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Hurricane Sandy puts NJ hospital under extreme stress, highlighting vulnerabilities, areas requiring improvement

Advice from hospital administrators: Regularly test for multi-system failures

When Hurricane Sandy was taking aim at states along the northeastern coastline in late October, hospitals and emergency management officials in the region had several days to prepare. But the storm proved once again how difficult it can be to respond to a national disaster of this magnitude, and how important it is to have multiple layers of contingency plans in place in case crucial systems go down.

While the storm caused dozens of fatalities, perhaps miraculously, there were no reports of lives being lost as a result of hospital systems

EXECUTIVE SUMMARY

When monster storm, Hurricane Sandy, struck the northeastern coast in late October, the emergency systems for many hospitals in the region were stressed beyond their limits. At least four hospitals in the region had to be evacuated, and many hospitals lost power and access to essential services. Using backup generators, CentraState Medical Center in Freehold, NJ, was able to keep its doors open throughout the emergency, but the event highlighted a number of vulnerabilities that administrators will work to improve.

- Demand for care spiked because people in the hospital's service area could not get in to see their primary care providers. The hospital established care areas next to its emergency department to handle the demand, and it also enabled physicians in the region to see patients in offices on an ambulatory campus, adjacent to the hospital.
- Emergency department visits increased by about 41% during the hurricane week, admits went up by about 50%, and the number patients sent to observation went up by 450%, according to hospital administrators.
- In the future, hospital leaders say practice drills need to regularly test for events that cause many systems to go down, rather then testing for one vulnerability at a time.

going down. However, at least four hospitals in New York and New Jersey had to be evacuated when their back-up generators failed. This put added stress on other hospitals in the region that were already dealing with surges in demand from patients who could not get in to see their own physicians or even fill needed prescriptions during the height of the storm.

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Just 20 minutes from the coastline, CentraState Medical Center in Freehold, NJ, a 284-bed teaching hospital in the center of the state, operated in the dark for nearly two days while back-up generators provided power to essential equipment. Many hospital employees reported for work even while their own homes were damaged or swept out to sea, according to hospital administrators.

The hospital's information system went down just as demand for care surged, but administrators say they feel fortunate that the facility was able to get through the storm as well as it did. In the process, they also learned many valuable lessons that will enable them to be better prepared when the next storm hits.

Emergency procedures are put to the test

The hospital started planning during the week before the storm actually hit, explains **Linda Geisler**, MNEd, RN, NEA-BC, FACHE, the hospital's vice president for patient services. "We had the executive team come together and look at all the resources we would need for the storm in terms of staffing, materials, and equipment," she says. "We have disaster cabinets on every nursing unit, so we made sure the flashlights, lanterns, batteries, and all of those kinds of things were in working order and ready to be used."

It was clear that staff were going to have to spend at least one night at the medical center, so administrators developed plans for where people would be bedded throughout the organization. "We got back-up linens because we knew the staff would need that, and we have a fitness center, so [facility managers] agreed to provide shower facilities for our staff," adds Geisler.

All of these preparations were pulled together through the command center, which was put into place three days before the storm made landfall, explains **Daniel Messina**, PhD, FACHE, LNHA, CentraState Health System's senior vice president and chief operating officer. The back-up generators were tested to make sure they were in working order, and the management team made sure that all critical equipment was plugged into the hospital's red emergency outlets, which are connected to the back-up generators.

CentraState Health System is a stand-alone, independent system, but in addition to the hospital, which is a level II emergency facility, it operates a continuing care retirement community, a 123-bed skilled nursing and rehabilitation facility, and a 90-bed assisted living center. Consequently,

when the power went out within hours of the storm making landfall, health system administrators had to think beyond just the hospital's concerns. "While we were hustling about with all of the hospital-related priorities, we also had responsibility for the other 600 some odd beds on the post-acute side," notes Messina.

Demand for care spikes, crucial systems go down

During a typical day, the ED sees 175-180 patients. On the first day of the storm emergency, patient volume spiked to 263, explains **Laurie Gambardella**, RN, MSN, clinical director of the ED. "One of the main challenges we had was that we had no access to our information system electronically," she says. "Secondly, our lab downstairs was not functioning optimally."

The biggest issue was that lab results and other information could no longer be exchanged electronically, so ED administrators developed workaround processes. "We had so many extra people who were helping us throughout the hospital. They were actually transporting the information back and forth," says Gambardella. "Every time there was a lab result, they would manually write it down and bring it up to the ED and hand it to us."

The ED also had extra manpower stationed at the entrance to the ED. "They were escorting patients directly back to the care areas where they needed to be," says Gambardella.

Further, to accommodate the surge of patients who were arriving at the hospital because they could not access their primary care providers, the hospital opened up care areas adjacent to the ED where these patients could be triaged to and cared for by nurse practitioners or physicians who were stationed in these areas.

"One of the populations we saw was elderly people who were just very cold at home. They needed some warmth, so they would come in," says Gambardella. "Some needed respiratory treatment and they didn't have electricity, so they came in."

The ED also saw a high number of young children who were brought in for various reasons, and there was also an uptick in the number of patients coming in with mental health issues such as depression and anxiety. The ED had two nurses and one registration person stationed in the waiting room so that they could monitor the patients who had not yet been seen and make sure that serious problems requiring quick attention were not overlooked.

Emergency department visits increased by about 41% during the hurricane week, admits went up by about 50%, and the number patients sent to observation went up by 450%, says Messina.

Adjacent resources ease stress on the ED

While the hospital did take in some patients from a local nursing home, the biggest impact on the hospital in terms of volume came from patients who simply couldn't get in to see their regular physicians. "We have seen this happen before, but this is the first time everything happened all at once," observes Gambardella. "Our computer systems were down, outside physician offices were closed, and people had no access to pharmacies or outside services."

Messina agrees, noting that with all the electricity down in the region, safety was also a concern for hospital staff that were coming in to work. "It was the perfect storm, not just from a meteorological standpoint, but from an operational standpoint as well," he says.

To ease pressure on the ED, hospital administrators were able to make use of an adjacent ambulatory campus where the health system has medical offices that it provides to the medical staff. "We do have time share space which we make available to interested physicians and, fortunately, we had some extra capacity, which we were able to offer to local physicians who had no ability to open their own offices" explains Messina.

The health system never had the need to implement this type of arrangement before, but the approach proved useful in this situation, positively impacting patient flow in the ED and timely patient care, explains Messina.

