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Implementing Emergency Bedside Backpacks in the NICU to Improve Patient Outcomes

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### Abstract

Planning for a disaster, by implementing a unit specific disaster plan, has become an essential recommendation for Neonatal Intensive Care Units. Emergent situations have resulted from past natural disasters proving the need for additional planning when it comes to units with fragile populations. Research has shown instituting a specialized disaster plan, increases patient safety resulting in improved patient outcomes. This prospectus aims to implement emergency bedside backpacks as the first step in the development of a NICU specific disaster plan. These backpacks are meant to be an addition to the current hospital emergency plan, with the goal being to have similar success as other facilities that already have them in use. Our unit's past experience with an evacuation demonstrated the need for additional disaster planning to improve our patient's safety, staff coordination, and communication. Data was conducted via a SWOT analysis, and a fishbone diagram was created to determine what steps needed improvement. A Gantt chart was formulated to provide an anticipated time guideline, and process mapping was then completed to act as another planning guideline. A survey of the staff showed conflicting knowledge of what the current emergency protocol entails indicating a need for further disaster training. The prospected outcome is that this will be a successful, cost-effective project that will garner approval from all of the required hospital administration members, and become a standardized protocol.

## Implementing Emergency Bedside Backpacks in the NICU to Improve Patient Outcomes

### **Clinical Leadership Theme**

This project primarily uses the CNL role of a Care Environment Manager. Within this category, the role of Team Manager best fits this scenario. In this role, I am acting as a leader/partner of an interdisciplinary team that is designing and coordinating a plan of care that would improve patient care efficiency and outcomes.

The global aim statement for this project is: We aim to improve safe patient handling and the evacuation process during an emergency in the NICU. The process begins with the development of an emergency bedside backpack. The process ends with a suitable evidence-based plan being in place, the staff being trained appropriately, and if necessary, the backpacks used in a timely, safe manner during an evacuation. By working on the process, we expect 1) to improve our patients' care and safety in the event of an emergency evacuation, 2) to streamline the process, 3) to design emergency bedside backpacks with necessities for a 12-hour period and, 4) to develop an emergency documentation sheet in the event that there is no computer access. It is important to work on this now because 1) disasters (earthquakes and fires) can occur at any time, 2) it is best to be prepared prior to an event, 3) past national disasters have demonstrated that NICUs need a unit specific disaster plan in addition to the hospital emergency plan, 4) our past experience in evacuating our unit, due to wildfires, highlighted our shortcomings and stressed the need for advance planning.

### **Statement of the Problem**

Emergency disaster preparedness is a legitimate concern for any hospital or clinic setting. Certain high-risk, specialty units, such as the NICU, need to take their fragile populations into consideration when it comes to disaster plans, and not just rely on the generic hospital

emergency MOU. Hospitals that were involved in past natural disasters such as Hurricane Katrina and Sandy, and the Joplin tornado know first hand the importance of specialized disaster planning, and have since learned from their shortcomings (Barkemeyer, 2011).

In recent years, my unit was evacuated due to the hospital filling with smoke resulting from a wildfire burning on and around the hospital grounds. We did not have a specific evacuation plan in place, but a safe, albeit a disorganized evacuation took place (Appendix B). However, the evacuation occurred in the middle of the night, with the hospital on generator power, leading to the babies being evacuated with minimal light in a smoke-filled building. At a hospital safety meeting, it was discovered that the NICU did not have a unit specific disaster contingency plan. It was suggested by the hospital Safety Coordinator that a NICU specific policy be developed and implemented.

Currently, we have emergency aprons that can be used to transport our more stable babies out of the unit, but we realized that this is not enough. This evacuation experience taught us that because we never had routine emergency drills, the staff was anxious, and slightly unorganized. As the staff was primarily concerned with the patients' safety, they correctly used our emergency transport aprons, but were unable to carry out additional supplies. Lastly, without an EHR, entire charts were given to the arriving transport teams. The purpose of the backpacks is for them to be an enhancement to our current emergency policy. In addition, this project centers on the development of emergency bedside backpacks that would contain necessities for at least 12 hours, and a documentation sheet that would include space for a brief H&P, current status, and parental contact information. A project such as this requires planning, the collaboration of several disciplines, and approval from the NICU director, safety committee, and hospital administration.

### **Project Overview & Methodology**

The site for this project is a 377 bed Los Angeles County hospital. It is a teaching hospital that is associated with the David Geffen School of Medicine at UCLA. It offers patients primary care via outpatient clinics and hospital care for those in need of specialty services or surgery. The microsystem of focus is a 14-bed (plus 4 flex beds) level III neonatal intensive care unit. The patients being cared for range in the neonatal spectrum (birth to 30 days) from 25-41 weeks. However, their length of stay may vary from a few hours observation, to a 48-hour rule out sepsis, to months of ongoing care, depending on their gestational age and/or diagnosis. The staff members involved with this project include the nurse manager, a nursing supervisor, and a member of the medical staff, a respiratory therapist, our occupational therapist and myself. As previously stated, the purpose of this project is to develop and design an emergency bedside backpack that will be used during an evacuation. The backpacks will contain contents that will support the care for each patient.

The processes involved with planning this project first included identifying a need to have additional unit specific disaster plans in place. This was followed by initial research that established the backpack as a good, feasible first step in our disaster planning. The idea was then presented to the nurse manager who gave her approval to proceed. Following the chain of command, we then obtained approval from the NICU medical director. The core members of the team were chosen, and then meeting times were decided. At the meetings, the design of the bag, its' contents and maintenance would be discussed. Once everything was agreed upon, the project would then be presented to the Director of the Maternal-Child department, the hospital safety coordinator, and hospital administration.

