Northwest Regional Healthcare Coalition
Hazard Vulnerability Assessment (HVA)
2017-2018

This document summarizes the Northwest Regional Healthcare Coalition Hazard Vulnerability Assessment (HVA). It includes an overview of the process that was used to identify and prioritize the likely hazards that Northwest Regional Healthcare Coalition (NWRHCC) could encounter and a summary of the outcomes.

The Northwest Colorado Region is comprised of the following ten counties: Eagle, Garfield, Grand, Jackson, Mesa, Moffat, Pitkin, Rio Blanco, Routt and Summit. The region is entirely on the western slope of the state and encompasses many river headwater basins, high alpine environments, ranching, farming, agricultural, recreational, and arid and desert areas. The area is also known to attract many tourists for world sporting events, recreational outdoor adventures, fishing and hunting.

The first step in a comprehensive HVA is to identify and prioritize the likely hazards that the regional healthcare coalition could face; with the understanding that each community is unique and may have specific patient population, geography, and healthcare needs to consider. These will often overlap with the hazards confronted by the coalition member organizations and are typically identified using historical and current data from multiple sources. The HVA process is iterative and should be reviewed on an annual basis or after major incidents. Although there are many suggestions on how regional healthcare coalitions could produce an HVA, one method is to examine the HVAs of regional coalition member organizations and its respective all-hazards region before conducting its own. Coalition members should be given the opportunity to participate in and/or review the regional coalition HVA efforts. Coalition members can provide important information related to hazards and vulnerabilities as well as guidance on risk interventions for healthcare organizations. The outputs of the regional healthcare coalition HVA should be used by the NWRHCC to structure and prioritize its efforts.

Northwest Region Healthcare Coalition

Overview

An HVA was developed for the NWRHCC to better understand the events and conditions that threaten the NWRHCC's ability to continue the provision of healthcare at the regional level. Each hospital facility regularly conducts a HVA focused on the potential impacts to that facility's operations. Similarly, ancillary healthcare providers, public health agencies, and local emergency management agencies also assess hazards and vulnerabilities that may impact the ability of their agency to continue normal operations. The HVA is the initial step in understanding the events and circumstances that may reduce the capability and capacity of healthcare provision throughout the NWRHCC.

The initial step in developing the NWRHCC HVA began by gathering and analyzing coalition members individual facility HVAs in order to understand the hazards and risks to the regional healthcare partners.

Each NWRHCC members' HVA that was submitted was reviewed and analyzed. The top ten hazards from each member HVA were reviewed and entered into a regional HVA template. Each hazard was then assigned a number based on its assigned priority in the individual facility HVA. Based on the region's top hazards, a three-point scale was used rate each hazard on its probability, alerts, activations, human impact, property impact, business impact, preparedness level, internal response, and external response.

Following the evaluation and analysis of the coalition members' HVAs, the regional THIRA and previous Northwest Regional Hospital group HVA were reviewed to validate the relationship between individual facilities and regional hazards. This list of hazards contained those that were most probable, were perceived to have the highest impact on the regional healthcare capability, or demonstrated the lowest level of mitigation and preparedness.

To illustrate the analysis, consider a hurricane, tornado, a mass casualty event from a hazardous materials release, and an act of terrorism in a public place that injures a large number of people. The weather events have a similar impact on the regional healthcare capability. There are challenges presented by each weather event that may vary according to the size of the weather event or other variables. Similarly, regardless of cause, a large number of people injured generates a medical surge and creates a similar impact to the regional healthcare capability. The impacts to the regional healthcare

capability can be analyzed to understand the root cause of the impact which would allow a mitigation strategy to reduce the impact from more than one event. In this report the conditions creating vulnerability are identified and the mitigation strategies listed.

The overall challenge for completing the HVA was the geographic size and diversity of population density within the NW Colorado Region. In analyzing the hazards or risks some may have a significant physical or emotional impact within one area of the region, but those hazards do not create a high relative risk score as a regional risk because of the relatively low regional impact. The size of the region allows for geographic separation of the population and resources and ultimately a lower probability of widespread impact.

