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Hailee Marie Barnes
University of San Francisco, haileemarie@gmail.com

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Emergency Preparedness on an Inpatient Hospital Unit

Hailee Barnes

University of San Francisco

Fall 2014
Abstract

This paper will discuss the implementation of an emergency preparedness quality improvement project conducted by a University of San Francisco Clinical Nurse Leader (CNL) student on an inpatient cardiac unit, Unit H, at an urban teaching hospital in Northern California, Hospital B. An assessment of the current state of emergency preparedness, a diagnosis of Unit H’s area of greatest needs, the details of planning and implementing the quality improvement as well as the final evaluation will be discussed. The nursing process will be used for the structure of this paper as it was used as the structure of this project. This structure aligns with and was implemented with the change theories of Kurt Lewin and Ronald Lippitt (see Appendix A; Mitchell, 2013). The results of this project included an overall increase in Unit H’s nurses’ feeling of preparedness as well as bringing Unit H’s Emergency Action Plan and equipment into compliance with Hospital B’s policies and Joint Commission standards.
Emergency Preparedness on an Inpatient Unit

**Assessment**

**National Preparedness**

The plethora of recent mass casualties incidents in the United States and around the globe have highlighted the need for countries, states, cities, and individual healthcare organizations to update and improve their emergency and disaster preparedness. Hospital leaders have recognized the need to prepare for natural disasters as a result of reflections from nurses and hospital administrators in the aftermath of Hurricanes Sandy and Katrina, the 2011 earthquake in Japan, the threat of a cyber attack, and events with a rapid influx of patients due to terrorist attacks such as the Boston Marathon Bombings and the World Trade Center attacks (Priest, 2009; Yamashita & Kudo, 2014). Disaster preparedness has evolved over the last two decades from the traditional focus on meeting the food, shelter, and economic needs of displaced persons and on repairing the physical destruction of infrastructure towards larger issues of healthcare delivery during a disaster (Center for Biosecurity of UPMC, 2009).

On September 11, 2001, hospitals in New York City and Washington D.C. initiated their disaster response plans, but found that their previous disaster policies and drills did not adequately prepare staff for the magnitude of the event. In response to the clear need for more hospital based disaster preparation, President Bush signed into law and funded a bill that created the Hospital Preparedness Program (HPP) (Center for Biosecurity of UPMC, 2009). A 2009 evaluation report by the Center for Biosecurity of University of Pittsburg Medical Center of the first five years of the HHP found individual hospitals throughout the country have improved significantly in disaster preparedness since the start of the HPP but still have a long way to go (See Appendix B for a timeline of disasters and the evolution of emergency preparation in the
United States).

Extensive reflection, analysis of response, and design of innovative ways to prepare hospital staff have been done to improve the level of preparation in response to this call to prepare hospitals and staff for disasters (Priest, 2009; Goodhue, Burke, Chambers, Ferrer & Upperman, 2010; Yamashita, & Kudo, 2014). Emergency preparation efforts involve many components from policies, equipment, and staff training. Nurses make up the largest employment group in the hospital and on any given unit and thus need to be at the forefront of any emergency preparation plan (Hynes, 2006; Fung, Lai & Loke, 2009). The Joint Commission mandates all health care facilities create a plan for emergency preparedness and practice that plan two times a year with all staff (The Joint Commission, 2013). Despite these specific guidelines, many healthcare facilities are not prepared to handle emergencies and disasters effectively (Goodhue, Burke, Chambers, Ferrer & Upperman, 2010). Because nurses feel confident in what they practice regularly but report less familiarity with incidents that are rare, low confidence in the area of emergency preparedness is understandable given that mass casualty incidents are relatively rare incidents (Worrall, 2012).

A descriptive survey study conducted by Whetzel, Walker-Cillo, Chan, and Trivett (2013) revealed that nurses do not feel confident in their individual and facility emergency preparedness. They looked further into the education requirements of nurses when it came to emergency preparedness and found that while most states require continuing education, much responsibility falls on the individual nurse to read their facility’s disaster plan and on management to review the plan with staff (Whetzel, Walker-Cillo, Chan, & Trivett, 2013). Another survey study of rural nurses’ perceived readiness to manage disaster situations revealed most nurses do not feel confident in their abilities to respond in a major disaster (Baack, &
Alfred, 2013).

