Emergency Preparedness for Rural Communities Policy Paper
Tara Haskins, David Barney, and Bishow Paudel

I. Introduction

An Emergency Preparedness Plan is imperative for rural communities as many rural communities have limited resources compared to urban areas, such as human resources, financial, distribution and access challenges. Many rural communities rely heavily on the reimbursements from the Centers for Medicare & Medicaid Services (CMS) given the high percentage of rural residents covered by Medicaid and Medicare, and rural health care providers must comply with CMS emergency preparedness requirements to be eligible providers. For example, CMS requires that rural hospitals have an Emergency Operation Plan (EOP) in place, and Rural Health Clinics (RHCs) and Federally Qualified Health Centers (FQHCs) have an Emergency Preparedness Plan in place. Other rural health care providers who receive Medicare and Medicaid reimbursement, such as home health and nursing homes, must also comply with CMS emergency preparedness requirements. This policy brief addresses some of the areas of opportunity for Emergency Preparedness for Rural Communities

II. Statement of the Issue

Fostering Community Involvement

There have been studies conducted on the vulnerability in urban communities in the United States, however, very few studies exist on how rural communities and the residents who respond to natural and man-made hazards.[1,2] Rural health care providers and first responder agencies are widespread geographically. To test preparedness, functional exercises provide an evaluation of command staff, identification of areas for improvement, and advance regional collaboration among diverse response partners among rural organizations.[3]

The coordination of local, regional and national stakeholders is important for emergency preparedness. Diversity among stakeholders, decentralization of local health care systems and availability of limited resources contribute to emergency preparedness challenges. While some stakeholders, such as hospitals and local emergency medical services, consistently work together, other providers (e.g., primary care clinicians and nursing homes), are not often integrated in local coalitions.

Local coalitions can be incentivized by defining and analyzing processes associated with collaboration, such as coalition membership and development of planning documents, which include the outcomes expected for a successful collaboration in the event of a disaster.[4] Broad, multisector participation is important to build capacity. This

has been illustrated in the public mental health emergency planning as leaders from public health, faith communities, education, and academic health centers worked effectively to execute a practical, effective, and widely applicable model of capacity building at multiple levels.[5] Similar broad multisector participation may be feasible for other components of the emergency preparedness plan.

Addressing a Rural Culture of Readiness

Emergency management professional and partner agencies should understand the local needs, concerns, and perceptions to create and sustain partnerships both before and after a disaster.[6] Rural communities often have less diversified economies with fewer financial support for disaster planning, response or recovery when compared to the urban areas. Rural communities also encounter challenges due to smaller pools of response personnel and insufficient communication systems than urban communities.[7]

It is important to recognize that just as rural areas differ from urban areas, rural communities are not homogenous. As such, rural community assessments for disaster preparedness must be tailored to the community. The vulnerabilities of rural communities need not hinder a rural community's ability to respond or recover as long as the community is provided the skills and processes to build an effective plan that meet their needs.[8] High levels of trust and familiarity among community members have been shown to facilitate effective disaster response and recovery.[9]

Additional Rural Considerations

An agrarian livelihood creates unique situations to consider for the planning and management of a disaster. The loss of agricultural economic base in rural communities due to disasters creates ripples that spread through a community quickly. Migrant populations seen in more significant numbers in agricultural areas are particularly vulnerable due to language, communication and extended response times. Interdependence typically seen as strength of rural communities may be a weakness during recovery efforts (Kapucu, Hawkins, & Rivera, 2013).[10]

Unique issues specific to agricultural based communities are not addressed in urban disaster planning, such as the role that livestock ownership plays in rural residents deciding to evacuate. Hurricane Katrina and Rita and recent coastal flooding highlighted the importance of addressing the evacuation of animals. Rural residents are more willing to evacuate if provisions for livestock and animals are part of the disaster planning process for the community. These provisions have a direct impact on mitigating injury and death for rural residents during disasters (McConnico, 2018; McConnico et al., 2007).[11,12] Farm flooding creates specific challenges for rural communities increasing the risk of zoonotic diseases, water and pesticide contamination in the surrounding areas. Rural health care providers and health facilities need to identify symptoms of illness as well as implement appropriate treatment and care.

