Regional Disaster Health Response System

Report to Congress

Saving Lives. Protecting Americans.

ASPR

Table of Contents

Executive Summary

Purpose of this Report

This report, prepared by the Department of Health and Human Services (HHS), Office of the Assistant Secretary for Preparedness and Response (ASPR), is in response to a request, included in the explanatory statement accompanying Division A of H.R. 1865, the Further Consolidated Appropriations Act, 2020, for an evaluation of the Regional Disaster Health Response System (RDHRS) pilots and a plan for the RDHRS that does not duplicate current services:
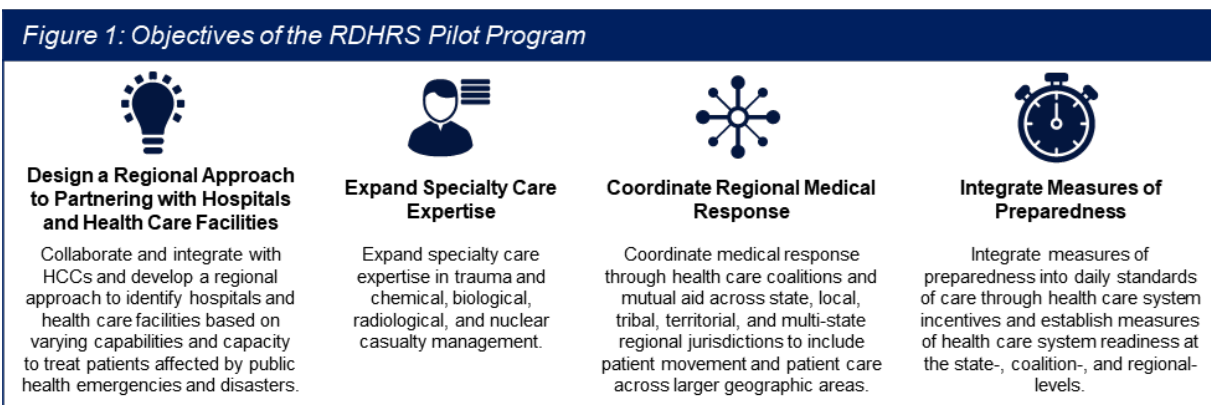
> *Regional Disaster Health Response System Demonstration Pilots*—The agreement continues funding for current pilots. Before program expansion, and no later than 90 days after enactment of this Act, the agreement directs HHS to provide an evaluation of the pilot program and a plan for the Regional Disaster Health Response System that does not duplicate current services."

Partnership for Disaster Health Response Cooperative Agreement

In FY 2018, ASPR awarded two pilots under the Partnership for Disaster Health Response cooperative agreement to address health care preparedness challenges, establish best practices for improving disaster readiness across the health care delivery system, and demonstrate the potential effectiveness and viability of a RDHRS. The pilot programs receiving funding were the Nebraska Regional Disaster Health Response Ecosystem (NRDHRE) and the Massachusetts/Region 1 Partnership for Regional Health Disaster Response (MA/R1 RDHRS). ASPR structured the cooperative agreement around five specific disaster health response capabilities:

1. Build a disaster health response network
2. Align plans, policies, & processes related to clinical excellence in disasters
3. Increase statewide & regional medical surge capacity
4. Improve statewide & regional situational awareness
5. Develop readiness metrics & conduct an exercise to test capabilities

These capabilities work in tandem to achieve the overall objectives of the RDHRS (Figure 1). This report will 1) provide an overview of the pilots and their intended impact, 2) explain how the RDHRS fits into ASPR's strategic plan for national disaster readiness and is not duplicative of other programs, and 3) evaluate the pilots against the established objectives of the program.

Figure 1: Objectives of the RDHRS Pilot Program

Design a Regional Approach to Partnering with Hospitals and Health Care Facilities

Collaborate and integrate with HCCs and develop a regional approach to identify hospitals and health care facilities based on varying capabilities and capacity to treat patients affected by public health emergencies and disasters.

Expand Specialty Care Expertise

Expand specialty care expertise in trauma and chemical, biological, radiological, and nuclear casualty management.

Coordinate Regional Medical Response

Coordinate medical response through health care coalitions and mutual aid across state, local, tribal, territorial, and multi-state regional jurisdictions to include patient movement and patient care across larger geographic areas.

Integrate Measures of Preparedness

Integrate measures of preparedness into daily standards of care through health care system incentives and establish measures of health care system readiness at the state-, coalition-, and regional-levels.

Summary of Evaluation Methodology

To evaluate progress towards achieving the objectives of the RDHRS (Figure 1), ASPR conducted a qualitative analysis of deliverables provided by the MA/R1 RDHRS and the NRDHRE, including the full-length and summary Year One reports for both sites and Year Two kickoff materials. ASPR also analyzed results from end-of-year surveys administered by the MA/R1 RDHRS.

Initial Pilot Outcomes

ASPR leads the nation's medical and public health preparedness for, response to, and recovery from disasters and public health

[The RDHRS] offers **a powerful way to form alliances** and **build specialized capabilities** that **save more lives in overwhelming, catastrophic emergencies**. This system draws on the existing U.S. health care infrastructure, **pulling together private sector and federal resources** in a way that has never been done.