Emergency highlights weaknesses

While administrators give high marks to the way staff performed during the storm emergency, they learned several valuable lessons that they intend to make use of in their emergency plans and drills going forward. For example, Messina wants to put in place additional contingency plans for what will happen in the event that back-up generators fail.

"We check these things on full-load on a regular basis, but equipment does fail," he says, explaining that one of the hospital's back-up generators did go down during the storm, impacting the lab and some of the hospital's support services for a short period of time. In this case, the hospital was able

to work around the problem, but Messina wants to develop more robust plans to handle this type of situation in the future.

Also slated for further review is what procedures the health system needs to have in place to protect the community in the event of a major disaster like Sandy. Messina advises colleagues to consider this issue as well. "What happens when you discharge patients out of the ED and they have no place to go to fill their scripts?" he says.

During the storm emergency, CentraState's internal pharmacy provided 24 hours of medicine to people who had no access to pharmacies in the region. Even when some of the commercial pharmacies began to open, they lacked access to electronic pharmaceutical records. This is just one of the issues disaster planners need to consider when thinking about the community's vulnerabilities in the event of a large-scale emergency, adds Messina.

Crowd control is another problem to consider, notes **Cathy Janzekovich**, MA, RN-BC, NEA-BC, the health system's assistant vice president of nursing. "We would have whole families come in with someone because they were cold," she says. "We would have people coming in to plug in their phones and [other electronic devices], so we made a designated center in our ambulatory building where these people could go to get them out of the ED and away from the patient care areas."

Communications problems are a key focus for improvement

CentraState had clearly identified red plugs that they could plug ventilators and other essential equipment into to connect these life-saving devices to emergency power, but it is clear now that the hospital could have used a lot more of these plugs. "There are never enough plugs when your power is down and you want to plug in everything," says Geisler. "Also, we could not keep enough flashlights on site. We would give them to patients, and then the families would take them home so we could never keep enough flashlights on site."

Further, Geisler notes that there is room for improvement in the way the hospital managed communications without the benefit of email or computers. "It is hard because you have people running around the building trying to communicate with everyone," she says. "The next time, we want to make sure we have a centralized place for people to report because we pulled people from everywhere to help in the ED. I think we can do better with that next time."

Gambardella observes that one of the things the ED realized early on during the storm emergency was the value of designating one key point person in each department to handle communications. "When the lab went down, a lot of the doctors and nurses were frantically looking for results and calling the lab, so the lab was inundated with phone calls," she says. However, once the charge nurse in the ED took over communications with a point person in the lab, retrieval of results was actually expedited, she says. It was an approach that hospital administrators developed in the midst of the storm emergency, but one that ideally could be formalized in a disaster plan.

Prepare for large-scale failures

There is nothing quite as instructive as a real disaster to inform how you prepare for such events and conduct practice drills. And Messina says there is no question that the hospital will be doing some things differently from now on. For instance, in the past, the hospital tended to test its contingency systems and disaster preparedness based on a single issue at a time, such as losing electricity or losing water. However, it is now clear that emergency preparations need to take into account the possibility of larger-scale failures.

"One of the things I learned was the importance of testing your systems when multiple events occur simultaneously. I think that is something that we don't do enough of," he says. In addition, Messina points out that it is important to understand the capabilities of your back-up generators, and to have contingency plans in place that enable you to take rapid action if one of your back-up generators fails.

For instance, Messina notes that administrators need to consider what happens if the back-up generator for the hospital's blood bank goes down and there are blood products that have a very short life span without refrigeration.

Another big issue to contend with is making sure that you have adequate fuel, he says. Fortunately, CentraState had contingency arrangements with some local providers, including a snow-removal company that had a big fuel supply on hand and was able to help the hospital out during the storm emergency, when there was a drastic fuel shortage throughout the region.

You have to think about all of these potential scenarios and consider what the impact would be on your various departments and services, explains Messina. "Overall, we did well. But [the storm]

pointed to the fact that sometimes even though we have contingencies and plans in place for each of our major vulnerabilities, when they come flying at you all at once, it can really stress the system," he says. "So even if you have contingencies, [a large-scale emergency] can really impact your ability to create a good work-flow or work-around." ■

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Hospitals in the storm-battered Northeast get lessons in recovery, retooling from Louisiana colleagues

After Katrina, Ochsner Health System revamps emergency systems, drilling procedures

In the immediate aftermath of Hurricane Sandy, many hard-hit hospitals along the northeast coast were putting in calls to colleagues in New Orleans for advice on how best to pick up the pieces and, perhaps more importantly, bolster their defenses for future disasters. While hospitals along the Gulf Coast are much more accustomed to preparing for hurricanes than facilities in the Northeast, Hurricane Katrina knocked even the best-prepared facilities on their heels when it devastated the region in August of 2005.

Ochsner Health System's main hospital, not far from the water in the city's uptown section, was the only hospital in the region that remained fully operational during Katrina and throughout the immediate aftermath of the storm, explains **Grant Walker**, the health system's vice president of supply chain and disaster preparedness. In part, this was possible because the hospital was fully staffed with its own physicians, whereas most of the other hospitals only had make-shift crews, he says. But the facility was also physically equipped to manage much of the storm's impact.

For example, the hospital is situated on property that is nine feet above sea level, which is high ground for New Orleans. Back in the 1980s, the hospital moved all of its emergency generators from a below-sea-level location to higher ground, and placed them on platforms so that the generators were largely out of harm's way, at roughly 18 feet above seal level. Developers then built 10- to 12-feet flood walls around the generators and other essential equipment, including the switches that enable the hospital to switch over to emergency power.

Ramp up emergency capabilities

Some hospitals in the Northeast had to evacuate their facilities when their basement-level emergency generators were flooded by the storm surge from Sandy, cutting off power to the facilities. "That is not that uncommon for back when those hospitals were constructed. It is not the fault of the

EXECUTIVE SUMMARY

When Hurricane Katrina devastated greater New Orleans in 2005, only one hospital was able to stay fully operational throughout the crisis. Not only was Ochsner Health System's main campus situated on higher ground than most facilities, it also had access to food, water, and enough emergency power to keep the doors open. Nonetheless, administrators took advantage of lessons learned during the crisis to beef up communications and make emergency systems more robust for the next storm. And now they are sharing these lessons with colleagues in the Northeast who have just been through their own monster storm crisis with Hurricane Sandy.