Nurse leadership publications have highlighted managers’ and educators’ roles in preparing student nurses and staff nurses in disaster preparedness. In one particular article by Chad Priest (2009) nurse leaders are encouraged to go beyond the basics of reviewing protocols and procedures and equip nurses with the skills necessary to make good choices during tough times. This means that nurse leaders need to have conversations with their staff about values and ethics that will apply during a disaster. These core philosophies and values will guide decision making in a disaster.

**Hospital B’s Preparedness**

The Hazard Vulnerability Analysis (HVA) of Hospital B indicates that the top 5 hazards that they need to prepare for are: earthquake, external flooding, cyber terrorism, civil disturbance, and drought. The emergency management program at Hospital B works in four areas of emergency management: mitigation, preparedness, response and recovery. This project focused on the area of preparedness. Hospital B’s emergency management program policy defines preparedness as:

Planning how to respond in case an emergency or disaster occurs and working to increase resources available to respond effectively. Preparedness activities are preparing staff to minimize damage and are designed to save lives when an emergency is imminent.

Preparedness activities are plan writing, drills, training, and exercises.

Hospital B defines an emergency as:

An unexpected or sudden event that significantly disrupts the organization’s ability to provide care, or the environment of care itself, or that results in a sudden, significantly changed or increased demand for the organization’s services. Emergencies can be either
human-made or natural (such as an electrical system failure or a tornado), or a combination of both, and they exist on a continuum of severity. A disaster is a type of emergency that, due to its complexity, scope, or duration, threatens the organization’s capacities and requires outside assistance to sustain patient care, safety, or security.

The minimum requirements outlined in the emergency management policy of Hospital B include having a department Emergency Action Plan (EAP) and emergency equipment (see Appendix C for details of these two requirements and the status of unit H’s preparation). The author assessed nurses’ knowledge of these requirements and their willingness to learn in order to understand the current state of unit H’s preparation (See Appendix D for the questions asked of nurses). The author performed an informal, verbal survey and recorded the responses of 20 nurses; the results indicated a clear lack of knowledge of the emergency preparedness plans and equipment (see Appendix C, Table C1, column 2 for nurses responses) and an overwhelming desire to know more. There was no pushback from nurses about this project focus; all nurses asked the author to follow-up and let them know what they can do to be more prepared.

Further assessment of Unit H through conversations with nurses and management, observation of the unit flow, and looking through the emergency resources available revealed that most of the emergency preparation requirements were not in place on Unit H. Some of these measures were physically in place; however, they were not complete, no staff were maintaining the systems, and few staff beyond management were aware that these items existed, rendering them ineffective as staff will not use items of which they are unaware.

When asked what one of the top safety concerns for the unit was, the manager reported that while it is not a day-to-day concern, the unit is really not prepared for an emergency. There had been an earthquake measured at 6.0 on the Richter Scale close to Hospital B, according to
the United States Geological Survey, the week before and emergency preparedness had come back into the manager’s mind. Many reasons for this particular floor not to be prepared surfaced: lack of knowledge on the part of management and staff, lack of direction from the hospital administration, recent remodeling of the unit, recent change in management, a sense that day-to-day measures are more pressing, and a shared sense of lack of time (See Appendix E for a root cause analysis).

When analyzing the driving and restraining forces toward increased emergency preparedness on Unit H, it is clear that there are many driving forces and few restraining forces to be overcome in order to improve the emergency preparation on Unit H. Lewin (1951) discusses this force field analysis of driving and restraining forces and emphasizes that it is necessary in order make any changes in a group settings successfully. The only restraining forces, lack of knowledge and time, were taken away by the author, as it was her only responsibility within the CNL project to focus on emergency preparation of Unit H. The driving forces toward improved emergency preparedness included assistance from Hospital B’s emergency management office, encouragement from Unit H’s manager, desire to know more from the nurses, and the author’s available time and passion.

