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Improving Emergency Response in the Outpatient Clinic Setting

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IMPROVING EMERGENCY RESPONSE IN THE OUTPATIENT CLINIC SETTING

By

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BSN, University of New Hampshire, 2014

CAPSTONE PROJECT

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the Requirements for the Degree of

Master of Science

in

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This Capstone Project has been examined and approved.

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Date

BIOGRAPHY

Matte received her Baccalaureate degree in nursing from the University of New Hampshire in 2014. For her honors thesis she conducted a qualitative study of lateral violence experience in graduates of Masters Entry nursing programs. She began an accelerated program for her Master's degree in 2013 while still completing her undergraduate degree. Since being licensed as a Registered Nurse, she has worked full time as an RN on a cardiac/telemetry unit at Wentworth-Douglass Hospital in Dover, New Hampshire. She completed her CNL clinical immersion within the Manchester VA Medical System. She completed half her immersion experience at the medical center and then transitioned to the community-based outpatient clinic setting for the completion of her capstone project. Matte currently lives in Dover, New Hampshire and enjoys reading and spending time with friends.

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ABSTRACT
Improving Emergency Response In The Outpatient Clinic Setting

By

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University of New Hampshire, September, 2015

Background: Effective triage, assessment, and activation of necessary systems in emergent situations of clinical instability is vital in reducing morbidity and mortality of patients in any clinical setting. When medical emergencies occur outside of the hospital, organized and expedited transfer to a higher level of care reduces the potential for adverse events, lasting deficits, and patient death.

Aim: The aim of this project was to identify weaknesses in the emergency response system in the community-based outpatient clinic setting and to propose solutions.

Methods: The “Swiss Cheese” theoretical framework was used to do a root cause analysis of two clinical scenarios. Weaknesses in the emergency response system in the community-based outpatient clinic setting were identified.

Results: Several tools were utilized including a fishbone diagram and the 5-Whys tool. Two root causes were identified. The first is that clinic staff does not have a working knowledge with specifics regarding the emergency response process. The second is that the existing emergency response checklist document is visually confusing and duties are not in sequence.

Discussion and Implications for the CNL: Weaknesses in the emergency response system will be discussed. Knowledge and experience from inpatient care will be translated to the outpatient clinic setting. The role of the CNL in designing an effective emergency response system will be discussed with the proposal of several plans of action.

Key words: *emergency, response, outpatient, clinic*

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Improving Emergency Response in the Outpatient Clinic Setting

Clinical deterioration can occur anywhere, and at a sudden and unpredictable rate. Time is a critical factor affecting outcomes in many common emergent medical conditions including myocardial infarction, respiratory distress, and stroke. The beneficial effects of therapy in these conditions are greatest when performed as soon as possible after presentation. The concept that “time is muscle” when cardiac ischemia and infarction occurs has been around for over 40 years. More recent evidence on this topic shows that the amount of myocardial salvage per unit time is greatest during the first few hours after the onset of ischemia. There are sharp reductions in the amount of salvage each hour thereafter. (Antman, 2008)

Another example that illustrates time as a critical factor affecting outcomes is provided by the article *Time is Brain-Quantified*. This article explains that in a typical large vessel acute ischemic stroke, each minute of ischemia leads to the death of 1.9 million neurons, 14 billion synapses, and two kilometers of myelinated fibers. Compared to the normal rate of neuron loss that occurs with aging, the ischemic brain ages 3.6 years every hour without treatment (Saver, 2006). These examples help to reinforce the idea that when medical emergencies occur outside of the hospital, transfer to a higher level of care for appropriate diagnostics and treatment must be expedited, organized, and effective.

The outpatient clinic setting faces specific challenges in emergency response. The largest challenge is that infrequency of occurrence of these events can cause panic and disarray in staff when these emergent clinical events present. Therefore, the emergency response system in the outpatient setting must be optimized to minimize adverse outcomes.

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Global Problem

In emergent situations of clinical instability and potential deterioration, delayed activation of the emergency response system with an unorganized transfer of the patient to a higher level of care increases patient mortality. Additionally, if pertinent information is not conveyed to the responding caregiver in an organized and appropriate way this also increases the potential of adverse events and patient mortality.

