How Can Hospitals be Better Prepared? Case Study of an Exercise Design Program and Use in a Real-Life Event

Julie Bulson MPA, BSN, RN
Manager, Emergency Preparedness
Spectrum Health Hospitals
Objectives

1. Verbalize understanding of the Joint Commission exercise requirements.
2. Identify components of a successful exercise design program.
3. Verbalize rationale of utilizing a department focus to education / exercise.
Program Background

Began officially in April, 2005.

Two staff: Manager, Emergency Preparedness
          Project Coordinator → HERT team leader

Program objectives:

1. Develop a structure -
   a. Establish exercise design team and define exercise goals at the beginning of each year
   b. Aggressive exercise calendar, using exercises as education
   c. Revise plans to incorporate collaboration between both G.R. hospitals

2. Design a Decon. Response Team, now identified as the Hospital Emergency Response Team (HERT)
Evolution of EM standards

Joint Commission standards have dramatically increased the last few years, demonstrating focus similar to that of the federal government.

The number of Elements of Performance have increased 29% from 2008 to 2009.
EM 01.01.01 – The hospital engages in planning activities prior to developing its written EOP

EP 2: The hospital conducts a HVA to identify potential emergencies that could affect demand for the hospital’s services

EP 6: The hospital uses its HVA as a basis for defining the preparedness activities that will organize and mobilize essential resources
EM 03.01.03 -- The hospital evaluates the effectiveness of its EOP
Rationale: The organization conducts exercises to assess the EOP’s appropriateness, adequacy and effectiveness…Exercises should stress the limits of the plan.

EP1: As an emergency response exercise, the hospital activates its EOP twice a year at each site included in the plan

EP 14: The evaluation of all emergency response exercises and all responses to actual emergencies includes the identification of deficiencies and opportunities for improvement. This evaluation is documented.

EP 15-17: The deficiencies and opportunities for improvement are identified; the EOP is modified based on the evaluation; subsequent exercises reflect the modifications
# Spectrum Health HVA – Determines Priorities

<table>
<thead>
<tr>
<th>EVENT</th>
<th>PROBABILITY</th>
<th>HUMAN IMPACT</th>
<th>PROPERTY IMPACT</th>
<th>BUSINESS IMPACT</th>
<th>PREPAREDNESS</th>
<th>INTERNAL RESPONSE</th>
<th>EXTERNAL RESPONSE</th>
<th>SEVERITY = (MAGNITUDE-MITIGATION)</th>
<th>RISK</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mass Casualty Incident (trauma)</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>26.4</td>
<td>79%</td>
</tr>
<tr>
<td>Mass Casualty Incident (medical/infectious)</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>25.4</td>
<td>25%</td>
</tr>
<tr>
<td>Terrorism, Biological</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>25.4</td>
<td>25%</td>
</tr>
<tr>
<td>Pandemic Flu</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>27.4</td>
<td>82%</td>
</tr>
<tr>
<td>VIP Situation</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>23.4</td>
<td>70%</td>
</tr>
<tr>
<td>Infant Abduction</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>23.4</td>
<td>23%</td>
</tr>
<tr>
<td>Hostage Situation</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>27.4</td>
<td>70%</td>
</tr>
<tr>
<td>Civil Disturbance</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>26.4</td>
<td>79%</td>
</tr>
<tr>
<td>Forensic Admission</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>24.4</td>
<td>73%</td>
</tr>
<tr>
<td>Bomb Threat</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>29.4</td>
<td>29%</td>
</tr>
<tr>
<td><strong>Average</strong></td>
<td><strong>2.00</strong></td>
<td><strong>1.90</strong></td>
<td><strong>0.60</strong></td>
<td><strong>1.80</strong></td>
<td><strong>2.40</strong></td>
<td><strong>1.80</strong></td>
<td><strong>1.60</strong></td>
<td><strong>25.90</strong></td>
<td><strong>52%</strong></td>
</tr>
</tbody>
</table>

*Risk = Probability* Severity

*Threat increases with percentage*
Exercise planning – Meet Priorities & Requirements

Our exercise program is designed to meet organizational risks, requirements of The Joint Commission and federal grants.