Planning

The goal of this project was to create the structure and resources so that nurses will feel prepared to deliver safe patient care in the event of an emergency. The action items, listed in Appendix C, Table C1, column 3, were undertaken by the author in partnership with Unit H’s manager, a member of the emergency management office, and the fire marshal at Hospital B. These items were completed before nurse teaching took place. A timeline of the project is provided (see Appendix F). Nurses’ personal preparedness was emphasized in addition to the
hospitals’ preparation as three studies of nurses’ preparedness emphasized the need for nurses to have personal preparation plans in order to be present and provide safe patient care in times of disaster (Mbewe, & Jones, 2013; Bulson & Bulson, 2011; Twedell, 2009).

**Cost analysis**

Costs associated with this project include replacement of expired equipment and time for nurse training provided during staff meetings; both of these items were already built into Unit H’s budget. The additional expense of this project is theoretical in nature as the CNL student’s time was provided free of charge. However, a cost analysis is provided assuming the student’s time was as an employee of Hospital B as a CNL at the Clinical Nurse 3 level (See Appendix G). The rationale for spending this money is that in the event of a disaster, patient safety will be maintained, thus preventing or reducing loss of life.

In the arena of disaster planning, the benefit of reduced loss of life is listed as the primary benefit when looking at disaster planning’s cost-benefit analysis (Rogers & Tsirkunov, 2010). The World Health Organization’s (2000) disaster mitigation series states, “A convincing argument can still be made that reducing the vulnerability of health services, in order to guarantee the safety of people, equipment and services when they are most needed, is a highly cost–effective decision in both social and economic terms” (p. 16). Additionally, if a unit is organized and is able to effectively and efficiently treat patients throughout an emergency, there is the opportunity to reduce the financial impact by maintaining patient flow. In the event of a disaster, the Federal Emergency Management Agency (FEMA) may reimburse hospitals. In order for that to happen, hospitals must have a written policy that outlines how the hospital will capture disaster related expenditures, including labor and materials, through cost centers or purchase orders (Center for Emergency Preparedness and Disaster Response, 2013). The Center
for Emergency Preparedness and Disaster Response in “A Quick Guide to FEMA Reimbursement for Acute Care Hospitals” makes note that “In some cases, having a policy in place prior to a disaster may result in more comprehensive reimbursement” (p. 5). Thus, there may indeed be a financial advantage to being prepared in the future, though it is challenging to project, as there are too many factors about any given disaster to project savings. One of the items updated in the EAP for Unit H was the cost-capturing tool that would be used in an emergency or disaster.

**Implementation**

The timeline in Appendix F was followed closely to complete this project. The majority of the author’s time was spent preparing the EAP, organizing the equipment, learning about Hospital B’s policies and requirements, partnering with the emergency management office and Unit H’s manager, and getting Unit H to meet all the hospital requirements. Once these items were in place in November, the focus shifted to updating the nurses on Unit H regarding these changes and partnering with Emergency Management to deliver nurse education. The author conducted a thirty-minute teaching session during the November staff meeting. Pre-teaching and post-teaching surveys were done by the nurses in attendance to measure the effectiveness of the teaching and the author’s emergency preparation activities on the floor (see Appendices H & I).

During the teaching, a power point presentation was shown; however, in order to protect the privacy of Hospital B, this teaching resource is not provided in this paper. The content of the presentation and the power point included what Hospital B has in place for emergency preparation including the hospital incident command structure, how food and water distribution would work in the event of an emergency, highlights from the newly completed Unit H EAP, emphasis on the nurses’ responsibility to read and internalize the EAP, as well as what additional
Trainings are anticipated from the emergency management office. The content of the presentation was selected in partnership with the emergency management office and was informed by literature outlining the competencies required for nurses (Mbewe & Jones, 2013; Bulson & Bulson, 2011). An online toolkit on personal preparedness was provided to Unit H nurses during the staff training. Emphasis on nurses’ personal family preparation was woven into the teaching on seven slides so as to highlight the importance of the matter.

