

## Responding to Medical Surge in Rural Communities: Practices for Immediate Bed Availability



### Background

Natural disasters, severe disease pandemics, and terrorist attacks have the potential to result in hundreds, thousands, or even tens of thousands of ill or injured victims. During such events, the healthcare system in the affected area is likely to experience a “surge” of patients requiring medical treatment beyond normal operating capacity. One approach to address medical surge within the current healthcare system is the practice of immediate bed availability (IBA)—the means to provide adequate levels of care to all patients during a disaster.<sup>1</sup> This report explores the implementation of IBA in the context of rural healthcare settings.

Practices for implementing IBA and addressing medical surge vary based on community and local health care capabilities, resources, and laws/regulations. As part of efforts to better understand and address the unique needs of rural healthcare related to IBA, the U.S. Department of Health and Human Services (HHS), Assistant Secretary for Preparedness and Response (ASPR), asked the National Association of County and City Health Officials (NACCHO) to identify promising practices that local health departments (LHDs) and healthcare coalitions are using to plan and execute IBA in rural communities.

ASPR, as part of the Healthcare Preparedness Program (HPP), released guidance defining program measures and indicators for medical surge, such that IBA is the “ability [of healthcare coalitions or HCCs] to provide no less than 20 percent bed availability of staffed members’ beds, within four hours of a disaster.”<sup>2</sup> In other words, IBA seeks to “free-up” 20 out of every 100 beds within a healthcare coalition for higher acuity patients with no new space, personnel, or equipment. Operationally, to absorb the surge created post disaster, a HCC

achieves IBA through the processes of off-loading non-critical patients; on-boarding the most serious patients; real-time, continuous monitoring of patient needs and healthcare resource capacity (e.g., available, staffed beds, equipment) across all HCC partners; and tracking patient movements.<sup>3</sup>

For this report, NACCHO conducted a literature review and synthesized feedback from local and state health departments and HCCs captured during interviews, workgroup meetings, webinars, surveys, and NACCHO’s 2014 Preparedness Summit. In addition, NACCHO interviewed state and local representatives in four jurisdictions—Mississippi, Southwest Utah, Virginia, and Southeast Texas—to illustrate how strategies for IBA are being implemented in rural areas. These communities, which represent state and local health departments, were identified through outreach to NACCHO’s Preparedness Policy Advisory Group (PPAG), Surge Management Workgroup, and the National Rural Health Association.

While practices such as off-loading, on-boarding, and patient tracking are a normal part of healthcare operations, application of IBA during medical surge, particularly in rural areas, is still a relatively new concept and less understood. This report is not intended to illustrate the full scope of IBA in rural regions, nor does it capture all promising practices in the execution of IBA; rather, it is a first step in understanding the inherent challenges of rural IBA and how some state and local health departments are addressing these challenges. NACCHO’s and ASPR’s goal in developing this report is to share practices for IBA that may apply to other states and localities serving rural populations who are seeking to improve medical surge planning in their regions.

# Approaches to Immediate Bed Availability that Meet the Needs of Rural Communities

Through information collected during interviews with state and local health departments serving rural communities and feedback from members, NACCHO identified four strategies that may enhance the ability of rural health departments and healthcare organizations to meet the needs of their community during an emergency resulting in medical surge. These strategies, and specific examples of practices implemented in rural communities, are described below.

## 1. Establish and Leverage Partnerships

Effective local partnerships set the stage for well-coordinated medical surge planning and response. Many rural LHDs have established formal and informal relationships with hospitals, long-term care facilities, clinics, dialysis centers, Federally Qualified Health Centers, emergency medical services, and pharmacies and should continue to strengthen these partnerships. LHDs may also consider working with healthcare organizations in their jurisdictions to designate a liaison or formally integrate with larger, regional healthcare coalitions in neighboring suburban or urban communities to extend their reach and available resources during a medical surge.

