1. Risk Assessment and Planning

**Risk Assessment and Planning – Element 1**

Element 1

Emergency Preparedness Toolkit

**Risk Assessment Using All-Hazards Approach**

Per the Emergency Preparedness requirements, long term care facilities must develop and maintain an emergency preparedness plan that is reviewed and updated annually and is coordinated/referenced to the facility assessment.  The emergency preparedness plan needs to include the following elements:

* Risk Assessment
* Continuity of Operations
* Collaboration and Cooperation with local, state, federal officials

**Risk Assessment**

The purpose of the risk assessment portion of the emergency plan is to conduct a facility – based and community‐based risk assessment utilizing an all-hazards approach including addressing scenarios involving missing residents.  An all-hazards risk assessment is to assist facilities in identifying the greatest threats and vulnerabilities within the facility and the community.  It focuses on developing the capabilities and capacities that support and promote preparedness for a large spectrum of emergencies.  Facilities are encouraged to utilize community-based risk assessments developed by their state or other entities, but must maintain a copy of the risk assessment and align the emergency preparedness plan with the risk assessment findings.    Based upon the assessment, the emergency plan can be developed and resource or knowledge gaps can be addressed.

It is important to conduct a risk assessment utilizing a team approach.  Team members can brainstorm examples of internal and community‐specific issues that present real or potential hazards.   Assigning an educated guess can often yield a reasonable risk calculation.  But when the team reaches out to local, county/parish, tribal, regional, state, and federal coalitions, they may find more solid data.

The risk assessment is facility-based, which, among other things, considers a facility’s patient population and vulnerabilities. Facility-based and community-based risk assessments are intended to assist a facility in addressing the needs of their patient populations, along with identifying the continuity of business operations which will provide support during an actual emergency. For instance, if a facility has a population which is primarily dependent on medical equipment the risk assessment would identify a higher impact for emergencies that lead to power failures.

Facilities are encouraged to utilize the concepts outlined in the National Preparedness System, published by the United States Department of Homeland Security’s Federal Emergency Management Agency (FEMA) at <https://www.fema.gov/emergency-managers/national-preparedness/system> , as well as guidance provided by the Agency for Healthcare Research and Quality (AHRQ) at <https://www.ahrq.gov/topics/emergency-preparedness.html> .

When developing an emergency preparedness plan, facilities are expected to consider, among other things, the following:

* Identification of all business functions essential to the facility’s operations that should be continued during an emergency.
* Identification of all risks or emergencies that the facility may reasonably expect to confront; Identification of all contingencies for which the facility should plan.
* Consideration of the facility’s location.
* Assessment of the extent to which natural or man-made emergencies may cause the facility to cease or limit operations; and,
* Determination of what arrangements may be necessary with other health care facilities, or other entities that might be needed to ensure that essential services could be provided during an emergency.

Based on the community threat and hazard identification process, facilities should select a comprehensive risk assessment tool that evaluates their risk and potential for hazards. The comprehensive risk assessment should include all risks that could disrupt the facility’s operations and necessitate emergency response planning to address the risk mitigation requirements and ensure continuity of care.

Using an all-hazards approach helps facilities consider and prepare for a variety of risks which may impact their healthcare settings. Facilities should categorize the various probable risks and hazards identified by likelihood of occurrence and further create supplemental risk assessments based on the disaster or public health emergency. For example:

* For power loss and potential disruptions of services: Facilities can consider using a heat index or heat risk assessment to identify situations which present concerns related to patient care and safety. Facilities are required to maintain safe temperatures under (b) policies and procedures (see Tag E-0015); therefore, a heat risk assessment can be considered as an additional risk assessment but is not required. Facilities may find it helpful to refer to ASPR TRACIE for the Natural Disasters Topic Collection at <https://asprtracie.hhs.gov/technicalresources/36/natural-disasters/27> .
  + NOTE: In situations where the facility does not own the structure(s) where care is provided, it is the facility’s responsibility to discuss emergency preparedness concerns with the landlord to ensure continuation of care if the structure of the building and its utilities are impacted.
* For public health emergencies, such as EIDs or pandemics: Facilities should consider risk assessments to include the needs of the patient population they serve in relation to a communicable or emerging infectious disease outbreak. Planning should include a process to evaluate the facility’s needs based on the specific characteristics of an EID that includes, but is not limited to:
  + Influx in need for Personal Protective Equipment (PPE)
  + Influx in need for medical equipment, medical supplies, cleaning and disinfection supplies, food and other supplies/equipment as needed.
  + Considerations for screening staff, patients and visitors, which may also include testing considerations for staff, visitors, and patients for infectious diseases.
  + Transfers and discharges of patients; alternative care sites, Home-based healthcare settings.
  + Physical Environment, including but not limited to changes needed for distancing, isolation, or capacity/surge.
  + Education and training of staff
  + Emergency staffing contingency plans
  + Communication processes in accordance with current guidance and requirements

Facilities must develop strategies for addressing emergency events that were identified during the development of the facility- and community-based risk assessments.

Facilities will also want to consider evacuation plans. For example, a facility in a large metropolitan city may plan to utilize the support of other large community facilities as alternate care sites for its patients if the facility needs to be evacuated. The facility is also expected to have a backup evacuation plan for instances in which nearby facilities are also affected by the emergency and are unable to receive patients.

For long term care facilities (LTC), written plans and the procedures are required to also include missing residents and clients, respectively, within their emergency plans.

**Risk Assessment - In Summary**

Once the relative risk for each hazard is determined, the team can develop and can prioritize the work plan. The hazards with the newly identified highest relative risk can be addressed by applying available resources to information gathering, policies and procedures, emergency preparedness planning, and training that will reduce the risk value of a given hazard scenario.

Correlation with QAPI

The Emergency Preparedness Plan and the Facility Assessment should be integrated into the Quality Assurance and Performance Improvement process. As part of the facility’s QAPI process, use of an action plan to assign and to manage work tasks associated with Emergency Plan development is essential. A sample is located below.



The overall goal with hazard risk analysis is to continuously improve the relative management grade, then focus periodic training and exercises on those hazards that remain at the highest probability.

**Risk Assessment/Hazard Vulnerability Assessment Tool**

**Examples and Resources**

**Example 1 - Abbreviated Template for Risk Assessment**

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| **EXAMPLE Risk Analysis of ABC Nursing Home – Step 1**  **Brainstorm Potential Hazards and Establish Relative Impact Magnitude** | | | | | | | |
| **A** | **B** | **C** | **D** | **E** | **F** | **G** | **H** |
|  |  | **Impact** | | | | |  |
| **Potential Hazard** | **Probability** | **Human Impact** | **Service Impact** | **Property Impact** | **Business Impact** | **Community Impact** | **Relative**  **Impact Magnitude** |
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|  | 0 = N/A  1 = Low  2 = Moderate  3 = High | 0 = N/A  1 = Low  2 = Moderate  3 = High | 0 = N/A  1 = Low  2 = Moderate  3 = High | 0 = N/A  1 = Low  2 = Moderate  3 = High | 0 = N/A  1 = Low  2 = Moderate  3 = High | 0 = N/A  1 = Low  2 = Moderate  3 = High |  |
| **Probability**: **0** = Implausible; **1** = 0-1 event/30 years; **2** = 2-3 events/30 years; **3** = 4+ events/30 years  **Impact**: **0** = no impact expected; **1** = < 1% affected; **2** = 1 – 10% affected; **3** = > 10% affected  **Relative Impact Magnitude = Probability X (Sum of the 5 Impact Rankings)** Range is 0 - 45 | | | | | | | |

*The higher the Relative Magnitude score, the more widespread the impact. Later, in Step 2, the team will analyze how well the facility currently manages each specific hazard.*

Emergency Preparedness is an on-going effort. You should update the risk assessment and the emergency plan annually and as new data becomes available.

**Example 2 – State Specific Facility Based Hazard Vulnerability Assessment (HVA)**

A Federal interagency workgroup developed a list of all-hazards planning scenarios for use in national, federal, state, and local preparedness planning activities. For example, the following list of scenarios was modified by the Wisconsin Department of Health Services for LTCF (<https://www.dhs.wisconsin.gov/regulations/preparedness/prep-hva.htm> ) use under two categories: natural and man-made.