Local Problem

Recently, there has been an increase in patients presenting with emergent symptoms to the outpatient clinic setting of this quality improvement project. During the months of January and March of 2015 there were four patients who required transfer to local emergency departments. Two of these patients presented to the same clinic during the same week, both with symptoms of chest pain. The statewide community-based outpatient clinic setting does have a policy and standardized checklist of tasks, not necessarily in order, that need to be completed by both nursing staff and the primary care physician when emergent events occur. It seems that although staff are familiar with most of the items on the checklist, process and timing of tasks varies. These differences in actions that were noted, specifically between the RN and the LPN. Variations in practice and process were noted between staff in each situation. Process variations have the potential to cause delays in care. The result of this process dysfunction had the potential to delay life-saving treatment.

Direct observation and assessment of several emergency response scenarios as well as retrospective documentation review of past scenarios provide convincing evidence that these problems exist. When two patients presented with chest pain to the same office within one week of, observation of the triage and emergency response process allowed identification of variances

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in treatment and the need for a more organized, efficient, and standardized response. This prompted a root cause analysis focused upon the emergency response system in the community based outpatient clinic setting. The results of this root cause analysis will be discussed in regards to their salient features to provide conclusions and recommendations for improvement.

Literature Review

A literature review was conducted to gather evidence that could be translated to guide the development of an improvement project focused upon emergency response in the outpatient setting. A search of the literature was performed utilizing the University of New Hampshire online library database. Search terms that were used included “emergency response,” “outpatient,” “myocardial infarction,” and “clinic.” Inclusion criteria that used were articles published in English within the last five years. It was found that the body of published work on this topic is limited. Initially, five articles were identified and reviewed for their applicability to the topic of this work. Two studies were disregarded because their results seemed erroneous.

A study titled *Implementation of Multiple Strategies for Improved Door-to-Balloon Time in Patients with ST-segment Elevation Myocardial Infarction* (Pan, et al., 2014) highlighted the importance of rapid response when symptoms of cardiac ischemia are present and also described a quality improvement effort directed at optimizing efficient treatment. When indicated, early reperfusion with percutaneous coronary intervention significantly reduces mortality and morbidity in ST-elevation myocardial infarction. This coincides with the belief that all chest pain should be assessed and diagnosed in the most intensive manner, always assuming a STEMI until otherwise proven. Therefore, actions and interventions that expedite care towards possible percutaneous reperfusion procedures are of utmost importance. This study implemented four strategies to reduce time till reperfusion therapy, referred to as “door-to-balloon” time in the

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study. Strategies adopted included EKG during triage for patients with chest pain, implementation of computerized provider order entry for standard chest pain order sets, early activation of the cardiac catheterization laboratory by cell phone, and using an open real-time online STEMI registry. In the post-intervention data analysis, door-to-balloon time was decreased from 83 minutes overall to 63 minutes.

When translating the evidence from this study, there are two salient features that will inform this current quality improvement project. The first finding is the idea of obtaining an EKG during triage. Prompt identification of cardiac rhythm is paramount to directing proper treatment. If the patient is noted to be in an unstable or potentially lethal rhythm, more aggressive treatment can take place sooner, hopefully reducing morbidity and mortality. The second pertinent finding of this study was the early communication initiated by the emergency department to the cardiac catheterization laboratory. Notifying the next accepting caregivers that a patient with a potential myocardial infarction is coming allows them to prepare staff and materials for impending emergency diagnostics and care. This reduces delays in treatment and reduces door-to-balloon time, which has a positive effect on patient outcomes.

One study that provides a potential framework for clinical intervention is titled *Cardiopulmonary Arrest in the Outpatient Setting* (Scaramuzzo, Wong, Voitle, & Gordils-Perez, 2014). The purpose of this quality improvement project, conducted in an outpatient oncology infusion treatment area, was to enhance patient safety through the incorporation of rapid response algorithms as well as simulation teaching with staff. Evidence shows that many patients who experience cardiopulmonary or respiratory arrest exhibit impending signs and symptoms several hours before the emergent event. Early identification of these symptoms and appropriate transfer to higher level of care for necessary diagnostics and intervention improves outcomes by

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reducing the potential of an arrest event. Many hospitals have used this evidence as a basis for instituting rapid response teams to assess patients who exhibit signs of clinical deterioration.

Bridging this type of intervention from the inpatient to the outpatient clinic setting where an interdisciplinary team well versed in emergency response is not available requires a solution that increases current staff comfort and competency.