Additionally, rural LHDs have had success building partnerships with religious institutions, schools, community centers, and local businesses. These non-traditional partners are often trusted members of rural communities and may be able to lessen the burden on healthcare facilities by providing shelter, food, resources, emotional support, or information to community members displaced during an event or who are trying to locate family members. While the composition and governance structure for these partnerships will differ across communities, by pooling their collective expertise, funds, staff time, and equipment, partners in rural communities can help alleviate challenges related to limited infrastructure, resource constraints, and smaller workforces.<sup>4</sup>

### IN PRACTICE: SOUTHWEST UTAH PUBLIC HEALTH DEPARTMENT BUILDS PARTNERSHIPS TO EXPAND CAPACITY AND ASSIST IN MEDICAL SURGE

The Southwest Utah Public Health Department covers five counties and approximately 17,000 square miles, the majority of which are rural. The total population is 215,000; however, the Zion and Bryce Canyons, as well as the Lake Powell tourist regions of Southwest Utah, bring between two and three million visitors to the area each year. Should a large-scale disaster occur with mass casualties, Southwest Utah's medical infrastructure could become quickly overwhelmed by patients needing all levels of care.

To address this scenario, Southwest Utah has focused on building a coalition of traditional healthcare partners and developing non-traditional partnerships. The Southwest Utah Preparedness Coalition, which is hosted by the local Southwest Utah Public Health Department, includes hospitals, emergency management, air transport, and long-term care facilities in Southwest Utah and neighboring regions. Coalition members participate in regular exercises testing their ability to update bed and resource capability using the state-wide Utah Healthcare Resource Management System (UHRMS) and identify triggers for when to request additional resources from the coalition.

The Southwest Utah Public Health Department (and the Coalition) have also established relationships with local community organizations to supplement hospital medical surge capacity. For example, they have collaborated with local emergency management groups, schools, churches, and sporting venues to activate these larger facilities as temporary shelters, triage, and/or medical facilities for individuals that sustain less severe injuries during a disaster. They have also developed partnerships with the mental health and faith-based communities in Southwest Utah. These groups have helped provide preparedness education to community members and could be leveraged during a disaster to communicate important information or provide psychological and spiritual support. Through building these partnerships, Southwest Utah's LHD is able to supplement the resources of the Coalition at the local level and help alleviate the surge of patients on hospital facilities in the community during a pandemic or disaster.

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### 2. Focus on Sustainable Practices

Rural jurisdictions commonly cited reductions in healthcare preparedness funding, lack of additional space and equipment, and a shortage of healthcare workers as barriers to implementation of IBA. To address these challenges, some rural health departments are focusing on the sustainability of healthcare coalitions and innovative information technology platforms.

#### Building and Sustaining Healthcare Coalitions

The healthcare coalition or other partnership is key to implementation of IBA in rural communities because it allows individual healthcare facilities with limited capacity access to the collective resources of a network of providers. As such, many HCCs, whether LHD-hosted, quasi-governmental, or private, non-profit entities, are exploring and implementing innovative models and funding mechanisms to help support the long-term sustainability of the partnership. For example, some healthcare coalitions are being transitioned from local or state government-managed to non-profit models [i.e., 501(c)(3)] financially supported by federal grants and membership dues, charitable giving, events, vendor showcases, fee-for-service arrangements, and competitive bidding awards. LHD-hosted coalitions are stretching available federal funding by transitioning to regional models, investing in coalitions, coordinating resources to meet multiple legislative requirements, and centralizing technical assistance.

Other LHDs and healthcare coalitions in rural areas are leveraging their state's health department and non-monetary resources to engage partner organizations in coalition activities, including exercises and planning for IBA. Although

these incentives are targeted at building and sustaining HCC membership and participation, these efforts ultimately impact LHDs' and HCCs' ability to execute IBA adequately and manage medical surge situations. Some examples of non-monetary incentives are described below:

- Utah's healthcare coalitions, most of which are LHD-hosted, have developed program targets that align with Centers for Medicaid and Medicare Services (CMS) emergency management rules and the public safety community (e.g., National Guard) to convene a yearly exercise in each region where all HCC members can participate.
- In Pennsylvania, which has nine regional HCCs based on task forces that are legislatively mandated, the state department of health offers free resources for planning, exercises, and response efforts to each of the HCCs and individual healthcare facilities. These resources include regional field staff, mobile medical assets, communications equipment, prescription and equipment caches, and a web-based emergency management system that is available to all healthcare organizations.
- The Texas Department of State Health Services hospital preparedness program and HCCs are building and refining emergency medical task force teams to support hospital preparedness and response efforts at regional and local levels; the task force teams can exist and function without HPP funding and include ambulance strike teams, mobile medical units, nurse strike teams, and ambulance buses for use during actual events.
- The Mississippi State Department of Health, as highlighted in detail below, uses its bed capacity tracking system for routine and emergency purposes, ensuring that users are both trained and familiar with the system while also systematically reinforcing the value of information sharing across the partnership.

