

# Early-Intervention Teams Draw Praise, Criticism

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WASHINGTON — It was 8 a.m., and a nurse at Kaiser Permanente's Santa Clara (Calif.) Medical Center was puzzled about a patient who had been admitted for a small bowel obstruction. Everything seemed fine, but the patient was hypotensive. What should be done?

The nurse decided to call the hospital's rapid response team (RRT). Belinda Chu, R.N., the RRT nurse, considered possible causes for the low blood pressure. She concluded that the nasogastric tube that had been inserted to suction the patient's stomach could cause a high amount of fluid loss from the stomach, leading to an imbalance of fluids and electrolytes.

Ms. Chu recommended that the physician order more fluids to be given to the patient, but 2 hours later the patient was still extremely hypotensive. The physician agreed that the patient needed to be transferred to a higher-care unit for closer monitoring.

This is one example of the work of early-intervention teams. Such teams, which are available 24 hours a day, 7 days a week, vary in makeup, Dr. Andrew Auerbach of the University of California, San Francisco, said at the annual meeting of the Society of Hospital Medicine. The teams also go by different names:

► **Medical emergency teams (METs).** For these, "think of 'code team' in your head," Dr. Auerbach said. "They can prescribe medications, they probably have airway management skills, and they can get vascular access easily. The term we use is 'ICU at the bedside.'" METs are typically led by intensivist physicians.

► **RRTs.** These teams, on the other hand, "have some but not all of the METs' abil-

ities," Dr. Auerbach continued. "They begin basic care, and they have the ability to call in other resources, but there's not necessarily a physician at the bedside and not generally an intensivist at the bedside. Instead, they choose to ramp up care as conditions dictate."

► **Critical care outreach (CCO) teams.** Similar to RRTs, these provide active surveillance to recent ICU discharges in addition to doing RRT functions, he said.

Training requirements for nonphysician members of all of these teams vary, but Advanced Cardiac Life Support and Pediatric Advanced Life Support seem to be minimal requirements for all teams.

Criteria for activating the teams differ from one hospital to another, but in general, hospital staff members or anyone else in the room with the patient are encouraged to call the team after noticing any of the following: abnormal vital signs, a change in symptoms, a change in mental status, a perceived risk of harm or imminent deterioration, or a feeling that something is "just not right," Dr. Auerbach said.

Team members are usually contacted via overhead speaker or by pager. "The [teams] tend to be underutilized even if the clinical criteria and triggering process is extraordinarily simple, so the systems can be there, but you have to really encourage people ... to use it," Dr. Auerbach said.

Once the team arrives at the bedside, he emphasized, "there should not be any negative feedback that this was an inappropriate call, or you were weak, and why couldn't you do this yourself. You should just reinforce that triggering the [team] was in fact appropriate and say, 'I'm glad to be here. How can I help?'"

Once activated, the team makes an initial diagnosis and starts appropriate interventions. The team should be able to make transfer decisions on its own and have access to the intensive care unit, Dr. Auerbach said.

Dr. Auerbach was part of a group of physicians who participated in a consensus conference on early-intervention systems held last year in Pittsburgh. The attendees discussed development of outcomes measures and criteria for using teams. The results of the conference are expected appear soon in a peer-reviewed journal, he said.

## Gauging the Impact

Studies of early-intervention systems are mixed on the question of whether they improve the quality of care, said Dr. Kaveh Shojania of the department of medicine at the University of Ottawa (Ontario).

"There have been about eight before-and-after studies, most of which show pretty dramatic benefits," but there have been major methodologic problems with some of them, Dr. Shojania said at the meeting. A large randomized, controlled trial in Australia found the teams to be of no benefit, but there are questions about that study's methodology as well, he added.

Hospitals that have implemented the teams have had varying results. At the University of Pittsburgh Medical Center, it used to be that if the patient decompen-

sated, "you would get on the horn to the ICU or the critical care attending physician" and send the patient to the ICU. "That was how we took care of 'I'm a little bit worried' situations," explained Dr. David J. McAdams of the University of Pittsburgh.