Scaramuzzo et al. (2014) used a Plan-Do-Study-Act model of improvement to develop an intervention aimed at increasing nurse competence and comfort level during medical emergencies. After a survey of current staff comfort with performing various emergency response skills such as BLS, code cart knowledge, and automated external defibrillator operation, the project leaders developed emergency case scenarios. These scenarios were used in educational sessions for staff that focused on mock codes. Other research has shown that mock codes improve clinician confidence and decrease anxiety during actual emergent scenarios. During the mock codes emergency process and operation of necessary equipment was reviewed, mnemonic techniques were used to reinforce important processes, and return demonstration was used to assess nursing competence.

An additional outcome of the training sessions with staff was prompted by their feedback regarding problems and hesitations that arise in emergency response. This led to the creation of a policy for handling medical emergencies in the outpatient setting. Within this policy a medical emergency algorithm which included the American Heart Association's Basic Life Support treatment algorithm was incorporated to identify a step-by-step approach for all staff to use in emergency response. After all mock codes were completed and the policy was in place for several months, a post-session survey completed by clinic staff showed increased comfort levels for all aspects of emergency response, with a 99% overall improvement.

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Another quality improvement intervention published in the literature by Schiavone (2009) and conducted in the outpatient oncology clinic setting involved the development and incorporation of a rapid response team. This was in response to both growing acuity needs of patients seen at the infusion clinic as well as a Joint Commission 2008 Patient Safety Goal to improve recognition and response to changes in patient condition. Feedback from nursing staff was elicited prior to project development, and they identified that a center-specific policy was needed that outlined who responded to emergent events, what functions they performed, and appropriate actions.

The overall goal of the intervention was to establish a method that enabled healthcare staff to request additional assistance when patient condition deteriorates. A multidisciplinary emergency response committee was formed that began their efforts by ensuring emergency equipment was in working order and emergency medications were organized and readily available. The second phase of the project started with brainstorming possible emergency case scenarios which then allowed staff to identify a step-by-step process and form an emergency response team with standardized roles. The rapid response team that was formed consisted of four members: venous access and medication administration, respiratory and airway support, vital signs and documentation, and the patient's primary nurse who provided direction, information and compressions when necessitated. In addition to the formation of the rapid response team, policy items were instituted such as no new patients would be brought to the treatment area during an emergency response and patient and family education would take place on sudden changes in condition. Staff education took place through designated sessions prior to implementation as well as through quarterly drills and mock scenarios that aimed to reinforce the

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process and staff comfort with emergency response. These interventions had a positive effect on staff comfort and competence as well as patient outcomes.

Summary of the Evidence

Emergency response in the outpatient clinic setting presents an issue as infrequency and lack of experiential knowledge by staff can cause delays in identification and care. Overall, the evidence shows that interventions directed at outlining a step-by-step process, standardizing emergency response roles, educating staff, and carrying out mock code scenarios are most successful to both increase staff competence and improve overall patient outcomes.

Aims

Global Aim

The global aim of this project was to reduce patient morbidity and mortality due to delayed and unorganized transfer of the acute patient to a higher level of care.

Specific Aim

The specific aim of this project was to identify process problems in the emergency response system in the community-based outpatient clinic setting through a root cause analysis. The secondary aim of this project was to propose a plan of action to organize and streamline the medical emergency response process in the outpatient clinic setting.

Methods

The “Swiss Cheese” theory was used to provide a background and framework for this project (Reason, 2000). This theoretical model is frequently applied to patient safety and adverse medical events. The theory explains that in processes of patient care, there exist multiple layers and steps. In an ideal system the layers of “cheese” are intact, however in reality the layers are more like Swiss cheese, with holes representing potential errors in the system. Errors can be

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latent, built into the system itself; they can also be active, which means that they are the result of human decision making. Each layer of the process has its own holes, or potential for error.

Usually, the error can be caught in the next intact layer before harm can occur. It is only when the holes in the layers align that adverse events occur.

Observational data was collected during careful observation and recording of two emergency response scenarios. An informal debriefing discussion took place following each emergency transfer with participating staff. Data was also collected through retrospective documentation review of two previous emergency transfers that took place at a nearby clinic.

In choosing a method and tools for the actual root cause analysis, an additional search of the literature was conducted. Websites for the Institute for Healthcare Improvement, the American Society for Quality, and the Lean Six Sigma were browsed for similar themes and approaches to root cause analysis. Additionally, an excerpt from the book *Apollo Root Cause Analysis – A New Way of Thinking* (Gano, 2007) compares root cause analysis tools and methods according to specific process criteria. The first tool that was selected for use was the “Five-Whys” method. It is a simplistic root cause analysis process that produces a “linear set of casual relationships and uses the experience of the problem owner to determine the root cause and corresponding solutions” (Gano, 2007). The process involves repeatedly asking “why” to answer a problem question. The analysis is complete and the root cause is identified when asking “why” does not provide any more useful information or answers. According to Dean Gano’s analysis, the Five-Whys method is acceptable to apply in informal discussions of cause and it has a particular strength in that it defines all causal relationships.

