SHELTERING, RELOCATION, AND EVACUATION

Introduction

Increases in natural and human-caused disasters heighten the likelihood that a hospital will have to partially or totally evacuate. A key part of hospital emergency management is having a robust plan in place to mitigate and be prepared for threats to the facility to *prevent* evacuation. However, threats will arise that require rapid decision-making and action. Staff should understand and have exercised evacuation/relocation plans and resources, and hospital leadership should have a clear understanding of community plans and resources that can support an evacuation.

Chapter Quick Links

Strategies and Timing

In general, there are three strategies that may be employed in response to a threat to or within the facility:

- **Shelter in place** – actions taken to reduce risk while remaining in the current location. This may include implementing access controls, shutting down ventilation systems, and taking other measures designed to "defend in place." Sheltering is recommended when the risk of patient and staff movement is higher than the risk of staying in place. Threats may include smoke and chemical plumes affecting the hospital, an active threat of violence in the facility, or a sudden storm that does not permit patient movement.
- **Relocation** – moving patients and staff to a safer part of the facility. This may occur when a localized power outage, water leak, or other issue renders a portion of the facility less safe or unsafe but there are areas of the campus that are safe (or at least safer). **Horizontal** relocation (on the same floor) is preferable to **vertical** (different floors) when possible.
- **Evacuation** – movement of patients from the hospital to other hospitals. Generally, this is a last resort. Evacuation may be **partial** (e.g., intensive care patients moved due to a water leak) or **complete** (e.g., the entire facility is threatened by a wildfire or flood).

Related Resources

Additional resources are available in ASPR TRACIE's Healthcare Facility Evacuation/Sheltering and Patient Movement, MOCCs, and Tracking Topic Collections.

Sheltering and relocation decisions are relatively common. Unit staff should have the authority to take sheltering actions and, when needed, relocate patients and themselves to avoid immediate harm. Evacuation decisions are less common and involve a significantly higher degree of logistical complexity and some risk to the patients being transferred. Authority to make decisions about structured relocation or evacuation should be delegated to the incident commander. Though sheltering and relocation are preferred, complete evacuation is the most complicated contingency and is the focus of this chapter.

There are three types of hospital evacuation:

- **Scheduled** – the evacuation occurs in anticipation of unacceptable risk to the campus (e.g., hurricane or flood crest) with adequate time (typically 24 hours or more but depends on the facility size and patient types/acuity) to complete an orderly evacuation. Scheduled patient movement presents much less risk. Orderly sequencing of patient transfers to appropriate destinations, along with their records and belongings, is possible.
- **Urgent** – the evacuation needs to begin within hours (e.g., less than 12 hours) and be rapidly completed due to an evolving threat (e.g., flooding, wildfire). Resources for patient transfer and matching patients to available receiving facilities may not be optimal. Abbreviated records transfer may occur.
- **Emergent** – the evacuation must occur immediately due to imminent threat (e.g., fire and smoke). Emergency medical services (EMS) resources may be inadequate for patient transport and patient/receiving facility matching may be minimal. Records and belongings transfers may be inadequate. Risk to patients for injury and decompensation is high, particularly among the more critically ill.

Factors Affecting Decision-Making

When hospital infrastructure and patient and staff safety are threatened, a range of actions may be necessary to reduce risk. These actions are informed by:

- **Type and duration of threat:** What is the threat, potential direct and secondary impacts, and anticipated duration?
- **Degree of risk to patients and staff:** The risk of remaining at the facility should be balanced against threats in the community and the relative risk of deterioration of patients during transport in terms of distance, available transport resources, and patient condition.
- **Timing of threat (notice/no-notice):** What is the time window for patient movement?
- **Jurisdictional evacuation orders and authorities:** In some cases, evacuation orders are mandatory and apply to hospitals. In other cases, hospitals are exempt from evacuation orders or orders may be voluntary. In these cases, the hospital will decide whether to evacuate in conjunction with the local authorities.

