

Specialists Help Rural Clinics Handle Emergencies

Rural life may be free of some of the tension and frustrations of city dwelling, but it also can be more dangerous. While about one-third of Americans live in rural areas, for instance, 57 percent of all deaths from motor vehicle accidents occur outside cities. A similar pattern holds for the other leading causes of traumatic death — suicide, homicide, and falls. Overall, rural residents are almost 50 percent more likely to die from trauma than city residents.

Accidents in rural areas frequently go undiscovered for longer periods than ones in more populated cities and suburbs. Ambulances often have to transport rural accident victims longer distances over slower roads before they can be treated. Rural areas frequently rely on volunteer rescue squads that are not as well trained than their urban peers, and rural hospitals have fewer trauma specialists.

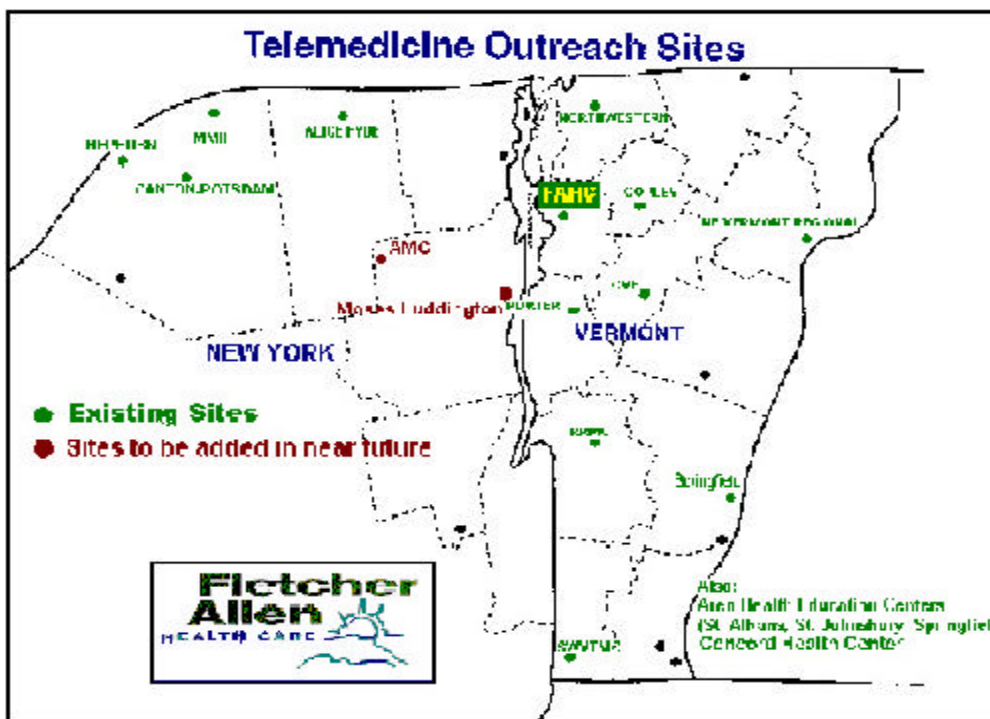
No single strategy can address all these issues, but the University of Vermont's Fletcher Allen Health Care hospital in Burlington, Vermont, hopes telecommunications offers at least part of the answer. With help from the Technology Opportunities Program, it has installed videoconferencing workstations in its own facilities, in the homes of three of its trauma specialists and in the emergency rooms of four rural hospitals in Vermont and upstate New York. With these tools, the

doctors in Burlington now can participate in the crucial, initial decisions about treating accident victims in outlying areas.