The HPP (hospital preparedness program) does not currently require full HSEEP (Homeland Security Exercise and Evaluation Program) compliance for ASPR-funded exercises; however, all exercises conducted using HPP funds must follow the HSEEP framework and program guidelines. (State of Michigan HPP exercise policy statement)

HSEEP *compliance* is defined as adherence to specific HSEEP-mandated practices for exercise program management, design, development, conduct, evaluation, and improvement planning.
HSEEP Compliance

To be HSEEP compliant, an entity must satisfy four distinct performance requirements:

1. *Training and Exercise Plan Workshop* – development of the exercise calendar including a multi-year training and exercise schedule.

2. *Exercise Planning and Conduct* – type of exercise should be consistent with the plan.

3. *After-Action Reporting* – following each exercise an AAR / IP must be developed and submitted.

4. *Improvement Planning* – corrective actions identified in the AAR / IP must be tracked and implemented.
# Exercise Design – Model Calendar (H1)

<table>
<thead>
<tr>
<th>Date</th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>April</th>
<th>May</th>
<th>June</th>
<th>July</th>
<th>Aug</th>
<th>Sept</th>
<th>Oct</th>
<th>Nov</th>
<th>Dec</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/8/16</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2/5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4/29</td>
<td></td>
<td>4/8</td>
<td>4/16</td>
<td>4/21</td>
<td>5-6</td>
<td>5-12</td>
<td>5-19</td>
<td>5-30</td>
<td>6/2-6</td>
<td>11</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6/16</td>
<td>7/10</td>
<td>8/12</td>
<td>8/13</td>
<td>9/17</td>
<td>9/22</td>
<td>10/21</td>
<td>10/13</td>
<td>10/15</td>
<td>10/22</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Training and Exercise Workshop**

- Call drill
- DRT TTX: 09-11

**Identify the type of drill**

- Call drill
- DRT TTX: 09-11

**Determine objectives (C/O or IPC mtg)**

- 4.29.08
- 4.21.08
- 5.6.08
- 5.12.08

**Determine what roles need to participate**

- x
- x

**Develop scenario specifics**

- n/a

**Develop briefing and schedule meeting to share information for dept exercise**

- n/a
- 4.20.08
- 4.21.08
- 5.6.08
- 5.12.08

**Schedule FPC**

- n/a
- 3.21.08
- 5.21.08
- 5.10
- 5.21.08

**Conduct exercise**

- n/a
- 4.16.08
- n/a
- n/a

**Conduct hotwash**

- n/a
- 4.21.08
- 5.6.08
- 5.12.08

**Evaluate hotwash information**

- n/a
- n/a
- n/a
- n/a

**Develop AAR**

- n/a
- n/a
- n/a
- n/a

**Schedule AAC**

- n/a
- n/a
- n/a
- n/a

**Make appropriate changes to plans**

- will be rescheduled

**Educate changes**

- n/a

**Redrill date**

| 12/2 | 10/210 | 10/13 | 10/150 | 22 | 7 | 12/2 |
Exercise Design – Process Development (H2)

1. Determine Broad Goals
2. Identify Exercise Type
3. Determine Unit Objectives
4. Determine Participants
5. Develop Scenario
6. Develop Meeting Schedules
7. Exercise
8. Hot Wash
9. Evaluate Data
10. Develop AAR
11. Update Plans
12. Educate
13. Re-Drill
Exercise Design – After Action Reports (H3)

After action reports (AAR) completed after each exercise and real life event.