- Ochsner was able to weather Katrina with partial emergency power, but it has since made sure that all hospitals within the Ochsner system have access to full emergency power, if need be.
- To overcome communications difficulties experienced during Katrina, Ochsner has implemented several methods of communications, including satellite phone links with the switchboard and short-wave radios. These systems are tested regularly.
- Hospital administrators advise colleagues to make emergency plans for their facilities to operate without any external support. Steps short of this goal will potentially leave you inadequately prepared, they say.

New York hospitals," observes **Norris Yarbrough**, assistant vice president of emergency preparedness and response for the Ochsner Health System. "We were probably more concerned with flooding here because of our proximity to land-falling hurricanes. I think that is what helped us think a little more progressively. We were faced with this a lot sooner than [hospitals in New York and New Jersey] were because this is an every-season concern for us."

During Katrina, just one of the four buildings on the main hospital campus had 100% air conditioning, but facility managers were able to leverage this capability to cool the entire facility. "Fortunately for us, all of our buildings are connected together on each floor, and we have these huge fans that we put by the [connecting] doors, and they sucked the air out of that one building and blew it into all the other buildings," explains Walker.

While the approach worked remarkably well, facility mangers have since made sure that they have enough generator power to provide full power to the entire hospital in the event of an emergency. "Every plug and every piece of equipment would have power," adds Walker.

Another advantage Ochsner had during Katrina was access to a well that the hospital had never used, but the facility's founder made it a point to invest in when the facility was first built decades earlier. "We had never been hit by a storm like this before, but we had full water pressure all the way to up to our fourth level from this old well that was put in during the 1950s," explains Walker. "If you don't have water, you can't produce heat or electricity."

The well proved so indispensable during Katrina that the health system has since made sure that all eight of the hospitals within the current Ochsner system have similar wells at their disposal, and they are also equipped with enough emergency power to run their facilities at full capacity.

Prioritize communications

While Ochsner was, in some respects, uniquely prepared for a hurricane disaster, many of the difficulties experienced by hospitals in New Jersey and New York during Sandy are very familiar to the Ochsner staff. For example, one of the first things to go down during Katrina was telephone service because the telephone lines were largely underground, and they flooded out very quickly, recalls Yarbrough.

"We went in and made sure that we now have satellite phones linked to our switchboard so that we are able to get a dial tone on some select phones," says Yarbrough. "We also increased the number of Internet protocol phones, which, again, are not dependent on a dial tone coming to you from AT&T or a similar supplier."

The hospital contracted with a cell phone supplier to install its transmission equipment on the roof of the hospital, and to hard-wire the facility for all the dead zones so that the hospital now has complete cell phone coverage, explains Walker. "If the entire United States had no cell phone service at all, we would be able to turn on our cell phone tower so that we could use our cell phones within a seven-mile radius of the hospital," he says.

In addition to these measures, administrators equipped the hospital with old-style UHF and short-wave radios. "The key is that we test these devices once a month. You can put that kind of equipment in and let it lay dormant, and then two years later you need it and it doesn't work," adds Yarbrough. "We now build all of our drills to a scenario that forces us to test our redundant systems. Prior to Katrina, we didn't do that."

Further, Yarbrough explains that these rigorous testing practices are being carried out at all facilities within the Ochsner system. "We reach out and incorporate all of our hospitals in our drills. We are drilling as a group of hospitals, not just one hospital," he says. "We even pass this thinking on at the state level, where we participate with all of the hospitals in the state on monthly planning."

During these get-togethers, emergency planning chiefs make sure that all of the hospitals are communicating with each other. "We now have a radio system that is common between all of the hospitals," adds Yarbrough.

"We did re-think how we do drills after Katrina, but more importantly, we rebuilt the system that we are testing with those drills," says Yarbrough. "We have a different look in our emergency operating picture than we had in 2005. It is much more robust, and it is much more coordinated among all the hospitals."

Take cues from crises

It is hard to miss the importance of communications when preparing for a crisis, but there are many other problems that seem to come to light only when a crisis occurs. For example, after Katrina, there was no garbage pick-up for a month. "You can't keep it in the hospital. You've got to get it out of there, but you have to use com-

mon sense and do what you need to do to survive," explains Walker.

What Walker did was designate a particular parking lot as the trash dump, and he eventually was able to get a provider in from out of state to haul the garbage away. But he stresses that these are issues that need to be considered in the emergency planning process.

Similarly, health care organizations need to have a plan in place for food. During Katrina, the issue was never a problem at Ochsner because the health system had an agreement with a large warehouse full of food that was undamaged during the storm. "We had full access to it the entire time," notes Walker.

Another issue that needs to be discussed is security. During Katrina there was basically no government in the area for several weeks, explains Walker. "Your disaster plan is based on what you are willing to commit to. If you think the government is going to be there to save you, you aren't going to prepare as well," he says. "Our plan has always been to stand alone and to assume that we are not going to get any support from anybody." ■

SOURCES

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Study: Cases discussed at the end of hand-off sessions get less time, regardless of complexity

Experts advise hospital administrators, practitioners to take steps to prioritize cases requiring extra discussion time

A new study, led by researchers at the University of Michigan (UM) in Ann Arbor, MI, suggests that clinicians might not be spending enough time discussing some of the most complex patients when they are handing-off these cases during shift changes. And there is a simple reason why, according to **Michael Cohen**, PhD, professor of complex systems, information, and public policy at UM.

"We found that even when the physicians are very experienced, they spend about 50% more time on the patients discussed early in a hand-off than they do on those discussed near the end of the session," explains Cohen. "This was true despite the fact that they were working from a list ordered by room number, and so they were taking the patients essentially in random order."

Cohen's study consisted of an analysis of 23 hand-off sessions, involving 262 patients in the intensive care unit (ICU) at Kingston General Hospital in Ontario, Canada. The physicians turned over between six and 23 patients in each of nearly two dozen hand-off sessions. While the physicians spent, on average, 2.5 minutes per patient, this varied significantly. The researchers report that for physicians who were handing-off medium-sized groups of 11 patients, the average time spent per case steadily declined as the physicians moved down the list of patients to be handed off.

Consider 'the portfolio effect'

While this study involved patients in the ICU, Cohen says that the findings should apply to

EXECUTIVE SUMMARY

A new study shows that during shift changes, physicians tend to spend more time discussing cases at the beginning of the hand-off session than toward the end, regardless of the complexity of the case. In an analysis of 23 hand-off sessions involving 262 patients in an ICU setting, the researchers report that for hand-off sessions involving medium-sized groups of 11 patients, the time spent per case steadily declined as physicians moved down the list of patients, which was ordered by room number.