Based on the situation, the Incident Commander and team (refer to Incident Command chapter of the Guidebook for additional information) will also decide whether a "stay" team will remain onsite to secure, monitor, and maintain the facility (facilitating more rapid reopening) or if certain services (such as emergency department [ED] stabilization) will continue despite an evacuation of inpatients. An approach to decision-making is outlined in Figure 1, courtesy of the Minnesota Department of Health.

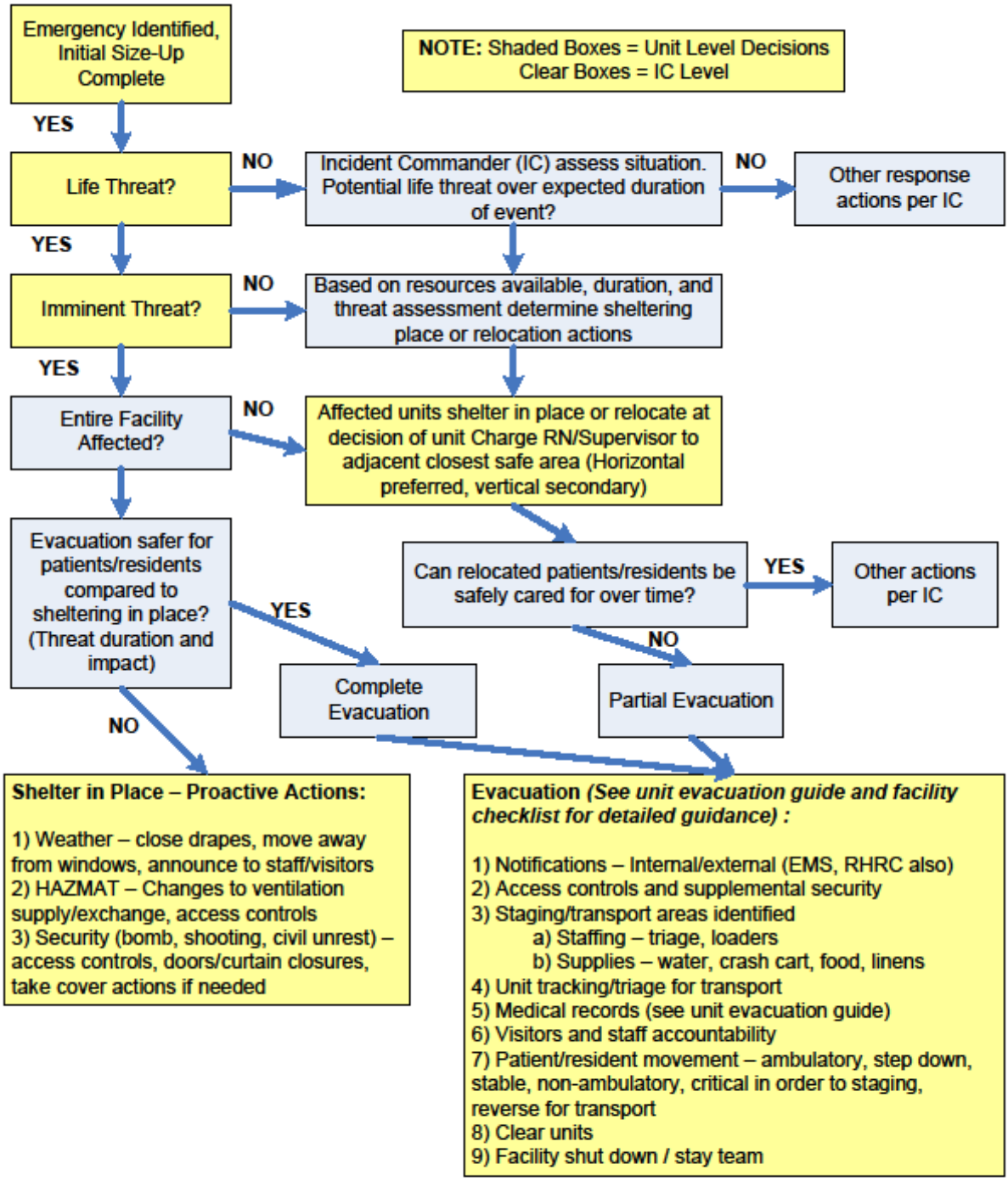

Figure 1, Decision tree for evacuation actions and timing

Planning

Preventing an emergency hospital evacuation is far preferable to conducting one. Prevention may involve activities such as:

- Protecting the campus from threats (e.g., wildfires, flooding, wind damage).
- Establishing robust contingencies for utility failures, including electricity, communications, potable water, and sewer services.
- Moving patients in a structured manner in advance of an incident (e.g., prior to a hurricane's landfall).
- Ensuring air-handling systems can be shut down to prevent smoke or hazardous substances from entering.