The patterns (weaknesses and threats) that would affect this project mainly concern the aspect of time (Appendix E). The short time frame of this class, too many opinions being involved with the decision-making process to reach a consensus, staff education and time to have them become accustomed to incorporating the backpacks into their daily shift environmental checks all could end up affecting the timing of the project. However, the majority of the project planning will be completed by August 2015, with final approval, implementation, and outcomes pending.

This project involves adding a new protocol to the unit that could potentially improve the outcomes of our patients during a disaster. The alternative is going against current evidence and advice by keeping the unit protocol status quo and relying on the generic hospital emergency plan. To implement this change, Kotter's eight-step model of change was selected. This change theory best suits this project because I did not encounter any resistance during the planning process. By utilizing Kotter's model, I would be presenting the need for an emergency bedside backpack. I would then proceed to organize a coalition to put the plan into effect. This group would then develop a "vision" to design and plan the project. This step would be followed with the dissemination of the information throughout the unit, and staff education. The project would then be instituted, and the positive effects of having the backpacks in place would be determined during evacuation drills, or until they would be needed in the event of a true emergency. The other change theories involve identifying a problem or need, then getting other staff members to accept the change. Whereas, my project identified a need that the staff was already aware of, and the unit as a whole was already willing to put a plan into place. If not for Kotter's model providing more structured guidance to the planning process, the organization of the project may have taken longer, with more distractions along the way.

Once the backpacks are implemented, routine disaster drills will take place and monitoring the maintenance of the backpacks will also occur. The data collected from these two items will help determine if the outcomes are a success. These backpacks are to remain at each bedside at all times, and the contents will need to be checked bi-monthly, on the 1<sup>st</sup> and 15<sup>th</sup> (which is the same as our crash carts) by the staff for expired items. Most important is that the entire process has to be simple, and not require much thought- grab backpack, baby and go, while still fitting into the hospital emergency operations plan. As for predictions, I predict that once the staff gets to know the backpack, and are used to having them at the bedside, if a disaster were to take place- they would not hesitate to put them to use. Hopefully, we will never have to take part in the actual use of the backpacks, but at least they will be available, if needed.

My specific AIM statement is as follows: After the development and implementation of the emergency bedside backpacks, 100% of the staff will be adequately trained on their use and upkeep. The successful outcome of using the backpacks would be evident if/when they are utilized, resulting in the safe evacuation of the NICU patients. The staff would then have access to supplies to care for the babies for at least a 12-hour period, or until assistance, or a transfer team arrives (Appendix D). This process should be completed by August 2015. This statement correlates to the Global AIM statement because they both state that the importance of the backpacks is to improve the safety of the NICU population during an evacuation. The global AIM is more detailed in regards to what is expected throughout the entire process, whereas the AIM statement is more focused.

### **Rationale**

The rationale for this project is based on our unit's past experience, as well as that of other hospital's throughout the nation that have had to evacuate their NICUs. States that have



experienced natural disasters have demonstrated the need for special emergency planning in units such as the NICU. Hurricane Katrina provided a steep learning curve for the hospitals that were directly affected, and whose patients needed to evacuate or those that were stuck in the hospital itself. Whether the disaster is related to wildfires, earthquakes, hurricanes, or tornados, the evidence shows it is in the patients' best safety interest for the unit to have their own disaster plan in place (Schultz, Pouletsos, Combs, 2008).

The idea for this project came after an impromptu FMEA was conducted after our unit evacuation occurred. It was at this time that it was decided that we needed a unit specific disaster plan. However the actual planning seemed to get pushed to the backburner for more acute matters. Having a student available to concentrate on this project was beneficial to everyone involved.

The projected cost analysis for this project is minimal in comparison to the potential adverse events that could occur without having a new plan in place. The idea is that the backpacks are just the first step in the development of an entire NICU disaster plan. The initial cost analysis begins with my time as a CNL student. The CNL student costs for 220 hours of project planning is free. Taking into consideration the interdisciplinary staff salaries for meeting attendance, the estimated cost would be approximately \$50 per hour for four employees per meeting once a week over four weeks equaling \$800. The cost of the backpacks is \$59.99 each, and we would require 18 total with free shipping the total would be \$1080. A 20-pack of emergency Mylar blankets to be included in the backpack is \$10.75 with free shipping as well. The remaining supplies to be included in bag would not add any additional costs because they would come from our regular floor stock.

The value to the patients and hospital are considerable. First, there would be an increase in efficiency, with improved safety during patient evacuation. There would also be an improvement in patient care by having access to supplies while on the go. Due to the increase in patient safety, there would be improved patient satisfaction and customer service as a result. By including a streamlined, tracking information form included in the backpack (Appendix A), there would be an improvement in patient handoff to the transport team. There would also be an improvement in life-saving measures by having access to emergency supplies. Another goal would be the avoidance of an increased hospital stay by being able to prevent/anticipate further medical problems. This alone would save the hospital the daily NICU hospitalization rate of \$14,000/day.

All of these benefits could be considered invaluable to both the organization and patient. A true monetary value could not be measured, as the safety, life, and well being of a neonate is immeasurable. The relative cost of putting the emergency backpacks to use is minimal compared to the benefits that could be achieved. Even if the backpacks are never put to use, just by having them present is like having an insurance policy in place- it is there if needed, and could be much more costly if not. Overall, research has determined that special planning for an emergency is essential. The costs that go into planning are irrelevant when it comes to the total decrease in evacuation risk, in relation to a decreased transportation and threat risk (Bish, Agca, & Glick, 2014).

### **Literature Review**

The articles included in this literature review highlight the importance of a having a NICU specific disaster plan in place. There is a substantial amount of research that promotes the development of a unit specific disaster plans within an organization in order to minimize adverse

outcomes. The purpose of the following evidence is to demonstrate the fact that specialty units, such as the NICU, need special planning and training, in order to provide these vulnerable populations with the special care they need, especially during an emergency.

