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**HARVARD**

**SCHOOL OF PUBLIC HEALTH**

Emergency Preparedness and Response  
Exercise Program



# MDPH HOSPITAL EVACUATION TOOLKIT

## X. EXERCISING EVACUATION PLANS







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## INTRODUCTION

### **Purpose of Exercising Evacuation Plans**

As previously mentioned, this document is designed to support hospitals as they develop and then annually update their evacuation plans. Once an initial plan is drafted the only way to test its feasibility is to then exercise that plan. When planned and executed properly, exercises that simulate response to major emergency situations can significantly help improve preparedness on two levels. At the *individual* level, exercises present an opportunity to educate staff members on disaster plans and procedures through hands-on practice. They also help staff improve their performance through constructive critiques of their actions. On a *system-wide* level, well-designed exercises can reveal gaps in resources, uncover planning weaknesses, and clarify specific roles and responsibilities.

All emergency plans, protocols, and procedures should be tested to ensure that the assumptions upon which they are based are valid. Because hospital evacuations are typically rare events, hospitals will generally not have the opportunity to examine the successes and failures of their plans without exercising.

Exercising evacuation plans can be difficult due to the 24/7 nature of hospital operations. This guidance includes suggestions and observed best practices to help hospitals test their evacuation plans.



## EXERCISING EVACUATION PLANS

### **Emergency Preparedness Exercising**

In general, there are four progressive levels of action in an exercise program. *Drills* test a single specified operation, such as activating a notification system or measuring response times. In contrast, *exercises* test multiple operations. *Tabletop exercises* are low-stress events designed to identify major gaps or conflicts in planning. Participants discuss which actions they would take when faced with a given emergency, but no real resources are used. *Functional exercises* are higher stress events where many participants simulate their actions within an Emergency Operations Center (EOC) and must make immediate, specific decisions, but real equipment and personnel are not deployed. *Full-scale exercises* are the most realistic, most complex, and most costly events where personnel perform as many of their actual duties as possible in a simulated emergency in order to best assess the true capabilities of the response system.

- *Evacuation exercises should involve both sending and receiving facilities to facilitate a well-coordinated relationship ahead of real events<sup>1</sup>.*
- *In addition to exercising your facility's plan to evacuate, seek out opportunities to exercise receiving patients from other facilities as there are unique challenges to this type of patient surge. Planning to receive patients is discussed further in Section VII.*

A successful exercise depends on appropriate planning. In general, the leading reason that exercises fail is a lack of practicality in the planning process. Begin your planning process with a realistic, even generous, timeline. Choose dates well in advance and anticipate weather-related contingencies, holidays and vacations. Next, recruit participants as early as possible. Most importantly, the goals and scope of each exercise must also be kept realistic with respect to what can be performed and tested. A common pitfall of overly ambitious exercises is the desire to test all parts of a plan at once in one comprehensive exercise. In general, it is preferable to focus on assessing several specific, measurable objectives in each exercise and leave the remainder for future events. We recommend no more than five target objectives per exercise.

Be sure that the scenario for the exercise/drill and the evaluation forms are reviewed by other individuals with experience in these areas. The editing process often identifies prompts and injects that need clarification and allow for a more seamless exercise or drill.

Lastly, you must include assignments for both controllers and evaluators in the planning process:

- *Controllers* monitor the expected events and timeline of the exercise. Well-prepared controllers are critical to a successful exercise since nothing dulls the sense of realism more than a lull in the action or confusion about what is supposed to be happening in the sequence of events.
- *Evaluators* monitor the events of the exercise and offer objective measurements of how well exercise participants met the pre-specified objectives. Evaluators should be appropriately selected to be competent to assess their objectives. Also, adequate numbers of evaluators are vital since one of the most important products of an exercise is the independent assessment of the event.

On the following pages are some suggested Drills, Tabletop Exercises, Functional Exercises, and Full-Scale Exercises that may be conducted and/or adapted to test a hospital's evacuation planning.



## DRILLS

*Drills* test a single specified operation, such as activating a notification system or measuring response times.

Suggestions for targeted hospital evacuation drills include:

