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Spring 5-22-2015

Emergency Response Improvement Project

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Prospectus Summary Brief
Emergency Response Improvement
Ewan MacDonald

Specific Aim:
We aim to improve team response to emergencies through staff education and protocol development with 100% participation within six months.

Background:
The facility is a 572-bed JCAHO accredited, non-profit medical center that functions as the only trauma center for the county. The microsystem is the Surgical Services Department, which has 13 operating rooms. The CNL identified the existence of nurses' knowledge deficit and discomfort with emergency situations with regard to the pediatric patient cohort.

Supportive Data:
An Intense Analysis (IA) was conducted after an incident of laryngospasm/near-code in the OR involving a 5 month old patient. The fishbone diagram (See Appendix A, Figure 1) indicates 12 issues associated with nurses' emergency responses, two of these were addressed in this project: limited educational opportunities, and poor coordination and delegation during codes (role confusion). The process map (See Appendix B, Figure 2) indicates the steps typically taken by the nurses during an emergency in the OR prior to the improvement project.

Microsystem Status Relative to the Project:
The SWOT analysis (See Appendix C, Figure 3) indicates many positives for moving forward with the improvement project with two threats noted. The threats are: Staff resistance to training requirements, and the cost to present educational opportunities. This project is very important to the patients and the staff because it addresses concerns with safety and satisfaction for both parties. Improving team response to emergencies in the OR benefits all stakeholders by reducing the chances for poor outcomes and their financial losses with respect to the facility.

Summary of the Evidence:

Search Strategies:
The research articles obtained give legitimacy to the project that seeks to improve team response to emergencies. Key words utilized in the search include: *emergency response, pediatric code, operating room nurse, mock code, perioperative code,* and *code blue training.* The years of the article publications range from 2010 to 2014.

Databases Used:
CINAHL, MEDLINE, Science Direct, and SCOPUS.

Evidence:
Knight et al. and Epstein (2013) advocate training and education within an interdisciplinary context (physicians, nurses, techs etc.) as it applies to any patient population, especially the

pediatric cohort. Hill et al. (2010) promote the advantage of concentrating on improving skills in general rather than focusing on the concern with complete mastery. Perez (2014) and Antoniadis et al. (2014) emphasize the importance of controlling chaos by training staff how to properly assign roles and to limit the traffic in the OR. Finally, Murdock (2013) asserts the importance of debriefings as a part of the training program so that staff may learn from mock situations in a comfortable environment.

Theoretical Direction:
Lewin's theory of change is a simple yet powerful model that encourages process change with three steps: unfreezing, movement, and refreezing. These steps will be applied to the staff by disengaging their old habits, engaging them in planning and implementation, and encouraging the change to be accepted as the new norm.

Stakeholders:
The pediatric surgeons, the pediatric anesthesiologists, the pediatric OR nurses, the OR CNS/educator, the OR CNL (assistant manager), and the hospital risk manager all generally support the idea of education and training with regard to improving team response to emergencies.

Business Case:
Adverse events in the OR can be highly varied, as would the effect on patients and potential awards due to liability. Qualitative costs to patients, families, and staff are immeasurable (The Leapfrog Group, 2008).

The cost to develop and implement this project are based on a rate of pay at $60 per hour, which is then multiplied by the time spent in research, consultation, and the time spent executing the training and education. A reasonable estimate is that 150 hours of work will conducted on paid time in the facility. This equates to approximately $9000. The estimate for the income of the staff is also placed at $60 per hour with a predicted number of 25 total (including the OR CNS/educator) who require the training. The session time is estimated at 1 hour per staff member, which equates to $1500. The final estimate for the entire project is $10,500.

Methods:
Nurses that provide care for pediatric cases in the OR will be offered education and training with respect to the goal of improving team response to emergencies. The method will be in the form of mock code blue scenarios (Loyola University Health System, 2012). The Gantt chart (See Appendix D, Figure 4) outlines the timeline for this project.