• While the study was done in the ICU, experts say the results are applicable to the ED as well as other hospital units. People tend to rush at the end of a hand-off session, they say.

• Researchers report that even when physicians are very experienced, they spend about 50% more time discussing cases at the beginning of a hand-off than on those that occur near the end.

• The problem impacts both nurses and physicians, say researchers, but they say it can be remedied easily. They advise clinicians handing-off patients to identify the cases that require the most time, and discuss them first.

hand-offs in the ED as well as other hospital units. Regardless of the unit or setting, people tend to rush at the end, an observation that should be familiar to people who regularly attend other types of meetings, he says.

However, hospital hand-offs can have a major impact on patient care, particularly in the early parts of a shift. More than a billion of these hand-offs happen in the United States every year, according to the researchers. And they say the number has increased substantially in recent years, as administrators have become more focused on enforcing work-hour regulations.

While patient safety breakdowns during hand-offs have received considerable attention among researchers and quality experts, Cohen points out that most of the training in this area focuses on how to hand off a single patient as opposed to groups of patients. He suggests a better approach would take into consideration the fact that most hand-offs happen in batches. And the results, which he calls "the portfolio effect," can adversely impact patient safety.

Cohen says he has observed hand-offs in which key details were left out of the conversation about a patient. Indeed, the Institute of Medicine reports that preventable medical errors cause as many as 98,000 deaths each year, and studies show that hand-off miscommunications are a major contributing factor. Considering the hundreds of millions of hospital hand-offs that occur every year, Cohen argues that even a slight improvement in hand-off communications could prevent a huge number of injuries and deaths.

Try simple remedies

Cohen points out that informal observations suggest that the problem is "very widespread," but he says it is easy to assess whether it is happening, and there are a number of relatively simple remedies. "The key point is for the off-going physician to begin the [hand-off] session identifying the cases that need the most time," says Cohen, noting that these cases can then be taken at the beginning of the session. "The whole patient list can be ordered by the time required, or time can be preserved later on for the cases that need it."

While the changes required are not difficult, Cohen stresses that participants, whether they are physicians or nurses, need to become mindful of how much time they have to allocate across all the cases so that they can then put in the time where it is most needed. ■

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SOURCE

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Experts: Hospitals can improve care, save health care dollars by cracking down on unnecessary blood transfusions

Comprehensive blood conservation efforts can deliver big dividends in terms of safety, efficiency

While blood transfusions are often essential in the care of trauma patients, several prominent health care organizations recognize that too often providers are ordering blood transfusions when they are not medically necessary. This drives up costs and exposes patients to unnecessary risks, according to experts. And it also essentially wastes precious blood supplies.

The American Medical Association's Physician Consortium for Performance Improvement and The Joint Commission recently highlighted blood transfusions as one of five treatments that are overused at a National Summit on Overuse, which was held in September in Chicago, IL. ***(See more on the National Summit on Overuse, p. 11.)***

Also, the Advisory Committee on Blood Safety and Availability for the Department of Health and Human Services in Washington, DC, has called for new standards, both for when transfusions are needed as well as strategies to conserve blood products.

According to the American Red Cross, between 1994 and 2008, blood use rose by 40% in the

United States. The agency says that more than 14 million units of red blood cells are used every year in this country. This amounts to about 49 units of blood for every 1000 patients — much more than in many other countries. However, parts of the United States continue to experience shortages of blood, and it is difficult for blood banks to keep up with the demand, according to agency officials.

Nonetheless, with education and technological tools, it is clear that hospitals that focus on this issue can reduce the amount of blood they transfuse without negatively impacting patient care, and potentially save health care dollars in the process.

Take note of new evidence

Numerous studies in recent years have highlighted the problem of overuse. For example, in a study published earlier this year in the journal *Anesthesiology,* researchers found wide variation among surgeons and anesthesiologists regarding when they order transfusions.[1]

The researchers reviewed the electronic anesthesia records of more than 48,000 surgical patients at Johns Hopkins Hospital in Baltimore, MD, during the 18 months between February of 2010 and August of 2011. Overall, about 3,000 patients received transfusions during surgery, but the patients undergoing cardiac procedures received blood at much lower trigger points than patients having other types of surgery.

For example, patients who were having surgery for pancreatic cancer, orthopedic issues, or aortic aneurisms often received blood when their hemoglobin was at or even above 10 grams per deciliter, even though lower hemoglobin thresholds of 7 or 8 have been shown to be safe.

Also, the amount of blood transfused did not appear to be based on how sick the patients were or how much blood is typically lost during the specific type of surgery, according to **Steven Frank**, MD, the lead author of study and director, Perioperative Blood Management Services, Department of Anesthesiology/Critical Care Medicine at John Hopkins Medical Institutions.

"A lot of this has to do with a tradition in practice being handed down for generations of doctors that the hemoglobin level has to be maintained at 10 or higher," notes Frank. "In the last 15 years, there have been eight publications supporting lower hemoglobin triggers of 7 or 8, showing the same outcomes as a hemoglobin trigger of 10, even in older, sicker patients. People have been slow to change their practices and accept the lower hemoglobin triggers."

Also contributing to the problem, says Frank, are general guidelines governing when a surgical patient should receive blood that are too vague with respect to hemoglobin levels that fall between 7 and 10 grams per deciliter.

Consider transfusion risks, costs

Frank points out that it costs the American Red Cross about $1,100 to obtain, test, store, and transport a unit of blood. Providers pay $278 for the blood and Medicare pays $180, he says. And there are consequences beyond cost to consider. "Blood transfusion is not without risk, even though HIV and hepatitis are much lower risks than they used to be because there is better testing," he says.

For example, there can be an allergic reaction to a transfusion; there is a risk for a transfusion-related lung injury, which occurs in one out of every 5,000 patients; and about one in every 100 patients experiences transfusion-associated cardiac overload, explains Frank. "If you are not going to [improve the outcome] by transfusing blood, then

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EXECUTIVE SUMMARY

Leading health care quality organizations say that blood transfusions are among the most overused treatments. The problem wastes a precious resource as well as health care dollars, continues to stretch what is known to be in short supply in some parts of the country. Part of the problem is continued adherence to an outdated medical practice that calls for transfusions when they are not medically necessary. Also, experts say many guidelines are vague regarding hemoglobin triggers. However, education coupled with IT-driven interventions can help hospitals make dramatic improvements in their blood usage, potentially preserving blood products for patients who really need them.