-Dr. Robert Kadlec, HHS Assistant Secretary for Preparedness and Response

emergencies in an era where the health security landscape is quickly evolving. The current threats to our nation's health security are diverse and have the potential to disrupt our public health and health care systems and inflict significant injury and loss of life. HHS ASPR aims to strengthen U.S. public health and health care systems to swiftly and effectively confront the devastating consequences of these risks, such as the use of chemical, biological, radiological, and nuclear (CBRN) weapons; cyber warfare; emerging infectious diseases that could lead to a pandemic, such as COVID-19; and catastrophic natural disasters and human-caused incidents. As health threats to our nation evolve, our health care preparedness and response infrastructure must keep pace.

Meeting the objectives of the RDHRS pilots will help regions more effectively coordinate and deliver care when crisis occurs at a multi-state level. It will also better mobilize wealth of assets and expertise during public health emergencies. Initial results of these pilot activities have been promising, and include:

- **Improved disaster planning** by enhancing integration of disaster medical specialist expertise
- **Supporting coordination of medical surge** with technical specialists and experts in health care operations and patient placement
- **Developing a regional response center mechanism** to mobilize disaster medical experts that advise and support health care organizations, public health and emergency management leaders at all times.
- **Positioned to support large-scale patient movement** across the country or from overseas with manpower and expertise
- **Developing regional and national telemedicine capabilities** to enhance support for limited disaster medical specialty capabilities and capacity
- **Developing state and regionally deployable specialty medical teams** to address limited health care system capacity

In total, the pilot programs produced over 50 tools and products to support training, organization and reporting structure, data collection and information sharing, telemedicine, state deployable medical teams (DMT), and navigating legal and policy challenges. These included over 20 state DMT planning tools and sample mission ready packages in Massachusetts, and an incident management platform already in use in 93 Nebraska counties. The platform includes hospitals, long-term care facilities, county and state emergency management agencies, and health

departments in Nebraska, and allows emergency responders in multiple jurisdictions to see the same information at the same time. This platform optimizes shared resources and communication for improved disaster response and was successfully used during the 2019 Midwestern floods.

Throughout the first year of the program, the pilot sites demonstrated significant impact and potential for return on investment. The MA/R1 RDHRS found that 89 percent of surveyed organizations who participated in the pilot agreed that the RDHRS is addressing gaps within disaster health care preparedness and response that have not yet been addressed.[1] Additionally, 93 percent of participants surveyed agreed that the RDHRS can be an effective resource to provide medical expertise to public health and/or emergency management leaders to assist with decision-making related to health care operations during disasters.[2]

In response to the current Coronavirus Disease 2019 (COVID-19) pandemic, RDHRS pilot programs used their role as a regional convener to quickly support response in their respective states and regions. The NRDHRE used partnerships formed in the first year of the pilot to create a state-wide Medical Operations Center that meets daily to discuss key opportunities and vulnerabilities throughout the state. Stakeholders across the state are also using the information sharing platform established in the pilot, Knowledge Center, to submit Essential Elements of Information (EEI) to health care coalition and state leadership. The MA/R1 RDHRS leveraged its access to expert resources to create and disseminate clinical knowledge toolkits, best practices, and protocols to health care organizations across state, region, and United States. The MA/R1 RDHRS also partnered specialists with governmental and other regional stakeholders to maximize the effectiveness and equitable delivery of available healthcare and public health system resources, including ventilators and ECMO machines.

Regional Disaster Health Response System

RDHRS Overview

To prepare for a new threat environment, ASPR seeks to identify and address gaps in coordinated patient care during disasters through the establishment and maturation of a RDHRS. The RDHRS structure is conceptualized as a tiered system that builds on the existing Medical Surge Capacity and Capability (MSCC) foundation for local medical response (e.g., trauma systems, health care coalitions (HCC)) by enhancing coordination mechanisms and incorporating discrete clinical and administrative capabilities at the state and HHS/Federal Emergency Management Agency (FEMA) regional levels.[3,4] The RDHRS is not intended to alter or displace current local patient referral patterns, but rather aims to support clinical care delivery when existing referral patterns and health care delivery capacity and capabilities are exceeded by catastrophic events that require redistribution of patients, importation of resources, and/or resource utilization guidelines.

Addressing Gaps in Disaster Response

The RDHRS concept and the pilot programs were specifically designed to close existing gaps in the current U.S. health care and response system. Health care is a predominantly private sector function, but public sector stakeholders at the state, tribal, local, and territorial (STLT) and regional level have a responsibility to minimize the impact of disasters on U.S. health care systems. Currently, health care preparedness and response stakeholders at the regional level

---

[1] MA/Region 1 Partnership for Regional Disaster Health Response: Year One Summary Report

[2] ASTHO Survey cited in MA/R1 RDHRS Year One Report

[3] Medical Surge Capacity and Capability: A Management System for Integrating Medical and Health Resources During Large-Scale Emergencies.

[4] MSCC: The Healthcare Coalition in Emergency Response and Recovery.

lack the ability to coordinate many diverse public and private stakeholders across state boundaries and integrate national specialty organizations (e.g., American Burn Association, Trauma Center Association of America) with a wealth of subject matter expertise, into disaster response planning. Regional coordination is also difficult when there is inconsistency across the standard operating procedures (SOP), emergency operation plans (EOP), and guidance produced by various stakeholder groups. STLT all have unique laws, regulations, and policies that govern the coordination of health care assets within disaster planning and response, and this information is not easily accessible.