Targeted education and awareness within the communities at risk for these exposures are critical to disaster planning (AgriSafe, 2018).[13]

Mass Casualty Incidents

A mass casualty incident (MCI) in a rural community involving a small number of people may overwhelm the local health care system. 2011, the Institute of Medicine (IOM) Forum on Medical and Public Health Preparedness for Catastrophic Events identified rural challenges and discussed potential solutions to address the problems. Solutions for rural response to MCI could be achieved by:

1. Addressing daily capacity and capability through expansion and integration of EMS with public health medicine across local and state jurisdictions;
2. Establishing a collaboration for a single and a comprehensive guidance involving the public and private stakeholders to maximize resources;
3. Coordinating with the federal grant mechanism; and
4. Developing and sharing the best practices among stakeholders (Viswanathan, Bass, Wijetunge, & Altevogt, 2012).[14]

Potential best practices for rural MCI response could also be identified by the Federal Emergency Management Agency (FEMA), the National Aeronautics and Space Administration (NASA) and the U.S. military. These organizations incorporate vehicle tracking, crash notification, automatic weather reporting, preferred travel corridors and established command and control systems that integrate local, state, and federal emergency response using a common operating structure (Viswanathan, Bass,Wijetunge & Altevogt, 2012).[14] Public universities are incorporating military developed MCI modeling and simulation scenario training in EMS and physician training. Effective policies should address minimizing the regulatory obstacles and sharing best practices across industries.

Rural mass casualty preparedness and response coalitions should consider seeking grant funding from public and private sources to augment resources for training and equipment. These coalitions can also identify community resources, such as personnel, equipment, vehicles, communication systems, and telemedicine resources to enhance preparedness efforts (Viswanathan et al., 2012).[14] Other ways to strengthen local preparedness is to incorporate school health services in rural disaster health planning as part of the healthcare team. Rural school districts may consider developing complementary disaster plans using current recommendations, processes and resources tailored for their community (Doyle, 2011; Graham, Shirm, Liggin, Aitken, & Dick, 2006).[15,16]

While 25% of the U.S. population are children, there are significant gaps in pediatric disaster preparedness and management across the country (Burke, Iverson, Goodhue, Neches, & Upperman, 2010).[17] Use of robotic technologies has proven successful for

Pediatric specialists in providing remote triage and treatment consult of victims (Burke et al., 2012).[18]

Communication – How to Communicate with and without Technology

Wireless Internet Information System for Medical Response in Disasters (WIISARD) project uses electronic health records (EHRs) for the care of victims of mass-casualty events and disasters. The Mass Casualty Patient Allocation Model could be used in the field to transfer real-time information of the victims including casualty counts, time to drive to hospital, and hospital bed size for effective management of patient evacuation from one or more MCIs (Amram, Schuurman, Hedley, & Hameed, 2012).[19] A study by Boniface, Shokoohi, Smith, and Scantlebury (2011) demonstrated paramedics without prior ultrasound experience could obtain Focused Assessment with Sonography for Trauma (FAST) images under remote guidance from experienced professionals.[20] Such information can be used for pre-hospital assessment and appropriate triaging. Various real and simulated disasters use telehealth technologies. Telehealth applications include: ambulatory/primary care, specialty consultation, remote monitoring, triage, medical logistics, and transportation coordination.[21]

Cyber Threats Pose Unique Challenges for Rural Health Care Providers

With changing economics and ever-growing use of computers, devices, and cloud-based storage; the awareness and action plan of cyber threats is important. These threats are increasing within the healthcare industry data breach has a combined estimated cost of about US $6 billion [22]. The WannaCry malware attack in May 2017 highlighted an important patient safety consideration requiring urgent attention and effective solutions.[23]

Current data policies primarily address data privacy, however, more attention needs to be directed to data security efforts. The chief information officers and chief information security officers of health care organizations should enhance cybersecurity, focus on reducing endpoint complexity, and improve internal stakeholder alignment.[24] This includes training staff members regarding proper technology usage.

Removing Barriers to Enhance Disaster Planning, Emergency Response and Recovery Efforts Multistate Professional

Practice Barriers related to practice scope, licensure portability, credentialing, and liability for volunteers became evident after Superstorm Sandy.[25] Effective planning and coordination from federal, state, and local governments and nongovernmental entities (e.g., public/private schools, local businesses, pharmacies etc.) require that protocols be put in place before, during and after any disaster.

Multistate licensure for healthcare providers shows great potential in the development of the healthcare workforce for rural health general practice, telehealth, and disaster response.[26] Currently, there are thirty-one states in the Nurse Licensure Compact (NLC), which removes barriers for nurses to practice across borders and respond quickly to other state disasters within the NLC. The NLC also makes multi licensure more affordable for healthcare providers and healthcare facilities that choose to share the cost of licensure as part of recruitment to rural communities.[27,28] Model legislation, available through the Nurse Compact Licensure initiative, could help the 15 states and territories that currently have no NCL legislation pending.