Rural LHDs have also successfully leveraged and developed relationships with formalized volunteer groups, such as the Medical Reserve Corps (MRC), to augment medical and emergency response staff during an emergency situation. MRC units should be included in advance planning efforts with coalition members. For more information on the MRC, including resources, visit [www.medicalreservecorps.org](http://www.medicalreservecorps.org) or NACCHO's MRC Resource Center <http://www.naccho.org/topics/emergency/MRC/resources/>

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### Leverage Innovative Information Technology

Rural healthcare organizations may also be able to overcome geographic and infrastructure barriers by leveraging technology to lower healthcare costs. Several jurisdictions have implemented telehealth programs for normal and emergency operations to help reduce costs associated with building larger facilities, hiring more personnel, and maintaining additional capacity. Two examples of successful implementations of telemedicine to serve rural populations are in Mississippi and Virginia, highlighted below:

#### ■ **Mississippi: Using Telemedicine to Care for Rural Communities and Manage Medical Surge**

In over half of Mississippi's counties, individuals must travel 40 minutes or more to access specialty healthcare services, and some rural communities lack sufficient emergency care resources. To improve the availability of services, the University of Mississippi Medical Center (UMMC) started a telehealth program and established telehealth sites across the state that can provide wellness care, psychiatric, emergency medical, and telemedicine services. During an emergency or medical surge situation (e.g., pandemic flu), rural emergency departments could leverage the telehealth program to interact remotely with other medical providers, limiting unnecessary transfers and balancing patient loads. The telehealth program is supported by UMMC, and UMMC shares the role of primary agency with the Mississippi State Department of Health for Emergency Support Function-8 (ESF-8); both organizations are members of the state-wide Mississippi ESF-8 Healthcare Coalition.

#### ■ **Northern VA: Achieving IBA through Telemedicine**

The Northern Virginia Hospital Alliance, a non-profit healthcare preparedness coalition of hospitals spread across rural and urban areas, uses telemedicine to meet the 20 percent IBA requirement by leveraging communications technology to deliver health services and exchange health information among geographically separate locations during medical surge situations. During an incident, member hospitals can request telemedicine support, activating a Regional Triage Officer who provides secondary triage support from a remote location and can prioritize patient transfers, as needed. Additionally, members can request trauma and pediatric consultation services provided by a regional specialty center. The use of telemedicine allows northern Virginia hospitals to provide patient care during a disaster situation that overwhelms a single hospital by allowing members to quickly access the resources and expertise of medical providers located off-site (and which may be in short supply in rural areas) to provide secondary support, triage, and medical interventions.

### IN PRACTICE: MISSISSIPPI'S SMARTT APPROACH TO RURAL IBA

In Mississippi, licensed healthcare organizations, including hospitals, long-term care facilities, dialysis centers, EMS, (and soon pharmacies) use a web-based system, the State Medical Assets and Resources Tracking Tool (SMARTT), to share and retrieve information about medical resource capabilities, including staffed, available beds throughout the state. Although SMARTT has been activated on seven separate occasions in Mississippi between December 2013 and June 2014 to support emergency operations, its value as an IT platform goes beyond the identification of available beds. SMARTT is a dual-purpose system: it is used during emergency situations to support execution of IBA and on a routine basis by a wide range of healthcare, preparedness, and public health stakeholders to share information about resource capability and availability. For example, the Mississippi Department of Health uses SMARTT to request information from healthcare facilities about resources such as generator fuel capacity to assist in preparedness planning and decisions about allocation of resources at the local level.

The dual purpose nature of SMARTT helps to ensure its long-term sustainability. Not only is the system valuable to, and integrated across, a wide range of stakeholders, but healthcare personnel are also trained on and use SMARTT on a regular, often daily, basis so they have experience navigating the system. This familiarity is critical for the efficient identification of available beds and effective care of patients during an emergency, as demonstrated during tornado response efforts in April 2014 in rural Winston County, MS.

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### IN PRACTICE: MISSISSIPPI'S SMARTT APPROACH TO RURAL IBA CONTINUED

At approximately 4:30 PM on April 28, 2014, an EF-4 tornado ripped through the rural county of Winston, MS. Among the buildings that took a direct hit along the tornado's 34-mile path was the Winston Medical Center, which is one of few medical facilities in the primarily rural county, operating inpatient and outpatient services, several on-site clinics, the county's only 24/7 emergency room, and an adjacent nursing facility. As a result of the tornado, Winston Medical Center lost power and sustained significant damage, requiring that all 40 hospital patients and 112 nursing home residents be evacuated.