The second tool that was selected for use was the Ishikawa Fishbone Diagram. This cause and effect tool operates under the idea that every problem has specific causes that lie within

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several pre-defined categories. Although the Fishbone Diagram does not explicitly define causal relationships, it allows an individual to brainstorm many causes within multiple categories. This helps to prevent the analysis from becoming narrow and resolute. It also helps the individual to consider which categories and causes they have the ability to positively influence.

Setting

The clinical context that is the focus of this evaluation is the community based outpatient clinic setting. The clinic is part of a larger medical system with four community based outpatient clinics (CBOCs) distributed across the state of New Hampshire in Tilton, Conway, Portsmouth, and Somersworth. The purpose of these clinics are to provide high quality outpatient primary and specialty care services to veterans closer to their homes. A great degree of coordination of care occurs between the Medical Center and the CBOCs. In terms of emergency and inpatient care, the Medical Center has a 24/7 urgent care but does not provide inpatient acute care medical services.

The patient population served in the community based outpatient clinic setting includes veterans, both male and female, with a large age range varying from 20 to 90 years old. Common diagnoses carried by patients include hypertension, hyperlipidemia, diabetes, congestive heart failure, COPD, and PTSD. Many patients carry multiple diagnoses in combination with other comorbid conditions such as obesity and lifestyle habits including alcohol and tobacco consumption. These diagnoses and lifestyle habits all carry the potential of causing emergent exacerbation. An evaluation and diagnosis sample among the population served allows an individual to predict the types of emergent situations that may present in the clinic setting. Through a lens of pathophysiology and assessment of previous clinic data, a list was compiled to include the following situations that may present: myocardial infarction, rapid atrial fibrillation,

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hypertensive crisis, cerebrovascular accident, acute fluid overload related to congestive heart failure, acute shortness of breath and hypoxia related to COPD exacerbation, active seizure, hypoglycemic shock, diabetic ketoacidosis, and suicidal ideation.

Professionals that serve this population in the outpatient clinic setting have a responsibility to be trained and prepared to respond to any of these emergent situations.

Professionals that are present in the outpatient clinic setting on a daily basis include at least one registered nurse, two licensed practical nurses, two medical practitioners (MD or NP), and at least one medical assistant. Professionals that cycle through clinics on a less consistent basis include a social worker, psychiatrist, optometrist, and audiologist.

The current process of triaging and emergently transferring patients from a clinic to an appropriate acute care institution is intended to be standardized across all CBOCs in the state of New Hampshire. As previously mentioned, the medical center itself does not provide acute inpatient care, therefore patients requiring an emergent higher level of care must be transferred by ambulance to an appropriate community hospital. Within the current emergency response process, there is a checklist of duties to be completed by both the primary care physician and by the nursing staff. In one clinic this checklist is available in the front desk area attached to several accompanying forms that require attention by the physician and the patient. In another clinic the checklist is not printed ahead of time and posted, therefore staff must remember how to access and print the checklist and forms off the computer when an emergency occurs. In the current process the PCP is responsible for assessing the patient, dictating orders for immediate treatment, educating the patient on transfer, completing relevant documentation with the patient, initiating a non-VA care consult, and contacting next of kin. The nursing staff is responsible for assessing the patient, activating the emergency response system, carrying out PCP orders for treatment,

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printing up relevant documentation for transfer, and contacting the accepting ED to provide handoff. They are also responsible for several clerical duties after transfer including contacting the VA business office to notify them of the event, contacting the CBOC nurse manager, and documenting the event in the electronic health record. Clearly, as there are multiple members on the nursing staff present in the clinic at all times these duties can and should be divided among nurses to provide safe and efficient care and transfer.

Intended Improvement

The results of this root cause analysis will be used to identify process problems in the emergency response system. The intended improvement will be that the results of the root cause analysis are used to develop an action plan that creates a more standardized and organized response for clinic staff in the event of a medical emergency.