Utilizing the PICO search strategy, I formulated the following PICO statement:

P: Neonates and Infants in the Neonatal Intensive Care Unit

I: Begin process of unit specific disaster plan with the first step being implementation of emergency bedside backpacks

C: Do not follow evidence-based practice guidelines that recommend unit specific emergency plans, especially for fragile patient populations, by continuing to follow generic hospital plan

O: The ultimate outcome would be the improvement of patient care and safety during an evacuation.

The initial search was completed using the USF library “Fusion” search box with the key phrase “disaster planning in the NICU”. With this phrase I was able to obtain a sufficient number of articles related to my topic. When I wanted information that was related to an article that I found particularly helpful, I then chose the “find similar results” option. After researching all that I could under the NICU heading, I switched to searching for “hospital disaster planning”. I also utilized the Google search engine to see what information was accessible to the generic public. When using Google, this is where I was able to locate the disaster plans that are currently in use at various facilities. By reading some of these plans, I could then go back to Fusion and adjust my search to be more specific.

Unfortunately, it has been the occurrence of major, natural disasters, within the last ten years that has fueled the availability of data currently available to me. At the time of these

emergency evacuations, the units that were involved in these disasters often did not have a NICU contingency plan in place. Many of the researchers, learned from their shortcomings, and have been able to publish their findings in order to assist others with the development of their own disaster plans. Others that have once again experienced evacuations since their NICU disaster plans were initiated have been able to transport their fragile patients without incident. Twelve references were chosen to provide evidence depicting the need for hospitals to have a NICU specific disaster plan in place.

Barkemeyer (2011) gives an account of his harrowing tale following Hurricane Katrina, and what has since changed within the hospital system as a result of the evacuations that occurred at that time. Hospitals in the New Orleans area now have plans in place when there is a threat of an evacuation. Hospitals that are unable to evacuate, or choose not to, now have hospital safeguards in place, whether it is preferred flood status, generators, emergency water supply, along with a stockpile of food and supplies designed to last for several weeks after the initial disaster occurs. Three years after Hurricane Katrina, Hurricane Gustav once again threatened New Orleans, and the new evacuation plans in place were effective and a success. The purpose of this article is to stress the importance of preparation, which will limit the loss of life and property.

Bish, Agca, and Glick (2014) assert the need for emergency evacuation planning. They stress the importance of this kind of planning to minimize the risk to patients and staff. Evacuation preparedness is considered a risk management tool whose importance is highlighted by The Joint Commission. Even though disaster planning can be hampered by budgetary concerns, or resource limitations, the costs of not having a plan in place could be great in comparison to the cost of instituting one. Any step that could be taken to minimize risk during

an evacuation would be worth it. Especially in comparison to potential legal costs, the logistical costs of disaster planning would be the most cost-effective measure.

Cohen, Murphy, Ahern, & Hackel (2010) have written a commentary in response to an article that reviewed the detrimental effects that occur during a disaster when a protocol does not exist to aid NICU patients. The authors stress that this cannot continue with NICUs having the highest mortality rate during an emergency situation. The reason for this is that most emergency protocols do not take into consideration the special needs of neonates. The authors suggest the development of a triage system that would be a collaborative effort and implemented in NICUs nationwide. To not even consider this option would be unethical.

Espiritu et al. (2014) recount their own NICU evacuation experiences. They began their story once they noted a lack of published material regarding the evacuations of NICUs. As staff members of a New York teaching hospital, they unfortunately participated in two evacuations within a 15-month period, resulting from hurricanes during 2011-2012. Using data and debriefing notes, they comprised objective information on their unit's shortcomings, and identified key factors individual to a NICU that would aid in disaster planning. They reviewed every step of the storm and evacuation process from the storm preparation, dealing with power failure, finding beds, the transfer of medical information, various aspects of transport, and finally the lessons learned from the experience. The ultimate goal is to provide helpful information that could be used to develop a disaster plan that focuses on the NICU population.

Femino, Young, and Smith (2013) discuss their data obtained during a full-scale NICU evacuation exercise that took place at their facility. Their results noted the importance of communication at each step, the need for adequate staffing, and having an available triage area. It was evident that the adult forms, and available emergency equipment and procedures were not

suitable for the NICU patients. It was recommended to have a unit contingency plan in place to help avoid unnecessary morbidity and mortality due to the disaster. Their experiment demonstrated the hospital and unit's strengths and stressed the importance of a team approach.

Hayhurst (2013) emphasizes that being prepared is the only way to have a successful outcome during a disaster. Planning, drills, and having equipment at the ready are a must. But even when a hospital has a strong disaster plan in place, Mother Nature can still be unpredictable, and there is still a need for contingency plans to be in place. After disasters have occurred, biomedical engineers have noted the importance of working with individual units to enhance specialized department preparedness. Collaboration between hospital departments and units is the only way to ensure success in times of disaster.

The Illinois Emergency Medical Services for Children in collaboration with Loyola University, and the Illinois Department of Public Health (2009) developed this guideline to assist hospitals in generating a NICU evacuation plan. This guideline has been utilized statewide, and is often referenced in other states. Evidence-based research was thoroughly conducted prior to this document being constructed. The findings clearly indicate the need for pre-event planning and drills. It is stated, that a real “evacuation incident” is not the time to learn the evacuation procedures, and equipment.

Jorgensen, Mendoza, & Henderson (2010) discuss the fact that even though the occurrence rate of disasters has increased over the last 30 years. Nurses, as the largest portion of healthcare workers remain inadequately trained and prepared for an emergency, and can even be a hindrance. Disorganized hospital infrastructure planning can lead to increased morbidity and mortality rates. It is suggested that nationally derived core competencies are developed to provide a template for emergency preparedness, as well as training and educational programs.