Emergency response and medical personnel at Winston Medical Center jumped into action to address the medical needs of existing patients and a surge of approximately 100 new individuals presenting with injuries as a result of the tornado. Using SMARTT, and in coordination with coalition partners, regional emergency operations personnel were able to quickly identify available and staffed beds at alternate care sites and coordinate transportation to those facilities. Within eight hours of the tornado, all of the hospital patients and nursing home residents had been safely relocated to alternate care facilities.

The situational awareness provided by SMARTT following the tornado allowed local, rural community first responders, healthcare organizations, and emergency operations personnel to effectively execute IBA and manage medical surge. By efficiently connecting Winston County with other regional healthcare resources, SMARTT demonstrated its value as a tool for managing medical surge in Mississippi's rural communities during emergencies; however, the strong stakeholder participation and routine use across the state will help to justify its continued operation and maintenance in the long-term.



### 3. Share Information and Integrate Data

A core component of IBA is continuous, real-time monitoring of healthcare capacity, services, and patient acuity. To effectively implement IBA and provide the highest levels of care possible, healthcare, EMS, and emergency operations personnel need accurate, timely, and detailed information about available beds and patients' medical needs. This type of "real-time" situational awareness is possible through automated information sharing and integrated information technology systems.

- Virginia's Hospital and Healthcare Association is working with the state health department to deliver real-time information sharing by connecting its bed availability system with hospital registration and social services systems through automated data feeds;
- Other regional jurisdictions, such as the SouthEast Texas Regional Advisory Council (SETRAC), are integrating patient tracking data systems with bed availability systems so that detailed information about the characteristics of beds (e.g., type, services, gender of patient) can be matched with patients' medical needs;
- Several other jurisdictions noted that they had exercised using existing communications systems to send warning messages, alerts, or requests for information, such as updated bed capacity, to separate bed tracking systems so that decisions could be made based on the most up-to-date information available.

Through these types of information sharing systems, hospital and emergency response personnel who are responsible for executing IBA will benefit from increased situational awareness and better decision-making abilities during a medical surge situation, ultimately improving the health of communities.

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New Orleans Medical Reserve Corps (LA)

### IN PRACTICE: SOUTHEAST TEXAS TAKES A “WHOLE BED” APPROACH TO IBA

The South East Texas Regional Advisory Council (SETRAC), a non-profit organization and administrator of federal HPP and state grant money representing the preparedness needs of nine county regions in Texas, has a long history of using both healthcare resource tracking technology, EMResource, and patient tracking information, via EMTrack, to support rural communities during disaster situations. During emergency situations, SETRAC operates as a regional coordination and transfer center (Catastrophic Medical Operations Center or CMOC), connecting private healthcare facilities evacuating or releasing patients with those receiving them.

The practice of identifying and transferring patients utilizes a “Whole Bed” approach because the systems and processes CMOC uses do more than identify open beds. In addition, CMOC uses patient information available in EMTrack and detailed bed information (e.g., services, capabilities, equipment, male vs. female) available in EMResource to match patient needs with available resources. EMResource and EMTrack represent a partnership between healthcare coalitions and state and local health departments; EMResource is funded through the Mississippi State Department of Health and EMTrack is supported by SETRAC through the regional ASPR hospital preparedness program funding grant.

During and in the weeks after Hurricanes Katrina and Rita, the “Whole Bed” approach was used to support the evacuation of 3,400 patients from the affected regions and into “like” beds in other medical facilities. In the weeks following the hurricanes, SETRAC performed quality reviews of this system and found that only two of the 3,400 people evacuated to southeast Texas healthcare facilities had to be transferred to another facility due to lack of capacity or inability to care for the patient.

More recently, in Katy, TX, the collapse of a building with 150 people inside tested the implementation of the “Whole Bed” approach to support the local healthcare system execute IBA processes. Upon responding to the scene, first responders contacted the SETRAC duty officer to mobilize additional ambulance, transport, and medical hospitals. SETRAC used EMResource to query detailed information about hospital bed capabilities based on the needs of patients. Transportation officers received information on available beds on their mobile devices and quickly transported patients to the appropriate facilities without overwhelming any particular hospital.