Data Analysis Plan

Observational data was collected during careful observation and recording of two emergency response scenarios. An informal debriefing discussion took place following each emergency transfer with participating staff. Data was also collected through retrospective documentation review of two previous emergency transfers that took place at a nearby clinic. To analyze the data, a thematic analysis was used to discover patterns and develop themes between the root cause analysis methods.

Results

Patient One Situation: One patient who presented to the clinic had been experiencing intermittent pain for several days at a 4/10 intensity on the NRS scale. This patient was triaged by a licensed practical nurse (LPN) who immediately attached the blood pressure cuff to the patient and then left the room to notify the provider, leaving the patient unattended in the room.

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The provider came to evaluate the patient and instructed the nurse to perform a 12-lead EKG on which there were some T-wave changes and therefore made the decision that the patient would have to be transferred to a higher level of care at the local hospital. A medical assistant was then instructed to call 911. Another licensed practical nurse began printing up relevant documentation from the computerized electronic health record, but lacked knowledge regarding the system and had difficulties locating and printing off several documents including the patient's problem list and current medication record. The paramedics arrived within fifteen minutes and the patient left the clinic. Thirty minutes later the LPN realized that she never called the emergency department to give them report. She then called to present the situation asked if the hospital had any questions about the patient, who at that point was already in the emergency room but had not yet been seen by the ED physician.

Patient Two Situation: A second patient experienced sudden chest pain and shortness of breath that morning at a 6/10 intensity. This patient was triaged by a registered nurse (RN). As soon as the RN was made aware of his symptoms they instructed an LPN to call 911. The RN then instructed the LPN to notify the provider so they could promptly evaluate the patient. The RN took vital signs and then began attaching electrodes for an EKG. One feature that stood out in this situation was that delegation was used more effectively. This led to an increased efficiency of gathering relevant assessment information. When the provider was evaluating the patient, the RN excused themselves briefly to notify the local emergency department of the situation and give a quick SBAR format report to an emergency department RN. Finally the task of printing out relevant transfer documents was delegated to a medical assistant, who more often accesses the electronic health record and therefore had no issues with this task.

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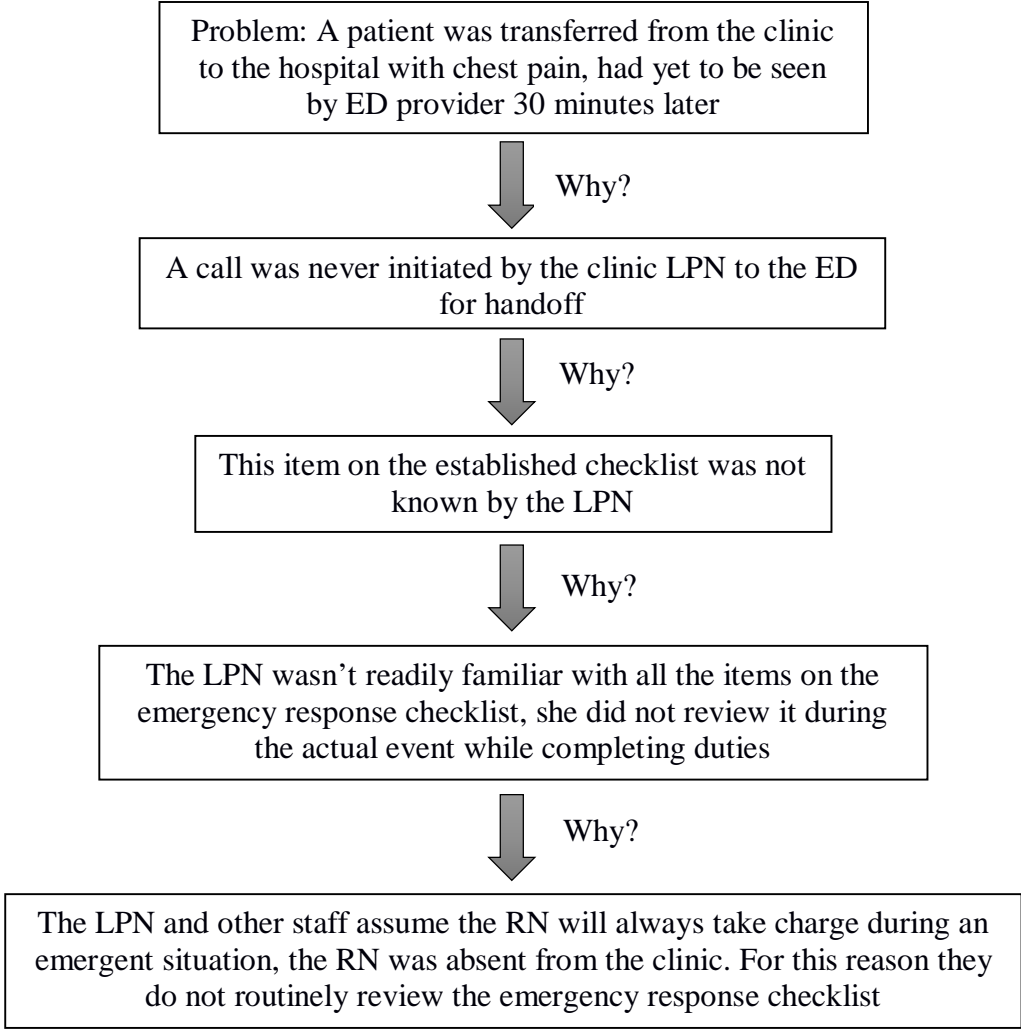
The Five WHYS