But in 1988, a physician's wife who was an inpatient became critically ill while on the med/surg unit. The critical care doctor arrived and performed an intervention at the bedside. "The physician said, 'This is a great idea. Why don't we do this for everybody?'" he said.

After that, the hospital began devising ways to help patients before they decompensated. But the criteria were practitioner-centered, so only certain staff could decide to call for help. And adhering to the hospital's chain of command often meant initially calling the least-experienced person, such as an intern.

"It was 'delegation to the dumbest,'" Dr. McAdams said. "In a crisis situation, this leads to delays and disaster."

In 1999, the hospital revised its criteria to make it more specific and to make it patient-centered; it also allowed anyone to call a code, he continued. Hospital officials also decided that neither hospitalists nor residents needed to be involved in the response; instead, the attending critical care physician answers the call.

The teams get an average of two to six calls per day, Dr. McAdams said. The hospital also has found that the more people call for an RRT—which the hospital calls a "Condition C" code—the fewer times they get "Condition A" calls, which are more serious. And although the data are not yet complete, Dr. McAdams said he suspects that the program has reduced the number of preventable deaths.

## Full-Time Nurses

Kaiser Permanente in Santa Clara is one hospital that has just begun to experiment with RRTs; it fully implemented its teams in April. But Kaiser has decided to do things a little differently. Rather than having all RRT members—the RRT nurse, the respiratory therapy supervisor, and a physician—all work on the team in addition to their regular jobs, Kaiser hired RRT nurses to be on the team full-time, 24 hours a day.



Kaiser Permanente, Santa Clara's rapid response team (left to right) Cesar Perez, RT, Dr. Steve Fisk, and Louanne Peregrino, RN.



Temple's team includes Bill Pierce, nurse manager-NICU; Courtney Vincent, clinical pharmacist; and Michael Wright, RT.

## Keeping Response Teams in Play

Dr. King outlined some of the lessons that hospital staff have learned about working with rapid response teams:

► **Have needed equipment available.** "We need oxygen!" "And a crash cart!" After those cries were heard several times, oxygen and crash carts were put in centralized locations and additional ones were placed near the security guards and in the lobby.

► **Don't forget about hypoglycemia.** Often, the team would see a patient and say, "He looks hypoglycemic," but there would be no glucometer available. The team eventually added a glucometer, glucagon, and glucose tablets to its supply bag.

► **Make detecting a problem easier.** The hospital is piloting a vital signs sheet that highlights in yellow any physiologic markers of decline. "It actually says, 'MD or RRT should be called'" on the sheet, Dr. King said.

"The RRT nurse has no other patient responsibilities," explained Dr. Allison Schwanda, chief of hospital-based medicine at the facility. When the nurse is not answering RRT calls, he or she rounds on all patients transferred out of the ICU and follows up on RRT calls within 12 hours to ensure that patients remain stable. He or she also "asks the nurses if there is anyone they're worried about. We think that even gets us intervening earlier than what we might get with a call to the RRT."

The RRT nurse must handle a delicate balancing act: keeping the primary care physicians involved in care of the patient without creating barriers to activating the RRT. As a result, the team has developed a notification system to keep doctors in the loop. "Then it's up to that [doctor] whether they want to come bedside," she said.

If the nurse in charge needs backup, she can call in the "second tier" for help: an intensivist during the day or the hospitalist at night. So far, the RRT is averaging 2½ to 3 calls per day, or about 1 per shift, Dr. Schwanda said. The response to each call averages 30-90 minutes.

Although several speakers were enthusiastic about the potential of RRTs, not everyone in the audience was as impressed. "I remain skeptical due to the methodologic issues [in] the studies that are out there," said Dr. Shaun Frost, a hospitalist at HealthPartners Medical Group and Clinics, Minneapolis. "And I'm amazed at the amount of resources thrown at this activity," such as Kaiser's hiring several full-time nurses. ■