The vast resources that provide support during an event or mitigate the impact assist in reducing the relative risk of a hazard. This availability enhances the region's healthcare organizations to absorb the consequences resulting from many of the potential impacts.

HVA Summary

The highest risk events identified for the healthcare capability in the NW Region are (in order):

1. Winter Storm
2. Wild Fire
3. Communication / Telephone Failure
4. Chemical Exposure, External
5. IT System Outage
6. Fire
7. Structural Damage
8. Inclement Weather
9. Active Shooter
10. Infectious Disease Outbreak

Winter storm and wild fire posed a significantly higher risk than others, while the probability of the other events appeared to be somewhat consistent. The facility impact also appeared to be largely consistent based on the fact that most of the events threatening regional healthcare capability are not likely to impact every healthcare facility in the region.

The events that presented the highest relative risk illustrated consistency among the assessment factors of human impact, activations, and overall preparedness. Regardless of the risk factor, those that generated the highest relative risk consistently were viewed as presenting a relatively high human and business impact and preparedness level. The human impact, whether community members or healthcare workers, creates an impact to the regional healthcare capability.

Identified Hazards

The member HVAs reviewed identified an extensive list of events that may impact a healthcare facility. Within that list, each facility identified the events that present a higher relative risk to their facility. The events that were most commonly identified as presenting a high relative risk to a facility were compiled. The compilation could also be described as "top facility hazards."

Events commonly identified as high risk by facilities:

- Active Shooter
- Bioterrorism
- Bomb Threat
- Chemical Exposure, External
- Communications/Telephone Failure
- Critical Staff Shortage
- Electrical Failure
- Evacuation
- Explosion
- External Flood
- Forensic Admission
- Generator Failure
- Helicopter Crash into Structure
- Hostage Situation
- HVAC Failure
- Inclement Weather
- Infant Abduction
- Infectious Disease Outbreak
- Internal Facility Fire
- Internal Flood
- IT System Failure
- Landslide
- Mass Casualty Incident
- Medical Air Contamination
- Patient Surge
- Sewer Failure
- Steam Failure
- Structural Damage
- Supply Chain Shortage
- Terrorism, Radiologic
- Transportation Failure
- Trauma
- Water Contamination
- Water Failure
- Wild Fire
- Winter Storm

Among facility hazards, the following were most frequently identified as high risk:

- Active Shooter
- Chemical Exposure, External
- Communication / Telephone Failure
- Fire
- Inclement weather
- Infectious Disease Outbreak
- IT System Outage
- Structural Damage
- Wild Fire
- Winter Storm

A list of validated events that are likely to create an impact to the regional healthcare capability were also identified:

- Special needs population
- High risk infectious disease
- Limited transport assets for evacuation
- Coordination of evacuation
- Staffing shortage
- Storms and weather
- IT events
- Communication
- Mental Health
- Hazmat capability
- Transportation

Top Five Regional Hazards Justification:

Hazard	Impact to Regional Healthcare Capability
Winter Storm	Staffing and the resource of personnel Medical surge Communications internally and externally Regional coordination Regional resources Power outages Transportation
Wild Fire	Medical surge Staffing and the resource of personnel Communications Health conditions due to smoke particles and inhalation Regional resources Evacuation Regional burn resources
Chemical Exposure	Staff protection (Decon capabilities) Medical surge Health conditions due to chemical inhalation Regional resources Transportation

Hazard	Impact to Regional Healthcare Capability
Communication/Telephone Failure	Communications internally and externally Minimal redundant communication systems Regional coordination
IT System Failure	Communications internally and externally Access to medical records Electrical and medical equipment failure Regional information sharing and situational awareness

Regional Vulnerabilities

The natural and man-made events that create a high risk to healthcare facilities as well as those events that may occur within the region and create an impact to the regional healthcare capability were analyzed by commonality and root cause. As commonality and root cause were assessed, several events and conditions were consolidated or further defined.