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### IN PRACTICE: VIRGINIA'S REGIONAL HOSPITAL COORDINATING CENTERS LEVERAGE TECHNOLOGY AND PARTNERSHIPS TO ACHIEVE "REAL-TIME" IBA

During and following an emergency, many different organizations may be involved in a response. While emergency responders, including fire, police, emergency medical services, clinicians, and emergency operations center staff are integral for the safe and efficient transport and care of patients following a disaster, social services and volunteers often play a key role in reuniting family and friends following an event. Recognizing that IBA can provide key informational inputs into this process, the Virginia Department of Health, in coordination with the Virginia Hospital and Healthcare Association, has taken steps to integrate information from Virginia Healthcare Alerting and Status System (VHASS), which tracks bed availability, with 2-1-1, which connects Virginia residents with community services.

In the event of an emergency, patient information such as name and date of birth are entered into VHASS, along with a triage tag and disaster number. This information can be accessed by 2-1-1 operators to help individuals locate and reconnect with family members. This capability is especially helpful in rural communities where patients may be evacuated or transported to healthcare facilities across the region or another state for medical care.

Additionally, the Virginia Hospital and Healthcare Association and Virginia Department of Health are upgrading VHASS so that it is capable of accepting automated data feeds from hospital registration systems. This will allow emergency operations personnel to view information about available beds as soon as patients are admitted or discharged using a designated disaster number, rather than relying on manual inputs into VHASS from hospital staff.



Marion County Public Works (OR)

## Approaches to Immediate Bed Availability that Meet the Needs of Rural Communities

### 4. Engage in Efforts to Define Crisis Standards of Care

Local and rural healthcare and public health voices need to be heard in national, state, and regional conversations about crisis or altered standards of care. Rural LHDs and healthcare partners can participate in these conversations by coordinating with state leadership and participating in regional working groups or coalitions that are developing guidance for crisis standards of care.

As members of the community, LHDs are uniquely positioned to take the lead by engaging community members in discussions and decisions about altered standards of care. Through these actions, LHDs can help to ensure that definitions, triggers, protocols, and guidance developed around crisis or altered standards of care are relevant in rural healthcare settings.

Additionally, rural and local health officials should consider working with their healthcare coalition or other regional preparedness planning organizations to consider how federal and state guidance for crisis standards of care would apply in their jurisdiction. For example, would certain indicators or triggers apply or need to be adjusted in rural settings? How would mitigation tactics be applied in remote or rural areas? What additional expertise or resources may be required to implement crisis standards of care? Engaging in multi-disciplinary planning with public health and EMS representatives will help rural LHDs and healthcare organizations answer questions about how to apply crisis standards of care should a catastrophic event occur.

The Institute of Medicine has developed several reports and resources on crisis standards of care for emergency management, public health, healthcare, EMS, and behavioral healthcare organizations. Among the most recent resources is Crisis Standards of Care: A Toolkit for Indicators and Triggers available at <http://www.iom.edu> and via NACCHO's Preparedness Brief Blog at <http://nacchopreparedness.org>.<sup>5</sup>

#### IN PRACTICE: UTAH BUILDS ON NATIONAL GUIDANCE FOR CRISIS STANDARDS OF CARE

Recognizing that lingering questions about crisis standards of care, and a lack of education within the medical community and larger public were creating barriers to developing and implementing processes for medical surge and IBA, the Utah Public Health Department began a five-year process to update and produce guidelines for Crisis Standards of Care. To date, Utah has developed state-specific triage guidelines for hospitals, intensive care units, and EMS to guide the allocation of resources during an influenza pandemic, when demand for services dramatically exceeds supply. These guidelines use several medically accepted scoring rubrics and processes specific to Utah (e.g., activation sequence) to make admission decisions at varying levels of pandemic. They also specify roles for various stakeholders in the process.



Salt Lake County Medical Reserve Corps (UT)

# Acknowledging the Challenges of Medical Surge Response in Rural Communities

Through interviews, a literature review, and feedback from LHDs, NACCHO identified the following common challenges to implementing IBA in rural areas.

## Resource Constraints

All of the jurisdictions that NACCHO interviewed and consulted with during preparations for this report cited a lack of resources, including funding, space, equipment, and personnel, as an impediment to the effective planning and execution of IBA. Although resource constraints may not be unique to rural health departments, their smaller economies and population size make it difficult to support and sustain a large public health infrastructure with the capacity to respond during a medical surge situation.