This suggestion is especially crucial in the preparation of disaster plans for the vulnerable NICU population. The purpose of this article is to emphasize the need for neonatal nurses to take a leading role in emergency preparedness, and not just rely on the general hospital disaster plan.

Loma Linda University Children's Hospital (2013) has provided resources to aid in the development of a NICU or pediatric disaster plan. It was created in response to the National Commission on Children and Disasters findings that stated children are included in the 25% of the nation's population that are neglected in disaster preparedness. The creators of this guide- The California Neonatal/Pediatric Disaster Coalition, in collaboration with Loma Linda University developed this guide to help hospitals develop their own specific unit plans for emergency planning in regards to the needs of children and infants. This document was designed as a template or guideline for others to build their own plan around. It comprises examples of best practice, and expert opinions to help guide planning.

Orlando, Danna, Giarratano, Prepas, and Johnson (2010) focus on the nurses' role in providing care to infants and their mothers during a disaster. It has been noted that this unique population requires special knowledge and planning when it comes to disaster plans. The authors proceed to highlight the nurses' role throughout the disaster process preparedness to recovery. Hurricanes Katrina and Rita, along with bioterrorism threats, have stressed the importance of having an infrastructure in place that will sustain a hospital's most vulnerable populations for an extended time, or until assistance arrives. Unit-specific emergency plans with a properly trained staff are encouraged. A triage and assessment plan is recommended to determine evacuation priority. Nurses play a key role in each step on the disaster process, and their experience is key in the development of a successful plan. Past experiences reveal the need for individual units to remain at a state of readiness at all times.

Philips, Niedergesaess, Powers, and Brandt (2012) acknowledge a changing pattern in hospital disaster planning. No longer are organizations focusing solely on regulations, but they are now dedicated to unit specific disaster plans. However, Philips et al. noted resources guiding the development of these plans are rare. The authors have instituted an emergency plan for their NICU focusing on the use of bedside backpacks, disaster boxes, and documentation kits. Training continues to determine the effectiveness of staff training, drill response, and inventory monitoring. The purpose of their disaster plan is to provide a framework for other units to base their individual disaster plans on.

Schultz, Pouletsos, and Combs (2008) provide an outline for the development of a disaster plan for a NICU. Along with this pertinent information, the authors also supply readers with information regarding resources that are available to assist and support organizations with the development of their own NICU specific disaster plan. The importance of hospitals having their own unit specific policies in place during an emergency is stressed in order to achieve optimum outcomes. The process is a collaborative effort between inside and outside personnel and resources. The key is to have a plan in place with staff members who are prepared to handle the situation.

The above evidence proves the need to have a NICU disaster plan in place. It has been shown that units that have been evacuated have benefited from having a unit specific plan in place to improve the efficiency of the evacuation process, which has resulted in improved patient outcomes. The costs of instituting an emergency plan outweigh the potential costs of not having a plan in place. Past experiences have also proven that adult evacuation plans do not support good outcomes for NICU patients. Along with this evidence, additional data stresses the importance of nurse education during the planning process by way of completing disaster-



training competencies. In conclusion, it has been proven that in order to optimize outcomes, especially for specialty units such as the NICU, organizations should have plans in place that meet the specific needs of their patients.

### **Timeline**

The majority of this project should be completed within a twelve-week timeframe. Final approval by hospital administration and the hospital safety coordinator will take the longest. Until the backpacks are in use at the bedside, their efficacy will remain undetermined. The same will be true of the measurable outcomes. This information would not be available until the backpacks were to be used, or the evacuation drills were conducted, and data regarding the monitoring of the backpacks contents were obtained. The first couple weeks involved my preceptor and myself discussing the project, determining a need, and then designing the project. The following two weeks were spent on research. During week 5, the project was proposed to my nurse manager and medical staff, and their approval was obtained. Week 6 involved the formulation of the project team, and weekly meeting times were determined. The next four weeks, the team members will meet weekly to discuss the design and needed contents of the backpacks (Appendix C). The plan for week 11 is to submit the completed project plan to the nurse manager for approval. By week 12, the nurse manager will have approved the project plan and will then forward it to the Maternal-Child Nurse Director, the hospital Safety Coordinator, and hospital administration (Appendix F). At the end of the semester, we will be awaiting the final okay before we can purchase the backpacks, put them together, place them at each patient's bedside, then educate the staff on their use and maintenance prior to beginning the practice of routine evacuation drills.

### **Expected Results**

After the emergency bedside backpacks are in place, I would anticipate that the evacuation of our patients would become easier. The bedside nurse would not have to worry about gathering supplies to take with her, because they would already be inside the backpack ready to use. This one piece of equipment could relieve one big aspect of concern during a stressful situation. Initially, I could foresee some resistance from the staff in regards to the maintenance of the backpacks. But, once they become accustomed to the bags and realize their potential importance during a disaster, I believe their acceptance will improve. Educating the staff on the “what-if” possible occurrences that could take place during a disaster, and reminding them of our past evacuation should be evidence enough to gain staff compliance. Disaster preparedness can be a tricky concept to enforce since it involves the unknown, but this plan will be just the first step in achieving our ultimate goal of having a complete NICU specific disaster policy in place. I would also like to see our unit be the example for other units in the hospital to model their own unit specific disaster plans after.

### **Nursing Relevance**

Nurses are and will always remain at the forefront of patient care. It is for this reason that they should be active participants in disaster planning. Nurses can be the determining factor of whether or not patients are transported or evacuated safely during a disaster. They are the ones who are primarily responsible for coordinating patient care at these crucial times. If there is a way to improve patient care and safety during an evacuation, nursing as a whole should be accepting of new procedures to do so. Having nursing involved during the planning process will ensure that their needs and concerns are addressed and met. This is not to say that the patient’s care is the sole responsibility of the nurse, rather, it is a collaborative team effort that will take the cooperation of multiple disciplines. However, within my unit, it will be the nursing staff that

initiates, and carries out the evacuation plan with the assistance of the respiratory staff, while the physician/nurse practitioner on duty is coordinating patient transfers with other facilities. It is for this reason that this NICU disaster plan involving the emergency bedside backpack is relevant to nursing.