- The American Red Cross says that blood use rose by 40% in the United States between 1994 and 2008.
- Studies show there is wide variation regarding when blood transfusions are called for by practitioners.
- The latest research suggests hemoglobin thresholds of 7 or 8 grams per deciliter are acceptable, although practitioners often call for transfusions when hemoglobin is at 10 grams per deciliter.
- Of particular importance to EDs, the lower hemoglobin triggers don't always apply to actively bleeding patients.
- Through a comprehensive blood conservation program, Eastern Maine Medical Center in Bangor, ME, has been able to nearly halve the number of patients who now receive transfusions without negatively impacting patient care. Also, the program has saved the hospital more than $5 million in blood costs.

there is no reason to transfuse beyond the recommended thresholds," he says.

However, of particular importance to the ED, the lower hemoglobin triggers don't always apply to actively bleeding patients, such as patients who are brought to the ED following traumatic injuries from a car accident or a gun shot wound. "It is like having a hole in the gas tank. You are losing blood, so if you want to stay ahead of the game you are going to have to give blood to actively bleeding patients because you know their hemoglobin is going to drop," he says. "But you don't have to give it above a hemoglobin of 10; you can still tolerate the newly accepted lower hemoglobin levels."

It is not easy to change provider practice, but Frank advises clinical leaders to make sure providers are aware of the latest research, supporting lower hemoglobin triggers for blood transfusions. "I would show practitioners the four published guidelines and the four randomized trials that all support hemoglobin triggers of 7 or 8, and try to dispose of the traditional teaching that hemoglobin needs to be above 10," he says.

Further, Frank points out there is good evidence that electronic notifications or alerts that are integrated into the electronic order sets that most hospitals now use can lead to significant improvements in compliance with the new, lower hemoglobin triggers. In fact, Johns Hopkins Hospital has just implemented this type of intervention.

"We have a recommended threshold for transfusion, and if the hemoglobin is above 8, the provider will get a message in the electronic order noting that this transfusion may be outside of recommended guidelines," explains Frank. "Then the provider will have to submit a specific reason why he or she is giving blood to the patient."

While it is too early to tabulate the results from this intervention at Johns Hopkins, Frank notes one published study that showed that a similar approach decreased the blood transfusion rate by 12%.[2]

Provider education is key

One hospital that has already made great strides in limiting unnecessary use of blood products is Eastern Maine Medical Center in Bangor, ME. "Our medical director approached the administration in the summer of 2006 with the concept of a blood management and conservation program," explains **Tiffany Nelson**, RN, BSN, coordinator of EMMC's Patient Blood Management Program.

The program included a proposal to decrease blood acquisition costs and improve quality of care, she explains.

One of the first interventions involved implementing a computerized physician order entry system for blood product ordering that is similar to what Frank describes. The system not only alerts providers if they are deviating from evidence-based guidelines, it also tracks how much blood each provider uses. "Provider report cards are given to each service, showing specific provider transfusion rates in comparison to his or her peers," explains Nelson.

The program includes a comprehensive education program aimed at bringing both nurses and physicians up to speed on the latest blood transfusion recommendations, as well as steps that can be taken to reduce the need for blood. For example, patients are checked for anemia prior to elective surgeries so that they can be treated for the condition beforehand, thereby reducing the need for transfusions.

The hospital has also taken steps to reduce the amount of blood that is drawn for laboratory tests, and to limit the number of repeat transfusions that physicians can order for a specific patient without testing to make sure the added blood is necessary.

The results of the program have been dramatic. The hospital now gives blood to just over half as many patients as it used to, and it has reportedly saved more than $5 million in blood costs without any added risks to patients. ■

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SOURCES

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The Joint Commission, AMA seek to raise awareness of five treatments that are overused

Treatments can be life-saving, but they also often come along with risks, not to mention costs, so it is important to make sure providers only prescribe tests, procedures, or medicines when they are indicated, based on evidence-based guidelines. In fact, this issue is so important that the American Medical Association's Physician Consortium for Performance Improvement (PCPI) and The Joint Commission co-sponsored the National Summit on Overuse to discuss methods for improving both the quality and safety of patient care.

The meeting, which was held on September 24, 2012, in Chicago, IL, included representatives from physician organizations, medical specialties, government agencies, research institutions, and patient groups to build consensus on ways to minimize the overuse of five treatments that are commonly used, but not always necessary, including:

- heart vessel stents;
- blood transfusions;
- ear tubes for brief periods of fluid behind the eardrum;
- antibiotics for viral upper respiratory infections; and
- early scheduled births without medical need.

During the summit, participants reviewed the existing literature about the five treatments, and discussed ways to raise awareness about their overuse among both health professionals and patients. They also developed recommendations for improving appropriate use of the treatments and minimizing the potential risk to patients. These included the creation of educational tools, the dissemination of leading practices, standardized reporting of data, and better alignment of existing guidelines.

Mark Chassin, MD, FACP, MPP, MPH, president, The Joint Commission, noted that the overuse of medical tests, treatments, and procedures is a serious quality and patient safety concern. "Our aim is to help improve safety for patients by raising awareness about the inappropriate indications for these procedures and treatments," he says. "Widespread and effective dissemination of this important information will help physicians and patients make informed decisions and avoid overuse."

Excerpts from the conference are available at www.jointcommission.org/podcast.aspx?CategoryID=12&F_ALL=y. ■

CNE/CME INSTRUCTIONS

HERE ARE THE STEPS YOU NEED TO TAKE TO EARN CREDIT FOR THIS ACTIVITY:

1. Read and study the activity, using the provided references for further research.
2. Log on to **www.cmecity.com** to take a post-test; tests can be taken after each issue or collectively at the end of the semester. *First-time users will have to register on the site using the 8-digit subscriber number printed on their mailing label, invoice, or renewal notice.*
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4. After successfully completing the last test of the semester, your browser will be automatically directed to the activity evaluation form, which you will submit online.
5. Once the evaluation is received, a credit letter will be sent 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

1. **Laurie Gambardella**, RN, MSN, says one of the main challenges the ED faced during Hurricane Sandy was:
A. Storm damage prevented ambulances from reaching the hospital.
B. Hospital staff had trouble making it in to work.
C. The ED had no electronic access to the hospital's information system.
D. all of the above

2. The biggest impact on CentraState Medical Center, in terms of volume during Hurricane Sandy, came from:
A. a surge in vehicle accidents
B. patients who simply couldn't get in to see their primary care providers
C. emergency responders who were injured
D. transfers from other hospitals