The Five Whys method of root cause analysis was used to evaluate processes in each scenario. This method is illustrated in Figure 1. This method helped to outline a causal relationship between actions by the LPN as well as the policy and process that caused delay in evaluation and care. Although the checklist was pre-printed and therefore available for reference throughout the situation, the LPN and other staff did not review it during the scenario. An important step was missed when a phone call was not initiated by the LPN to the emergency department for handoff of pertinent information. It was identified that the root cause in this first scenario was that clinic staff make role assumptions rather than using knowledge of the emergency response and transfer process.

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FIGURE ONE

Five-Whys Method



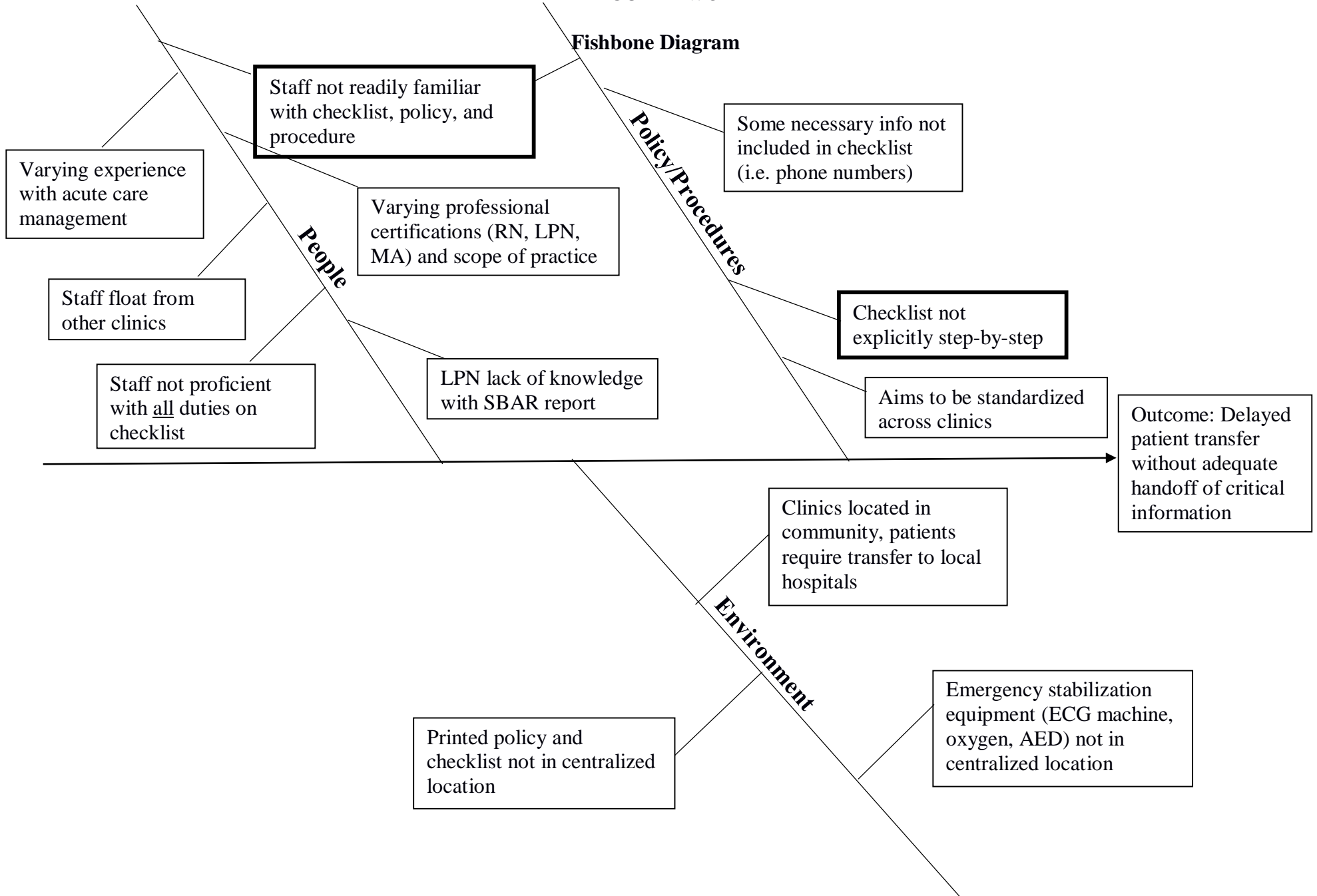
Fishbone Analysis

A fishbone diagram that was completed as the second step in this root cause analysis process is presented in Figure 2. The sub-categories that were selected were people, policy/procedures, and the environment.

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FIGURE TWO

Fishbone Diagram



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Both root cause analysis methods identified comparable root causes to the problem of delayed and uncoordinated patient transfer from the outpatient clinic to a higher level of care. After compiling the knowledge generated by both of these methods, two key root causes were selected. The first is that the current emergency response checklist document is visually confusing and designated duties are out of chronological order. The second cause is that staff in the clinics do not have a working knowledge of the emergency response checklist and process. Emergency response is a process that is infrequent, however when it does occur actions must be coordinated and organized to prevent delays and adverse events. Both of these root causes address this concern, therefore future potential improvement efforts can be focused upon addressing these causes.

Discussion

The summary of process in the two emergency response scenarios evaluated provides convincing evidence that several problems exist. The first is that staff knowledge and comfort level in emergency response scenarios is low, likely due to infrequent occurrence in the outpatient setting. Other problems identified include a lack of both designated and standardized roles in emergency response in the clinic setting, a confusing checklist document, as well as inadequacies in timing and sequence of staff responsibilities. These problems may have resulted from a lack of initial or continuing education, lack of staff experience with emergency response, or poor managerial support or follow-up in the standardization of the emergency response process. The two root causes identified as having the most direct effect on a delayed and unorganized transfer of a patient in this quality improvement project can be described within the categories of people, policy/procedures, and the environment. Potential sources of error and inefficiency were identified.

