



Hospital Surge Evaluation Tool

USER MANUAL FOR CONTROLLERS AND EVALUATORS

U.S. Department of Health and Human Services
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PREFACE

The Hospital Surge Evaluation Tool is a user-friendly peer assessment tool that helps hospitals identify gaps in their surge planning through a no-notice drill. This tool was developed by RAND Health under a contract with the U.S. Department of Health and Human Services, Office of the Assistant Secretary for Preparedness and Response (ASPR). The ASPR Hospital Preparedness Program would like to acknowledge the contributions of RAND Health and the staff at numerous hospitals and several health care coalitions who contributed to the development of this tool. Users are encouraged to share comments and suggestions for improvement with the Hospital Preparedness Program at hpp@hhs.gov.

TABLE OF CONTENTS

[INTRODUCTION](#)

[BEFORE THE DRILL](#)

[DURING THE DRILL](#)

[AFTER THE DRILL](#)

[PLANNING CHECKLIST: TRUSTED INSIDER](#)

[PLANNING CHECKLIST: PEER ASSESSORS](#)

[SAMPLE COMMUNIQUE TO HOSPITAL STAFF](#)

ABBREVIATIONS

CC	command center
ED	emergency department
ICU	intensive care unit
IBA	immediate bed availability
MD	medical doctor
RN	registered nurse

Introduction

The Surge Test is a user-friendly peer assessment tool that helps hospitals identify gaps in their surge planning through a no-notice drill. This training module provides a brief overview of the Surge Test, including its objectives, key features, and staff and resource requirements. Planning checklists at the end of the document can be used to track progress in completing needed tasks before the drill.

Drill Objectives. The Surge Test (called “the drill” below) tests whether a hospital can rapidly shift into disaster mode, clear space in the emergency department (ED), create space in inpatient units to accommodate patients moved from the ED, and effectively coordinate with the hospital command center (CC). The exercise does not make any assumptions about the hospital’s status prior to exercise and incorporates the hospital’s real-life current status (i.e., full, empty, or in between). The drill should be used by emergency planners, hospital administrators, and clinical staff to assess and improve their hospital’s surge plans. It is not intended for use as an accountability tool.

The Surge Test is a user-friendly peer assessment tool that helps hospitals identify gaps in their surge planning through a no-notice drill.

Resources Required. The drill requires players (i.e., hospital staff), four peer assessors (each equipped with a laptop computer), and a trusted insider.

- *Players.* The drill requires two ED staff who can be free of clinical duties for the entire 75 minutes of the drill (e.g., a physician to lead the response and one person to assist). In addition, the drill requires players at the hospital command center who would be involved in an actual response (e.g., incident command, bed control, security, and other functions needed for a response, etc.).
- *Peer assessors.* Four evaluators are needed to run the exercise. An ED Exercise Controller and ED Qualitative Evaluator work in the ED, while an Incident Command Evaluator and Bed Control Evaluator work in the command center. Peer assessors should plan for up to four hours to accommodate any last-minute planning before the drill and continued conversations after the hot wash.
- *Four laptop computers.* The exercise will require four laptops that are capable of running Microsoft Excel to run the Excel-based tools described below. In addition, the ED Controller should have a printed paper of the patient injects (described below).

Players include:

- Two in the ED
- Full complement of command center staff

Peer assessors include:

- ED Controller
- ED Qualitative Evaluator
- Incident Command Evaluator
- Bed Control Evaluator

- *Trusted insider.* A “trusted insider” will serve as an internal point of contact in the hospital. This person should have the authority to schedule the exercise, ensure that the necessary permissions have been obtained, and ensure that peer assessors have access to the facility. The trusted insider can provide hospital staff a one- to two-week window but should *not* divulge the exact date and time of the drill. The trusted insider may also help identify two ED staff that can be relieved of clinical duties during the 75 minutes of the drill.

How the Drill Works. Two assessors are stationed in the ED and two in the command center. All information that comes to the hospital regarding the scenario and arriving patients comes through the ED. The ED must then communicate with the command center to coordinate the response. There are no moulaged patients. Rather, every 15 minutes, the ED is given a list of patient descriptions that represent arriving patients. The players are expected to act in real time to respond to the scenario as they would in an actual event. Playing time for the drill is 75 minutes.