- **Funding** – The capability to safely evacuate and relocate patients, maintain operations, adequately meet the needs of a surge in patients during an emergency, and operate systems to reunite family members following an event have traditionally been supported by federal HPP funding. Because rural areas are more likely to rely on federal and state support to fund public health and preparedness programs, cuts to these programs, along with other austerity measures, are and will continue to substantially impact rural healthcare coalitions' ability to develop and sustain these capabilities.<sup>6,7</sup>
- **Space/Equipment** – Critical access hospitals<sup>8</sup> and small community health centers serve many rural areas of the country; some rural areas may not even have a hospital.<sup>9,10</sup> These healthcare facilities have limited additional space and equipment caches to accept and care for an influx of patients (whether from rural areas or those leaving urban areas) during an emergency event or evacuation.
- **Medical and Preparedness Personnel** – Many rural communities face a shortage of medical providers to meet their populations' needs during normal operations and often rely on medical services in larger cities for specialty care.<sup>11</sup> During an emergency response, already scarce resources are more likely to be strained, and certain services, such as mental health, pediatric intensive care, and burn units, may not be available at all. Additionally, individuals responsible for preparedness planning, coordination, and response activities in rural health departments and healthcare organizations often serve in multiple roles or are volunteers, making advanced planning and recovery efforts more difficult.<sup>12</sup>

## Geographic Barriers

Although rural communities differ significantly within and across geographic regions, they are often remote and isolated. Health departments in some rural areas noted that this creates challenges in setting up and maintaining reliable communications infrastructure (e.g., cellular service, internet) for use during an emergency. The terrain may also create difficulties in accessing or evacuating patients to other medical facilities during an emergency. For example, natural barriers, such as mountains, large bodies of water, or long stretches of unpaved roads would restrict EMS operations. During a natural disaster or weather event, routes may become impassable or prevent certain methods of transportation (e.g., strong winds may prevent helicopter evacuations).

## Limited Access to Real-Time Information

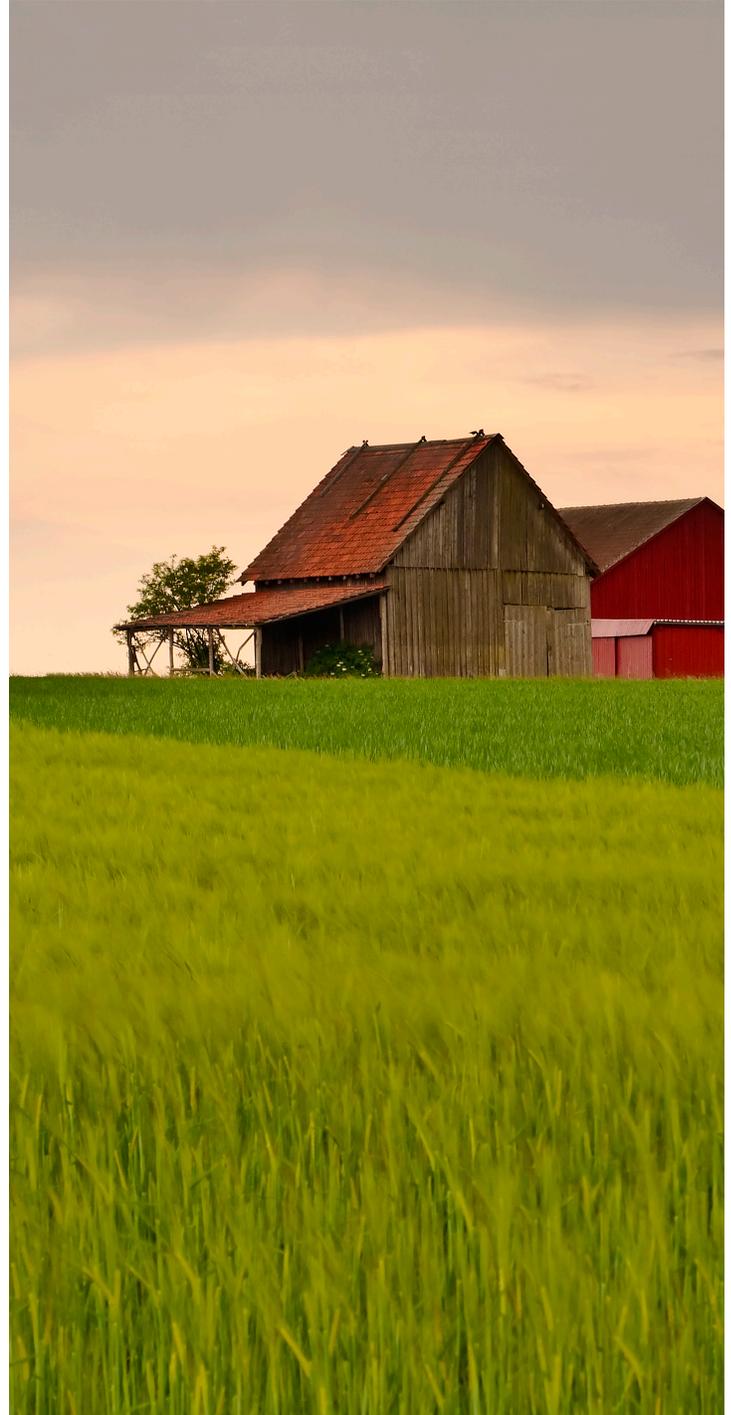
Through the implementation of state and regional IBA systems and federal Hospital Available Beds for Emergencies and Disasters (HAVBED) guidance, rural healthcare organizations and coalitions are better equipped with information to manage medical surge. However this information is often not “real-time”—rather, it is a snapshot of resource capabilities based on the time the data was last manually entered. However, during an emergency, response and operations personnel need accurate and up-to-the-minute information about the status and capabilities of healthcare organizations, including available, staffed beds and healthcare services, to facilitate decisions about how to care for and where to transport casualties from a disaster.