Distributed to the executive team with an improvement matrix and improvement plan.
### Sample: an Improvement Matrix developed after a power outage

<table>
<thead>
<tr>
<th>Tasks</th>
<th>Recommendation</th>
<th>Improvement Actions</th>
<th>Responsible Party/Agency</th>
<th>Completion Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Utility Systems Failure Plan outdated and missing integral information</td>
<td>Plan needs to be updated</td>
<td>1. Update plan to include updated information (e.g., communication, supplies, etc.)</td>
<td>Julie</td>
<td>Oct/2008</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Present plan to disaster for approval</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Present plan to safety for review and approval</td>
<td>Julie</td>
<td>Nov/2008</td>
</tr>
<tr>
<td>2. Equipment</td>
<td>1. Update response steps for power outages and equipment performance</td>
<td>1. Will include these steps in the plan as it gets updated</td>
<td>Julie</td>
<td>Oct/2008</td>
</tr>
<tr>
<td></td>
<td>2. Investigate current options for improved lighting when on generator power.</td>
<td>2. Share information developed by ACC related to “black-out” scenarios.</td>
<td>Julie</td>
<td>Sept/2008</td>
</tr>
<tr>
<td></td>
<td>3. Flashlights are never available on the units when needed</td>
<td>3. Will include phone number for supply chain mgmt in the plan for flashlight availability. Managers need to keep flashlights available in a designated area</td>
<td>Julie</td>
<td>Oct/2008</td>
</tr>
<tr>
<td>4. Need alternate CT scan process if CT scanners are unavailable</td>
<td>4. FSS will get CT scanners on emergency power</td>
<td></td>
<td>Tom</td>
<td>Oct/2008</td>
</tr>
<tr>
<td></td>
<td>5. Set a meeting to discuss process when CT scanners are unavailable</td>
<td></td>
<td>Julie</td>
<td>Sept 26/2008 at 1900</td>
</tr>
<tr>
<td></td>
<td>5. Two patients were transported to BWH to have CT scans. They should not have to pay for that transport bill</td>
<td></td>
<td>Julie</td>
<td>Completed Sept/2008</td>
</tr>
</tbody>
</table>
Exercise Design – Goals

1. Training and Exercise Workshop – scheduled at the start of each year to determine the types of exercises we need to complete and when the community-based exercise will occur.

2. Place all potential exercises on a master calendar.

3. Determine design team members for each exercise.

4. Schedule design team meetings as required: C & O / IPC, MPC, FPC and immediate debriefing of each exercise.

5. Begin HSEEP documentation for all exercises.
Exercise Design – Planning shifted in 2007

Several mass-casualty exercise critiques identified a common issue: exercises do not go deep enough into the organization.

The E.D. staff routinely cares for MCI victims; we needed a process to include other departments.

A team member heard about “department specific” exercising and its effectiveness and prime objective: If all departments become individually competent, then the organization will function more efficiently.

That began our focus on department specific exercising.
**Priority:**

Develop unit-based evacuation plans (horizontal, vertical, total) highlighting specific evacuation locations for all floors within the two Grand Rapids hospitals.

<table>
<thead>
<tr>
<th>North Tower</th>
<th>1st choice</th>
<th>2nd choice</th>
</tr>
</thead>
<tbody>
<tr>
<td>7N-Adults</td>
<td>6225—elevator area by 6S and 4C</td>
<td>6MHC</td>
</tr>
<tr>
<td>7N-Peds</td>
<td>6C</td>
<td>6MHC</td>
</tr>
<tr>
<td>6N</td>
<td>5200—5S family waiting area</td>
<td>5MHC</td>
</tr>
<tr>
<td>5N</td>
<td>4253—waiting room, office area on 4S</td>
<td>4MHC</td>
</tr>
<tr>
<td>4N</td>
<td>2402—OR family waiting room</td>
<td>2MHC</td>
</tr>
<tr>
<td>3N</td>
<td>2482—OR family waiting room</td>
<td>2MHC</td>
</tr>
<tr>
<td>2N</td>
<td>Foyer by Rommick parking ramp</td>
<td>1MHC—lobby area</td>
</tr>
<tr>
<td>1N</td>
<td>DVCH lobby—A level</td>
<td>AN—radiology</td>
</tr>
<tr>
<td>AN—radiology</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Center Tower</th>
<th>1st choice</th>
<th>2nd choice</th>
</tr>
</thead>
<tbody>
<tr>
<td>9C</td>
<td>8C</td>
<td>7MHC</td>
</tr>
<tr>
<td>8C</td>
<td>7006—7N conference room and hallway</td>
<td>7MHC</td>
</tr>
<tr>
<td>7C</td>
<td>6006—6N conference room and hallway</td>
<td>6MHC</td>
</tr>
<tr>
<td>6C</td>
<td>5005/5009—5N family waiting room</td>
<td>5MHC</td>
</tr>
<tr>
<td>5C</td>
<td>4008/4009—4N family waiting room</td>
<td>4MHC</td>
</tr>
<tr>
<td>4C</td>
<td>3500—3W elevator bank area</td>
<td>3C</td>
</tr>
<tr>
<td>3C</td>
<td>2W—elevator bank area</td>
<td>2014—North holding</td>
</tr>
<tr>
<td>2C</td>
<td>DVCH lobby—A level</td>
<td>AN—radiology</td>
</tr>
<tr>
<td>1C</td>
<td>Rommick pigg entrance foyer</td>
<td>AN—radiology</td>
</tr>
</tbody>
</table>
Exercise Design – Plan