3. What asset proved so indispensable to Ochsner Medical Center during Hurricane Katrina that emergency planners have since made sure that all hospitals within the health system have access to this same type of asset?
A. a water well powered to work on back-up generators
B. satellite phones
C. platforms on wheels for backup generators
D. a food warehouse

4. According to **Norris Yarbrough**, after Hurricane Katrina, administrators at Ochsner Medical Center began building all of their drills:
A. in a way that tests the facility's ability to evacuate patients
B. based on a mass-casualty weather disaster
C. so that every hospital employee plays a role
D. to a scenario that forces the system to test its redundant systems

5. New research, led by **Michael Cohen**, PhD, suggests that during shift changes, physicians tend to spend more time discussing patients at the beginning of the hand-off session than those near the end, regardless of complexity. This raises concerns about patient safety. What remedy does Cohen recommend?
A. provider education about the problem
B. regular case reviews of how hand-offs were handled
C. physicians or nurses need to first identify patients requiring the most discussion time, and handle those cases first
D. take steps to reduce the number of patients per physician or nurse being handed off

6. According to **Steven Frank**, MD, in Baltimore, MD, what is one of the main reasons why blood transfusions are being used more often than necessary?
A. Many providers are adhering to outdated medical practice regarding hemoglobin triggers.
B. Providers are not aware of the risks associated with blood transfusions.
C. Patients demand blood transfusions when they are not necessary.
D. Hospital blood-ordering systems are inefficient.

2012 SALARY SURVEY RESULTS

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Nurse manager salaries remain stable, but experts say upward pressure on physician compensation could accelerate in the coming years

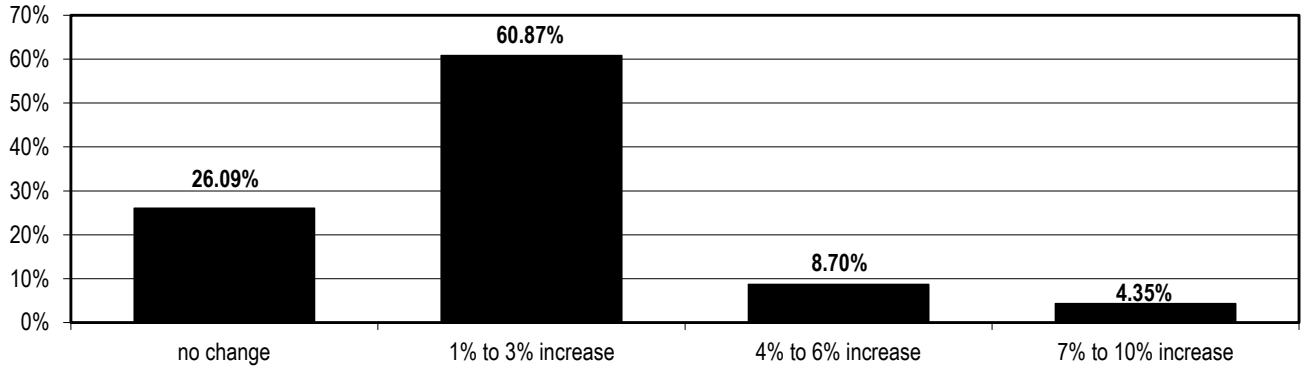
While 2012 has been a year of uncertainty in health care, as both the Supreme Court and voters made judgments on whether provisions of the Accountable Care Act will continue to unfold, salaries for ED leaders have remained relatively stable, according to the results of the *2012 ED Management Salary Survey*.

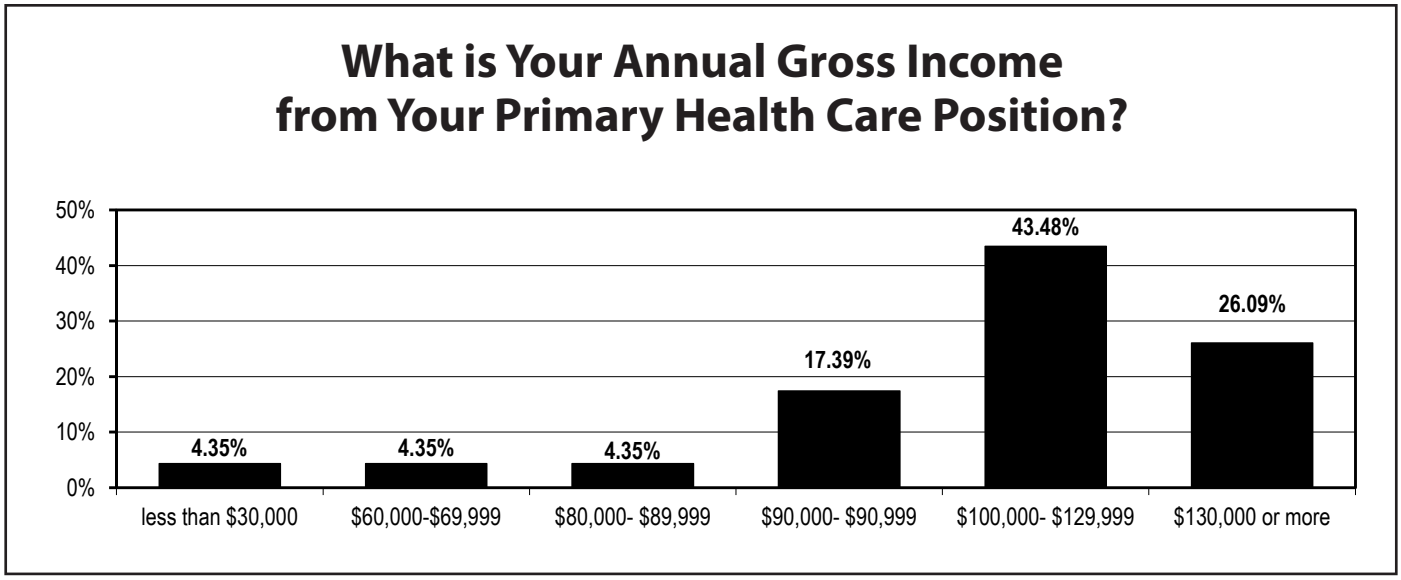
In this year's survey, more than 60% of respondents indicated they received salary hikes in the 1% to 3% range; nearly 9% reported receiving increases of 4% to 6%; and about 4% of respondents said they received salary increases of 7% to 10%. About a quarter of respondents, 26.09%, said there was no change in their salary this year, and there were no reports of salary decreases.