### **Summary Report**

As previously stated throughout this prospectus, the purpose of this project is to implement emergency bedside backpacks into our NICU. This is to be done with the long-term plan being that this is just the first step in the development of a NICU specific disaster preparedness plan. The goal is also for this to be a sustainable project that develops into a standardized protocol. Another unofficial goal is that this project will inspire other specialty units within the hospital to develop their own unique disaster plans as well. This paper has shown that research is on the side of this project being implemented. Being unprepared when a disaster occurs has been proven ineffective, and the patients have suffered for it. However, once a plan has been instituted patient safety and patient outcomes have improved. All of the steps have been approved up until this point. At this time, I am just awaiting final hospital administrative approval for us to completely move forward. I have been told that this should not take an extended period of time, as the project shows so much promise and is a very cost effective plan to take. Once the staff is officially and adequately trained on the contents and maintenance of the backpacks, then they can be placed at each bedside and further disaster training and drills can take place. Nursing is at the frontlines of patient care when it comes to the evacuation process, which is why this project is relevant to nursing. As mentioned previously, nurses should be accepting of this new project by virtue of the impact it could have on improving

patient care and safety during a stressful, chaotic time. The staff survey conducted attests to this point as well.

During these last three months, initial research was conducted, a need identified, then a plan was formed. The team participating in the project was chosen, and subsequent planning meetings took place. In addition to myself, team members included, my preceptor, our nurse manager, and a member of the medical staff, a respiratory therapist, and our occupational therapist. A SWOT analysis was drafted; a fishbone diagram was comprised to see where our previous weaknesses lay, a Gantt chart was made to provide a time guideline, and process charting was completed as an additional resource to help keep our plan on track. Time was spent deliberating on the style of backpack, as aesthetics are always a concern for some, in addition to practicality and cost. Once a bag was chosen then the key contents of the backpacks were reached in a collaborative effort. The project was then submitted to my nurse manager for formal approval, and then she forwarded it onto other hospital administration members for the final decision. This is where our project stands now.

During the design process, disaster plans that have shown success in other institutions were modified to fit our own unit. At this time of the planning process, the staff was given a survey that asked simple questions pertaining to their feelings/knowledge of our unit's disaster readiness (Appendix G). I was surprised to find out that 75% of the nurses felt that we were adequately prepared for a disaster, yet the same percentage could not completely state the hospital or unit plan. The most common answer given was simply to stay in the unit and await further instruction. The remaining 25% did state a need that additional disaster preparation was needed. In accordance with this thought, 100% of the staff stated they would benefit from added training. Most (85%) were in favor of the backpacks, with the primary concern being the nursing

staff's responsibility for their maintenance. When asked for their input of essential items to be included in the backpack, all responses given were already a part of the chosen list.

While awaiting approval, I had the opportunity to conduct two impromptu emergency drills. As the backpacks had not been approved, substitute bags were utilized. Both times the drills went fairly well, once the staff was briefly re-educated on the evacuation process. It seems the most time consuming process was filling out the transport form. At this time, now we have to decide when this form should be completed- once a week, when an emergency occurs, or start it on admission. A consensus must be reached for the form to be effective. This is now a part of the PDSA cycle (Appendix H). We had already completed the plan, and are awaiting an official "do". However, from this practice session, we were able to study the staff's responses to the survey and drill. Based on this information, we can still act on our findings, and begin a new plan that addresses these new issues.

As discussed previously, the backpacks are just the first step of a comprehensive NICU specific disaster plan. Their use will be an introduction to further disaster planning, leading to the sustainability of the project. Unfortunately, hard data would not be collected unless a disaster were to occur, so in the meantime, we will have to monitor external benchmarking of other facilities that already have a complete plan in place. The metric of patient safety would be continually monitored via disaster drills and ongoing staff assessments. This data will determine at what steps additional teaching, or practice is needed. These actions will continue to propel the PDSA cycle forward.

Briefly reviewing the budget analysis of the project, the backpacks were proven to be a very cost effective measure to take prior to a disaster occurring. In the event of a disaster, patient care would be inhibited, and more supplies would be lost as the staff tries to haphazardly grab

what they can. Both of these would negatively impact the costs the institution would incur. More money would be spent providing additional care to patients that could have potentially been prevented by having the backpacks in place. Also, additional funds would be needed to replace the supplies that were lost in transport. These events would not be following the principle of lean healthcare, which provides value-centered care that benefits both the patient, as well as the organization. The institution of the backpacks would cost a minimal fee that would ultimately provide a greater value to the patient and the unit, if they were to be available during a disaster.

In conclusion, I still feel that this is a project worth continuing, and one that shows much promise in being successful. Living and working in Southern California, along with already being victims of a wildfire evacuation are grounds enough to promote this project, which will not only promote patient safety, but also improve patient outcomes. I see no reason for this project not to be approved, and I feel the need for this action has been justified.