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In terms of the policy and procedures category, a visually confusing and non-sequential checklist document was selected as one of the major potential sources for error. This unclear document promotes delays in care and also makes standardizing the process difficult. In the process improvement project conducted by Schiavone (2009), several interventions were implemented that focused upon a need identified by nursing staff. These nurses recognized that their outdated and disorganized emergency response process was failing to meet the needs of their patient population. This led to the development of a center-specific policy that promoted a more organized and efficient emergency response process. This policy outlined who responded in an emergent clinical event, what functions they performed, and included appropriate evidence-based actions. Creating an evidence-based standardized policy is beneficial because it provides an organizational-supported framework for action. During emergencies, staff anxiety can be high, therefore having a standardized policy and checklist document available for reference can reduce stress and support appropriate action. In their intervention, Schiavone (2009) took this concept a step further by developing a medical emergency algorithm. Evidence shows that algorithms enhance learning new skills. Applying these algorithms in simulation improves understanding, critical thinking, and supports appropriate action in real-time situations. (Ruessler et al., 2012)

Creating a working process and procedure in which staff can operate within must be the first step. Therefore, addressing the root cause of a confusing emergency response checklist must come first. In revising and reformatting the document, input from staff and management should be sought. This will help in the design of a user-friendly document. The ideal process must be outlined, step-by-step, from start to finish. As with the current document, duties can still be divided among the primary care physician and nursing staff. However, a key difference must be

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that roles are identified and listed in chronological order. This is based upon the successful intervention conducted by Schiavone (2009). After the development of a new checklist document, copies should be pre-printed and posted in a centralized location for immediate access.