- A floor (unit) level drill opening and using the Floor Evacuation Toolkit
  - Staff on a specific unit open their Floor Evacuation Toolkit and complete all of its contents with the patients currently on their unit. This exercise gives staff familiarity and comfort with the Toolkit and the Evacuation Plan.
  - It is suggested that this exercise be conducted annually.
- A patient packaging drill
  - Staff on a specific unit prepare patients for transport from the floor.
  - This exercise can be done with inanimate objects (i.e. boxes), mannequins, or with live volunteers.
  - All needed medical equipment, medications, and medical records are gathered and placed with the simulated patient on their wheelchair, stretcher or other transportation device.
  - This exercise is particularly helpful to better estimate times for preparing medical records, preparing medication packages for each patient, and for loading patients onto stretchers and wheelchairs.
- A stairwell drill moving an entire unit's ambulatory and non-ambulatory patients down the stairwells to the ground floor
  - This exercise can be done with mannequins that weigh the same as typical hospital patients, or with live volunteers.
  - Additional safety and expert support staff should be present to prevent injury during this exercise.
  - This exercise is particularly helpful to better estimate times for evacuation using stairs-only, and also to test any specialty devices (such as transport sleds or stair chairs) that may be part of the hospital's plan. Staff trained to use specialty devices must be present at any such exercise.
- An elevator evacuation drill moving an entire unit's ambulatory and non-ambulatory patients down the elevators to the ground floor
  - This exercise can be done with mannequins that weigh the same as typical hospital patients, or with live volunteers.
  - This exercise helps validate assumptions about the number of ambulatory, wheelchair, and stretcher patients that can maximally be loaded onto elevators. It also helps identify optimal configurations of such devices (i.e. 1 stretcher and 2 wheelchairs as an example).
  - This exercise also helps to better estimate times for evacuation using elevators.
- An internal transportation drill transporting patients from the floors to the Assembly Point(s)
  - The transportation drill can begin from the ground floor areas where patients would exit the stairwells and elevators (building on the drills above) or can begin on an individual patient care area.





- This exercise is particularly helpful to better estimate total times to evacuate the units to arrive in the Assembly Point(s)
- This exercise can be done with inanimate objects (i.e. boxes), mannequins, or with live volunteers.
- An Assembly Point set-up drill
  - This drill is conducted to estimate the times required to move necessary medical and other support equipment into the Assembly Point to prepare to care for evacuating patients.
  - The drill helps validate assumptions about the spaces required to support patient care and essential services in the Assembly Point.
- An Assembly Point operations drill
  - This drill is conducted to validate the assumptions of the Assembly Point to support essential care for evacuating patients.
  - The drill also helps validate assumptions about the spaces required to support patient care and essential services in the Assembly Point.
  - This exercise can be done with inanimate objects (i.e. boxes), mannequins, or with live volunteers.
  - Staff working in the Assembly Point should be required to perform basic medical care functions (i.e. medication administration, oxygen administration, suctioning, wound care, monitoring, and vital sign measurement, etc.) for their “patients” during this drill.
- A Staging Area drill
  - This drill helps estimate throughput times for loading patients into ambulances and to estimate the approximate number of ambulance transfers away from the hospital per hour at the selected Staging Area.
  - This exercise can be done with inanimate objects (i.e. boxes), mannequins, or with live volunteers.
  - This exercise requires participation with EMS providers and several ambulances that may be recycled after they “drive away” with the loaded patients.
- A Staff Credentialing drill
  - This drill is conducted to either send staff to be credentialed at another hospital or to receive staff to be credentialed at one’s own hospital.
  - The drill serves to test the ability to produce and review necessary documentation.



## TABLETOP EXERCISES

*Tabletop exercises* are low-stress events designed to identify major gaps or conflicts in planning. Participants discuss which actions they would take when faced with a given emergency, but no real resources are used.

Suggestions for hospital evacuation tabletop exercises include:

- A leadership exercise reviewing the decision to evacuate and initial command decisions required
  - This exercise would focus on the complexity of the decision to evacuate. Tools from the AHRQ Hospital Evacuation Decision Guide may be used.
  - The participants should activate the hospital EOP and assign ICS roles.
  - The participants should practice assigning evacuation-specific positions and making the required command decisions that support evacuation.
  
- A floor (unit) level tabletop exercise
  - This exercise would progress through the entire evacuation sequence from start to finish with all clinical representatives on a floor/unit.
  - Suggested invitees include:
    - 54Nursing
    - Physicians, NPs, PAs
    - Administrative support staff
    - Hospital leadership representatives
    - Respiratory therapy
    - Case management
    - Security
    - Materials management
    - Environmental services
    - Translators
    - Physical and Occupational therapy
    - Emergency management
  - This exercise is expected to reveal gaps in planning or understanding of evacuation efforts.
  
- A community tabletop exercise
  - This exercise would progress through the entire evacuation sequence from start to finish with all appropriate community representatives present
  - Suggested invitees include:
    - Hospital administrative and clinical leadership representatives
    - Hospital emergency management
    - State, regional, and/or local public health representatives
    - Local police
    - Local EMS
    - Local fire department
    - Local and/or regional emergency management
    - Local CMED representative
    - Regional healthcare coalition representatives (if applicable)



- This exercise is expected to reveal gaps in planning or understanding of local community evacuation plans as well as uncover errors in assumptions about others' plans or capabilities
  
- A Regional tabletop exercise
  - This exercise would progress through the entire evacuation sequence from start to finish with all appropriate Regional representatives present
  - Suggested invitees include:
    - Hospital administrative and clinical leadership representatives from all Regional hospitals
    - Hospital emergency management from all Regional hospitals
    - State, regional, and/or local public health representatives
    - Local police
    - Local EMS
    - Local fire department
    - Local and/or regional emergency management
    - Local CMED representative
    - Regional healthcare coalition representatives (if applicable)
  - This exercise is expected to reveal gaps in planning or understanding of local community evacuation plans as well as uncover errors in assumptions about others' plans or capabilities.



