

Ham System Helps Hospitals in Disasters

By Duane Mariotti and Marina Zuetell • Washington State

We watched and listened in disbelief and anguish to the stories from the Gulf Coast during and after Hurricane Katrina. Hospitals couldn't communicate with one another, rescuers or the world outside their walls. They had to use canoes to get to other hospitals and exchange information. In the aftermath of Katrina, as in so many other disasters, failure of communications was a significant issue.

Imagine an area greater than the size of West Virginia, with an international border and several major population centers. Inside this area are more than 50 hospitals of all sizes, from academic medical centers to rural access, and all capacities, from more than 700 to fewer than a dozen beds. Imagine these hospitals – some across an international border, some in an adjoining state, some in rural and mountainous areas and some in the center of major cities – have a means to communicate with one another reliably in a crisis.

This is not a fairytale or a wish for the future. This is an actual radio-communications system that has been in use for more than 10 years and is expanding to meet the needs of the hospital community. It is the Medical Services Communications Team in place in western Washington State.

The team is comprised of amateur radio operators assigned to hospitals and of hospitals with equipment permanently installed to assist with this mission-critical communication. The program differs from most amateur radio systems in that the amateur radio operators know their roles and from where they will be operating and they can self-dispatch to their assigned hospitals or healthcare-support agencies during significant crises. They truly believe in their mission.

In Action

In November 2005, the western Washington Medical Services Team held its largest communications exercise ever. It included 49 hospitals in 16 counties in western Washington, plus six hospitals in the Portland, Ore., metropolitan region and one in Vancouver, British Columbia, Canada. Only nine hospitals in the western Washington geographic region did not participate, due to construction or other activities.

The drill encompassed more than 28,000 square miles, or 40 percent of the landmass of Washington, in 19 counties. It included a population base of 4.5 million, or 78 percent of the population of Washington in four (Seattle, Tacoma, Bellevue and Vancouver) of the five major metropolitan areas. For perspective, this is greater than that of 10 states and the population covered in this drill was greater than that of 30 states. Of course, this region is geographically diverse and includes the Cascade and Olympic mountain ranges, lakes, the Puget Sound with more than 3000 miles of coastline, and 157 miles of Pacific coast. Additionally, this drill encompassed an international border (Canada) and an additional state (Oregon) and its major metropolitan area (Portland).

The amateur radio operators donate their time to the hospital and the training. By having operators assigned to specific hospitals, the hospital staff and amateur radio operators get to know one another and the operators have a sense of pride in the hospitals they support. This support was exceptional by the volunteer amateur radio operators in the November drill, with more than 100 licensed amateur radio operators donating more

than 500 man-hours of time and driving more than 1500 miles to assure the communications-drill success.

Amateur radio operators have a standardized training program specific to the hospital environment. It includes infection control, HIPAA, aero-medical helicopter operations, medical terminology and hospital-communications systems. Additionally, the amateur radio operators participate in on-line FEMA training, specifically NIMS and ICS. Training activities are held about 10 times per year, not including drills. Drills are held several times per year in individual regions and hospitals, but with at least two wide-area drills, one typically based and incorporated into the hospital's annual spring NDMS exercise.

Washington is composed of nine Department of Homeland Security regions. Six of these, plus one in Oregon, participated in this exercise. Each of these participating regions is designed with one hospital that functions as "Disaster Medical Hospital Control" (DMHC) to coordinate the activities of the hospitals in that region. In our quest for seamless access, the DMHC in Portland, Ore. actually coordinates several hospitals in Washington, assuring that metropolitan-region hospital coordination is independent of location. In addition to the DMHC, the amateur-radio community has a Med Net Control Station which interfaces communications among all the hospitals on the amateur-radio frequencies. The Med Net Control Station and DMHC are typically not in the same location, to assure redundancy and account for the different activities (coordination vs. communication). All hospitals within a region intercommunicate. The DMHC coordinates within its designated region and to all other DMHCs in Western Washington. The amateur radio stations function similarly but with a central "Med Net" Control Station located at a hospital in the Seattle metropolitan area.

Recently, federal HRSA (Healthcare Resources and Services Administration) bioterrorism funds are being used to insure hospitals have new amateur-radio equipment. Each hospital is equipped with two radios capable of independent operation on two different (VHF and UHF) amateur radio bands. This equipment has been standardized not only in make and model, but in channel programming. The same channels are installed in all hospital-installed radios. A number of hospitals participating in this drill used this newly installed equipment. The cost of the amateur radios and antennas is typically just a few hundred dollars. Typically the greatest cost is installation of the half-inch cable from the radios to the antenna on the roof.

One benefit of using amateur radio is the variety of communication methods that may be employed. In this drill, voice communications on two meters (VHF), six meters (VHF), 70 centimeters (UHF), High Frequency, computer Internet Linking protocol (IRLP) and packet (text) messages were all used and tested. This flexibility is an advantage during long-term events as normal channels become more congested. Additionally, Washington has some difficult geographic challenges for radio communications, and the amateur-radio operators are adept at resolving or finding an alternate method of communicating.

Other regions have adopted this hospital-specific amateur-radio communications system. The states of Hawaii and West Virginia, as well as Orange County, Calif., are the most notable. The hospitals in Washington have many emergency-preparedness activities planned for the future. The amateur-radio operators of the Medical Services Team continue to strive to add additional capabilities, training and expanded geographic reach

with each drill. In Washington, the planning is typically around the “big earthquake” and resulting tsunami. With several levels of redundant communications systems, including amateur radio, Washington’s hospitals will attempt to assure communications failure is not part of the event.

About the Authors

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