These figures are comparable to data from the 2011 Salary Survey. A year ago, 40% of respondents reported receiving salary hikes in the 1% to 3% range; 15% reported hikes of 4% to 6%; and 5% reported salary increases of 7% to 10%. However, last year, 10% of respondents noted that their salaries actually decreased.

While the economic recovery is expected to continue this year, **Diana Contino**, RN, MBA, FAEN, senior manager, Deloitte Consulting, Los Angeles, CA, observes that unemployment remains high, resulting in a reasonable pool of candidates applying for managerial jobs. "As personal and family financial stability improves, we will see more experienced managers retiring, but right now there are

In the Last Year, How Has Your Salary Changed?





many ready to apply for these vacant positions," she explains. "Administrative teams are concerned about declining reimbursements and potential increases in costs; therefore, significant increases in salary are not likely."

Contino adds that rewarding managers based upon performance continues to be a prevailing trend. "Often these bonuses are tied to the overall organizational achievement of goals such as customer satisfaction scores, infection rates, or The Center for Medicare and Medicaid Services' (CMS) core measures," she says.

Increasingly, salaries linked to metrics

India Owens, RN, MSN, CEN, NE-BC, FAEN, director of Emergency Services at Franciscan Alliance, Inc., in Indianapolis, IN, agrees that compensation is increasingly being linked to metrics for both nurse and physician leaders. For example, she and the ED medical director she works with share a score card that contains both nursing and physician metrics, but they are both held accountable for the results.

Owens has also observed some moderation in nursing salaries. "We adjust the starting salary for staff nurses once a year, and in the past, we could see those go up by as much as 6% year over year, but now the hikes are in the 2% to 3% range," she says. "Salaries for nurse leaders are actually going up more than that, in my experience, and I think a lot of that has to do with the increasing pressure on nurse leaders."

For instance, where nurse leaders used to be able to focus primarily on clinical components, Owens notes that they now must also be able to analyze data and motivate staff to achieve organizational goals. "These days you have to be a project improvement guru who can change processes to deliver better financial metrics and move patients through faster," she explains. "You have to understand what is contributing to your bottom line and what may be causing productivity measures to fluctuate."

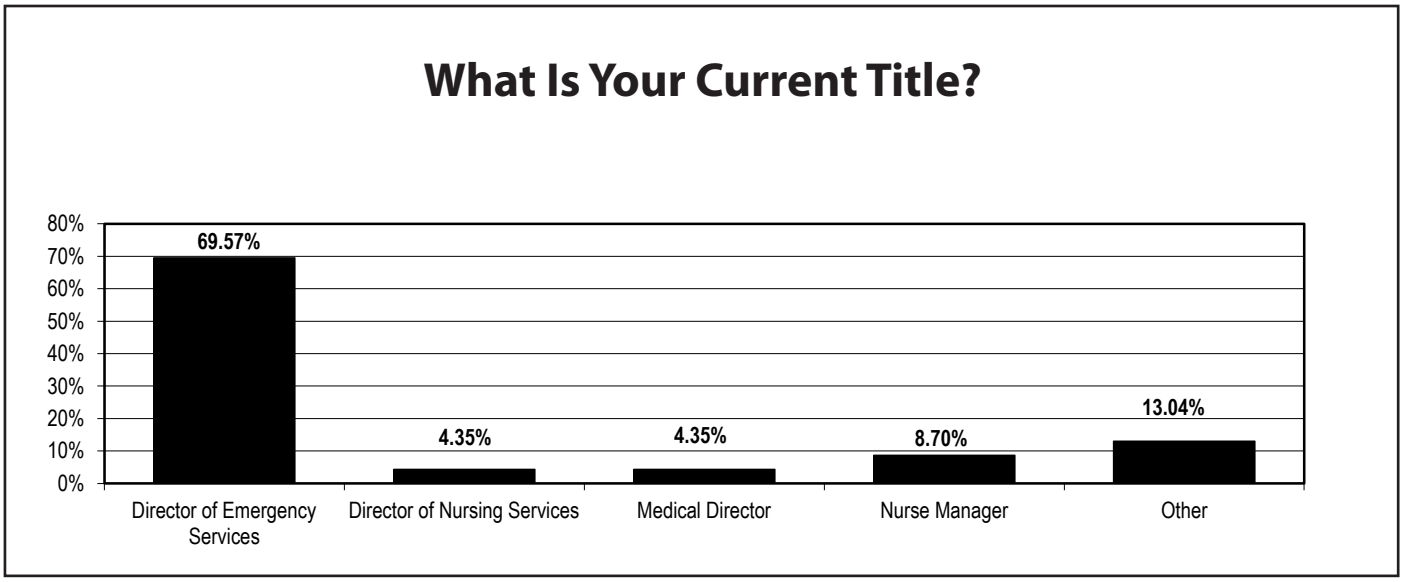
To cover all of these bases, Owens has actually divided the ED nurse manager responsibilities between two people. "I have a clinical manager who manages quality and throughput processes and I have an operations manager who oversees retention, turnover, and the financial components," she says.

Contino observes that health care organizations continue to look for managerial candidates with MBAs or some business background. "Magnet hospitals may also require MSN degrees. Many nurse and physician directors are obtaining dual degrees such as MSN/MBA or MD/MBA," she explains. "Additionally, leaders need knowledge of informatics and a broad understanding of health care technology."

Work-life balance is a concern

While there are plenty of qualified candidates for these types of nurse manager jobs in the greater Indianapolis region, Owens has found that nurses with advanced degrees are often reluctant to take on manager roles requiring 24/7 accountability. This makes it tougher to find nurse manager candidates with both the skills and personality traits to inspire and support the staff nursing team.

"This is a tough business; it is hard every day



out there because it is physically taxing, it is emotionally taxing, and I need those nurses to be all smiles and patient-centered," says Owens. "No matter what they get from the patient, they need to be tolerant, caring, and compassionate, and unless my manager is tolerant, caring, and compassionate, and can restore staff nurses — build them up and make them feel good about the care they are delivering — then in a very short time they will be operating in an emotional vacuum, and then they won't be able to deliver that caring compassion and my patient satisfaction scores will plummet."

Offering nurse manager candidates an acceptable work-life balance is challenging, given all that they are expected to do, acknowledges Owens. Indeed, more than 30% of the respondents to the Salary Survey reported that they work 56-60 hours per week, on average. Another 26% reported that they work 51 to 55 hours per week. Only about 26% of respondents worked 50 hours a week or less, and about 17% reported that they worked more than 60 hours per week.