The following three challenges were determined to contribute to the vulnerability of the regional healthcare capability during almost every natural or man-made impact. No order of priority or relative risk was identified among the three.

Weather

All weather events contain potential for similar impacts. Examples include transportation being impacted, staff being personally impacted, a medical surge being possible due to higher numbers of injured people, or infrastructure being impacted by rising water or falling trees. The exact time and severity of an impact is difficult, if not impossible, to predict. Individual facilities may be able to better identify potential impact from specific weather events. Weather also creates geographic isolation from other counties within and outside of the coalition.

From the perspective of regional preparedness to continue to provision of healthcare, weather events all require similar preparedness and response activities. Assessing these events together focuses on the coordination to provide healthcare rather than the specific impact a specific weather event may or may not generate.

Medical Surge

Medical surge refers to a surge of individuals requiring medical care at healthcare facilities. The potential for "medical surge" exists at each receiving healthcare facility due to an event impacting only that facility or the community. For the purposes of assessing the vulnerability of the regional healthcare capability, medical surge refers to an event generating individuals seeking medical care at multiple facilities simultaneously within the region. This may be a result of a single event or an interruption of healthcare services that shifts the regional patient care burden to other facilities within the region.

Medical surge events can include an influx of patients or mass trauma creating a large number of patients arriving at all facilities, pandemic, burn, mass fatality event such as a bombing or shooting, an impact to access and functional needs individuals, and any increase to the current number of mental health patients due to the limited number of mental health resources.

In addition, a medical surge may occur due to a hazardous materials event and generate any of the following challenges: potable water contamination, decontamination of patients, airborne chemical event, and waste disposal.

Transportation

The failure of any portion of the infrastructure used to move patients, staff, or supplies creates a similar impact to the regional provision of healthcare. Transportation impacts due to infrastructure may include: reduction or loss of air medical transport, limited transportation abilities, reduction or loss of medical transport, and reduction or loss of supply transport.

Transportation may impact the regional healthcare capability due to the limited number of medical transport assets, the geographic distance between patients and providers, or an impact to infrastructure that slows transport times and further taxes the limited resources moving patients over a vast distance.

Additionally, staff transportation may be impacted due to incapacitated or closed roads providing healthcare agencies with a shortage in staffing. The transport of equipment or supplies to support the healthcare system will be challenging if road conditions and air travel are closed, or fuel is unavailable to operate vehicles.

At-Risk Population

There is a portion of the population that is "at-risk" because of the individuals' need for support from outside resources. The at-risk population is easily identified in some cases, such as the individuals residing at a skilled nursing facility. In other cases, those with access or functional needs may be more difficult to identify because they are homebound, do not speak English, or live independently as long as there is no impact to utilities or transportation. The following factors that generate the regional healthcare vulnerability created by the at-risk population were identified and defined:

- Continuing Care – includes Long Term Care, Skilled Nursing, group homes, assisted living, and independent living. This is a large population with a diversity of needs.
- Mental Health services and population – within the region and Colorado, there is a limited number of services that provide mental health support. In addition to limited resources to support the regional healthcare capability during a disaster, there is a portion of the population that relies on these services. An event impacting the provision of mental health services means a surge to the already taxed system as well as a portion of the population that becomes a functional needs population due to their inability to utilize a service they depend upon.
- Ancillary healthcare consumers – the population that relies on or utilizes ancillary healthcare providers such as dialysis, home health, primary care, or ambulatory surgery may create challenges for the regional healthcare providers to manage during an event impacting the region. Consumers may need access to dialysis, home health patients may be difficult to reach due to road closures, primary care providers may be closed creating additional patients at emergency rooms, and patients may be forced to live without electricity or running water that is vital to their ability to be served by ancillary healthcare outside of a hospital.
- Access and Functional Needs – the portion of the population that has access and functional needs that may interfere with their ability to access or receive medical care before, during, of after an emergency. This broad definition includes needs of individuals who have limitations that interfere with their ability to receive or respond to information, individuals who require personal assistance services to maintain health, those living

independently with assistive devices, and those with transportation needs because of age, physical disability, temporary injury, poverty, cognitive disorder, addiction, legal restrictions, or no vehicle.
- Worried well – some events generate a large number of people who are not physically impacted but the circumstances create a belief that they are impacted. This group requires healthcare resources to communicate with the group as well as to treat them as part of any patient surge until they are determined to not be physically impacted. Regardless of physical impact these patients may create a surge to the mental health resources based on their need for psychosocial support.

