

## Emergency Preparedness in North Carolina: Leading the Way

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North Carolina is situated in an ideal climatic location to be at risk for natural disaster. Hurricanes, ice and snow storms, and tornadoes all strike the state with fair regularity. As such, the emergency responders in North Carolina have had to develop and hone their preparedness skills and maintain a state of readiness. They do not have the luxury to let down their guard. Man-made disasters such as recently experienced in the chemical fire in Apex or the pharmaceutical plant explosion in Kinston also test the preparedness of our responders on the front lines.

Changes in the environment in which we live require constant surveillance and assessment of threats in the community. Recent experiences with SARS in Canada and the isolated case in Chapel Hill dramatically illustrate the effect of new pathogens on communities. As we watch the progression of avian flu in the world, EMS must be ever vigilant as both they and the emergency department are likely to be the first to report the spread of disease in their environments.

In addition, the practice of medicine has evolved in the last few years. Hospitals have fewer available beds due to downsizing, nursing shortages, and minimizing the financial margin. Medicine has begun to emphasize home care. Patients are discharged from the hospital sooner and sicker. There is a smaller margin of error for these patients. More patients are maintained at home on ventilators, home oxygen, and in bed-bound states. When disaster strikes, these patients are most at risk. Finally, our emergency departments are overcrowded with admitted patients awaiting an available and clean bed, making surge capacity slim.

The last 10 years have taught several major lessons to EMS, hospitals, and the medical community at large. First and foremost, we have recognized that hospitals do not provide medical care in a vacuum. Hospital disaster plans used to focus solely on the hospital and were primarily mass casualty plans. We now see hospitals, the medical community, EMS, fire departments, and law

enforcement working together with public health and emergency management to develop comprehensive community-wide plans. Lines of communication and coordination are being established before events. As mandated by the Joint Commission on the Accreditation of Healthcare Organizations, hospitals have embraced this community approach to disaster preparedness and are partners with EMS in emergency preparedness.

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Responding to a major statewide disaster such as experienced on the Gulf Coast in 2005 is not a matter of if but when. “Will North Carolina be ready?” is the question many emergency planners are asking. In the past 6 years, funding for preparedness equipment and activities has increased substantially thanks to the attention of the federal government in the wake of the 9/11 events. Planners have also embraced the notion that disaster preparedness must be scalable, flexible, and sustainable. Cross-institutional planning between emergency responders, hospitals, community officials, and industry has resulted in more robust,

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comprehensive, and integrated plans that allow a community or region to react in concert to mitigate the effects of disasters.

As required by Homeland Security Presidential Directive-5, adoption of the National Incident Management System by all emergency responders (eg, hospitals, EMS, public health) has allowed for a common language and better communication among providers. Incident command uses the concept of management by objective and is task-oriented rather than person-oriented.

Mass-casualty incidents affect particular segments of communities, but disasters have consequences that are felt across entire communities and regions. An "all-hazard" approach to emergency preparedness has demonstrated the greatest potential for success. In an "all-hazards" model a standardized framework for disaster response is developed and followed with the ability to supplement response with specific entities such as decontamination as the incident dictates. While the federal government offers substantial assistance in the event of a disaster, this help may be days to weeks away and communities have to plan to be self-supporting for 72 to 96 hours.

## Where Does North Carolina Stand?

North Carolina's emergency responders stand at the forefront of emergency preparedness compared to the rest of the nation. The North Carolina State Medical Response System (SMRS) is a joint partnership of the North Carolina Office of Emergency Management, the North Carolina Office of Emergency Medical Services, and the North Carolina Department of Public Health. Role modeling at the state level the partnerships that are most effective in emergency preparedness, the SMRS has set the standard for both regional and local level preparedness. Utilizing a comprehensive approach based around the administrative organization of the Trauma Program's Regional Advisory Councils, the SMRS has set up several layers of emergency preparedness.

The central concept of SMRS is that it is scalable and flexible. Incorporating assets at the local, regional, and state levels, the SMRS is able to mount an integrated response with common equipment, protocols, and training. At the core of this response is the State Medical Assistance Team program (SMAT) with tiered levels of team response. The SMAT layers are based out of county (SMAT 3), regional (SMAT 2), and state (SMAT 1) bases. This concept has been proven effective in responses to tornadoes and the recent Apex chemical plant fire as well as responses to Hurricane Katrina.