The Federal Emergency Management Agency (FEMA) is the agency that promotes disaster mitigation and readiness and coordinates response and recovery following the declaration of a major disaster. FEMA defines a disaster as: “an event that results in large numbers of deaths and injuries; causes extensive damage or destruction of facilities that provide and sustain human needs; produces an overwhelming demand on state and local response resources and mechanisms; causes a severe long-term effect on general economic activity; and severely affects state, local, and private sector capabilities to begin and sustain response activities.”

**Examples - Natural Disasters**

* + **Blizzard**: A blizzard means that the following conditions are expected to prevail for a period of four hours or longer: sustained wind or frequent gusts to 35 miles an hour or greater; and considerable falling and/or blowing snow (*i.e.,* reducing visibility to less than a quarter of a mile).
  + **Cold (extreme and prolonged)**: A period of unusually cold weather that lasts two or more days.
  + **Earthquake**: An earthquake is the sudden release of stored energy; most earthquakes occur along a fracture within the earth, called a fault. The shaking caused by this sudden shift is often very small, but occasionally large earthquakes produce very strong ground shaking. It is this strong shaking and its consequences – ground failure, landslides, liquefaction – that damages buildings and structures and upsets the regional economy. The Richter scale is logarithmic, so a recording of 7, for example, indicates a disturbance with ground motion ten times as large as a recording of 6. A quake of magnitude 2 is the smallest quake normally felt by people. Earthquakes with a Richter value of 6 or more are commonly considered major; great earthquakes have magnitude of 8 or more.
  + **Flash Flooding**: A rapid and extreme flow of high water into a normally dry area or a rapid water level rise in a stream or creek above a predetermined flood level; beginning within six hours of the causative event (*e.g.,* intense rainfall, rapid melting snow). However, the actual time threshold may vary in different parts of the country.
  + **Heat (extreme and prolonged)**: A period of abnormally, uncomfortably hot and unusually humid weather; typically, a heat wave lasts two or more days.
  + **Ice Storm**: An ice storm is used to describe occasions when damaging accumulations of ice are expected during freezing rain situations. Significant accumulations of ice pull down trees and utility lines resulting in loss of power and/or communication lines or disrupt the movement of supplies and materials. An accumulation of ice may make walking and driving extremely dangerous. Significant ice accumulations are usually of about a quarter of an inch or greater.
  + **Landslide**: Landslide is the movement of rock, soil and debris down a hillside or slope. Landslides take lives, destroy homes, businesses and public buildings, interrupt transportation, undermine bridges, derail train cars, cover marine habitat and damage utilities. The term landslide includes a wide range of ground movement, such as rock falls, deep failure of slopes, and shallow debris flows. Ground failures that result in landslides occur when gravity overcomes the strength of a slope. Landslides are activated by storms, earthquakes, volcanic eruptions, fires, alternate freezing or thawing, and steepening of slopes by erosion or human modification.
  + **Tornado**: Tornadoes are nature’s most violent storms. Spawned from powerful thunderstorms, tornadoes can cause fatalities and devastate a neighborhood in seconds. A tornado appears as a rotating funnel-shaped cloud that extends from a thunderstorm to the ground, with whirling winds that can reach 300 miles per hour. Damage paths can be in excess of one mile wide and 50 miles long. Every state is at some risk from this hazard.
  + **Wild fire**: A wildfire is an uncontrollable fire spreading through vegetative fuels, exposing and possibly consuming structures. They often begin unnoticed, spread quickly and are usually signaled by dense smoke that fills the area for miles around.