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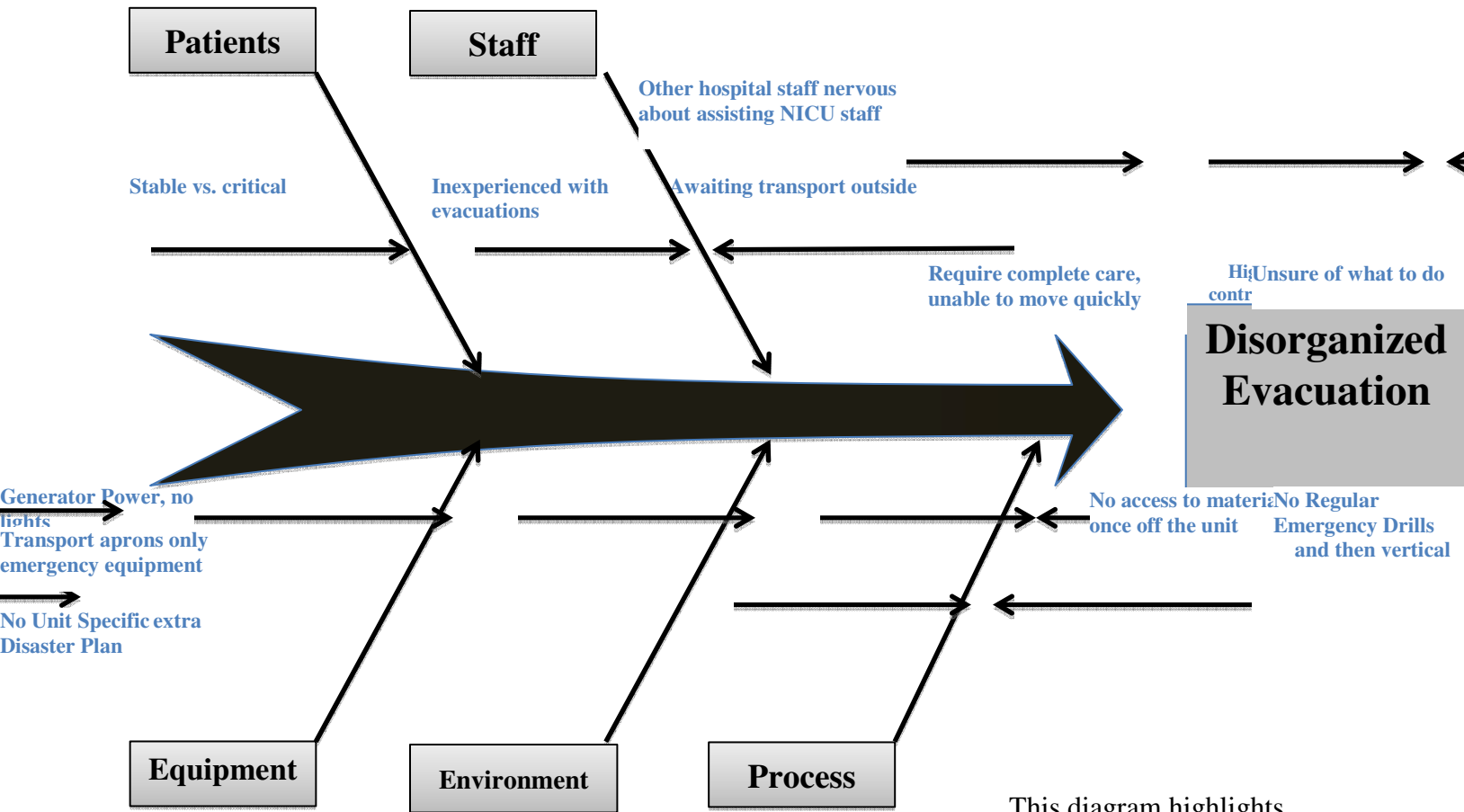


Appendix A

NICU PATIENT EVACUATION TRACKING FORM			
1. DATE		2. UNIT	
3. PATIENT NAME (OR LABEL)	4. AGE	5. MRUN #	
6. DIAGNOSIS (-ES)		7. HISTORY	
8. FAMILY NOTIFIED <input type="checkbox"/> YES <input type="checkbox"/> NO CONTACT INFORMATION:			
9. ACCOMPANYING EQUIPMENT (CHECK THOSE THAT APPLY)			
<input type="checkbox"/> Isolette	<input type="checkbox"/> Monitor	<input type="checkbox"/> Arterial Line	<input type="checkbox"/> PICC
<input type="checkbox"/> Warmer	<input type="checkbox"/> Oxygen	<input type="checkbox"/> PIV	<input type="checkbox"/> Broviac
<input type="checkbox"/> Bassinette	<input type="checkbox"/> Ventilator	<input type="checkbox"/> Peripheral Arterial Line	<input type="checkbox"/> Breast Milk
<input type="checkbox"/> Crib	<input type="checkbox"/> CPAP	<input type="checkbox"/> UAC	<input type="checkbox"/> Feeding Tube
<input type="checkbox"/> Other	<input type="checkbox"/> Chest Tube(s)	<input type="checkbox"/> UVC	<input type="checkbox"/> IV Pumps
ISOLATION <input type="checkbox"/> YES <input type="checkbox"/> NO		TYPE	
REASON			
10. DEPARTING LOCATION		11. ARRIVING LOCATION	
ROOM#	TIME:	ROOM#	TIME:
ID Band Confirmed <input type="checkbox"/> YES <input type="checkbox"/> NO	By:	ID Band Confirmed <input type="checkbox"/> YES <input type="checkbox"/> NO	By:
Medical Record Sent <input type="checkbox"/> YES <input type="checkbox"/> NO		Medical Record Sent <input type="checkbox"/> YES <input type="checkbox"/> NO	
Patient Labels Sent <input type="checkbox"/> YES <input type="checkbox"/> NO		Patient Labels Sent <input type="checkbox"/> YES <input type="checkbox"/> NO	
Belongings <input checked="" type="checkbox"/> With Patient <input type="checkbox"/> Left in Room <input type="checkbox"/> None		Belongings Received <input type="checkbox"/> YES <input type="checkbox"/> NO	
Medications <input checked="" type="checkbox"/> With Patient <input type="checkbox"/> Left in Room <input type="checkbox"/> None		Medications Received <input type="checkbox"/> YES <input type="checkbox"/> NO	
PEDIANS/INFANTS			
Bag/Mask with Tubing Sent <input type="checkbox"/> YES <input type="checkbox"/> NO		Bag/Mask with Tubing Received <input type="checkbox"/> YES <input type="checkbox"/> NO	
Bulb Syringe Sent <input type="checkbox"/> YES <input type="checkbox"/> NO		Bulb Syringe Received <input type="checkbox"/> YES <input type="checkbox"/> NO	
12. TRANSFERING TO ANOTHER FACILITY			
DESTINATION		TRANSPORTATION <input type="checkbox"/> AMBULANCE UNIT <input type="checkbox"/> HELICOPTER <input type="checkbox"/> OTHER	
ID BAND CONFIRMED <input type="checkbox"/> YES <input type="checkbox"/> NO		BY: (Please Print)	
DEPARTURE TIME			
13. FACILITY NAME:			