It may take some time to measure the impact of the system, but it already has won converts among many of the doctors who have used it. “When I was first asked to participate in this project, I was not too excited about it,” admits Fred Rogers, Director of Trauma at Fletcher Allen. “But as we got the system up and started doing our first few consults, it became readily apparent this was allowing me to be transported right into [remote hospitals’] emergency rooms. In a couple of cases, we have had a significant — possibly even life-saving — impact.”

of the latest emergency procedures. These remote hospitals routinely transfer their most serious trauma cases to Fletcher Allen, but ambulances sometimes need three hours or more to deliver patients over treacherous roads and past obstacles like the Adirondack and Green Mountain ranges and Lake Champlain. In addition, helicopters often are not a meaningful alternative because adverse weather keeps them grounded almost one-third of the time, and even when the weather is good, flight crews can be hard to assemble on short notice.

All these factors reduce the chances that trauma victims will reach specialists during the first crucial hour after their accidents — a period called



The “Golden Hour”

Upstate New York and northern New England are a good setting to test whether telemedicine can improve care for rural accident victims. Fletcher Allen is the only top-rated, or Level 1, trauma center in the region. Smaller hospitals in outlying areas lack the most advanced facilities, and their staffs do not see enough trauma victims to be well practiced in all

the “golden hour” because it is so important in determining how such patients ultimately fare. The University of Vermont’s “teletrauma” project, as it is known, increases victims’ chances by enabling specialists to see them within minutes of the time they first arrive at local hospitals. Using both a ceiling mounted camera and microphone and an eye-level camera, Burlington-based specialists can pan the distant emergency rooms, zoom in on patients, read

monitors and x-rays, and talk with doctors and other medical personnel on the scene.

In emergencies, when every second counts, being able to see a patient and his doctors in real-time makes a world of difference, according to doctors. “I do a fair number of consults over the telephone, and they are remarkably unsatisfactory,” says Barry Heath, Director of the Pediatric Intensive Care Unit at Fletcher Allen. He was one of the first Burlington doctors to use the system, advising physicians at a remote hospital who were trying to resuscitate a little girl after she had suddenly stopped breathing and her heart had stopped beating. “This makes a remarkable difference,” Dr. Heath recalls. “I could see the child, and correct their technique in ventilation and cardiac compressions. I could watch the [electrocardiogram] monitor. I could read the chest x-ray.”

The connection was so vivid that Dr. Heath reflexively reached out at one point to perform a procedure himself. “It was very intense,” he says.

Trauma chief Rogers agrees that videoconferencing represents a great advance over consultations by telephone. Usually, when a rural doctor calls a specialist in Burlington for advice, he has to leave his patient. He then shares only the information he decides is relevant, giving a “static” — and possibly out-of-date — assessment of what could be a rapidly changing situation. However, with the videoconferencing system, the expert in Burlington can see everything the local doctor sees, noting changes as they occur and quite possibly observing factors the remote doctor may not think to mention.

Dr. Rogers recalls one case where doctors at a remote hospital were eager to perform a CAT scan of a patient with a severe head in-

jury. But Dr. Rogers, noting that the patient’s blood pressure was dropping, advised them first to perform a procedure that enabled them to find — and stop — internal bleeding that would have killed the patient if it had gone undetected. In another case, doctors at an outlying hospital were having trouble inserting a breathing tube to save the victim of a motorcycle accident. Dr. Rogers urged them to open an airway surgically, but they were reluctant because none had performed the procedure in 20 years. Dr. Rogers walked one of his remote colleagues through the process step-by-step, probably saving the man’s life.

City Doctors, Country Doctors

Although it may sound revolutionary, surgical telemedicine actually represents less of a departure from current trauma-care procedures than one might expect, according to Dr. Michael Ricci, a vascular surgeon at Fletcher Allen and leader of the project. When the victim of a serious accident is brought into the Burlington hospital, he typically is treated by a whole team, led by a doctor who stands at the foot of a patient’s bed, Dr. Ricci notes. The team leader typically doesn’t even lay hands on the patient because he has to avoid becoming so engrossed in any one procedure that he loses sight of the overall situation. However, with adequate



videoconferencing tools, the leader can do his job just as well from a remote site as if he were in the room, Dr. Ricci suggests. “There isn’t a lot of difference between what we do with videoconferencing and what we do in the medical center,” he says.