Steps for Implementation:
The nurses that participate in the pediatric cases will be cycled through mock code blue scenario training and education sessions that will be initiated on April 20th, 2015. The sessions will be held during the Monday morning in-service period that occurs weekly, and will last for approximately one hour. The plan is to conduct these sessions twice per month with 5 to 6 participants each period. There will be lecture, demonstration, and return demonstration in an environment that is nurturing and stress-free. An available pediatric anesthesiologist will be invited to attend each session and to provide further input and instruction.

Evaluation Methods:
The CNL and the OR CNS/educator will conduct an evaluation of the effectiveness of the sessions. This will consist of observing staff performance regarding manual skills and teach back skills, as well as examining the staff reactions in the debriefings and the examination of the written staff evaluations at the end of each session.

Results:
The activities in the timeline have been completed through the first PDSA cycle and the evaluation of that cycle. Six pediatric OR nurses attended the 50-minute session as well as the CNS/educator; no pediatric anesthesiologist was available to attend. The mock code was conducted for two cycles. All of the nurses participated actively by assigning and performing roles, engaging each other with prompts and encouragement, and responding to prompts from the instructor and the CNS/educator. A debriefing was held and all staff members participated verbally and by repeating the performance of skills associated with the role assignments. The CNS/educator added to the discussion by clarifying the policy regarding the in-house code team response to the OR. Questionnaires were given to each participant; four of these were returned within the following week.

Outcomes:
The final outcome for the specific aim was not completed – the current participation is 24%. Each participant indicated either verbally and/or through the written evaluation, that valuable skills and information were gained, which increased their role knowledge and reduced their level of fear with respect to emergency situations. All of them indicated the desire to have these sessions continued on a regular basis, perhaps every 3 months, in order to increase the retention of information and skills. The staff indicated the value of the simplicity of the format and the small number of attendees; they indicated that the relaxed atmosphere assisted in the learning process. Further, the time and place for the session was universally appreciated as appropriate. Suggestions included adding more prompts during the mock code and providing medication props for practice purposes.

Recommendations:
Obviously the entire project requires more PDSA cycles than was possible in this time period but the initial results point to an overwhelming enthusiasm for the mock codes. The format, time, and place appear quite appropriate as well as the number of participants, but I would push to continue with the sessions twice per month in order to cycle all of the pediatric nurses through the training. It is important to keep the sessions simple and to avoid making them too complicated, which will aid in stress reduction and information retention. More scenarios need to be written to keep things interesting and to provide for variety during each session. I would continue to invite an anesthesiologist but I would not focus on this as an absolute necessity.