During a response, the health care system is unable to effectively share real-time, actionable, and reliable data in disaster events due to a lack of interoperable information sharing systems and inconsistent communication platforms. Although stakeholders collect varying sets of essential elements of information (EEI), it is extremely challenging to accurately describe the real-time status of health care system capacity and capability or communicate real-time resource needs. Additionally, competitive private sector stakeholders have little incentive to share critical information, some of which may be considered proprietary.

Finally, the health care system has limited resources and expertise for the specialized care needed in disasters, producing significant gaps in the timing and quality of care. For example, most U.S. hospitals do not have trauma, burn, or pediatric specialists on staff. Health care systems are already overwhelmed due to limited surge capacity across the U.S. health care system, and regional stakeholders have found it challenging to obtain expert consultation without transferring patients. In a catastrophic situation, federal medical response teams can deploy to support specialized care needs, but this may take days. Further, more than half of states have no state-level disaster medical team that can quickly mobilize during a disaster.[5]

Figure 2: Regional Ebola and Other Special Pathogens Treatment Network
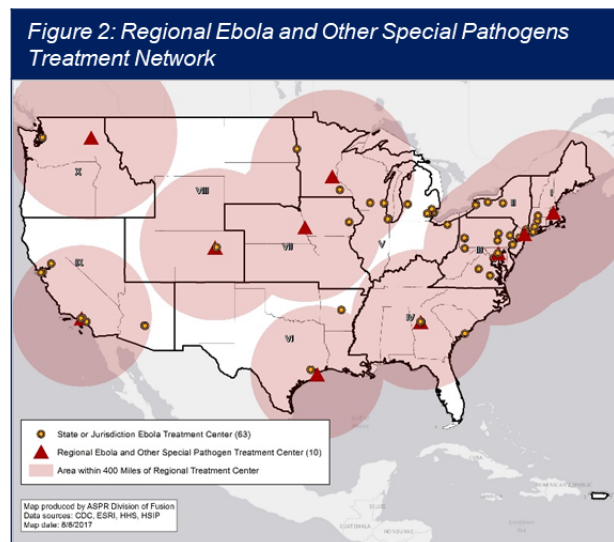
Benefits of a Regional Approach

ASPR has already tested a regional approach in several established programs and has found them to be effective in bolstering the nation's preparedness and response posture for public health emergencies.[6] In 2015, ASPR developed the Regional Treatment Network for Ebola and Other Special Pathogens, a nationwide, regional approach to creating a system of care for high consequence infectious diseases, in response to the 2014-2015 Ebola Virus Disease Outbreak (Figure 2). To meet this need, ASPR established a four-tiered system of care that includes Regional Treatment Centers, State (or Jurisdictional) Treatment Centers, Assessment Hospitals, and Frontline Health Care Facilities. Regional Treatment Centers have substantial expertise in caring for patients with Ebola and other special pathogens that cause high consequence infectious diseases. They serve as regional centers of excellence, providing diagnosis and treatment for referred patients who require specialized care. In FY 2018, 95% of states and jurisdictions in the regions across the nation participated in the development of a

---

[5] NRDHRE Year One Final Report
[6] Regional Treatment Network for Ebola and Other Special Pathogens: HHS Report to Congress

regional Concept of Operations (CONOPS) for care of Ebola patients.[7] This network proved the viability of regionalization to prepare for low-probability but high-impact incidents like Ebola, and has since expanded to include other special pathogens, including those causing respiratory disease like COVID-19.

Other ASPR programs and national initiatives that connect interstate efforts to facilitate regional collaboration include:

- **The Radiation Injury Treatment Network (RITN)**: A nationwide, regional network of more than 70 trauma, burn, and NDMS facilities that are trained to receive and care for patients following a mass casualty radiological incident.
- **U.S. Trauma System**: Regional system to optimize care of seriously injured patients that include prehospital providers, trauma center and non-trauma center hospitals, and long-term care and rehabilitation facilities.[8]
- **The Hospital Preparedness Program (HPP)**: Annual cooperative agreement that develops over 360 HCCs across the nation to advance collaboration, capacity, and capability building across the health care delivery system for improved readiness. Required core members of HCCs are hospitals, Emergency Medical Services (EMS), public health departments, and emergency management agencies.
- **Medical Reserve Corps (MRC)**: National network of 1,000 community-based units and almost 200,000 volunteers, organized locally, to improve the health and safety of communities across U.S. states and territories.
- **Pediatric Disaster Care Centers of Excellence**: 12-month cooperative agreement awarded by ASPR in Fall 2019 to identify issues and develop best practices to improve the capability and capacity of state and multi-state regions to provide highly specialized care to pediatric patients during a disaster.[9]

Partnership for Disaster Health Response Cooperative Agreement – Year One Evaluation Overview

Evaluation Methodology

To evaluate the effectiveness of the RDHRS pilots, ASPR conducted a qualitative content and thematic analysis of deliverables provided by the MA/R1 RDHRS and the NRDHRE (Box 1). ASPR also analyzed results from end-of-year survey administered by the MA/R1 RDHRS. While the two pilot sites approached the first year of the pilot in unique ways, ASPR evaluated their progress against four objectives of the RDHRS, and their relevant subcomponents, that together build the five disaster health response capabilities of a RDHRS detailed in the Funding Opportunity Announcement. Figure 3 provides a summary of pilot program progress over Year One, which is detailed in the next section of this report.