**Evaluation**

This project improvement project had very few barriers standing in its way. The author had incredible support throughout this project from Unit H’s manager, her USF faculty, her Unit H preceptor, the emergency management office at Hospital B, the fire marshal, Unit H’s nurses and her classmates. Given this support and the effort to stick to the timeline, the author was successful in completing all action items identified in Appendix C.

The analysis of feedback and the nurse surveys reveal that the thirty-minute teaching during the staff meeting and action items in place were effective in improving nurses’ feeling of emergency preparedness (see Appendices J and K for pre and post teaching survey results). All 21 nurses who returned their post-teaching survey reported that the teaching improved their preparedness and that they intended to have a conversation with their families about emergency preparation. These results support the need for further conversations with nurses about emergency preparation so that all nurses on Unit H feel prepared.

Additional feedback and the reflections of the author were compiled and a resource binder with important contacts within Hospital B, relevant emergency management policies, and steps forward was created by the author for Unit H and the emergency management office to share with other units at Hospital B (see Appendix L for a copy of one of the pages, others were
omitted to maintain Hospital B’s confidentiality). Unit H’s manager offered the nurses the opportunity to carry on this project as an advancement opportunity as a clinical nurse 3 project, thus sustaining this project’s goals and creating the opportunity for continued improvement in Unit H’s emergency preparedness.

Beyond the immediate goals of this project on Unit H, the author has had the opportunity to have conversations with her 33 classmates about emergency preparedness, casual conversations with nurses throughout Hospital B, in nursing job interviews, and with family and friends. These conversations have emphasized the need to be prepared and have a plan at work and home. These conversations may have additional impact that is not directly measured by this project. In addition, the author has gained tremendous knowledge and experience through this project. Beyond being able to help prepare any institution in the future, the author was able to successfully complete a quality improvement project and demonstrate competency in each of the following role dimensions of a CNL: advocate, member of a profession, team manager, information manager, system analyst, clinician, outcomes manager, and educator. It is projected that the relevance of this project will be felt on Unit H for a very long time especially as it is carried on. The author will continue to advocate for and implement further emergency preparedness throughout her career.
References


Appendix A

Nursing Process compared with Lippit’s and Lewin’s Change Theories

Table A1

<table>
<thead>
<tr>
<th>Nursing Process Elements</th>
<th>Lewin’s Theory</th>
<th>Lippit’s Theory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assessment</td>
<td>Lewin’s unfreezing stage (Examine status quo, increase driving forces for change)</td>
<td>1. Diagnose the problem 2. Assess motivation/capacity for change 3. Assess change agent’s motivation and resources</td>
</tr>
<tr>
<td>Planning</td>
<td>Lewin’s moving stage (Take action, make chances, involve people)</td>
<td>4. Select progressive change object 5. Choose appropriate role of the change agent</td>
</tr>
<tr>
<td>Implementation</td>
<td>Lewin’s refreezing stage (Make changes permanent, establish new way of things, Reward desired outcomes)</td>
<td>6. Maintain change 7. Terminate the helping relationship</td>
</tr>
</tbody>
</table>

