Advice for Minnesota Hospitals and Hams working with hospitals 3/08

Jack Maus, W0MBD has been spearheading a project out of St. Cloud to get hospitals in Minnesota to develop reliable backup radio communications capabilities. Amateur Radio is a good way to get this job done. This supplements phones, faxes, sat phones, etc. Think about what you do when the systems you use every day stop working. What they are doing:

1. Find licensed Amateur Radio operations in the area of the hospital- www.qrz.com   has a lookup function- you can search by zip code to find local operators. (Note: - Amateur Radio operators are *individually* licensed by the FCC. You are not required to work with any specific groups or organizations. You can pick and choose individuals or groups that best meet your needs as an organization).

2. Decide on your plan- most hospitals (40%+ of all hospitals in MN so far) are putting in FM VHF/UHF voice and data capable radio systems to start. These are called "dual band 2M/440 FM" radios in ham lingo. **We are now (9/06) advising hospitals to purchase only D-Star capable equipment.** This equipment was not available until recently but is fast and modern. We will be installing more D-Star "repeater" systems over time as we get grant funding and donations. The main D-Star data system is 90k bits/second using the Icom ID-1 radios, which is fast enough in production here for web based applications like the Minnesota Department of Health Workspace and the Red Cross Missing Persons database. The Icom ID-800 (and newer models) radio will work with current FM voice, current packet (via an external TNC like the KPC-3) and is ready for low speed D-Star.

D-Star and the ID-1s have been plug and play for web based applications and Internet access in our testing (5/7/2007). You can use D-Star for hospital-hospital use as well.

3. **Put up a permanent outside antenna (or two)**. Hospitals

are often heavily built with lots of metal framing/rebar and are well shielded against radio signals getting in or out. A well-grounded 8 foot fiberglass whip "Tri-Band" like a Comet GP95 is ideal on the roof, with a 1/2 inch diameter coax cable like LMR-400 run to the emergency communications location inside. Better coax cable (like 1/2 inch hardline or 7/8 hardline- Andrew etc) is a good investment. A source of reliable 12 volt DC power at >10 amps is required. The two/ three piece inexpensive fiberglass ham antennas with black plastic center couplings do not hold up well on tall commercial roofs due to wind flexing in our extensive experience.

We visited a corporate Security Operations Center recently. It was very well done and very cool. But it was indoors away from windows and hand held radios and cell phones were well shielded. One idea mentioned by Greg Kitchak was to have an antenna on the roof, and a piece of feedline to the operations center, and another antenna of the same type inside the room, which would act as a passive repeater of radio signals. One would be tempted to do this for whatever public safety radios were used, so when the Fire Captain or Police Chief shows up to help you in an emergency, his/her radio would work. Just having an antenna on the roof and feedline and the right connector might also work, so they would plug in their radio if the built-in antenna could be detached.

4. For voice, you are all set to talk to the 11,000 licensed hams and the 200 amateur radio owned and operated FM analog voice repeaters in Minnesota for a 10-30 mile range. For packet radio, connect to your nearest "node" above. You can then connect to the station you are asked to connect to for the drill, etc. Conferencing is available at the BBS locations on the map above. Regional bulletin board/mail servers are being deployed in all areas for mail use.

5. **The MN State Warning Officer (3/06) suggests that Hams do *not* rush to hospitals if a Pandemic Influenza outbreak is reported, as they would be subject to quarantine. Stand by at home for instructions.**

6. Get to know your local MN Public Health Officers (one per MN

County) as they have a critical /leadership role in health emergency management.

7. Putting in Amateur HF equipment and antennas gives you advanced capability including Statewide/National/Global range and access to HF Airmail, a radio based email system.

8. There is a strong interest by some groups in building new 2 meter legacy analog FM voice repeater systems. There are almost 200 amateur owned FM voice repeaters operating in Minnesota, and **no more open frequency pairs for new ones on 2 meters**. Use/support/ upgrade the ones we have.

9. Given the investments that our Minnesota Amateur Radio dealer, Radio City of Mounds View, has made in emergency communications ($60,000 worth of D-Star inventory in 2007 and six donated repeater systems) we are baffled why so many hospitals are buying their amateur radio gear from out of State.

10. Hospital employees can get an Amateur Radio license, but need to be careful of the legal restrictions on being paid to use Amateur Radio. So you can supervise and coordinate the work of volunteers. But you can't send messages while being paid. You can use the equipment in a real emergency, to help protect life and property. Just not on a routine basis.

11. Beware of the need in some cases to run (costly- $10/foot) plenum fire rated coax cable for radio signals inside of buildings. Read the electrical code carefully. Ground everything. In our experience with >20 sites over 20 years, we have never **ever** had properly grounded radio equipment or antennas hit by lightning.

12. The Amateur Radio Service is not allowed to use encryption on our radio frequencies. We can help you build encrypted databases, and encryption is allowed on commercial equipment and frequencies, but not on our radios. So moving patient specific condition information is not in the rules. There are lots of things we can do as community volunteers to keep your facility up and running and taking care of patients in a disaster without transmitting medical records

care of patients in a disaster without transmitting medical records information on our radios. We can handle logistics and assignment of people and track the location of patients. We are an ideal link to the outside world, but if it's a HIPAA issue, we will turn to a commercial device or service.   For the Marathon, one of our folks does handle and safeguard sensitive health records on a computer but it's one on one, in our role as backup IT staff in field medical facility - a role we might play in a real emergency. So in an emergency, you have five doctors, six nurses - do you take someone with patient care skills and have them run a computer, find a printer with paper in it, and repair the diesel generator, or do you call us?