

How a shock team can detect and treat critical illness earlier

A shock program helped a community hospital in northern California drastically reduce mortality from the condition

A hospital in northern California is putting a new twist on a not-so-old approach to give critically ill patients a little extra care.

You've probably heard about rapid response teams, which a growing number of hospitals are using to identify patients before they code. When nurses notice signs of trouble—an elevated pulse rate or troubled breathing, for example—they call a rapid response team for a consult. If necessary, the team then moves the patient to the ICU for immediate care.

Shasta Regional Medical Center in Redding, Calif., is using a similar concept it calls shock teams. And while rapid response teams focus on all critically ill patients, Shasta's approach focuses on patients suffering from nontraumatic shock.

The shock team, which was profiled in the May 2005 issue of *Chest*, has produced impressive results. The team not only delivered care to shock patients more quickly than traditional care systems, but it slashed mortality in a population that faces a high risk of death.

What makes the story even more interesting is that Shasta is a 180-bed community hospital, not a large academic center with around-the-clock physician coverage. To make its shock team a success, the hospital had to teach nurses and other nonphysicians to not only recognize the telltale signs of shock, but give them the confidence to call a shock alert without the input of a physician.

Telltale signs

Frank Sebat, MD, Shasta's ICU director and lead author of the study in *Chest*, says the program was both necessary and successful because physicians often have a hard time recognizing critical illness early enough to prevent problems.

"Most physicians think they recognize critical illness early on," he explains, "but many studies have shown that we really don't recognize critical illness until it's in the late stages. Somewhere along in training, the idea of the early recognition of critical illness is just not emphasized."

The problem is not limited to the ICU. Literature has shown that treatment outside the ICU is often delayed because of a general lack of recognition of critical illness, poor venous access, inadequate fluid resuscitation, and difficulty in getting a bed in the ICU.

The results can be deadly. Studies have estimated that the overall mortality rate for patients with cardiogenic shock ranges from 50 percent to 80 percent. Septic shock produces a mortality rate of 39 percent to 60 percent and kills at least 90,000 Americans a year.

To help physicians and other providers recognize the telltale signs of shock, Shasta created an educational campaign that focused on early recognition and management of the condition.

Dr. Sebat, who is director of the Kritikus Foundation, a nonprofit organization that's disseminating the shock program, says that while tachypnea is a very nonspecific indicator of serious illness, it is fairly sensitive. That's why the hospital's shock program tells physicians and nonphysicians to consider shock the most likely diagnosis when patients have a respiratory rate of greater than 20—and one of six other common indicators of the condition.

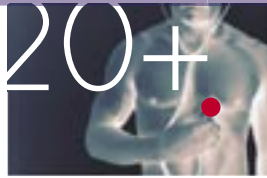
"When most people see a respiratory rate greater than 20, they do not think shock," he explains. "They think of asthma, COPD, anxiety or pain. We told them that we wanted them to think shock until proven otherwise. If it turns out not to be shock, if it's really pain or anxiety, then they've done the drill."

The shock program also emphasized the importance of what Dr. Sebat says is a frequently underused measure among physicians: skin perfusion. "If you have a respiratory rate greater than 20 and poor capillary refill," he explains, "it's likely to be shock."

Slashing mortality

Shasta next created a shock team made up of an intensivist, an emergency medicine physician, an ICU nurse, a respiratory

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—Frank Sebat, MD
Shasta Regional Medical Center

therapist, and staff from other departments like electrocardiography and pastoral services. Like the rapid response teams being used at other hospitals, Shasta's shock team visits patients on the wards or in the emergency department to determine whether shock is an issue. If necessary, the patient is moved to a bed that is held open in the ICU exclusively for patients admitted by the shock team.

The educational efforts and the creation of the shock team paid off immediately. Shasta found that shock patients treated by the shock team had average mortality rates of 28 percent. Patients who received standard care, by comparison, had mortality rates of 40 percent.

Because the shock program was instituted at a community hospital, not a teaching hospital with 24/7 physician coverage, the shock team depended on nonphysicians to both assess patients for shock and call a shock alert. That required a change in thinking for nurses, who were asked to call a shock alert without first consulting an attending physician.

“We had to empower nonphysicians to not only recognize a disease,” Dr. Sebat says, “but to actually start an intervention before a physician got involved.” He admits that some nurses were hesitant to call a shock alert early on because some attendings didn't support the program.

“We had nurses who said, ‘I was going to call a shock alert, but I didn't because I was concerned that the doctor would be upset,’” Dr. Sebat recalls. The hospital overcame those concerns by promising nonphysicians that they would have the full support of both the administration and medical staff.

Another challenge, at least initially, was convincing hospital administrators to keep a bed open in the ICU to receive shock patients. While some officials worried that keeping a bed open for shock patients would hurt the hospital's throughput, Dr. Sebat says they quickly saw the advantages.

“Instead of having a patient sit in the ER for eight hours on a ventilator taking pressors for septic shock,” he adds, “they were moved to the ICU immediately. We didn't have patients waiting in the ER who are critically ill.”

The benefit of standardization

One of the nice things about the shock program, Dr. Sebat notes, is that it's relatively easy—and inexpensive—to implement.

While his facility uses intensivists to staff its shock team,

he says that hospitalists could just as easily take the lead. He says they would need to undergo the same training that was given to the intensivists at Shasta. He also suggested a course reviewing the fundamentals of critical care that would help bring hospitalists up to speed.

The costs of running the program, he says, will vary depending on a hospital's size. His 180-bed hospital, for example, needed a quarter- or half-time position to get the program up and running. Afterwards, it needed a quarter- or eighth-time position to maintain the program.

In terms of dollars and cents, the hospital spent the equivalent of \$8,000 for every life it saved in the first full year of the shock program. Today, the hospital spends about \$2,000 for every life saved, in part because the shock program is saving more lives and able to distribute its costs across a larger patient group.

As the program matures, Shasta's mortality from nontraumatic shock continues to drop. While Dr. Sebat does not give exact numbers (he is preparing new research for publication), he says current mortality from shock is considerably lower than the 28 percent found in his original research. He attributes that progress both to the growth of the shock program, and also to new interventions like activated protein C and tight insulin control.

But an even more important factor in slashing mortality from shock, he says, is the program's ability to standardize not only the signs of shock that physicians and nonphysicians now look for, but the approach they take in treating the condition once it has been diagnosed.

Dr. Sebat points to studies that have shown that shock interventions can vary greatly depending on who recognizes the condition. That's why it was so critical to emphasize a standard regimen of early therapy like fluids, respiratory support, intubation and antibiotic administration in patients with shock.

“There are a lot of smart people out there,” he explains, “but there's not a system that facilitates crossing the i's and dotting the t's. Once you organize a systems approach, there are less things that can fall through the cracks.” **TH**

Edward Doyle is Editor of Today's Hospitalist.

For more information about shock teams, call the Kritikus Foundation at 530-244-7149.