There is growing recognition in the nursing community that high-pressure environments and long shifts are not conducive to good patient care, and Owens is taking steps to ensure that her nurse managers act accordingly. "I am trying to infuse the message that while this is a 24/7 accountability job, I expect them to take time off and I expect them to take care of themselves," she says. "That is the carrot that will draw quality applicants here. I will tend to their work-life balance."

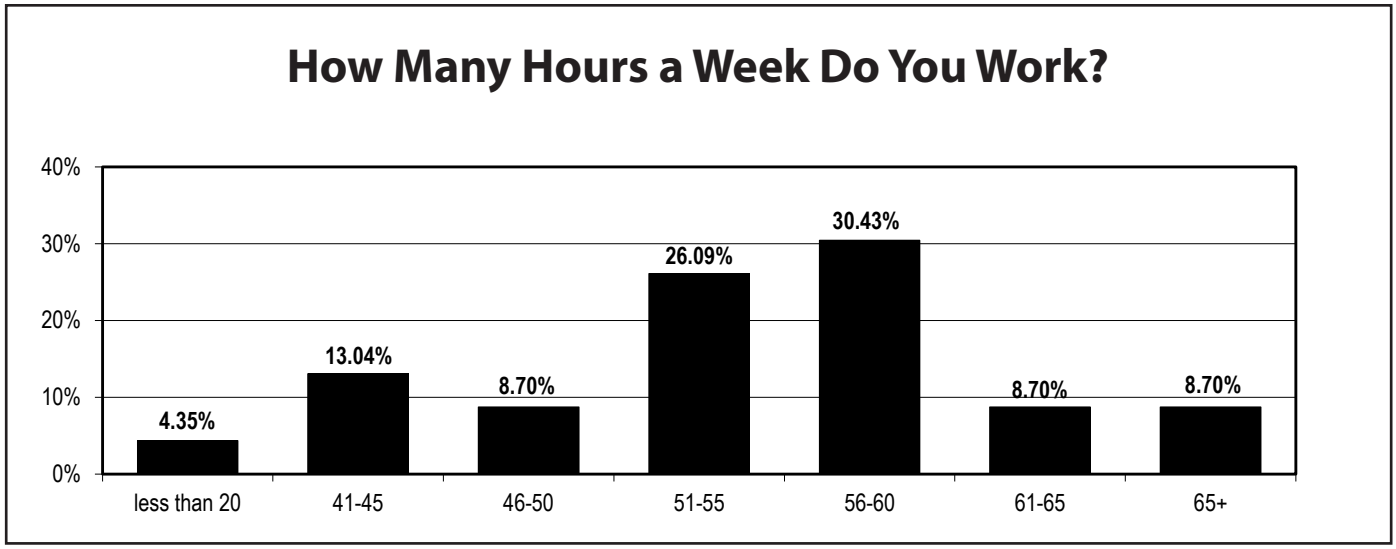
More than 43% of respondents to this year's Salary Survey reported that their gross annual income was in the $100,000 to $129,999 range; just over 17% indicated their annual income was in the $90,000 to $90,999 range; and 26.09% said they made $130,000 or more. These figures are in line with the results from the 2011 Salary Survey, which yielded very similar results.

With continuing pressure on health care organizations to improve efficiency and weed out excess expenditures, Contino anticipates that most managers will not see their salaries rise beyond modest cost-of-living adjustments in the coming months, although managers are likely to see an increase in responsibilities. "Cost reduction is a major area of focus for hospitals and health systems," she says. "Salary increases may occur in organizations that have successfully increased operational efficiency, automated processes, and have some competitive pressures; however, these increases may come in the form of bonuses."

Physician leader salaries rising

The compensation picture for physician leaders in the ED is somewhat brighter, according industry experts. "I have seen upward pressure on ED physician leader salaries over the past year, which is consistent with the overall trend in physician compensation," explains **William Cole**, MD, FACEP, chief executive officer of Premier Physician Services, based in Dayton, OH. "Demand for quality physician leaders is increasing and the supply is decreasing. This allows physician leaders to choose a geographic location and work balance that fits their lifestyle."

However, Cole also observes that hospital clients are demanding more from the medical director role. "Education, training, and experience



are becoming requirements for physician leaders who, not unlike the staff physicians, are few in numbers," he says. "Premier Physician Services is addressing this changing landscape through our internal Medical Director Leadership Academy which cultivates and trains our future physician leaders."

Emeryville, CA-based CEP America has a similar training program for physician leaders. **Mark Spiro**, MD, FACEP, the organization's president and chief operating officer, explains that leaders have to be clinically competent in order to gain the respect of their colleagues, but they also, increasingly, have to have excellent communications skills. "You have to be able to motivate people to make changes, and you do that by having open and honest communications and by having a clear vision," says Spiro. "We have found that even some very green clinicians, maybe one or two years out of residency, can be a successful director if they are able to communicate, collaborate, and motivate, since we have the support of senior leaders to guide them in other areas."

Cole adds that today's physician leaders spend more time forecasting impending changes in health care and how they will impact patient care. "This includes working with hospital leadership to find ways to meet specific goals and criteria," says Cole. "I have found that hospitals are looking to ED physician leaders to help them see around the corners and develop plans to stay ahead of uncertain changes."

Physician leaders have also taken on the responsibility of working with trade groups to make sure emergency medicine gets a fair shake when it comes to reimbursement, says Cole. "I also believe physician leaders are taking on more of the burden of physician recruiting and staffing due to the supply and demand issues of ED physicians," he says.

Cole predicts that ED physician leader salaries will continue to rise, and he suggests this trend may accelerate as health care reform takes hold. "I believe this upward pressure will be the result of the duties and responsibilities of these leaders increasing under the Affordable Care Act," he says, noting that the aging of the population and the surge in the number of people who will be insured under health reform will drive up volume in the ED. "Dealing with the penalties for ED bounce backs and unnecessary readmissions within 30 days discharge from the hospital, ED physician leaders will have the unenviable task making sure patients get the highest quality of care in the lowest cost setting."

While many health care organizations prize physicians with some business training or background, Spiro says he is much more interested in physicians who have more of a collaborative skill set. "Fifteen years ago, you could focus just on ED leadership. You still had to cooperate with the hospital, but you really were much more of an island, whereas now — and even more so in the next three or four years — it is going to be much more a collaborative skill set that is needed. That collaboration will need to be across all medical specialties." ■