Tools and Training Materials. Box 1 provides a complete list of tools and materials provided with the Surge Test.

Five Excel tools accompany this training manual. The first tool (“Arrival List Generator”) is used prior to the exercise to generate the lists of arriving patients that are to be handed to the ED at 15-minute intervals. The distribution of injuries is based on published reports of previous terrorist bombings. At default, a total of 250 patients are generated; however, the total number of patients can be chosen by the user.

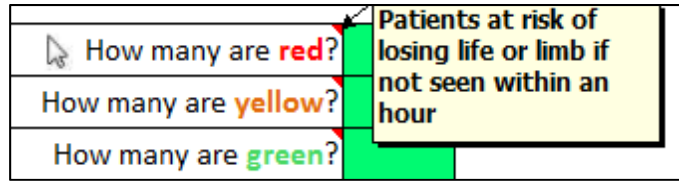
The remaining four Excel tools (ED Exercise Controller Tool, ED Qualitative Tool, Command Center Incident Commander Tool, and Command Center Bed Controller Tool) are used by the peer assessors during the exercise itself. These tools include real-time instructions, scripts meant to be read verbatim, and convenient places to enter data. The ED Exercise Controller Tool also contains a built-in exercise

Box 1: Tools and Materials Included in the Surge Test

- **Controller and Evaluator Handbook** (this document). Provides introduction to and overview of the drill and accompanying Excel tools.
- **Arrival List Generator.** Generates the lists of simulated patients that will be used in the exercise.
- **ED Exercise Controller Tool.** Instructions, injects, and data fields for patient movement. Organized by time period during the drill (e.g., T=0 to T=15).
- **ED Qualitative Tool.** Instructions and qualitative checklist of key response actions and decisions.
- **Command Center Incident Commander Tool.** Instructions, scripts, data fields for data on staff/supplies, and qualitative checklist.
- **Command Center Bed Controller Tool.** Instructions and data fields for data on bed availability and patient movement.

clock and provides time-based prompts for the evaluator to provide patient injects and scenario updates at 15-minute intervals. The ED Exercise Controller Tool also provides a graphical display of the quantitative data to be used during a “hotwash” at the end of the exercise.

The tools include “mouseover” help to explain potentially confusing concepts. Just look for a small red triangle at the upper right of some cells in the Excel sheets. If you hold your mouse cursor over that cell, the message will pop up automatically and will disappear when you move the mouse. Review these ahead of time so that you are familiar with the questions. They will also be available during the drill.



Before the Drill

Preparation for the drill should normally begin at least three to four weeks before the drill to secure necessary permissions and find a time when four peer assessors are available. Below are the most important steps required to plan for the drill. A short checklist with these activities is provided as an appendix.

Identify a Trusted Insider. If a trusted insider has not already been identified, the first step is to identify one.

Secure Permission from Hospital Leadership. Hospital leadership may already be involved in the planning process, but if this is not the case, exercise planners should approach leadership to gain buy-in about how the exercise will be conducted, how much time will be needed to conduct the exercise, who will need to be involved in planning and execution, how the information from the exercise will be used, and who will have access to the information.

Select Peer Assessors. As soon as you have permission to conduct the drill, you should identify and secure commitments from four peer assessors. Doing this early in the process is important, as their schedules may partially determine the date and time of the drill. Peer assessors should have enough expertise to comment credibly about the performance of the drill while also providing an objective outside perspective. If it is not possible to recruit peer assessors from outside the hospital, then clearly instruct them to observe as if they were there as outsiders and to avoid using their prior knowledge of hospital plans or procedures to fill in gaps in data.

Trusted Insider: Be sure to check with hospital security to make sure peer assessors can get access to the ED and hospital command center. If necessary, find hospital staff who can escort them.

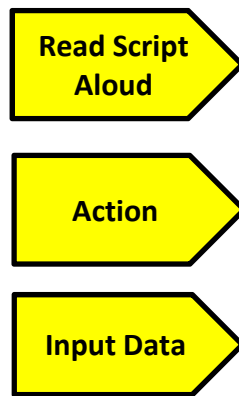
Trusted Insider: Remember to ensure that the command center (or backup location) will be available, along with a suitable location for the hotwash.