For pharmacy professionals and personnel, states lack consistent regulations covering out-ofstate practice in the event of a disaster. Some pharmacist must apply for a temporary license, while other state boards waive this requirement during a disaster. Furthermore, the function of the pharmacy technician in a disaster varies from state to state. The immediacy of needed medications and pharmaceutical response would benefit from compact licensures or at least compact emergency regulations. Additionally, expanded roles for pharmacists also varies in disaster relief from state to state. The continued loss of pharmaceutical services in addition to hospitals in rural areas only amplifies this problem.[29]

Multidisciplinary Training of Rural Health Professionals and Community Residents

Many healthcare educational programs across the U.S. include some type of disaster educational content for healthcare professionals. Nurses surveyed in a rural hospital in Texas reported low to average confidence in their disaster response abilities. Forty-five percent of rural nurses in Ohio felt they were less familiar with disaster preparedness. Forty percent reported concern they would not be effective asked to respond to disasters. Previous participation in a disaster or recovery efforts correlated with improved perceived preparedness.[30,31]

Existing preparedness competencies in rural communities are less than optimal. Hands-on disaster training has shown to improve competencies and outcomes for healthcare providers. Rural areas are challenged to provide rural hospital personnel and emergency responder joint training. Stretched resources and negative margins create barriers for testing, training and executing disaster exercises for rural communities and their rural access hospitals.

Rural hospitals and emergency systems are likely to experience both coordination and financial challenges. Conducting mock disaster scenarios or providing additional education for employees could potentially strain budgets and resources. A cost-effective strategy to improve competencies could be to utilize a site-specific, multi-disciplinary, computer- modeled training course, that includes interdisciplinary didactic and functional exercise training.[32] Using a computer-based simulation modeling approach (to analyze complex social systems could be a useful tool for rural disaster planning. Additional

applications of this technology could be beneficial to sustain competence in disaster skills, coordinate medical care, leverage community health resources, and coordinate community-wide efforts across agencies.[33]

Medical schools could improve in their efforts by involving community members in the process of identifying local health priorities. New agendas on community partnerships with medical education should place a priority on community accountability.[33] The inclusion of willing rural residents in the process of education and disaster training addresses rural culture characteristics of the community. Resource assessments for disaster planning should include lists of community members who are willing to respond to disasters and the resources they share, such as large equipment, communication abilities (e.g., translation and sign language), and expertise. Community assessments could include identification of those willing to function in a community health worker role and levels of training needed to perform in a disaster.

Community health workers (CHW) are effective in improving health outcomes, and can perform a wide range of duties such as connecting people with health care and community resources, identifying health care needs, collecting data, record keeping, sanitation, first aid, and serving as an adjunct to healthcare professionals. These CHW roles could be vital in rural disaster planning, recovery and response. The World Health Organization (WHO) completed an extensive review of CHW advantages and challenges to consider when building a successful program.[35]

The Gulf Region Health Outreach Program developed a disaster preparedness curriculum for training CHWs in disaster response/recovery, and disaster resilience. Training CHWs using Extension for Community Healthcare Outcomes (ECHO) model distance education has been effective in New Mexico when compared to traditional face to face didactic models and could be developed for disaster preparedness training.[35] Rural Health Information hub provides excellent resources for community health worker (CHW) programs outlining a variety of models, application and roles for rural residents. Search of this site did not yield specifics for rural CHWs functioning a disaster setting. Guidelines for CHW in rural disaster scenarios would be helpful and facilitate full engagement of residents in disasters would require the assistance of rural residents in an expanded capacity.[37] Programs such as "Stop the Bleed" have been successfully implemented across the nation using general community training and provide an excellent adjunct to licensed healthcare provider skills.[38]

Available mental health support services are scarce in rural areas. Disasters only amplify the deficiencies of current mental health resource in rural areas. The Mental Health First Aid rural model is has shown some success in rural areas to meet every day mental health needs. Application of these models in disaster preparedness rural training has the potential to address disaster needs for rural communities regarding crisis intervention, building resilience, and maintenance of mental health.[39]

Our current knowledge of the interplay of rural populations and effective disaster response is insufficient to fully inform providers and policymakers about appropriate management or allocation of resources during rural disasters. Rural communities need opportunities to participate and guide future research, improve the knowledge base and strengthen the rural voice.[40] Funding support at the federal, state and local levels to develop and evaluate successful models for rural community disaster planning and response is needed.

III.   Recommendations

1. Support development and funding for multi-sector coalitions in rural communities to create a community focused plan with input from all stakeholders that maximize resources available locally and in collaboration with neighboring urban communities.
2. Support the development of disaster plans that address rural culture and unique challenges of agriculture based communities that include farms and livestock.
3. Support policies that address the critical need for a robust communication infrastructure to make disaster response (phone, internet, and telemedicine capabilities) in rural communities effective.
4. Address the threat of cyber attacks and data security for rural hospitals, and include special provisions for disaster situations.
5. Encourage policymakers at the local, state and national levels to support national licensure compacts.
6. Support policy and funding to improve the education and multidisciplinary training of rural healthcare providers to work collaboratively with local organizations and residents.
7. Support best practices and innovative models that incorporate rural residents to actively participate in disaster planning, response, and recovery.
8. Prioritize research and outcomes metrics of disaster simulations, response and post disaster assessment for recovery in rural communities.

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