Through Health Resources and Services Administration (HRSA) grants, North Carolina has provided funding and other resources for individual counties to develop SMAT 3 teams. While not required, counties are encouraged to develop and maintain the training for SMAT 3 teams. At present, 25 counties have taken advantage of this opportunity. Primarily prehospital in orientation, these teams have the ability to rapidly set up technical decontamination systems to deal with weapons of mass destruction (WMD) or hazmat events. SMAT 3 teams also have the ability to assist with onsite medical care and triage in a mass casualty incident and are currently undergoing training to deal with blast injuries and structural collapse events.

Each of the 8 trauma regional advisory councils (RACs) in the state serves as the sponsor for a SMAT 2 team. These teams have the ability to support hospital based decontamination as well as provide care in a portable 50-bed medical facility that can be set up in either temporary shelters or fixed structures. Each facility is contained in a 55-foot tractor trailer (See Figure 1.) and can be used as a stand-alone acute care or alternate care facility. The units can be utilized in combination forming a larger medical facility with maximum surge capacity of 400 beds for our state. To form the SMAT 2 response, each hospital within a RAC commits a few staff members to support the SMAT operation based upon the size of the member hospital. SMAT 2 operations are thus enabled without compromising the staffing of any one medical facility. Members of the SMAT 2 team train with the system on an annual basis and, in addition to disasters, the units have been deployed to support events such as the Tall Ships sail in Beaufort last summer. Current purchases to augment the SMAT 2 operations include 2 portable digital field x-ray systems for the state, 3 pharmacy trailers, and a stock of portable ventilators.

The SMAT 1 is based at the Special Operations Response Team (SORT) headquarters in Winston-Salem. Containing a

**Figure 1.**  
**NC SMAT 2 Trailer**



more robust decontamination capability to deal with large-scale WMD events, the SMAT 1 inventory includes a tractor trailer-based field hospital and an 80-bed special medical needs trailer, which allow set up of a special needs shelter in a fixed facility. The Special Operations Response Team also maintains a tractor trailer with basic medical supplies for deployment during disasters as well as a rapid deployment field medical unit.

Carolinas Medical Center in Charlotte has developed and deployed under government funding a tractor trailer mounted intensive care unit and operating room facility called MED 1. Serving as the critical care area during the NC SMAT deployment to Waveland, Mississippi during the aftermath of Hurricane Katrina, the team has received extensive media coverage and accolades.

Public health has not been neglected in the process. Funding has been provided to increase training of public health agencies across the state and to upgrade laboratory facilities for the Division of Public Health to allow for timely diagnosis. Seven public health regional surveillance teams (PHRST) have been established and are operational, providing both technical support and epidemiological tracking for unusual diseases in our state. Lastly, the North Carolina Health Alert Network (NCHAN) uses a multimodel system for 24/7 distribution of health related information to health departments, medical facilities, and response agencies.

In a related function, the NC State Medical Asset Resource Tracking Tool (SMARTT) has been successfully deployed. It allows hospitals to enter bed status and availability in real time so that planners can use this information to allocate patients and assets during real events. The SMARTT system will eventually include EMS responders, special teams such as

hazardous materials teams, and local clinics and physicians' offices.

Much has been done, but there is still much to do. Dealing with the special needs populations remains problematic and unsolved. Development of SMAT 4s to specifically address the special needs communities with input from home health agencies and nursing facilities is now underway along with a system to track medical records and medications for this population. Special needs equipment is being purchased and stockpiled. Dual use capability of special needs equipment is being pursued with home health agencies and community colleges across the state. Equipment can be used to train nursing and allied health professions students on a daily basis and, in an emergency, equipment would be used by the students and other health care providers to provide a special needs shelter on the campus in a coordinated manner, with all the necessary assets centrally located for the region.

North Carolina is extremely fortunate. Due to our cooperative approach, North Carolina is a leader in disaster response and states across the southeast are emulating our system of tiered response. We cannot rest on our laurels. We must continue to examine the risks and adapt our preparations. Finally, as practitioners we must realize that the victims we discuss are our patients. Therefore, we must take an active part in the preparation for and the provision of disaster medical care by volunteering to serve on a team, being certain that our practices can and do remain open in the event of a disaster or other incident in our communities, or being personally prepared with our families for disaster. Above all, we must remember that disaster response is really the ultimate team sport and that we are fortunate to be part of a top team. **NCMJ**

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