Set Time for Drill. Identify a specific time and date for the drill. Keep in mind that if the drill is run when there are very few patients in the ED, it may fail to stress hospital staff. Therefore, consider avoiding scheduling the drill for times that typically have low patient censuses. You can provide a one- to two-week window for hospital staff and some general information about the drill. *But do not disclose the time/date or scenario details.* Remember that a key purpose of the drill is to simulate the surprise element of “big bang” incidents. A sample communique to hospital staff is provided near the end of this manual.

Also remember to make sure that the command center (or backup location) will be available for the drill and that there is a suitable location for a hotwash after the drill. Additionally, it will be easier to have a data-rich discussion during the hotwash if graphics from the Excel tools can be projected on a computer screen and/or printed. This may require some advance planning to secure projection cables and/or arrange for a staff member to be available to print and make copies of the data displays.

Peer Assessors: Be sure to test whether the Excel tools will run on the same laptops that will be used during the drill. Also make sure they will run “off-network.”

Provide Training Module and Tools to Peer Assessors. Provide this training module to each peer assessor. Be sure to ask the peer assessors to look through their tools carefully before the drill, examining instructions, scripts, and data elements. Instructions are highlighted with yellow flags (see examples below).



Encourage peer assessors to play with the tools. The fields are locked down (except for the scenario details, as described above), so the tools should not break. Peer assessors should also ensure that the tools will run on the specific laptops they intend to use during the drill—including whether they run when the computer is not connected to a network.

Peer Assessors: Peer assessors should meet ahead of time (e.g., by phone) to discuss plans for the drill, including the flow of the hotwash.

Meet with the Peer Assessors to Go Over the Drill and Tools. It is important to assemble the entire assessment team ahead of time (e.g., by telephone) to go over plans for convening on the day of the drill, and so that each assessor can understand what the others will be doing. In particular, each assessor should carefully examine instructions for his or her part of the hotwash. The instructions provided in the “Hotwash” tabs of the Excel tools recommend that the ED Controller start the hotwash, and that the ED Qualitative, Incident Command, and Bed Control Evaluators follow with their observations. However, the assessment team may wish to change this order or to add discussion questions not included in the tools.

Adapting the Scenario and Number of Patients (as Needed). The drill was designed around a bombing scenario, but users can customize both the scenario and number of patients to fit the characteristics of the community.

- *Customizing the scenario.* The ED Exercise Controller Tool includes a default scenario. To modify the scenario, click on cell B-9 of the T=0 to T=15 tab and enter the new text. On all subsequent time intervals, click on cell B-4 and edit the text as needed.
- *Customizing the number of simulated patients.* The Arrival List Generator produces patient injects for the drill. Go the START tab and enter the desired number of patients in cell C-5. Press the GENERATE LIST to produce patient lists. These will appear in subsequent tabs and should be printed before the exercise. Although patient descriptions are meant to convey the triage category (red, yellow, or green), the triage category is not listed explicitly. In selecting the number of patients, keep in mind that the majority of patients generated by the tool will be “green.” The tool will generate approximately 14% red, 18% yellow, and 68% green patients, based on a review of literature on real bombing incidents.¹ As a general rule of thumb, the number of simulated patients should be approximately 50 percent of the hospital’s total bed count (e.g., 150 simulated patients for a 100-bed hospital).

Trusted Insider: Be sure to print paper copies of the patient injects and give them to the ED Exercise Controller so he or she can hand them to the ED players during the drill.