From the Field
Following a tornado that destroyed the hospital, reconstruction focused on features such as hardening of the external structure, use of specialized glass, redundant generators located in different areas (including substantially away from the hospital building), and other design elements to help the hospital withstand future threats.

Planning for evacuation is a multi-disciplinary process. The emergency manager should work with inpatient medical/surgical, cardiac care, critical care, pediatric, nursery, ED, psychiatry, pharmacy, laboratory, outpatient, and administrative areas to understand the specific issues and needs for each area of the facility. This information needs to be incorporated into training and job aids for specific patient populations/care units as a supplement to the overall hospital evacuation plan.

The plan should specify who has the authority to initiate an evacuation, detail the usual transport needs to evacuate the facility based on average census, outline the processes used to evacuate units, and identify the horizontal and vertical destinations by unit. The plan should also specify the locations of evacuation equipment (being careful to distribute this equipment throughout the hospital in case a portion of the facility is damaged/inaccessible) and supplies (e.g., tags, pharmacy carts, supportive supplies, water). Expectations for handling medical records, belongings, and patient tracking should be outlined based on the type of evacuation. For example, in a scheduled evacuation, the patient's destination should be known and a full medical record made available to the receiving care team. During an emergent evacuation, only a "face sheet" with patient information may be available and the destination may be coordinated by EMS.

From the Field
In areas with potential wildfire risk, some hospitals created buffer zones free from flammable materials and plantings, updated HVAC equipment to allow better filtration and isolation from outside air, installed protective sprinkler systems, and/or contracted for private fire protection onsite during high-threat situations. Additionally, they incorporated water and electrical backup onsite in case of community utility failures.

Planning with EMS and community/healthcare coalition partners is critical, as assumptions about transport availability or destination determination can be problematic. The hospital should understand that other than rare instances when it is the only facility affected,

EMS will have competing priorities for their services and may not have a large number of assets available to assist. If buses, stretcher/wheelchair vans, and other alternative transportation assets are used, this is usually coordinated by the hospital. Regional or state EMS may have strike teams that can be deployed to assist. Additionally, the region or state may have patient tracking and other systems and resources that can help support hospital evacuation and should be understood prior to an incident.

Ideally, a regional coalition structure is in place that can help determine destinations to multiple hospitals in the area. If the hospital is part of a health system, there may be a plan to distribute patients to system hospitals and coordination may occur through a system patient transfer center. However, during emergent evacuations in particular, these options may be limited.

The hospital needs to identify virtual and physical locations where command functions may continue to manage response and recovery issues after the facility is evacuated. For example, hospital Incident Command may need to address ongoing facility issues; verify patient arrivals at receiving hospitals; manage information for patients, families, and staff; liaise with community agencies; handle queries about lost articles, medical care, and family contact information; and plan for reopening.

Related Resources
ASPR TRACIE's Hospital Wildfire Evacuation Considerations tip sheet offers a checklist to inform hospital evacuation planning activities based on lessons learned from recent wildfire incidents.

Due to the large size of certain facilities or specialty units relative to others in the area, planners may recognize that finding destinations for all patients may not be possible. This may have significant implications for an evacuation decision, particularly when roadways in the area may be damaged and EMS assets may be in short supply due to 911 demands. These realities reinforce the need for the hospital to have robust plans to function as an "island" and commit significantly more assets to operational continuity and facility hardening.