> **Box 1:** Deliverables Analyzed
> - MA/R1 RDHRS Year One Final Report
> - NRDHRE Year One Final Report
> - MA/R1 RDHRS Year One Summary Report (including survey)
> - NRDHRE Year One Glossy (Summary) Report
> - MA/R1 RDHRS Year Two Kickoff Presentation
> - NRDHRE Year Two Kickoff Executive Summary

---

[7] HPP FY18 (Year 4) Ebola Part B Performance Measures
[8] Geographic Variation in Mass Casualty Traumatic Injury Treatment Capacity: HHS Report to Congress
[9] Pediatric Disaster Care Centers of Excellence Cooperative Agreement Webpage

Figure 3: Evaluating Progress towards Objectives of the RDHRS Pilot Program
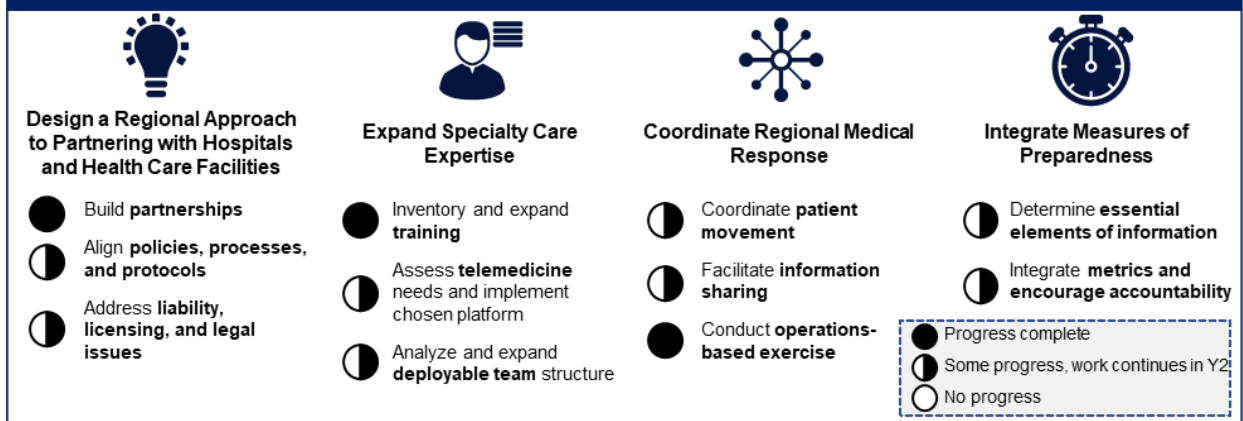
Evaluation Limitations

Piloting a Regional Disaster Health Response System is an ambitious task that will require partnership, planning, and coordination. This report only evaluates progress made in the first year of the pilots; much of this work is being continued and expanded in the second year of the pilots. This evaluation was also not intended to compare and contrast the two RDHRS pilot sites, which approached the first year of the pilot in unique ways, but rather aims to show collective progress towards meeting the overall objectives of the RHDRS pilot.

Partnership for Disaster Health Response Cooperative Agreement – Year One Evaluation Results

Design a Regional Approach to Partnering with Hospitals and Health Care Facilities

The RDHRS pilot sites collaborated with a wide group of stakeholders to develop a regional approach to disaster readiness. Both pilots dedicated significant time and effort in Year One to foundational activities to determine the current state of readiness, build stakeholder relationships, and inform design of an ideal regional framework for disaster response.

Build Partnerships

The NRDHRE focused on outreach with over 80 stakeholders across the state in both the public and private sector, many of whom had never collaborated prior to the convening activities of the NRDHRE. Stakeholders included state public health preparedness and emergency management, six state HCCs, the state trauma system, the regional Department of Veterans Affairs (VA) medical system, the regional poison control and radiation health center, the Department of Defense (DoD) Medical Special Pathogens Division, and state and local government agency representatives from the Douglas County health department and the Nebraska Department of Health and Human Services (NEDHHS), including the State Office of EMS. The NRDHRE also engaged with public and private sector community health care assets, including primary care, family medicine, and urgent care clinics; home health agencies; key representatives from the local business community and the insurance industry; and assets from a nearby Air Force Base to expand partnerships beyond existing relationships. These efforts allowed critical input and created connections with several important community businesses and organizations that had not previously been at the table for conversations and planning around health system preparedness.

The MA/R1 RDHRS convened 24 partners from area hospitals, state health departments, coalitions, and regional and national organizations. This included all eight of the Commonwealth's Level I adult and pediatric trauma and burn centers, two local health care facilities with unique expertise and resources relevant to disaster health and response, the Massachusetts Department of Public Health (MDPH), all six of the Commonwealth's Health and Medical Coordinating Coalitions (HMCC), and all five of the Commonwealth's Regional EMS Councils. The MA/R1 RDHRS also included the Boston Public Health Commission's Office of Public Health Preparedness (OPHP), the Massachusetts Emergency Management Agency (MEMA), and community health and long-term care representatives. The American Burn Association (ABA) was also a critical stakeholder and member of the MA/R1 RDHRS, helping to pioneer how national expert specialty organizations can work with regional systems to improve planning and response for catastrophic events. Six states in HHS Region 1 participated in quarterly meetings, and over 200 stakeholder meetings were held throughout the first year.