In some cases, it may be helpful to draw elements of the scenario from a real incident that the hospital or community has experienced, as a way to increase the sense of realism and urgency. It may be helpful to discuss the scenario with the peer assessors to get an outside perspective on the

¹ The Arrival List Generator spreadsheet creates a descriptive list of patients arriving during each time interval. Given a total number of patients (e.g., default of 250), the spreadsheet assumes a distribution of arrivals over the exercise time frame (e.g., 8%, 22%, 34%, and 36% arrive starting at T=15, T=30, T=45, and T=60, respectively) and a different distribution of triage acuity at each time interval (e.g., at T=15, 10% of arrivals are yellow and 90% are green, but at T=60, 23% of arrivals are red, 25% yellow, and 52% green). The patient lists are generated by picking randomly (with replacement) from a pool of red, yellow, and green patient descriptions that are meant to be unambiguous with regard to correct triage level. Thus, although each patient has an underlying “correct” triage category, only the patient descriptions are provided to the exercise players. It is up to the players to use these descriptions to assign triage categories (just as they would have to classify real patients in an actual event).

scenario and on picking a number of patients that will stress the hospital without appearing ridiculous to players. As noted above, ensure that the ED Controller has paper copies of the patient injects to hand to the ED players during the exercise. It is also a good idea to share backup copies with the ED Qualitative Evaluator.

During the Drill

Immediately Before the Drill. The four-member evaluation team and the trusted insider should meet outside of the hospital 30 minutes before the drill to make sure each member of the team is ready to begin. During this time, all team members should check to make sure they have all of the necessary supplies and understand the expectations of the exercise and how they will function in their respective roles.

Initiating the Drill. When the team is ready to begin, the command center evaluators should be escorted by the trusted insider to the command center (which should not yet be functioning), and the ED evaluators should ask to speak to the RN or MD in charge of the ED. The ED evaluators then inform the RN or MD in charge that the drill will be taking place and will require at least two ED clinical personnel (MD/RN) who are free of other duties for 75 minutes. The ED evaluators will then begin the exercise, following the prompts on the Excel tools.

Key Activities in the ED. The ED Controller maintains the operational tempo of the exercise and collects data on beds and patients. Typically, the ED Controller will stand with his or her laptop perched on a desk near the players. Following the prompts on his or her spreadsheet, the ED Controller will provide patient injects in 15-minute increments, and it will be the responsibility of the ED to work with the Command Center (CC) to find inpatient space to admit ED patients. The exercise makes the assumption that any patient in the ED will go to an appropriate inpatient bed as soon as it is available. Patients triaged as “red” need intensive care unit (ICU) beds, and those triaged as “yellow” need floor beds. As soon as inpatient beds are identified to the evaluator, patients are counted as transferred out of the ED, and the ED’s bed availability increases.

The other ED evaluator (“ED Qualitative Evaluator”) will assist the ED Controller (as needed) and score a set of qualitative checklist items on an “Agree-Disagree” scale. All instructions and data fields required to do this are provided in the ED Qualitative Tool.

Key Activities in the Hospital Command Center. The Incident Command Evaluator is responsible for introducing the drill to the Incident Commander, collecting data on staff/materiel, and scoring a set of qualitative checklist items on an “Agree-Disagree” scale. The Bed Control Evaluator is responsible for

collecting data on bed availability and patient movement.

It is likely that the two command center evaluators will arrive before the command center is fully staffed and activated. They should wait in the room (or in the hallway outside the room, if necessary) and use the time to make sure their laptops and Excel tools are ready to go. As hospital staff arrives, the Incident Command evaluator should seek out the Incident Commander and use the script provided in the Command Center Incident Commander Tool to introduce himself/herself and the drill. The Bed Control Evaluator should do the same for the hospital staff member responsible for bed control. Hospital command centers can quickly become noisy places, which can make data collection difficult. Thus, it is very important to quickly establish contact with the Incident Commander and person in charge of bed control. If you get behind on data collection early in the drill, it may be difficult to catch up, so be assertive if necessary.

Peer Assessors: Command center evaluators may need to be assertive in making contact with the Incident Commander and person in charge of bed control.

Ending the Drill. The ED Controller should declare the drill complete at T=75, after conclusion of the T=60 to T=75 time period, and instruct players to join other players in the command center, or wherever the hotwash will be held.