**Examples- Man Made**

* + **Airplane Crash**: The impact of an airplane crash should be considered on two levels; first, the epicenter of the crash site and second, an extended debris field. The question to ask is, “Is our facility along the take-off or landing flight path of a regional airport?”
  + **Biological Disease Outbreak-Pandemic Flu**: Influenza pandemics occur unpredictably. Influenza pandemics may occur when a new influenza A virus subtype emerges and causes infection in people (termed genetic shift). If this new virus subtype, for which there is little to no immunity in the population, spreads efficiently between people, it can cause a pandemic. While influenza outbreaks occur annually, a pandemic is a unique event. Rates of influenza illness, as well as its severity, are likely to be high because most (or all) of the human population will be susceptible, having had no prior exposure to this new influenza subtype. In addition, persons not generally at high risk may develop severe or fatal disease.
  + **Pandemic or Emerging Infectious Disease (EID):** emerging infectious diseases are infections that have recently appeared within a population or those whose incidence or geographic range is rapidly increasing or threatens to increase in the near future.
  + **Civil Demonstration (adjacent to your facility)**: A large number of people gather peacefully in one place in support of their civil liberties. This could block traffic patterns, thus disrupting staff and supply movement to or from your facility.
  + **Communications Disruption (major and prolonged)**: There is major failure in any type of communications infrastructure through a variety of mechanisms, including physical destruction of transmission or broadcast components, disruption in supporting infrastructure and system congestion for greater than four hours. This excludes computer network or internet access failure.
  + **Computer Failure (system)**: Loss of computer network or Internet access for greater than four hours.
  + **Explosives Attack-Improvised Explosion**: In this scenario, agents of an adversarial group will employ a multiple prong attack to funnel personnel into predetermined locations, utilizing multiple devices such as vehicle bombs, suicide bombers, and man-delivered IEDs to inflict the greatest number of causalities.
  + **Fuel Shortage**: An energy emergency or fuel shortage may involve any one or more of various types of energy resources. It might involve natural gas, heating oil, gasoline, coal, or electricity. No matter which type of resource is involved, it is the inability to produce or to transfer sufficient quantities of the resource at an acceptable cost to businesses, industry, and the public that creates the emergency. When this disrupts the normal day-to-day lives of citizens, it can become an energy emergency. This is especially true during periods of inclement weather where heating is necessary for individual safety.
  + **Hazmat Release** **/ Explosion (fixed site)**: An incident resulting in the unintentional release of a hazardous material or agent (biological, chemical, physical) which has the potential to cause harm to humans, animals, or the environment, either by itself or through interaction with other factors at a fixed site.
  + **Hazmat Release / Explosion (transport)**: An incident resulting in the unintentional release of a hazardous material or agent (biological, chemical, physical) which has the potential to cause harm to humans, animals, or the environment, either by itself or through interaction with other factors during the loading, unloading, transportation or temporary storage of hazardous materials.
  + **Nuclear Facility Incident (fixed site)**: This is defined as a larger scale radiological incident at a fixed location. This includes incidents at a nuclear power plant.
  + **Power Outage**: Loss of residential or commercial electrical service for greater than 4 hours.
  + **Supply Disruption**: This refers to a disruption that happens at one time, due to some type of major event, excluding fuel power, water. Crucial supply distribution is interrupted for more than three days, impacting citizen health and safety.
  + **Water System Failure**: Damage to public water supply systems that impact the delivery of potable water for greater than four hours.
  + **Municipal Water Contamination**: The presence of biological, chemical, or radiological contamination of a municipal potable water system.

Some organizations prefer to sort potential hazards into 3, 4, or more groupings such as the following:

* Natural disasters, Man-made disasters, and Technical disasters
* Natural hazards, Technical hazards, Human hazards, HazMat/Chemical hazards
* Infection-related hazards; *e.g.,* pandemics and food contamination, sometimes warrant a separate category as well.

Your state and local health care coalitions will have a state or local listing of potential risks in your geographic area. State or territory contacts can be found at: <https://www.fema.gov/grants/mitigation/state-contacts> .

**Example 3 – Comprehensive Hazard Vulnerability Assessment - Kaiser Permanente Example utilized by ASPR TRACIE** [**https://asprtracie.hhs.gov/**](https://asprtracie.hhs.gov/)

Large health care organizations often create comprehensive lists of hazardous events. No facility is at risk for all such events; however, one or two facilities may have experienced an event and then share their best practices to assist those facilities who have yet to experience such an event. The following alphabetical list from Kaiser Permanente hospitals in California is worth consideration when identifying potential hazards.