Appendix B

Fishbone Diagram Showing Causes of a Disorganized Patient Evacuation Process



This diagram highlights

the need for a unit specific disaster plan, regular staff education, and evacuation drills. The use of a bedside emergency backpack would remove the equipment aspect as well, making the evacuation process better for both the staff and patient.

## Appendix C

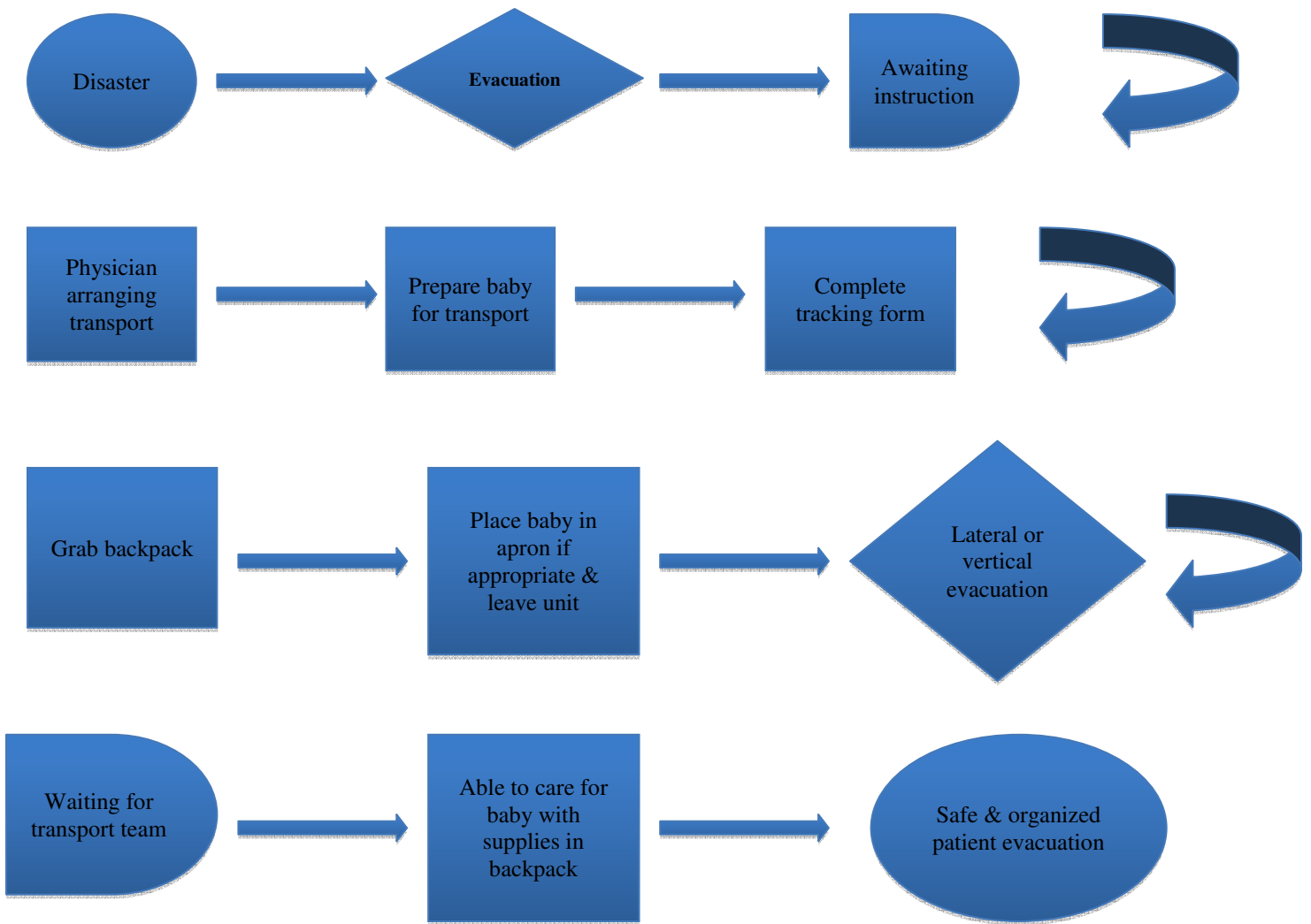
## Prospective List of Contents to be Included in Backpacks

Item	Quantity
Self-Inflating Anesthesia Bag	1
Full-term Mask	1
Premature Mask	1
Bulb Syringe	1
Stethoscope	1
Warming Mattress	1
Receiving Blanket	3
Mylar Blanket	1
Burp Cloths	3
Hats	2
60ml Formula Bottles	4
Nipples	4
Pacifier	2
Feeding Syringes & Tubing	4 each
Diapers	6
Diaper Wipes	1 package
Flashlight	1
Notepad & Pen	1
Tracking Form	1
Watch	1
Hand Sanitizer	1 bottle
Gloves	4 pairs
Sterile Gloves Size 6.5	1 pair
Sterlie Gloves Size 7	1 pair
Sterile Gloves Size 8	1 pair
Saline Wipes	4
Gauze 3x3	4
Alcohol Wipes	4
Whistle	1
Tape	1
IV Kit	1