Align Policies, Processes, and Protocols
Both pilot sites made a significant effort to inventory policies, SOPs, EOPs, and guidance across stakeholder groups.

The NRDHRE conducted a Clinical Disaster Risk Assessment Workshop in December 2018 with stakeholders from across the state to identify gaps in existing disaster preparedness plans. A summary report from the workshop identified planning gaps in disaster response systems within HCCs and/or agencies, and these gaps were used to assess, improve, and align preparedness plans in the region. Examples of frequently identified gaps included a need for standardized triage algorithm/protocol/process, a lack of reliable communication methods, and a need to incorporate community-based organizations in planning and response. These outputs contributed to a NRDHRE Conceptual Framework for Regional Health Care Delivery, which was refined during multiple Medical Surge Workshops held throughout the state with key NRDHRE stakeholders (Figure 4).

Figure 4: NRDHRE Conceptual Framework for Regional Health Care Delivery
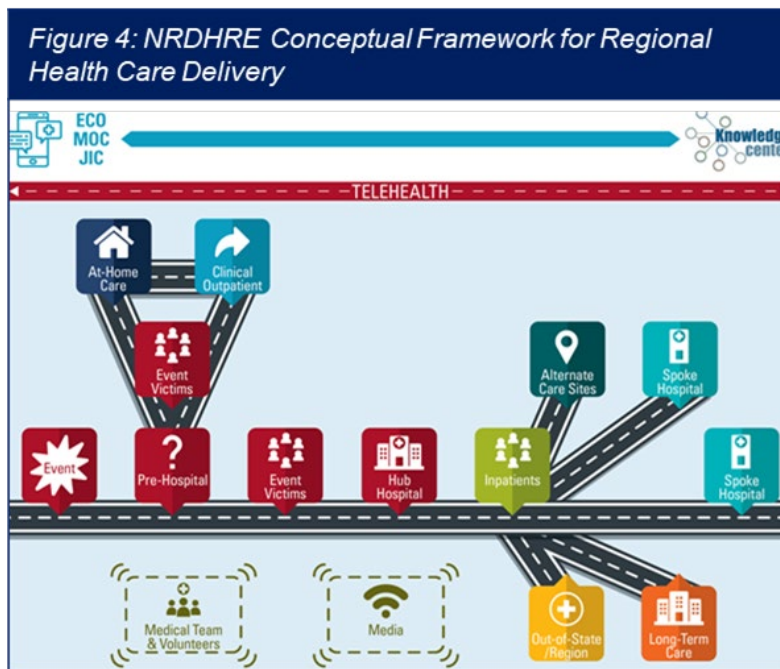
After identifying inconsistency in plans and a lack of a single, coordinating body to manage regional disaster health care response across state borders, MA developed a RDHRS EOP

which defines the RDHRS mission, organization, and assignment of responsibilities, as well as provides a concept of operations and other technical information. In addition, MA developed a model structure called an RDHRS Response Center, which is a health care multi-agency coordination center that provides coordination and support to hospitals, public health entities, and emergency management partners for patient transport, telemedicine use, special team deployment, and adaptation of care plans and systems.

Address Liability, Licensing, and Legal Issues
Each state has unique laws, regulations, and policies governing the coordination of health care assets (including staff and supplies) within disaster planning and response, and it is often difficult to quickly identify and locate this guidance. Both pilots created resources to make it easier to make informed decisions in a disaster situation.

The NRDHRE created a legal reference guide to address legal issues that could impact health care facilities and the delivery of care in the event of an emergency or disaster. Topics covered include levels and types of emergency declarations, volunteer and healthcare worker liability, the Health Insurance Portability and Accountability Act (HIPAA), Emergency Medical Treatment and Labor Act (EMTALA), 1135 waivers, and interstate coordination of assets The Nebraska pilot team learned that familiarity with federal and state disaster laws had the potential to save significant costs: up to $1,150,000 for each avoided state HIPAA penalty and $1,295,000 in avoided EMTALA penalties. The NRDHRE also developed an inventory of health care volunteers across the state and their relevant licensure, credentials, and/or accreditation, in compliance with NE's volunteer regulations. By having this database readily available, organizations can quickly find appropriate volunteers and reduce liability.

The MA/R1 RDHRS proposed a decision matrix to support convening real-time legal, regulatory, and policy discussions in the region related to coordination of patient care in disaster, and also created an inventory of potential actions the Governor and/or Commissioner of Public Health could take to support effective medical response of a declared Public Health Emergency or State of Emergency. Some examples of the proposed actions include using policy waivers to permit transport of selected types of patients to destinations other than Emergency Departments to alleviate overload, and offering temporary emergency credentialing to licensed providers who are formally affiliated with the RDHRS to provide telemedical consultation to support clinicians in providing disaster specialty medical care.