The tool is recommended by CMS as a best practice standard and includes the following potential risk scenarios: <https://asprtracie.hhs.gov/technical-resources/3/hazard-vulnerability-risk-assessment/1>

* Active shooter
* Acts of intent (Writer’s note: criminal activity)
* Bomb threat
* Building move (Writer’s note: temporary or permanent planned relocation of multiple residents or staff)
* Chemical exposure, external
* Civil unrest
* Communication/Telephone failure
* Dam failure
* Drought
* Earthquake
* Epidemic
* Evacuation
* Explosion
* External Flood
* Fire
* Flood
* Forensic admission (Writer’s note: criminal)
* Gas/Emissions leak
* Generator failure
* Hazmat incident
* Hazmat incident with mass casualties
* Hostage situation
* Hurricane
* HVAC failure
* Inclement weather
* Infectious disease outbreak
* Internal fire
* Internal flood
* IT system outage
* Landslide
* Large internal spill
* Mass casualty incident
* Natural gas disruption
* Natural gas failure
* Other utility failure
* Pandemic
* Patient surge
* Picketing
* Planned power outage
* Power outage
* Radiation exposure
* Seasonal influenza
* Sewer failure
* Shelter in place
* Strikes/Labor action/Work stoppage
* Suicide
* Supply chain shortage/failure
* Suspicious odor
* Suspicious package/substance
* Temperature extremes
* Tornado
* Transportation failure
* Trauma
* Tsunami
* VIP situation
* Water contamination
* Water disruption
* Weapon
* Workplace violence/threat
* Zombies
* Other considerations - What about underground coal mine subsidence? Sink holes? Volcanic eruptions? Food contamination? Missing residents?

If your facility has a unique situation or there is a unique condition in your community, they should be added to potential hazard scenarios to the list of potential hazards and assess them with the rest. But remember, the goal is not to identify and then to plan for every possible scenario. The goal of Step 1 is to identify relative magnitude levels before moving on to the emergency plan. The plan will focus on those hazards presenting the highest risk to the lives and safety of residents, staff, and community.

**How to Use the Sample Risk Analysis**

In the sample Risk Analysis Step 1 above, a ranking scale indicating events per year provides a simple standardized comparison method. **Probability** refers to the likelihood of future occurrence.

* 0 = N/A (Implausible)
* 1 = Low (0-1 event/30 years)
* 2 = Moderate (2-3 events/30 years)
* 3 = High (4+ events/30 years)

When scoring probability, consider the known risk, historical data, and manufacturer/vendor statistics.

Also in the sample Risk Analysis Step 1 above, the **Impact** upon 5 different categories was considered using a standardized ranking scale of percent affected.

* 0 = N/A (No impact expected)
* 1 = Low (< 1% affected)
* 2 = Moderate (1 – 10% affected)
* 3 = High (> 10% affected)

The **“Human Impact”** is the percentage of the facility population (residents and staff) likely to be injured or killed under an average occurrence of the hazard. It can include death but also injuries requiring medical intervention.

**“Service Impact”** is the percentage of healthcare services likely to be affected under an average occurrence of the hazard. Consider direct care, facility infrastructure, resident family support, professional support, and ancillary services in ranking this item.

**“Property Impact”** is defined as the percentage of properties likely to be affected under an average occurrence of the hazard. Think about replacement costs, temporary replacements, repairs, and time to recover.

**“Business Impact”** addresses the percentage of businesses likely to be affected under an average occurrence of the hazard. This includes business disruption, employees unable to report for duty, customers unable to reach the facility, contract violations, fines, penalties, legal fees, interrupted critical supplies, reputation or image loss, and financial burden.

**“Community Impact”** is the percentage of community likely to be affected under an average occurrence of the hazard. Contamination of air, water, and food; supply distribution; facility evacuation; and disruption of utilities and transportation are key consideration factors.

A **“Relative Magnitude”** score, ranging from 0 to 45, can be calculated by multiplying the sum of the impact ranks by the probability rank.