2008 Priority: complete evacuation table top exercises on several units, with plans to escalate evacuation exercises thereafter.

Evacuation Table Top Exercise Summary:

• Conducted 9 evacuation table-tops in 2008.
Exercise Design – Plan

April 21: Center Tower (pediatrics and women’s health)
May 12: Meijer Heart Center
May 19: North Tower (medical-surgical units)
    Charge nurses from 3 different women’s health units
May 20: Pediatric coordinators
May 28: Charge nurses from 2 different women’s health units
June 16: South Tower (medical-surgical units)
Oct 13: Blodgett Hospital
Oct 15: West Building (medical-surgical units)
May 29, 2008 @ 11:01 – AeroMed crashes
## Center Tower at Butterworth

<table>
<thead>
<tr>
<th>Department</th>
<th>Center</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cafeteria</td>
<td>1</td>
</tr>
<tr>
<td>OB triage + L &amp; D</td>
<td>2</td>
</tr>
<tr>
<td>Labor &amp; Delivery:</td>
<td>3</td>
</tr>
<tr>
<td>OB Special Care:</td>
<td>4</td>
</tr>
<tr>
<td>Post Partum:</td>
<td>5</td>
</tr>
<tr>
<td>Mother baby:</td>
<td>6</td>
</tr>
<tr>
<td>Pediatrics</td>
<td>7</td>
</tr>
<tr>
<td>Peds ICU:</td>
<td>8</td>
</tr>
<tr>
<td>Peds:</td>
<td>9</td>
</tr>
</tbody>
</table>
Real Life Event - Review

- Response began BEFORE a plan was officially called and paged overhead.

- A lot of automated responses built into our plans: O.R.s stop, staff report to the E.D. for surge management, discharges begin, etc.

“I designed a program that allows me to run the entire plant from my computer. By the way, how’s the weather back there?”
Evacuation process

- 11:03 – 9C begins vertical evac.
- 11:06 – Remainder of tower begins vertical evacuation
- 11:16 – Evac. of 7-9C complete
- 11:17 – HCC established
- 11:25 – BWH ED closed to EMS
- 11:31 – Vertical evac. of 2-6C complete
- 11:45 – Evac. of A Center lobby to GRCC complete
- 12:45 – Return of pts to 2-6C
- 15:30 – Return completed

133 adults and 41 infants evac.
Focus on department-level education and exercising will continue:

- Continue to exercise evacuation plans, as designed, for the next 2 years
- Develop department-specific plans with areas that lack one.
- Exercise at the unit level, not always as an organization.
- Exercise with “hospitals as the incident scene” to highlight communication challenges, HCC collaboration with UICS, and utilization of outside resources.
Conclusion – What We Learned

Expect your staff to be phenomenal; ours was, in part due to the exercise program we established.

People will rise to the occasion, staff were prepared to respond both within the organization and to come in from home.

There will be controlled chaos – we evacuated 133 adults and 41 infants in less than 45 minutes with a relative sense of calm.

Whatever the scenario, whatever the size of the organization, the most important response occurs at the unit level.
Questions?

Contact information:

Julie Bulson MPA, BSN, RN
Manager, Emergency Preparedness
Spectrum Health Hospitals
616.391.2244

Julie.bulson@spectrum-health.org