Finally, if the hospital is in a rural area and relatively isolated from other facilities, staff should plan with local officials and EMS to temporarily evacuate to an alternate location (e.g., nearby high school) if the campus is imminently in danger or unsafe to occupy. Supplies may need to be moved to this location to support temporary care until the patients can be moved back to the hospital or transferred to destinations outside the area. This intermediate location should have space and power requirements to sustain patient care and/or life support functions. In some cases, a true Alternate Care Site may need to be set up to provide ongoing patient care until an appropriate receiving facility can be found or the original facility can be re-occupied.

Logistics of Patient Evacuation

Staging areas should be accessible to both street entrances and elevators. The ED may serve as a staging area for critical care patients if required and the pace of the evacuation allows. EMS should be aware of the need to transport from one or more staging areas depending on the size of the campus and the situation. Supplies such as a crash cart and medications for symptom

treatment (e.g., nausea, pain) should be available to the staging area. Basic patient care supplies and medical equipment, snacks, and water should be available to send with appropriate patients in transit. A Staging Officer should be appointed to manage these areas. A Transport Officer should be appointed to track each departing patient, the transporter/ambulance, and the destination. In some cases, patients from the ED or inpatient units may be able to be discharged or family members may take a patient out of the facility independent of the hospital process. These patients should also be tracked to the degree possible as it is easy to "lose" them, creating accountability issues later.

From the Field
During an emergency evacuation due to an internal hospital fire with loss of power and oxygen systems, EMS and fire personnel brought backboards to the floors via stairwells to assist with evacuation of non-ambulatory patients and moved patients to gurneys on the first floor. EMS worked with area hospitals to determine evacuated patient destinations during this emergency. Fortunately, unit census had been printed that morning according to hospital policy, which was critical to patient tracking. Following the incident, planning was updated to designate up and down stairwells to further streamline evacuation procedures.

Many hospitals use a reverse triage process where all ambulatory patients are moved first, ideally in a group, followed by stable non-ambulatory patients and then critical care patients. This helps focus staff efforts on the non-ambulatory patients. Once arrived at the staging area, a normal triage priority of least to most stable is used for order of transport. Thus, the *last* arriving patients to staging are prioritized for *first* transport to minimize the time less stable patients stay in staging. Depending on transport resources and urgency, a stable patient(s) may travel in an ambulance with one critical care patient to speed evacuation and reduce transport needs.

Movement of non-ambulatory patients to staging areas may be performed on beds, wheelchairs, gurneys, stair chairs, purpose-built evacuation sleds, fabric litters, or backboards. Babies may be moved in pocketed vests or special stretchers. Each type of device offers advantages and disadvantages. In particular, fabric stretchers are small and can be stored in each room or even under each patient, but they are more difficult to carry down stairs compared to a rigid device. In some cases, EMS may be able to assist with backboards and gurneys.

An evacuation tagging system may be used to track patients and their belongings. The evacuation plan should specify what medical records accompany the patients. In some cases, remote access will allow the receiving hospital full record access. However, a basic face sheet with demographic information, problem list, medications, and allergies should be sent with the patient in case of issues that develop during transport or on arrival to the receiving facility. The unit should have a process to sweep and clear all their rooms to ensure that nobody is left behind. Ideally, the unit should be secured following evacuation.

Once the campus has undergone required inspections to ensure it is safe to resume operations, the need for Incident Command is often ongoing to support resumption of services and

facilitate the return of patients who had been evacuated from the hospital. A staged resumption of services and opening of units may also be required based on incident impacts, staffing, and other variables and affect patient return decisions as well as communication to the community, EMS, and other partners. Return of patients can be complicated by reimbursement, family preference, transportation, and other issues and often will need a multidisciplinary team to work with the receiving hospital(s) on identifying candidates for return. Further, the hospital will need to track expenses and identify insurance, disaster relief, and other sources of reimbursement. The successful movement of patients out of the facility is an accomplishment, but only the beginning of a longer process.

From the Field
During a period of civil unrest, patients on an inpatient psychiatric unit were traumatized by seeing fires burning in the community and National Guard vehicles on the street from the unit windows. Some patients were relocated to other areas that did not have a view of the affected area (with security and other appropriate adaptations to the new care area) and others were evacuated to different facilities to continue their care until the situation stabilized.