Expand Specialty Care Expertise
The RDHRS pilots enhanced on-demand specialty care expertise in disaster planning and response by inventorying and developing capabilities around training, clinical expertise, telemedicine, and deployable teams. The accomplishments described in this section contribute to improved access to, and utilization of, clinical expertise.

Inventory and Expand Training
Disaster training and consultative resources provided by the RDHRS can help to improve disaster capabilities at the local level before disasters occur. The NRDHRE identified training gaps during the Clinical Disaster Risk Assessment workshop and medical surge workshops held across the state, including health care worker protection, hazardous materials, and infection control, including isolation and quarantine. The NRDHRE also piloted delivery of triage and general first aid training through Simulation in Motion-Nebraska (NE-SIM) mobile units, which are large trucks outfitted to provide simulated ambulance and emergency room training environments. The MA/R1 analyzed and identified four key training audiences: general members of the health and medical community, RDHRS staff and response partners, RDHRS Response Center staff, and state-deployable medical teams. They proposed over 40 basic

training elements needed for a robust disaster response training curriculum for each key audience, and aggregated existing resources and trainings that meet each training element. Additionally, both pilot sites created just-in-time training plans so health care staff can be trained immediately during a no-notice incident to support response.

Assess Telemedicine Needs and Implement Chosen Platform

Both sites spent time researching literature and the current marketplace to understand core concepts, best practices, and available resources for use of telemedicine and/or virtual support during large-scale disasters. The pilots also met with stakeholders in their regions to determine telemedicine capabilities and requirements. Importantly, telemedicine platforms will enable regional stakeholders to respond more effectively to disasters using their own highly-trained medical personnel using common telemedicine capabilities and functions.

The NRDHRE analyzed different use cases for telemedicine capabilities. For example, they began to use video conferencing to augment an emergency operations center and incident command to help coordinate medical surge, bed placement, supplies, and security. They also explored telemedicine to augment triage and specialty care consults that occur 72 to 96 hours after a surge event. Finally, the NRDHRE considered how telemedicine could be used for continuity of care to support regularly scheduled clinic patient visits from facilities impacted by medical surge patients.

The MA/R1 RDHRS developed and tested a disaster telemedicine model to support all affected health care organizations in a disaster. The MA model leverages an established network of clinical experts to ensure access to specialty care, connecting community-based physicians with needed specialists to provide direct patient care, consultations and/or assist with triage to prioritize patient transfers.

In the second year, both pilot sites plan to use this foundational research and initial testing to implement disaster telemedicine capabilities for their regions.

Analyze and Expand Deployable Team Structure

More than half of states in the U.S. do not have a state-level disaster medical team (DMT) to mobilize during a disaster.[10] In addition to the ability to surge resources when needed, these teams infuse needed specialty care or other expertise, either in-person or via telemedicine. The RDHRS pilots developed an inventory of potential models for state- or hospital-hosted DMTs, in addition to strategies related to the creation and long-term sustainability of such teams.

Based on NRDHRE's analysis and planning, they have started to identity individuals to staff DMTs, which include those with general expertise, as well as Specialty Medical Augmentation Response Teams (SMART) with expertise in trauma/burn, biological/infectious disease, radiation, pediatrics, behavioral health, cybersecurity, and chemical injury. They developed an initial charter and plan to register these teams as assets of the state that can be activated via the Emergency System for Advance Registration of Volunteer Health Professionals (ESAR-VHP) process. The development of SMART teams will continue in the second year of the pilots.

The MA/R1 RDHRS worked to expand the number of DMTs that states can use in disasters. Their efforts focused on hospital-sponsored teams, particularly in states unable to leverage an existing state-wide NDMS Disaster Medical Assistance Team (DMAT) structure. Using Massachusetts General Hospital and UMass Memorial as prototypes, these teams were given specialized mission assignments including triage/pre- hospital care, general emergency care, shelter support, hospital augmentation, patient movement, administration of mass prophylaxis, and medical support for pre-planned mass gatherings. Overall, MA created over 20 DMT

---

[10] NRDHRE Year One Final Report

planning tools and sample mission ready packages for use across the region, and analyzed the legal and financial considerations of deploying such teams.

The DMTs explored by the NRDHRE and the MA/R1 RHRS differ from MRC and NDMS medical response teams. MRC teams are community-based volunteer units that are organized at the local level, but can lack coordination at the state-wide or regional level. NDMS medical response teams are a federal asset that can be deployed to support response, but they are limited in number and can take time to deploy. In an emergency or disaster that requires regional coordination, Regional DMTs can be deployed in a more agile manner, with understanding of nuances to a specific region that federal assets may lack.

Coordinate Regional Medical Response

Both pilot sites used newly-established frameworks and processes to coordinate medical response and mutual aid across STLT and regional jurisdictions. They have demonstrated competency in coordinating regional medical response through enhanced patient movement and information sharing capability, as well as conducting an operations-based exercise.

Coordinate Patient Movement

During the first year of the pilot, both sites sought to understand how regions can better coordinate with technical specialists and experts in health care operations and patient placement during medical surge situations.

The NRDHRE engaged national experts to determine best practices and lessons learned regarding medical operations center (MOC)/ emergency operations center (EOC) structures. They also worked with the Omaha metro area HCC to develop a virtual MOC/EOC model that could meet the needs for health system input for regional incident management, including SOPs for patient transfer. Six medical surge workshops hosted across NE also emphasized the value of identifying gaps and solutions in planning for and coordinating health care evacuation and relocation.