(Mitchell, 2013)
Appendix B

Figure 1. Timeline of Significant Events for Healthcare Preparedness: 1989–2007

(Center for Biosecurity of UPMC, 2009)
<table>
<thead>
<tr>
<th>Preparation Expectation</th>
<th>Unit H State as of 9/2014</th>
<th>CNL Student Action Steps</th>
</tr>
</thead>
<tbody>
<tr>
<td>Department Emergency Action Plan (EAP): located and understood by staff</td>
<td>Template in the environment of care binder with no department specific information entered. 0 out of 20 nurses have actually looked for or read it.</td>
<td>Complete EAP with help from manager and emergency management office</td>
</tr>
<tr>
<td>Call list in the EAP with 3 groups based on distance from hospital with phone numbers</td>
<td>Blank in EAP</td>
<td>Use list of nurses’ addresses and phone list to create call list</td>
</tr>
<tr>
<td>Know at least two ways out of department</td>
<td>Not known, not in EAP</td>
<td>Speak with fire marshal and put in EAP</td>
</tr>
<tr>
<td>Know at least two places to take cover</td>
<td>Not known, not in EAP</td>
<td>Speak with fire marshal and put in EAP</td>
</tr>
<tr>
<td>Know the primary and secondary assembly points along with refuge areas and routes leading to them in the case of fire or evacuation.</td>
<td>Not known, not in EAP</td>
<td>Speak with fire marshal and put in EAP</td>
</tr>
<tr>
<td>Have a plan for family including a telephone contact outside of California (if possible).</td>
<td>Resource available on emergency management intranet site, 0 out of 20 nurses surveyed knew about it or had a plan/ had discussed a plan with family.</td>
<td>Get resources to nurses and emphasize need to plan with family as it relates to their ability to provide care to patients in the event of an emergency.</td>
</tr>
<tr>
<td>Have Go-bags with a collection of items used in the event of an evacuation ready to go at all times.</td>
<td>2 with minimum required supplies in the dirty utility and one in another location.</td>
<td>Centralize equipment in a clean central location, label bags and show nurses where they are located. Survey nurses about what additional supplies are needed.</td>
</tr>
<tr>
<td>Have emergency supplies stored in a central location with items that are specific to the needs of their area.</td>
<td>2 bins with minimum supplies in the dirty utility.</td>
<td>Move to clean location, label bins, inventory, order expired equipment, survey nurses about what additional supplies are needed.</td>
</tr>
<tr>
<td>Departments are to review with staff the emergency supplies and go-bags along with the EAP on a quarterly basis.</td>
<td>Not happening, nurses do not know what is in the bins. 5 out of 20 nurses know where the bins are but do not know what is inside. 15 out of 20 were unaware that the bins existed but figured there must be something.</td>
<td>Review with staff what is in the bins and go bags, ask what more should be in there that would be specific to their patients’ needs. Create plan of months when to review with proposed topics and activities.</td>
</tr>
</tbody>
</table>
Appendix D

Unit H Nurse Emergency Preparedness Assessment

1. How prepared do you feel to act in the event of an emergency?

0 (not at all) 1 (under prepared) 2 (somewhat) 3 (Moderately) 4 (Prepared) 5 (Very prepared)

2. Have you ever experienced an emergency situation as a nurse or a layperson? Please briefly describe if yes.

3. What do you think would be the best way to prepare the nursing staff for an emergency?

4. What training, if any, would you like about emergency preparedness?

5. Where is the EAP on Unit H? How familiar are you with the content?

6. Where is the emergency equipment on unit H? How familiar are you with the content?
Appendix E

Root Cause Analysis for Emergency Preparedness on Unit H

**Hospital**
- Provides resources from EM and Safety departments.
- Relies on managers to implement.
- No accountability leverage to make sure managers are following through

**RN’s**
- Trained during new employee training
- No current further training
- Not sure of role
- Desire to know more, but don’t know where to start

**Problem**
Lack of emergency preparedness related to unprepared staff and emergency equipment not in compliance as evidenced by staff surveys and inventory of equipment.

**Equipment**
- Minimum provided is present on the unit
- Not being maintained
- Some items expired/ non-functional

**Unit Leadership**
- Feels that it is important to be prepared
- Not sure how to do it
- Lack of time
- Lack of perceived support
Appendix F

Project Timeline

August
- Microsystem Assessment
- Nurse Interviews
- Manager Interviews
- Team meetings
- Communication Board for RN’s

September
- Literature Review
- Nurse Interviews
- Inventory Emergency Equipment
- Wrote Emergency Action Plan (EAP)
- Wrote Project Prospectus

October
- Met with Emergency Management Office
- Final Edits to Emergency Action Plan (EAP) with assistance of the Fire Marshal
- Coordinated with floor manager on purchasing new equipment that was expired
- Coordinated Teaching Materials with officer of Emergency Management
- Call Lists for EAP finalized

November
- Finalized teaching plan and materials with Emergency Management office
- Project Summary
- Communicated opportunities for continued actions with manager and nurses
- Presented changes and EAP updates with staff at November staff meeting