Appendix D

Utilizing the Emergency Bedside Backpack Process Mapping Flowchart

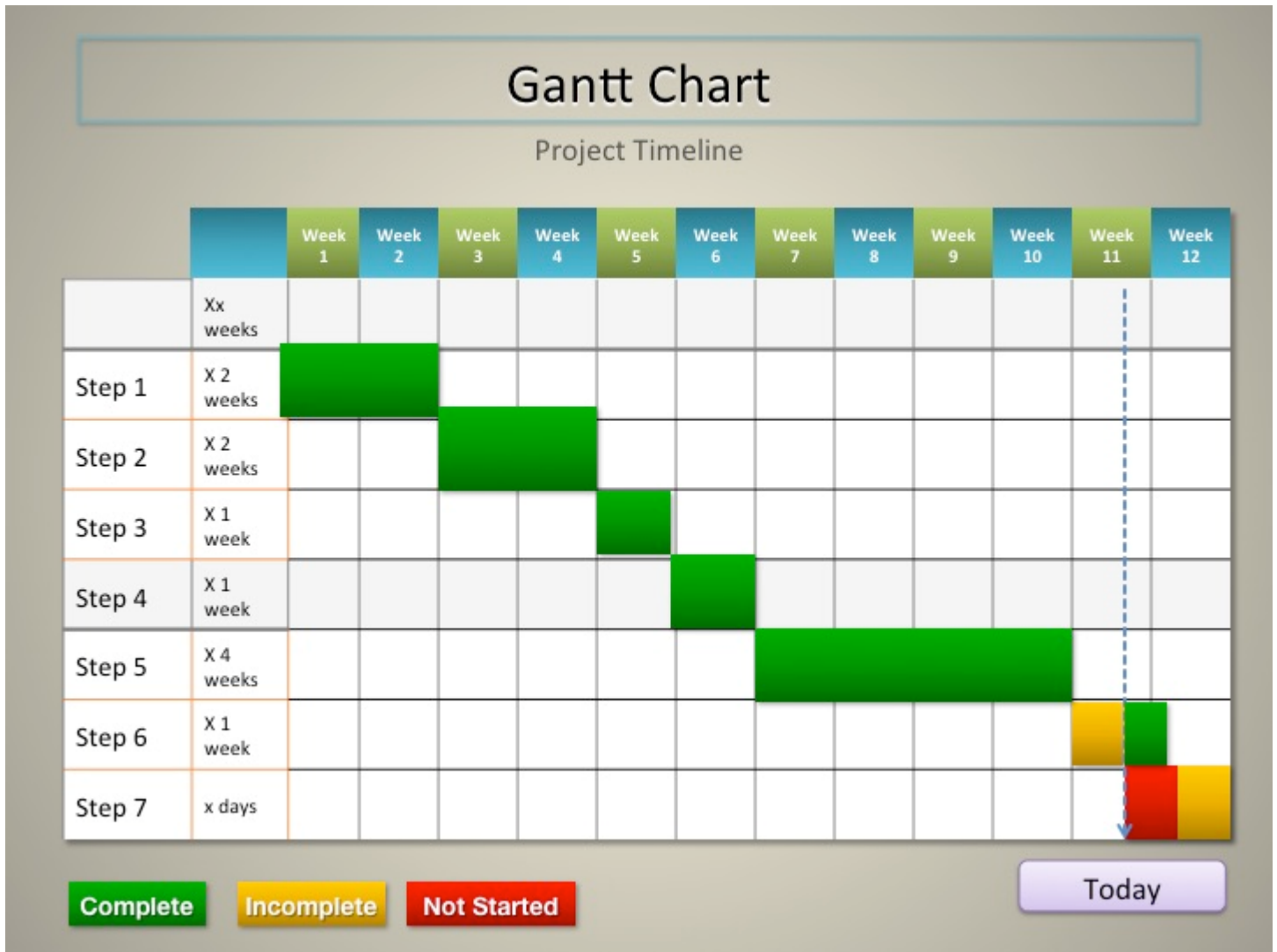


Appendix E

SWOT Analysis



Appendix F



Note:

Step 1: First 2 weeks need assessment, and project design

Step 2: Weeks 3-4, Project research

Step 3: Week 5 submit project proposal to nurse manager and NICU director for approval

Step 4: Week 6 choose core team for project and decide on meeting time

Step 5: Weeks 7-10, team meets once a week for project development

Step 6: Week 11 submit final project proposal to nurse manager for approval

Step 7: Week 12 Nurse manager forwards project to hospital safety officer, director of maternal child, and hospital administration for final approval

*Appendix G*

## Staff Survey

## Knowledge of NICU Disaster Protocol

1. Do you feel that our unit is adequately prepared for a disaster?  
Yes  No
  
2. Do you feel that the staff has been appropriately trained in the event of a disaster?  
Yes  No
  
3. Are you familiar with the current hospital emergency plan?  
Yes  No
  
4. Are you familiar with the NICU emergency protocol?  
Yes  No
  
5. Briefly explain the steps to be taken, as you understand them.
  
  
  
  
  
  
  
  
  
  
6. Do you think that our unit would benefit from additional staff training (drills, specific protocols, evidence based practice, etc.) that relate to disaster preparedness?  
Yes  No
  
  
  
  
  
  
  
  
  
  
7. Would you be in favor of implementing emergency bedside backpacks, that the nurses would be responsible for maintaining?  
Yes  No
  
  
  
  
  
  
  
  
  
  
8. List 5 essential items that you feel would need to be included inside the backpack.

Appendix H