## FUNCTIONAL EXERCISES

*Functional exercises* are higher stress events where many participants simulate their actions within an Emergency Operations Center (EOC) and must make immediate, specific decisions, but real field equipment and personnel are not deployed.

Suggestions for hospital evacuation functional exercises include:

- A hospital functional exercise
  - This exercise would progress through the entire evacuation sequence from start to finish.
  - This exercise would test communications capabilities, flow of information, and situational awareness among:
    - The hospital Incident Commander
    - The individual care units
    - The Assembly Point
    - The Staging Area
  
- A local community functional exercise
  - This exercise would progress through the entire evacuation sequence from start to finish.
  - This exercise would test communications capabilities, flow of information, and situational awareness among:
    - The hospital Incident Commander and EOC staff
    - The Assembly Point
    - The Staging Area
    - State, regional, and/or local public health representatives
    - Local police
    - Local EMS
    - Local fire department
    - Local and/or regional emergency management
    - Local CMED representative
    - Regional healthcare coalition representatives (if applicable)
  - Any planned local communications systems and services (such as 800 MHz radios, telephone hotlines, Nextel phones, web-based systems such as WebEOC, and others should be used in this exercise).
  
- A Regional functional exercise
  - This exercise would progress through the entire evacuation sequence from start to finish.
  - This exercise would test communications capabilities, flow of information, and situational awareness among:
    - Hospital administrative and clinical leadership representatives from all Regional hospitals
    - Hospital emergency management from all Regional hospitals
    - State, regional, and/or local public health representatives
    - Local police
    - Local EMS
    - Local fire department



- Local and/or regional emergency management
  - Local CMED representative
  - Regional healthcare coalition representatives (if applicable)
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- Any planned local communications systems and services (such as 800 MHz radios, telephone hotlines, Nextel phones, web-based systems such as WebEOC, and others should be used in this exercise).



## FULL SCALE EXERCISES

*Full-scale exercises* are the most realistic, most complex, and most costly events where field personnel perform as many of their actual duties as possible in a simulated emergency in order to best assess the true capabilities of the response system.

Due to the 24/7 nature of hospital operations and the nature of medical care, comprehensive, full scale exercises of hospital evacuation are generally not performed. Hospitals may wish to combine elements of the several drills, tabletop exercises, and functional exercises in this guidance to create variations on a full scale exercise. These exercises can be done with inanimate objects (i.e. boxes), mannequins that weigh the same as typical hospital patients, or with live volunteers. Additional safety and expert support staff should be present to prevent injury during these exercises and avoid disrupting ongoing patient care within the hospital.

*Hospitals that are accredited under the Commission on Accreditation of Rehabilitation Facilities (CARF) conduct numerous evacuation exercises on an annual basis. For at least one New York City hospital, lessons learned from these exercises positively influenced response actions during both Hurricane Irene and Superstorm Sandy<sup>1</sup>.*

Hospitals should also consider conducting full-scale exercises with a limited scope. For example, hospitals can test the full, vertical evacuation of a single unit. While this scenario is unlikely to play out in real-life, it affords the best opportunity to test all elements of an evacuation plan including communication coordination, patient movement, and use of evacuation equipment.



## MEASURING PERFORMANCE

Every drill and exercise *must* have a structured evaluation and critique.

First, the independent evaluators who observe an exercise should be armed with specific, measurable, pre-specified objectives and record those observations on pre-prepared forms. Evaluators should be briefed ahead of time on the exercise scenario, timeline, and rules of play.

Second, following completion of the exercise, all participants should be given an opportunity to voice their observations and emotions in a group setting. This debriefing is often called a “*hot-wash*” and should be performed immediately following the exercise, since its utility diminishes very rapidly as emotions and immediate memories of events fade.

Third, a summary of the comments made by participants in the hot-wash and the structured critiques from the evaluators should then be compiled into an After-Action Report. This comprehensive report analyzes each achievement and each problem that was noted in the exercise.

Lastly, an improvement plan contains specific steps that will be taken by the participants after the exercise to address the issues discussed in the After-Action Report. The improvement plan should be circulated as widely as possible because the most important product that any exercise program can generate is visible, measurable, positive change. Participants may quickly lose interest in the exercise program if they do not see it leading to specific improvements in preparedness afterwards. Therefore it is very important to publicize the changes and improvements that result from exercises and drills to sustain interest in the program. It is important to keep the emphasis of evaluation on the objectives of the exercise and not on challenges created by the artificiality of the exercise itself. Participant “buy-in” to the exercise is key, but so is awareness of what would be different in an actual event as opposed to an exercise. We suggest creating a separate mechanism for participants to provide feedback on how to improve future drills and exercises.



## SECTION X REFERENCES

1. Verni C. A hospital system's response to a hurricane offers lessons, including the need for mandatory interfacility drills. *Health Aff (Millwood)*. 2012 Aug; 31(8):1814-21.