December
- Final Poster Session
## Appendix G

### Cost Analysis

Table G1

<table>
<thead>
<tr>
<th>Item</th>
<th>Funding Source</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>EAP printing</td>
<td>Unit H cost center</td>
<td>8.00</td>
</tr>
<tr>
<td>Glow stick replacements</td>
<td>Unit H cost center</td>
<td>23.00</td>
</tr>
<tr>
<td>CNL Time (CN 3) 150% Salary</td>
<td>Unit H cost center</td>
<td>61.10/hour<em>1.5</em>200</td>
</tr>
<tr>
<td>calculated to factor in benefits</td>
<td></td>
<td>hours=18,330</td>
</tr>
<tr>
<td>Resource Binder</td>
<td>Unit H cost center</td>
<td>5.00</td>
</tr>
<tr>
<td>Teaching Materials</td>
<td>Unit H cost center</td>
<td>6.00</td>
</tr>
<tr>
<td><strong>Total cost</strong></td>
<td></td>
<td><strong>$18,372</strong></td>
</tr>
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</table>
Appendix H

Pre-teaching Nurse Survey

1. How prepared do you feel to act in the event of an emergency?
   0 (not at all)  1 (under prepared)  2 (somewhat)  3 (Moderately)  4 (Prepared)  5 (Very prepared)

2. Have you ever experienced an emergency situation as a nurse or a lay person? Please briefly describe if yes.

3. What do you think would be the best way to prepare the nursing staff for an emergency?

4. What training, if any, would you like about emergency preparedness?
Appendix I

Post Teaching Survey

PLEASE COMPLETE THIS AFTER THE PRESENTATION

How prepared do you feel to act in the event of an emergency?

0  1  2  3  4  5
(not at all) (under prepared) (somewhat) (Moderately) (Prepared) (Very prepared)

Was this review helpful in your level of preparation?  Yes  No  (Circle one)

Do you plan to have a conversation with your family about emergency preparation following this presentation?

Yes  No  (Circle one)

Additional Feedback:
Appendix J
Self-Reported Preparedness Before Staff Education

Table J1

<table>
<thead>
<tr>
<th></th>
<th>0 Not at all</th>
<th>1 Under prepared</th>
<th>2 Somewhat</th>
<th>3 Moderately</th>
<th>4 Prepared</th>
<th>5 Very Prepared</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial</td>
<td>3</td>
<td>8</td>
<td>9</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>24</td>
</tr>
<tr>
<td>% Initial</td>
<td>12.5</td>
<td>33.3</td>
<td>37.5</td>
<td>16.7</td>
<td>0</td>
<td>0</td>
<td>100</td>
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### Table K1

<table>
<thead>
<tr>
<th>Score</th>
<th>Percentage</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Not at all</td>
<td>4/21</td>
</tr>
<tr>
<td>1</td>
<td>Under prepared</td>
<td>2/21</td>
</tr>
<tr>
<td>2</td>
<td>Somewhat</td>
<td>7/21</td>
</tr>
<tr>
<td>3</td>
<td>Moderately</td>
<td>8/21</td>
</tr>
<tr>
<td>4</td>
<td>Prepared</td>
<td>38%</td>
</tr>
<tr>
<td>5</td>
<td>Very Prepared</td>
<td>19%</td>
</tr>
</tbody>
</table>

Appendix K

Self-Reported Preparedness After Staff Education
Appendix L
Ongoing Preparation and Review on Unit H
(As CN 3 project or Leadership Team)

Once a year: update EAP and check all Emergency Equipment (October), if changes are made to Appendix G, make sure nurses’ stations have a copy

Quarterly: EAP and Emergency Supplies should be reviewed in staff meetings (November, February, May, and August) Topics to Review: Med Sled use in evacuation, Evacuation plan and meet up locations, horizontal evacuation, what to do if off duty, how to prepare your personal life and family, earthquake preparation (duck, cover and hold), code triage, additional items to be included in go-bags and equipment bins, disaster Olympics drills (see articles)

New Hires or RN’s leaving: update the call list in the appendix of the EAP