

Plan Now to Use Telemedicine After Disaster Hits

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Imagine losing access to telephones, the Internet, and fax lines during a disaster, and trying to treat patients with nothing but a scratchy two-way radio to connect you with people and institutions outside your office.

It's so last century, and so avoidable, yet that's what happens after natural or man-made disasters, said Dr. Ronald C. Merrell.

Physicians should plan ahead to maintain telecommunications so that they can practice medicine independently of emergency operation centers in such situations, he advised.

"That's technology we've had since the Second World War. It's fine, but we need to find a way to access the Internet. It's hard to practice medicine over a radio," said Dr. Merrell, director of the Medical Informatics and Technology Applications Consortium (MITAC) at Virginia Com-

monwealth University, Richmond, Va. MITAC is a research center sponsored by the National Aeronautic and Space Administration (NASA).

The medical needs of refugees from a disaster aren't necessarily what you might expect. Dr. Merrell and two colleagues from MITAC responded to a call from NASA after Hurricane Katrina to help an occupational medicine office at a NASA facility about 34 miles from the Mississippi coast. The office and its one physician had

lost most communication with the outside world. Hundreds of people needed medical care, and within days the numbers grew to 4,000.

Telemedicine teams in other parts of the country were eager to help, but the Mississippi facility had no good way to let them know what to send. Dr. Merrell and his team set up a satellite telephone, a computer satellite dish, and other equipment that gave them 65 kilobytes of transmission speed. Phone calls were transmitted via a French satellite to Paris and back to the United States. The team even brought solar panels to provide power if needed, but they were able to use electricity from the NASA facility.

Because telemedicine isn't part of the usual disaster preparedness infrastructure, deploying the specialized equipment and then training people to practice telemedicine is time consuming, which limits the amount of help it can provide, Dr. Merrell noted. Physicians would be wise to assess the disaster plans for their clinics or hospitals and advocate for redundant telecommunications capabilities.

Having equipment and trained personnel in place made a huge difference when a devastating earthquake struck Pakistan in October 2005, Dr. Merrell said, noting that it may have been the first time that telemedicine formed the core of a successful medical response to a tragedy.

Under a grant from the U.S. Agency for International Development, Dr. Merrell and Dr. Azhar Rafiq of Virginia Commonwealth University had traveled to Pakistan about a month before the earthquake to help establish two telemedicine training facilities in Rawalpindi, just outside the capital of Islamabad. The telemedicine facilities were to enable communications with two primary care clinics in the rural Punjab area for a more integrated health system.

When the earthquake hit, "We were in touch with them within 12 hours" thanks to the telemedicine programs, he said. The Rawalpindi medical facility was the first fully intact medical site encountered by people fleeing the mountainous areas, where the earthquake had leveled brick hospitals and killed almost all of the medical workers. Soon Rawalpindi's 1,500 beds were in demand for 6,000 patients.

Telecommunications kept the facility from being overwhelmed. Medical students volunteered for brief training in telemedicine and hiked into the mountains with backpacks containing satellite phones, digital cameras, laptop computers, and mobile power sources. From the mountains they informed the hospital at Rawalpindi and other facilities about which patients were headed their way and what would be needed. The students also transmitted medical records and photographs.

After reconstructive surgery at the Rawalpindi medical facility, patients were sent back to tent facilities in the mountains to recover. Surgeons were even able to send patients with complex orthopedic repairs to the mountains, knowing that staff would be able to telecommunicate about the patients' status and any post-surgical problems that arose. ■

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