Special Considerations

Obstetrics/Neonatal Intensive Care Unit (NICU)/Nursery

Planning to evacuate a NICU or nursery involves substantial work and specialized training. Depending on the services and the capacity of the nursery, it may be inadvisable to evacuate a high-level NICU (e.g., Level 3+) based both on risk and the ability of other area hospitals to accommodate the infants. The hospital emergency manager should work with nurses and physicians to determine the best way to move infants, including those with high dependency needs (e.g., ventilators). The role of the parents in moving the children and plans for mothers in active labor should also be addressed in specific, unit-based plans with appropriate equipment and job aids.

Psychiatry

Inpatient psychiatric units may also be difficult to safely evacuate. Consideration should be given to regional inpatient resources when determining the threshold for evacuation. The stress of any threat to the facility can be destabilizing for patients. Charge nurses should be aware of which patients are there voluntarily and who is legally committed for treatment, which patients may be safely transported with others, and which must be transported alone. Transport crews should understand the potential risks for each patient and be prepared to address medication and restraint needs appropriately.

Operating Room (OR)

The emergency manager should plan with surgical areas for emergency situations that might require aborting a procedure in process and moving patients to a staging area, other OR, or ambulance. This requires close coordination with anesthesia staff and surgeons and a determination of who will make the call to stop the procedure versus complete it or temporize.

Some hospitals have used drills to identify the process and procedures needed and develop education and training for OR staff. In the absence of such planning and exercising, confusion and safety issues are likely.

ICU

Intensive care patients are very difficult to move if elevators are not functional. Some patients, such as those on extracorporeal membrane oxygenation (ECMO) or with left ventricular assist devices (LVADs) may have specialized equipment or battery needs. In some cases, the risk to move a very unstable critical care patient is too high and they will shelter in place with appropriate staff. This depends on the risk to the facility as well as how likely cascading system failures (e.g., loss of power, water) are after the initial impact. Whenever possible, horizontal relocation of these patients versus evacuation is preferred to minimize risk. Staff should clearly understand their actions and options in case urgent or emergent evacuation is warranted.

Communications Issues

Close communication with public safety partners is required before, during, and after an evacuation. Public safety and EMS agencies need to understand the status of the facility, what assistance is needed, and be able to communicate the status of the hospital with the public. Hospitals need to understand evolving risks, planning timeframes, and available resources. Public safety staff may need to allow EMS and hospital personnel to pass into restricted areas to support an evacuation in progress. Further, road closures, signage, and other assistance may be needed to isolate the campus after evacuation.

Some patients will be anxious and should be provided with as much information as possible about the situation and plans, including potential timeframes. Communication with patients and visitors should be in-person as much as possible. Scripted talking points may be circulated to staff during scheduled and urgent evacuations. Printed information may be a good option, if possible, as the patient is unlikely to remember phone numbers or basic information about the evacuation.

Loved ones will also be anxious about the patients. A dedicated phone line or rollover line should be staffed to provide destination information and other updates for family members seeking information. Phone lines should be rolled to an alternate location after evacuation. Messaging for social and traditional media should be developed and circulated as soon as possible. Additionally, and only if conditions are safe to do so, an onsite (or within close proximity) Family Support Center should be stood up to support reunification and other needs.

Finally, these situations can be very dynamic and stressful for facility staff. Multiple methods to communicate the current situation, plan, and timeline to staff (including those at home) is critical. If time allows, encouraging reference to unit evacuation plans in advance can help to facilitate a more orderly and efficient evacuation.

Ongoing communication with all these groups will be needed after the evacuation as well, emphasizing the need for continuity of Incident Command operations after evacuation.