Things to Keep in Mind During the Drill. Before discussing the hotwash, we highlight a few important things to keep in mind throughout the drill:

- **Avoid excessive prompting.** In order to simulate a true surge event, hospital players should be allowed to act as they would should such an event occur. As such, evaluators and the trusted insider should avoid prompting the players during the exercise. Evaluators will be encouraged to give feedback during the hotwash.
- **Note vague or inconsistent statements/actions for the hotwash.** In addition to collecting the data listed in the Excel tools, peer evaluators should remain on the lookout for vague or unrealistic statements. For instance, if hospital staff say they would open a mothballed wing to accommodate patients, consider whether they are accounting for the need to make staff and supplies available for that newly opened space. You might also ascertain whether there is discussion about ensuring that there are enough elevators, gurneys, and other infrastructure to move patients from one location to the other. Use your professional judgment and experience.
- **Read the scripts verbatim.** It is very important to read the scripts with fidelity throughout the drill. In many cases, they convey critical assumptions that

Peer Assessors: Throughout the drill, avoid excessive prompting, note vague statements for the hotwash, and read the scripts verbatim.

will make it easier for the players to respond to the scenario. Reading scripts can be awkward for highly trained professionals. Thus, we have tried to limit their length and use them only when absolutely necessary. Where text is labeled “read or summarize,” peer assessors are invited to paraphrase or improvise.

Tips on Pulling Off a No-Notice Drill. Some hospital staff and leadership may worry that a no-notice drill will interfere with patient care, given the need to free up two ED staff and command center staff for 75 minutes. Ultimately, hospitals need to be prepared for no-notice disasters. That said, hospitals may consider using one of the following approaches, which were developed by hospitals that pilot tested earlier versions of this tool.

- Include two ED clinical staff in the “trusted insider” team. Have them accompany the peer assessors into the ED at the beginning of the drill and have them assume clinical duties of the two players in the ED. The two staff who know the day and time of the drill should take over the clinical duties of players but should not participate themselves.
- Schedule the drill around a shift change or at a time when a couple of clinical staff members may be able to stay on for longer.
- Schedule a “fake” meeting (e.g., of the hospital emergency planning group) at the time of the drill. This will help ensure that needed staff are in the building when the drill begins. Remember, do *not* divulge the specific day and time of the drill beyond the trusted insider(s) and peer assessors. This diminishes of the no-notice aspect of the drill but still captures some of the element of surprise.