Mitigation Strategies

Each vulnerability was analyzed to determine a framework of strategies that, if implemented, would mitigate the impact to the regional healthcare capability from the vulnerability.

Weather

- Enhance preparedness for housing plans for staff, visitors and discharged patients
- Ensure that healthcare partners have a functional continuity of operations plan (COOP).
- Create a proactive approach to coordinate with other healthcare agencies during weather events.
- Improve regional coordination and communication.

Medical Surge

- Regional resources to assist with medical surge.
- Regional communication and coordination processes to manage the regional identification and allocation of resources.
- Develop a regional medical surge template for continuing care providers to establish processes to accept patients from ancillary healthcare facilities during an emergency to help eliminate the surge to hospitals.

Transportation

- Review plans for managing transport assets and coordinating patient resources when the medical transport assets are stressed.

- Examine the engagement of EMS providers within the efforts to coordinate healthcare in the region. Determine how EMS fits into the regional healthcare coordination and how to expand EMS coordination.
- Regional communication and coordination to manage shortage of supplies and staffing.

At-Risk Population

- Define the term so that all healthcare providers within the region have a similar understanding of the population.
- Determine the size of the at-risk population for the purpose or planning and identifying resources to support the population.
- Assess the transport needs of the at-risk in order to plan, as a region, to provide evacuation support to the at-risk population.
- Invite representatives from the services that daily support the at-risk population to be involved in the NWRHCC.
- Access and learn more about the Community Inclusion in Colorado (CICO) Mapping System for situational awareness regarding at-risk populations in specific geographic areas.

Recommendations

Based on the review, analysis, and discussion, the following items are recommended to continue utilization of this assessment. These recommendations will assist the NWRHCC develop a long-term strategy to address the mitigation strategies found within the assessment.

1. Conduct a workshop to share and review the NWRHCC HVA with coalition members during a regularly scheduled coalition meeting. This will provide coalition members an opportunity to assess the regional hazards and vulnerabilities and improve the understanding and focus for the NWRHCC.
2. Compare the NWRHCC HVA with the North Central Region Healthcare Coalition HVA: The North Central Region Healthcare Coalition identified five conditions that impact regional healthcare capability (Communicable Disease/Epidemic, Cyber Attack/IT Failure, Winter Storm, Power Failure, and Flood). These conditions are similar to those identified by the NWRHCC but there are some differences. Given the close working relationship and the mutual reliance for healthcare coalition operational

continuity, sharing and comparing the identified events impacting the regional healthcare capability may allow a deeper understanding of those events. Similarly, a comparative analysis by the two coalitions may produce more detailed or actionable mitigation strategies and an opportunity to share additional resources moving forward.

3. Establish priority: The information developed during this project can provide direction for coalition preparedness activities and expenditures. As this assessment is utilized, it may be helpful to the coalition to establish priorities. A prioritized list of events that impact the healthcare capability may provide guidance as the coalition works to understand the membership's perception of risk. Similarly, prioritizing the mitigation strategies will assist the coalition in determining the activities or expenditures in which to engage.
4. Exercise to validate: The assessment of the vulnerability of the NWRHCC healthcare capability is based on several variables, perspectives, facts, and historical events. In order to validate the findings, the events and conditions should be exercised (this would include a retroactive assessment of previous exercises). The exercise may be a discussion-based or operations-based exercise. The purpose of the exercise would be to examine the specific details around one or all of the events and conditions that may impact the regional healthcare capability. This scenario-based assessment would provide opportunity to examine a variety of factors related to a specific event or condition. If several events and conditions were tested simultaneously, the exercise could be designed to examine specific details about each event.