Considerations by Evacuation Type

Considerations for Scheduled Evacuation

Once the Incident Commander has determined that an evacuation is required or has been ordered to evacuate by the jurisdiction based on anticipated threat/impact level, the following actions should be considered if the facility has more than 12 hours to start the process:

- Developing information and communicating with jurisdictional authorities, media, staff, patients, and families.
- Cancelling procedures and discharging appropriate patients (and providing notice of pending cancellations and discharges).
- Determining transport needs and timeframes.
- Determining whether staging areas will be used or if patients will be moved directly from the room to the transport unit.
- Organizing destination hospital beds for patients.
- Determining potential for moving staff to assist at facilities receiving evacuated patients.
- Determining special evacuation needs (e.g., NICU, ICU).
- Diverting patients to the degree possible (particularly obstetric and operative).
- Planning for any "stay teams" or ongoing services.
- Determining continuity plans for Incident Command.
- Determining medical records transfer mechanisms and printing face sheets.
- Implementing protection plans for the campus anticipating impact (e.g., window protection).
- Preparing to load and track patients in an orderly manner.
- Securing/protecting instruments, temperature-sensitive products, and pharmaceuticals.
- Ensuring facility access controls are implemented. The hospital may maintain onsite security staff depending on the situation.

Considerations for Urgent Evacuation

As soon as the facility recognizes any potential for evacuation, staff should be encouraged to reference plans, mobilize equipment for evacuation and the staging areas, and start printing or copying medical records. If patient tagging systems are used for triage and belongings tracking, these should be applied and belongings gathered. Once an evacuation decision is made, if the facility has less than 12 hours to start the process of evacuation, the following priorities should be addressed:

- Moving key equipment to staging areas and evacuation equipment to units rapidly.
- Printing of face sheets by unit.
- Determining which units will move in what order.
- Liaising with EMS/public safety and rapidly assessing transport resources.
- Matching transportation assets to patient numbers and needs.

- Communicating key messages to the jurisdiction, patients, media, and staff. Notification of patient family members is optimal but may need to be delegated.
- Determining continuity of Incident Command location (a stay team is less likely in an urgent evacuation).
- Tracking patients leaving the facility.
- Securing valuable property and narcotics.
- Securing the facility once it has been evacuated.

Considerations for Emergent Evacuation

In an emergent evacuation when a threat on campus (e.g., fire, complete power loss) poses imminent risk, the following should be priorities:

- Contacting 911 for maximal public safety, fire, and EMS support.
- Obtaining unit census print outs and face sheets as possible.
- Establishing Incident Command in a safe location, which may be external with fire command.
- Establishing liaison with responding agencies.
- Moving patients rapidly to staging areas as appropriate versus fire/EMS movement of patients from their rooms in relation to the degree of threat/risk to that area.
- Sending trained staff to monitor intravenous drips, ventilators, and other medical equipment in the ambulance if the transport agency is not qualified to provide critical care.
- Deciding how destination hospitals will be determined, based on local protocol and resources.
- Tracking patients by the type of transport/unit number if destination is not yet known.
- Sweeping the facility to ensure no patients or staff are left.
- Securing the facility.

Note that some emergent evacuations occur after incidents cause catastrophic damage to the hospital without warning (e.g., an earthquake or tornado causing partial or full structural collapse). While rare, emergency managers should consider how evacuation plans may be affected by an incident resulting in injured or trapped staff and patients, damaged or lack of access to evacuation supplies and equipment, loss of utilities, and increased reliance on external rescue and evacuation support.

Conclusion

Decision-making regarding hospital evacuation can be complex and dynamic. When the need is obvious and the threat is imminent the decisions are easier, but the success of the evacuation will depend on the ability of EMS, fire, and public safety agencies to support the hospital. Urgent and scheduled evacuations rely on hospital plans and resources to ensure a safer and more structured process. When possible, sheltering and relocation on campus are preferred to a partial or complete facility evacuation. The range of options and the high risk to specific patient groups (e.g., NICU, OR) require that the hospital emergency manager spend significant time each year updating both facility and unit-based plans and conducting training and drills.

These should include strategic decision-making exercises with leadership and tactical evacuation/patient movement drills with unit staff. Unfortunately, loss of sewer/water, fire, flooding, hurricanes, and other incidents drive the evacuation of multiple hospitals each year. All hospitals are at risk of needing to evacuate, but community hazards and area hospital resources can help guide mitigation and preparedness activities.

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