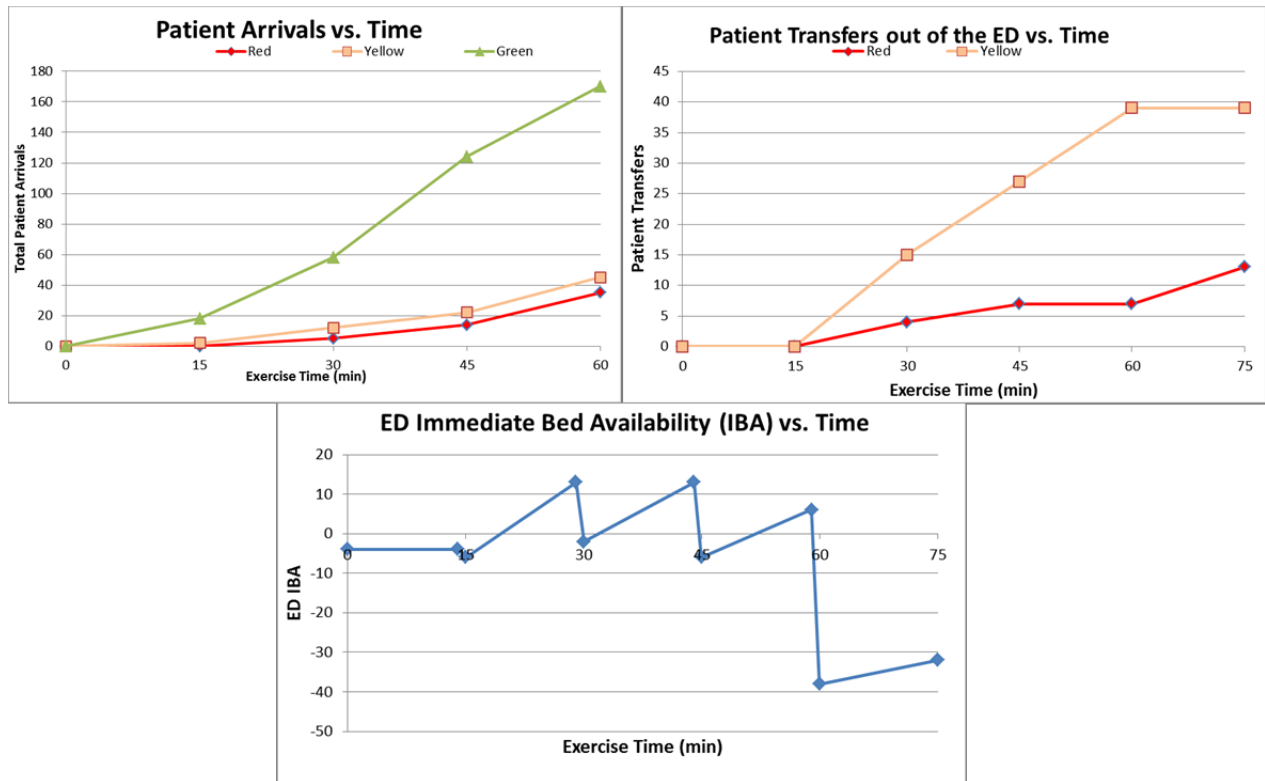
After the Drill

The following activities should be completed immediately after the drill.

Just Before the Hotwash Begins. The Excel tools are designed to make the transition from drill to hotwash as easy as possible. Nonetheless, moving from data collection to discussion of freshly collected data can be challenging. If possible, schedule a short break between the hotwash and drill to allow time for ED staff to walk to the command center and for the peer assessment team to review their data and notes in preparation for the hotwash. You can also use this time to hook up the ED Controller’s computer to a computer projector and/or make paper copies of data displays to distribute to players.

Initiating the Hotwash. If appropriate, the hotwash might begin with a brief statement by the hospital’s emergency planner or other leader. This might include one or two “icebreaker” questions such as “how did it go?” or “how did that feel?” However, the hotwash should move quickly into a discussion

of the data collected by the peer assessment team.



Presenting the Data and Leading a Discussion. The ED Controller should speak first, using the outline and discussion questions provided to describe the number of simulated patients that arrived at the hospital, the flow of patients out of the ED, immediate bed availability (IBA) over time, and other metrics. Examples of the hotwash graphics are provided above.

The ED Controller should keep his or her comments brief, leaving time for the other evaluators to summarize their findings using the outlines and questions on their hotwash tabs. The suggested order (after the ED Controller) is ED Qualitative Evaluator, Command Center Incident Commander Evaluator, and Command Center Bed Control Evaluator. However, the peer assessment team may find it helpful to use a different order. Also, peer assessors need not stick to the script and are encouraged to offer other observations, provided that they don't result in lengthy monologues. It is important to allow plenty of time for hospital staff to react to and interpret the data, offer their own observations, and discuss gaps and corrective actions.

A Note of Caution in Interpreting the Numbers Generated by the Drill. The Surge Test generates estimates of IBA and other quantitative indicators throughout the exercise. However, assessors and players should be cautious about treating these as predictions or estimates of actual surge capacity. The

drill makes a number of simplifying assumptions in order to limit the burden on hospitals and peer assessors. These include the following:

- The walking wounded will not occupy beds in the ED but instead are cared for in an alternate location.
- Patient disposition is deterministic, determined solely by triage status (i.e., yellow patients need floor beds, red patients need ICU beds).
- Patients leave the ED as soon as appropriate inpatient beds are available for them. There is no attempt to model treatment times in the ED, operating room, or radiology units.
- The exercise asks questions on the availability of certain staff and equipment. While not an exhaustive list, they serve as proxies for the hospital's ability to maintain situational awareness over resources that would be needed in an emergency.

More generally, keep in mind that the exercise only asks hospitals to identify spaces for patients but does not attempt to simulate the amount of time and effort that would be required to access and use supplies and infrastructure, provide treatment, etc. As such, estimated IBA numbers are likely to be higher than would be the case in a real event.

CAUTION: Estimated IBA numbers generated by the drill are likely to be higher than would be the case in a real event.