The MA/R1 RDHRS developed the Catastrophic Tertiary Care Access Center (CTAC) function within the RHDRS Response Center model, which, when activated, monitors patient movement and can advise response authorities on how to best adjust the medical response if need overwhelms capacity. A version of the CTAC structure was used in six coalition surge tests in MA and was extremely effective in supporting hospital evacuation and identifying appropriate placement of evacuating patients into receiving hospitals when required in a disaster situation.

Facilitate Information Sharing

The NRDHRE implemented an interoperable communications platform, Knowledge Center that provides a full common operating picture across emergency management, public health, and health care stakeholders in NE (Figure 5). The NE team trained more than 800 health care and incident command stakeholders in the use of Knowledge Center. The platform went live in July

2019 and was subsequently used in real-world response efforts for flooding incidents, as well as during the pilot's full-scale exercise. Knowledge Center decreased response time by two-thirds during a test for a resource request in this exercise.[11] The MA/R1 RDHRS conducted a detailed analysis of gaps and best practices for communicating situational awareness across a diverse set of stakeholders, and developed a prototype system to develop a common operating picture to evaluate critical care, patient transfer needs, and EMS needs.

Figure 5: Example of incident lockdown area map from Knowledge Center

Conduct Operations-Based Exercise

Both pilots were required to conduct an operations-based exercise to assess and measure readiness of the coalitions' surge capacity, and to demonstrate their ability to coordinate health care service delivery at the statewide and/or regional level.

The NRDHRE conducted a full-scale exercise involving patient surge with trauma and chemical casualties that required additional support, including resources and communication. Overall, the NRDHRE exercise tested and demonstrated their ability to support NE HCCs' effective expansion of medical surge capacity. It also identified sustainable solutions to support the coordination of patient care and resource management that will be required during large-scale incidents.

The MA/R1 RDHRS held a statewide functional exercise involving patient movement, which used disaster telemedicine and DMTs to augment specialty care and activated the RDHRS Response Center and CTAC. The MA/R1 RDHRS used disaster medical experts to guide and support the use of specialized clinical resources in real time, in addition to the overall health care system response. In addition, the CTAC was highly effective in streamlining and coordinating patient interfacility transfers across the entire system. It rapidly helped guide patients to the most appropriate available specialized medical centers using standardized technology and a common, coordinated health care system approach across the entire state. The CTAC also worked with a national specialty organization, the American Burn Association, in real time to augment its response capabilities.

Integrate Measures of Preparedness

The RDHRS pilots collaborated to develop measures of health care system readiness and encourage accountability in preparedness.

Determine Essential Elements of Information

The pilots generated frameworks for the EEIs necessary to facilitate medical surge response at the statewide and multi-state regional levels. Both pilot sites worked collaboratively with subject matter experts and key stakeholders, including HCC leadership across their states, to create a catalog of over 100 potential EEIs. The refined EEIs capture and aggregate data from health care systems on the magnitude of the surge they are experiencing, the major actions they've taken to respond to the surge (i.e., activate the emergency plan, cancel elective admissions, increase staffing, etc.), and the adequacy of those actions in meeting the surge situation. These EEIs were designed to improve communication and coordination efforts, quickly share the information during disaster response, and provide real-time situational awareness of health system status and/or needs.

---
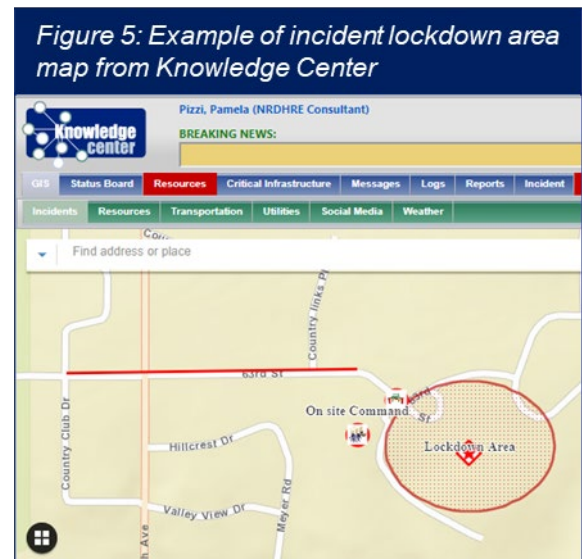
[11] NRDHRE Year One Final Report

Integrate Metrics and Encourage Accountability

The pilots created recommendations for readiness metrics that can be used to assess and evaluate performance within a region. The NRDHRE and the MA/R1 RDHRS assembled these readiness metrics into a scorecard as part of a proposed "Response Ready" designation program. The scorecards will rate progress towards the creation of a functional and "ready" coalition, helping to assess the "response readiness" of the health care system. The NRDHRE also conducted an analysis of potential financial incentives to encourage health care system participation in disaster preparedness and response activities as a part of developing their Legal Reference Guide. Increasing liability protections for volunteers and health care workers is a key area of opportunity for increased engagement that will be explored in the second year of the pilots, in addition to implementing the readiness metrics.