Appendix A
Fishbone Diagram

STAFF

Inadequate Remedial Training

Staff Experience High Levels of Stress During Emergencies

Not all Staff ACLS/PALS Certified

Very Few Codes Occurring

Poor coordination & Delegation During Codes

Limited Educational Opportunities Regarding Codes

PROCESS

PATIENTS

Varying Population

Less Frequent Pediatric Cases

Rise in High Acuity Patients

Stressful, High Acuity Rooms

Many Distractions

Chaotic Reactions Exacerbated by Case Circumstances

ENVIRONMENT

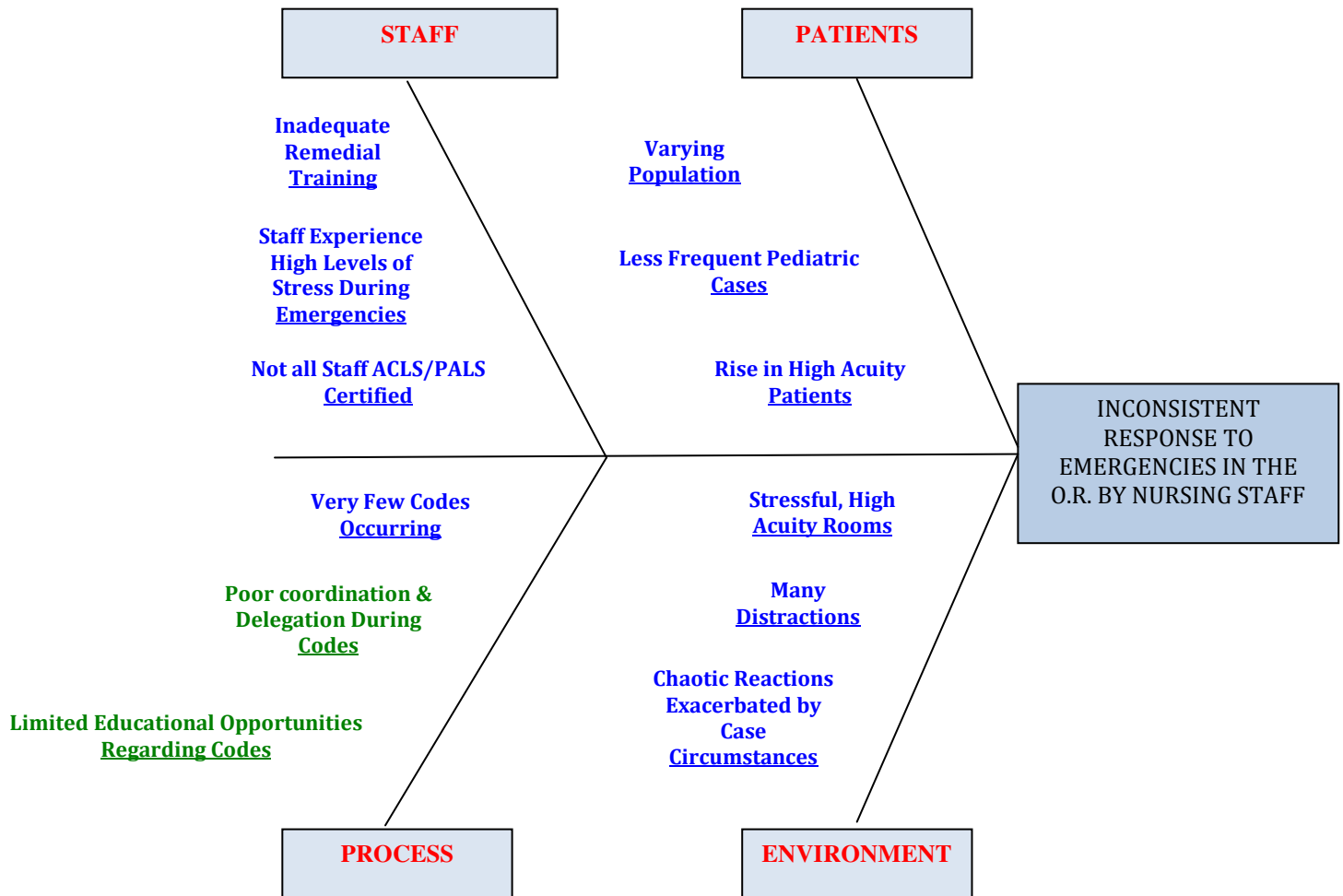INCONSISTENT RESPONSE TO EMERGENCIES IN THE O.R. BY NURSING STAFF

Figure 1. Fishbone Diagram indicating contributing factors to emergency responses. This project focused on the two issues highlighted in green.
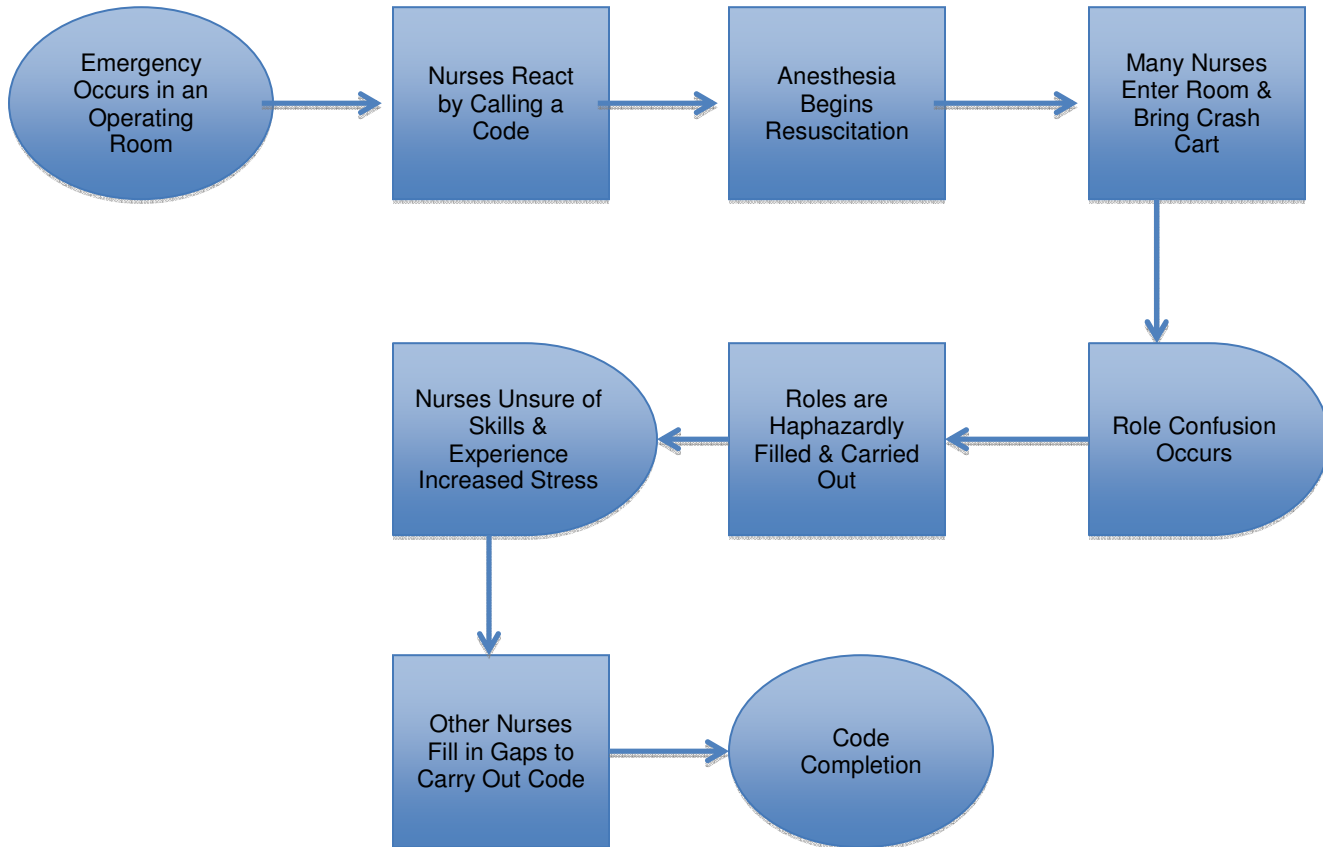
Appendix B
Issue Related Process Map