In spite of these limitations, the effort to quantify IBA is helpful in that it encourages players to think about the *details* of patient movement and space-clearing. The drill's requirement that players provide a specific available destination for a patient to be considered "transferred" is designed to encourage earnest play. As noted above, peer assessors should identify and discuss any decisions or actions that seem unrealistic, and hospital staff should think through the robustness of their strategies in a variety of scenarios and conditions.

Planning Checklist: Trusted Insider

GETTING PERMISSIONS AND NOTIFYING STAKEHOLDERS

- Identify a trusted insider to coordinate planning for the drill.
- Secure permission from hospital leadership to conduct the drill.
- If necessary, inform other hospital stakeholders of the drill (without divulging specific time and date).
- Inform hospital staff of the time window (as needed).

FINALIZING DRILL SCENARIO

- If desired, replace the default scenario (terrorist bombing) with a new scenario.
- Determine the number of patients for the drill (the default is 250).
- Use the Arrival List Generator (Excel tool) to generate patient inject lists (remember to enter the desired number of patients).
- Print patient injects for use by peer assessors.

ARRANGEMENTS FOR PEER ASSESSORS

- Select and secure commitments from peer assessors (list names and contact information below).
- Set time and date for drill (but do not share beyond trusted insider and assessors).
- Establish a location for peer assessors and trusted insider to convene 30 minutes before the drill.
- Ensure that each peer assessor has access to a laptop (four laptops total).
- Provide Excel tools and training module to peer assessors.
- Ensure that peer assessors have tested the Excel tools on the computers they will use during the drill (and off-network).
- Hold planning meeting with peer assessors:
 - Confirm meeting time/location.
 - Discuss scenario and number of patients.
 - Discuss plans for assessors to proceed to the ED and Command Center to initiate the drill.

- Discuss questions about individual Excel tools.
- Discuss plans for the hotwash (who will initiate the hotwash, the order in which peer assessors will present, and the plan for facilitating discussion).
- Print patient injects and provide hard copies to ED Controller (backup copies to ED Qualitative Evaluator).

ACCESS TO FACILITIES AND EQUIPMENT

- Ensure that the peer assessor can access facilities on the day of the drill.
- Ensure availability of command center (or backup) and other facilities required.
- Ensure availability of room for hotwash (e.g., command center).
- Consider whether to schedule a short break between the drill and hotwash to allow time for the assessment team to prepare. (Note: Consider the risk that players will not show up for the hotwash after a break.)
- Ensure availability of computer projection equipment and/or ability to print hard copies of hotwash data displays.

Planning Checklist: Peer Assessors

- Confirm your role on the peer assessment team (e.g., ED Controller).

- Confirm time and date of drill (do not divulge beyond peer assessment team).

- Get training manual and Excel tool for your position.

- Review the training module.

- Carefully review Excel tool for your position and identify questions.

- Meet with other members of the peer assessment team (e.g., by telephone) to discuss questions and plan for the drill and hotwash.

- Confirm specific time/location to convene on the day of the drill.

- ED Controller: Get printed copies of patient injects.

- ED Qualitative Evaluator: Get backup printed copies of patient injects.

Sample Communique to Hospital Staff

Sometime within the next [fill in text] weeks, [fill in name of hospital] will run a 75-minute no-notice drill to test its capacity to accommodate a large influx of patients from a mass casualty incident. The drill will be run by four peer assessors selected by the hospital. The drill will begin in the emergency department, where, after answering questions, ED staff will be given an initial scenario. Two peer assessors will stay in the ED, and the other two will observe activities in the hospital command center. Peer assessors will ask questions, record data, and present their observations to hospital staff in a “hotwash” debriefing immediately following the drill.

At regular intervals, assessors will provide scenario updates and lists of arriving patients. They will ask you questions, but as much as possible you should respond as you would during an actual incident. To lessen the burden on the hospital, there will be no "mock patients" and no physical movement of any patients. The exercise assumes that patients can be moved out of the ED as soon as inpatient destinations are found for them and does not attempt to simulate the amount of time and effort that would be required to provide treatment, etc. The ED staff will need to communicate with the hospital command center to coordinate the response and to find inpatient locations for ED patients. Use whatever communication system you would normally use (e.g. telephone, online tracking system) in a real mass casualty event.

Please contact [name] at [e-mail address] or [extension] if you have questions or concerns.