RDHRS Participant Feedback

The MA/R1 RDHRS surveyed participants in their pilot and found that 89 percent agreed that the RDHRS is addressing gaps within disaster health care preparedness and response that have not yet been addressed.[12] Additionally, 93 percent of participants surveyed agreed that the RDHRS can be an effective resource to provide medical expertise to public health and/or emergency management leaders to assist with decision-making related to health care operations during disasters.[13]

Evaluation Summary and Year Two of the Pilots

From the qualitative analysis performed on Year One deliverables, the two RDHRS pilots made significant progress to achieve the objectives of the RDHRS. In the first year, both pilots focused primarily on statewide coordination and collaboration as they built the foundation for regional health care response capabilities. In the second year of the program, the pilots will expand to establish a regional (multi-state) presence through the integration of additional partners and the expansion in scope of many of their deliverables.

The NRDHRE will build on accomplishments from the first year of the pilots, including continued development and refinement of the readiness metrics and EEIs, enhancement of specialized teams within the state and expanding into other states in the region, expanding the telehealth community and capabilities, and creation of pilots in communities to test the response system concept and readiness. NE plans to reach across surrounding borders to Iowa, Missouri, and Kansas to further enhance a multi-state, regional partnership. Regional opportunities will include further enhancement of a multi-state ability to respond, expansion of situational awareness and information-sharing capabilities, and refinement and inclusion of EEIs.

In Year Two, the MA/R1 RDHRS will also focus on regional collaboration with other New England states in HHS Region 1, training and technical system requirements for telemedicine, and further development and deployment of DMTs. The MA/R1 RDHRS will explore how the RDHRS Response Center and CTAC functions can be expanded as a regional resource. They will also further refine EEIs and readiness metrics, and will operationalize additional components of a disaster telemedicine program.

---

[12] MA/Region 1 Partnership for Regional Disaster Health Response: Year One Summary Report
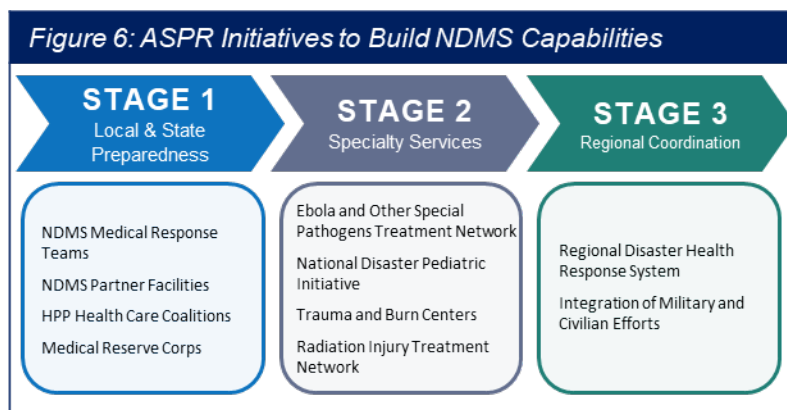[13] ASTHO Survey cited in MA/R1 RDHRS Year One Report

RDHRS in the Future

RDHRS as a Component of National Disaster Readiness
ASPR seeks to apply lessons learned from RDHRS pilots.

The 21st Century NDMS aims to help the nation develop core capabilities that mitigate gaps identified in recent disaster responses. Existing ASPR programs, including HPP and NDMS medical response teams, form the foundation of a 21st Century approach to disaster response readiness. Building a 21st Century NDMS requires alignment of legacy programs and the creation of regional public-private partnerships for enhanced coordination. Best practices and lessons learned from the RDHRS pilots could provide valuable input for future disaster response activities.

Figure 6: ASPR Initiatives to Build NDMS Capabilities

STAGE 1 Local & State Preparedness → **STAGE 2** Specialty Services → **STAGE 3** Regional Coordination

STAGE 1	STAGE 2	STAGE 3
NDMS Medical Response Teams	Ebola and Other Special Pathogens Treatment Network	Regional Disaster Health Response System
NDMS Partner Facilities	National Disaster Pediatric Initiative	Integration of Military and Civilian Efforts
HPP Health Care Coalitions	Trauma and Burn Centers	
Medical Reserve Corps	Radiation Injury Treatment Network	

RDHRS as a Convener in National Disaster Response
The RDHRS could serve as a regional connector, linking existing disaster response systems and coordinating care. The RDHRS does not remove, replace, or duplicate the assistance HHS provides through HPP, the National Response Framework (NRF) and the National Disaster Recovery Framework (NDRF), or our federal disaster response teams (e.g., NDMS teams). Instead, the goal of RDHRS would be to connect and amplifies the impact of these programs at the regional level. The future of RDHRS or any similar regional

Closing

ASPR is dedicated to building the readiness of our nation's health and medical system through existing ASPR programs, as well as looking to new innovative structures to prepare our nation for emerging threats. The RDHRS pilot programs have shown promise in the first year of the pilot, beginning to bridge gaps in regional ability to collaborate, communicate, and deliver specialized care in the face of a large-scale disaster. The speed and agility with which these programs have been able to respond to health care needs during the COVID-19 response is only one important example. ASPR looks forward to building on these accomplishments in the second year of the pilot, sharing and integrating lessons learned, and providing an overall connection between STLT, regional, and federal levels through a 21st Century NDMS framework.