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┌─────────────┐      ┌─────────────┐      ┌─────────────┐      ┌─────────────┐
│  Emergency  │      │ Nurses React│      │  Anesthesia │      │ Many Nurses │
│ Occurs in an│ ───► │by Calling a │ ───► │   Begins    │ ───► │ Enter Room &│
│  Operating  │      │    Code     │      │Resuscitation│      │ Bring Crash │
│    Room     │      │             │      │             │      │    Cart     │
└─────────────┘      └─────────────┘      └─────────────┘      └──────┬──────┘
                                                                      │
                                                                      ▼
┌─────────────┐      ┌─────────────┐      ┌─────────────┐
│Nurses Unsure│      │  Roles are  │      │             │
│  of Skills &│ ◄─── │ Haphazardly │ ◄─── │Role Confusion│
│  Experience │      │Filled &     │      │   Occurs    │
│  Increased  │      │Carried Out  │      │             │
│   Stress    │      │             │      │             │
└──────┬──────┘      └─────────────┘      └─────────────┘
       │
       ▼
┌─────────────┐      ┌─────────────┐
│Other Nurses │      │             │
│Fill in Gaps │ ───► │    Code     │
│to Carry Out │      │ Completion  │
│    Code     │      │             │
└─────────────┘      └─────────────┘
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Figure 2. The process map indicates the steps typically taken by the nurses during an emergency in the OR prior to the improvement project. Two areas of concern were *role confusion* and *nurses unsure of skills & experience increased stress.*

Appendix C
SWOT Analysis

INTERNAL	EXTERNAL

STRENGTHS

Most of staff motivated to increase comfort with Emergencies.

High level of quality care.

Most nurses highly experienced and educated.

Magnet designated facility with emphasis on nursing excellence.

Core group of nurses interested in paediatrics.

OPPORTUNITIES

Improve nurses' response to emergencies.

Improve comfort and confidence levels of staff.

Improve patient outcomes.

Reduce occurrence of potential harm to patients.

Reduce potential for adverse financial consequences.

Improve standardization of codes.

WEAKNESSES

Large group of nurses with varying schedules.

Limited times to present educational programs.

Anesthesiologists' approach to emergencies varies.

Staff overloaded with in-services in general.

THREATS

Staff resistance to additional training requirements.

Cost to present educational opportunities.

Need for cooperation from anesthesia department to some degree.

Figure 3. The SWOT analysis indicates many positives for moving forward with the improvement project with two threats noted.

Appendix D
Gantt Chart

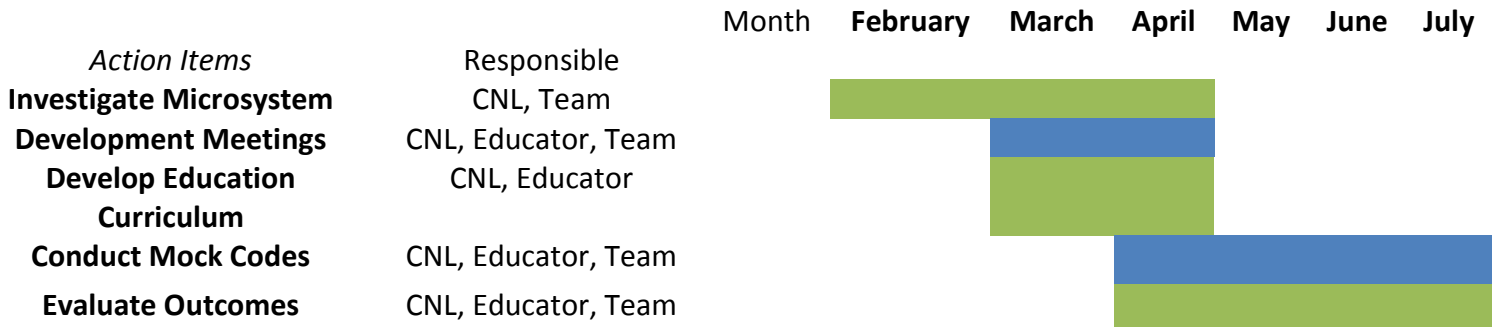| Month	February	March	April	May	June	July
Action Items — Responsible						
Investigate Microsystem — CNL, Team						
Development Meetings — CNL, Educator, Team						
Develop Education Curriculum — CNL, Educator						
Conduct Mock Codes — CNL, Educator, Team						
Evaluate Outcomes — CNL, Educator, Team						

Figure 4. The Gantt Chart outlines the timeline for the project.

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