But how do doctors at the smaller, remote hospitals feel about the system? One concern often voiced about distance medicine is that a few specialists in urban areas will push rural doctors aside. Participants in the University of Vermont project acknowledge that some rural doctors have grumbled about the possibility specialists in Burlington will second-guess the care they give. At times, they believe, such fears have even led rural doctors to refuse to use the technology.

But such cases seem to be relatively rare. More often, rural doctors appear to be happy to get advice from specialists who have more experience with trauma cases than they do. In fact, more than 90 percent of doctors in outlying hospitals say the teletrauma consultations have improved patient care, and more than half say videoconferencing represents a marked improvement over telephone consultations, according to a survey conducted by the Fletcher Allen team.

“I’m happy with the care I give, but I realize there are only certain things we can do here,” says Dr. Suhail Daye, a general surgeon at Massena Memorial Hospital in New York. “It never hurts to have the opinion of somebody who deals with more trauma cases.”

Trauma care often requires tough judgment calls, Dr. Daye notes. Should doctors operate to stop internal bleeding before transporting a victim to Burlington? And if they do operate, should they attempt the difficult task of stopping the bleeding, or should they simply pack gauze around the wound? These are “gray areas,” and there are no simple rules. But the more experience a surgeon has, the better the chances he will make the right call. Moreover, since many trauma victims ultimately are transferred to Fletcher Allen once they are stabilized, the patients benefit if their doctors in Burlington are fa-

miliar with their situation even before they arrive there, Dr. Daye adds.

Far from feeling that the city doctors are encroaching on him, Dr. Daye believes the videoconferencing system has helped him professionally. He can use the system to participate in “grand rounds” — conferences Fletcher Allen holds on a variety of topics — and in “morbidity and mortality” conferences where doctors at the Burlington hospital discuss how specific cases were handled. “It makes you feel like you’re part of the mainstream again, that you aren’t too far from what’s current,” says Dr. Daye. As a result, he says, he feels less tempted to leave Massena for a more urban area where he could have more contact with other professionals.

Education Builds Bridges

Fletcher Allen is a teaching hospital, and providing opportunities for continuing education to doctors like Dr. Daye is one of its core missions. In fact, it has used its new videoconferencing links to rural hospitals to provide educational opportunities not only to doctors in outlying areas, but also to local emergency medical technicians and ambulance crews. Doctors in Burlington already have taught classes to technicians at remote sites in such topics as burns, eye trauma and dealing with victims of cold water drowning. While the doctors donate their time to provide such instruction, Fletcher Allen staff put considerable energy into helping them prepare high-quality multimedia presentations, complete with numerous photographs and PowerPoint slides.

The classes clearly are of value to rural ambulance crews, many of whom are volunteers and work on such small crews that they would have difficulty getting away long enough to Burlington for such training. But significantly, the classes also help Fletcher Allen promote the use of videoconferencing in real-life trauma situations. “People naturally are apprehensive about this at first,” notes Mike Caputo, director of the telemedicine program at Fletcher Allen. “It’s new, it’s technology, and it’s untested.

Education programs help people get over their apprehension and start to see the quality of information that can be shared.” What’s more, the personal relationships developed in classes come in handy later, when real emergencies arise. “In an emergency, people know who they are dealing with,” Caputo notes. “They say, ‘Hey, I know Dr. Smith at Fletcher Allen.’”

Caputo, for one, expects telemedicine applications to grow greatly in number and variety in the years ahead. What new applications does he foresee? Right now, Fletcher Allen is exploring the idea of putting wireless telemedicine units in ambulances. That should give general practitioners in local hospitals and specialists in Burlington an even greater opportunity than they now have to intervene early in the “golden hour.”

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