## Lack of Clear and Practical Guidance for Altered Standards of Care

LHDs and rural healthcare organizations interviewed for this report cited difficulty in implementing some processes for IBA due to lingering questions about the development and application of crisis standards of care in their communities. Rural healthcare is likely to have fewer resources and less excess capacity than an urban hospital, making it difficult to apply standard definitions, indicators, and triggers. Application of altered standards of care is also difficult in some rural communities during an emergency due to a lack of education about these protocols with the medical community and general public.

## Conclusion

Successful implementation of IBA is a key component of LHDs' and healthcare organizations' ability to provide adequate medical evaluation and care during incidents that exceed the limits of normal medical infrastructure. Although progress has been made in medical surge planning—much of it thanks to dedicated federal funding and the leadership of state and local healthcare and public health preparedness officials—opportunities exist to improve understanding of IBA and its application to rural public health preparedness. NACCHO's and ASPR's goal in developing this report is to both acknowledge the challenges of IBA in rural areas and begin to identify strategies implemented in rural communities that have potential to overcome or mitigate these challenges. NACCHO encourages LHDs in rural areas to use the content of this report to help catalyze and lead conversations about rural IBA with state preparedness personnel and healthcare organizations/coalitions in their community.



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## [REPORT]

September 2014

### Acknowledgments

This report was supported by Cooperative Agreement EP-HIT-13-003 from the Department of Health and Human Services, Office of the Assistant Secretary for Preparedness and Response. Its contents are solely the responsibility of the authors and do not necessarily represent the official views of the sponsor. NACCHO is grateful for this support.

NACCHO thanks the following staff who contributed to this report: Scott Fisher, MPH, Senior Director, Public Health Preparedness; Laura Biesiadecki, MSPH, CPH, Director, Strategic Partnerships, Outreach and Education; and Katie Schemm, Senior Program Analyst, Public Health Preparedness.

NACCHO would also like to thank state and local public health preparedness representatives from Mississippi and Virginia, the SouthEast Texas Regional Advisory Council, and Southwest Utah Public Health Department who contributed practices and content for this report.

#### FOR MORE INFORMATION, PLEASE CONTACT:

**Katie Schemm**

Senior Program Analyst, Public Health Preparedness

202-507-4188

kschemm@naccho.org

**Laura Biesiadecki**

Director, Strategic Partnerships, Outreach, and Education

202-507-4205

lbiesiadecki@naccho.org



The mission of the National Association of County and City Health Officials (NACCHO) is to be a leader, partner, catalyst, and voice with local health departments.

1100 17th St, NW, 7th Floor Washington, DC 20036

P 202-783-5550 F 202-783-1583

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