In the quality improvement project conducted by Schiavone (2014) the first phase of the project was to ensure that working emergency equipment and emergency medications were organized and readily available. This involved the assembly of code carts, which were subsequently placed on each floor of their facility. Creating an environment of emergency preparedness is critical in emergency response. The largest potential source for error in the environment that was identified in this project was that emergency response documents and equipment were not kept in a centralized and pre-identified area in at least one of the clinics. This certainly has the potential to cause significant delay in the delivery of emergent clinical care, adversely affecting patient outcomes.

Once a straightforward and functional policy and process is established and the environment is rearranged to facilitate an organized and expedited emergency response, human factors can then be considered. In terms of people, the sources for error identified in this project centered upon staff inexperience and unfamiliarity with the current emergency response policy, process, and documents. Without a working knowledge of all steps in the emergency response process, delays in emergency supportive care and transfer can occur. As previously discussed, outpatient areas face inherent challenges in the amount of live experiences with sudden clinical deterioration and emergency care. (Scaramuzzo et al., 2014) This lack of experiential knowledge should motivate staff to have a full operational understanding of emergency care and the transfer process. Though infrequent, this process is high-stakes; therefore management should encourage a culture shift towards this idea. All staff must be empowered of their ability to recognize and

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respond to medical emergencies, provide excellent care, and minimize adverse outcomes. A team mentality in emergency response should be encouraged; strengths of particular staff members in designated duties can be emphasized to facilitate the most organized, expedited, and efficient transfer. In the project conducted by Schiavone (2009), this was done in a more formalized way with the development of a rapid response team. A consideration of available resources and staff members in certain clinic settings may not support a formal rapid response team concept, however having a general idea of standardized roles based on staff member's assets is certainly feasible.

Ultimately, it is the patients who present to the clinic that may be affected by a lack of efficient and standardized response by staff in emergency situations. Regardless of presentation, whether it be chest pain, respiratory distress, or another emergent condition, early identification, assessment, and prompt transfer to a higher level of care when indicated reduces the potential of morbidity and mortality. Both streamlining and standardizing the process of emergency response in the clinic setting as well as employing interventions to improve staff confidence and comfort in these situations should be the aims of a future improvement project. If both of these are accomplished, it is hopeful that patient outcomes will be optimized.

Implications for the Clinical Nurse Leader Role

In using the review of the literature to guide the development of an improvement project, the clinical nurse leader (CNL) would need to first address staff and environmental readiness in the clinic setting. This requires a consideration of both the staff and resources available at the outpatient clinics that can be dispatched and utilized in emergency response. Also, in improvement efforts the CNL must be careful to not place blame upon staff for causing delays. This clashes with the "Just Culture" so many healthcare institutions uphold today. Improvement

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efforts must be directed at optimizing the policy, process, and environment while empowering staff and increasing their comfort in emergency response. In terms of education for staff to increase comfort and confidence in emergency response it makes sense to use their input in the development of educational materials and interventions. This matches the design of the quality improvement effort directed by Scaramuzzo, Wong, Voitle and Gordils-Perez (2014) which demonstrated excellent results when staff input was elicited prior to intervention development. A survey could be drafted to assess staff's perceived comfort with various emergency response roles and tasks. The data from this survey would help illustrate which staff members are most comfortable performing which tasks. This information will help in the standardization of roles.

Once emergency response roles are standardized, educational sessions could take place to explain the emergency response process in detail and also address gaps in knowledge identified in the survey. An emphasis should be placed on staff empowerment in improving overall patient outcomes by following the step-by-step response checklist. The literature showed that mock code situations help significantly to improve staff confidence and decrease anxiety during emergent situations (Scaramuzzo, et al., 2014). Therefore, inclusion of mock code scenarios in the intervention would be beneficial as it would allow staff to rehearse their roles in the new emergency response process. It would also allow the CNL to evaluate the process as a whole real-time, therefore promoting continuous quality improvement.

Routine mock code scenarios with debriefing afterward on strengths and weaknesses in the scenario response support both continuous quality improvement and ongoing staff education. Evidence shows that an "ongoing curriculum addressing code team roles and responsibilities, team leadership education, and multidisciplinary mock codes is critical to ensure a proficient staff response to a code" (Dorney, 2011, p 242).

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Emergency transfer of a patient from the outpatient setting to the hospital is an infrequent occurrence; but when it does occur the process must be optimized to minimize adverse outcomes. Literature on quality improvement efforts to address this in the outpatient setting is limited. The root cause analysis conducted in this project lead to the identification of several weaknesses in an existing emergency response process in the outpatient clinic setting. Improvement efforts directed at these root causes should be published to increase the body of knowledge on this important topic.

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