the department's physical plant was inadequate. "About 1½ years ago, we reconfigured the department to have four screening rooms. Without that and the new triage process, we would not have able to survive."

The timing couldn't have been more favorable, notes **David Brown**, MD, the ED's vice chairman. "The screening process really ramped up then, so we were able to keep up with the increase in volume," he says. The new process includes having an attending out front 12 hours a day, a resident in screening eight to 10 hours a day, and a nurse practitioner there 12 hours a day — in addition to ample ED nursing support, he says. "That enabled us to increase efficiency and throughput so the volume increase last January could be managed," Brown says. **(Mass General used additional strategies to further improve flow. See the story, below.)**

Conn says, "Yes, this is added costs, but the CEO was happy to support it — although he said we had to drop length of stay by two hours and improve the door-to-doc time."

And they've done just that. The IBM LOS target has been met, and door-to-doc time, which had been at about 90 minutes, has dropped considerably. Brown says, "About 75% of the patients are seen within 30 minutes." Adds Conn, "My aim is 20 minutes."

Prior to the new process, says Conn, about 6% of patients left without treatment. "We've gotten that down to 1.5%, and it has stayed there monthly," he reports. **(No matter how crowded your ED becomes, you always should pay close attention to your time-based metrics, Conn advises. See clinical tip on p. 35.)** ■

Radiology and lab help improve flow

While a new triage process was instrumental in helping the ED at Massachusetts General Hospital in Boston survive a new state law banning diversions, several other strategies in the past few years helped put the department in a position to handle the added volume, says ED chair **Alasdair Conn**, MD, FACEP, FACS.

For example, he notes, "We implemented our own satellite lab in the ED 24/7," he says. "Any time any of the day that the labs are done and put into a computer, [the ED's "homegrown" computer system displays] a little flashing icon, so you immediately know there's a new lab value." Just making that change saved 20 minutes of every ED visit," he says.

The department also has an attending radiologist 24/7. "We have a 64-slice and 16-slice CAT scan and our own MRI in the ED," Conn adds, "but more important than that is the fact that these guys can go in at three in the morning if they need to and see a CAT scan." Members of the radiology staff also set their own performance targets, he says. "For example, they

COMING IN FUTURE MONTHS

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- County, hospitals team up to reduce seniors' ED visits

wanted results from ordering a plain CT scan back within 90 minutes," says Conn. "Right now, 90% of the time they do it in 60 minutes."

These changes did not occur by accident, says Conn. "The CEO mandated that every chief of other services that interfaced with the ED had to spend four hours in the department seeing what we were doing and how their service could help improve the function of the ED," he says.

The ED worked very closely with lab services and radiology, says **David Brown**, MD, the ED's vice chairman. "These are divisions of lab services staffed by lab technicians of the department, and emergency radiology is a division of radiology," Brown says. "They staff the area and read all the imaging for us."

The other departments were happy to participate in these changes, he says. "They helped us make the changes because they saw increasing volume and needed additional machines and human capital to get turnaround time down to what we all thought would be appropriate for ED patients," Brown explains. ■

Clinical Tip

Don't forget those time-based metrics

No matter how crowded your ED becomes, maintain focus on the time-based metrics you have established for processes involving ST segment elevation myocardial infarction (STEMI), acute stroke, and and other critical conditions, says **David Brown**, MD, vice chairman of the ED at Massachusetts General Hospital in Boston.

"In increasingly crowded EDs, meeting these metrics is difficult, so you must build in triage and screening processes to identify those patients early," he says. So, for example, when any patient presents in the Mass General ED complaining of chest pain, shortness of breath, or similar symptoms, triage is stopped and patients are given an immediate EKG.

"If you do this, you can rapidly move patients through the process so you will be able to meet your time-based metrics while still taking care of an increasingly large number of patients," says Brown. ■

CNE/CME instructions

Physicians and nurses participate in this CNE/CME program by reading the issue, using the references for research, and studying the questions. Participants should select what they believe to be the correct answers, then refer to the answer key to test their knowledge. To clarify confusion on any questions answered incorrectly, consult the source material. **The semester ends with this issue.** You must complete the evaluation form provided and return it in the reply envelope to receive a certificate of completion. When your evaluation is received, a certificate will be mailed to you. ■

CNE/CME objectives

1. **Apply** new information about various approaches to ED management.
2. **Discuss** how developments in the regulatory arena apply to the ED setting.
3. **Implement** managerial procedures suggested by your peers in the publication. ■

CNE/CME *questions*

31. According to David Hirschman, MD, FACEP, FAAP, medical co-director of the emergency departments, Children's Hospitals and Clinics of Minnesota, which of the participants in the H1N1 tabletop exercises physically visited the overflow locations?
A. All of them.
B. ED physicians.
C. ED physicians and nurses.
D. ED physicians, nurses, and techs.

32. According to Sandra M. Schneider, MD, FACEP, president-elect of the American College of Emergency Physicians and professor of emergency medicine at the University of Rochester, which of the following might explain why uninsured trauma patients have higher mortality rates?
A. They might be reluctant to seek care even when injured.
B. They have existing conditions that have not been well treated.
C. They are reluctant to have expensive tests.
D. All of the above

33. According to Catherine Hanlon, MD, FACEP, chair of emergency medicine, Monmouth Medical Center, where does the staff treat the ED patients who are

candidates for the community health center referral program?

A. In fast track.
B. In triage.
C. In a special room set aside for these patients.
D. In "intake."

34. According to Joey Sutton, CareDirect coordinator at Good Shepherd Medical Center, who follows up with patients who have been referred to primary care physicians?

A. The treating physician.
B. The treating nurse.
C. The hospital's "Healthy Hotline."
D. Sutton.

35. According to Gina Grnach, RN, administrative director of Emergency Services, Baptist Medical Center, which Early Invasive Strategy score qualifies a patient to "go either way" in the ED's split flow system?

A. 1.
B. 2.
C. 3.
D. 4.

36. According to Alasdair Conn, MD, FACEP, FACS, chief of emergency services, Massachusetts General Hospital, which of the following strategies have contributed to improved flow in his ED?

A. Physician in triage.
B. A satellite lab in the ED.
C. An attending radiologist in the ED.
D. All of the above

CNE/CME answers

31. A; 32. D; 33. B; 34. C; 35. C; 36. D.