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Implementing a Telephone Triage System

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## **Section I Title and Abstract**

### **Implementing a Telephone Triage System**

#### **Abstract**

Introducing a telephone triage system requires conscientious regard to the organizational configuration and culture, staff abilities and experience, observed need and expected outcomes, staffing issues, and the physical location in which the system will be introduced (Murdoch et al., 2015). For this microsystem A SWOT analysis and microsystem assessment were performed. This community health center's goal was to have standardized, evidence-based triage protocols followed by the nursing staff and the contracted nursing staff. The workflow was introduced in a series of lunch and learns provided by clinical nurse managers. Once workflows were established a 10 question knowledge assessment was provided by clinical nurse managers. The microsystem measured the impact of the implementation of a telephone triage system giving standardized advice to up to 50% of its patients. Also, the patient's understanding of the evidenced-based advice provided and appropriate level of care was assessed by the nurse and documented within the patient Electronic Medical Record (EMR). Documentation of evidence-based advice that was given to the patient was audited by the clinical nurse manager as well as the disposition of the patient. Changes to test ranged from measuring the number of patients receiving evidenced-based advice, the patient's understanding of the advice given, as well as monitoring of hospital discharges. Results included three plan, do, study, act (PDSA) cycles that were implemented on May 8, 2018. From May 17, 2018 to June 26, 2018 there were 9486 total calls to the call center in which 6.82% or 647 calls were service calls to nurses. From June 18, 2018 to June 24, 2018 approximately 200 calls or 100% of patients who called nurses received evidence-based

protocolled advice. Implementation and proper use of Triage Logic should reduce emergency room visits over time.

## **Section II Introduction**

### **Introduction**

When patients have health concerns they may seek emergency room care directly because they are not sure about the cause or severity of their symptoms. Telephone triage is a system in which trained nurses use standardized protocols to evaluate symptoms over the phone and determine the appropriate course of action. Triage nurses must be well trained in assessment skills in order to evaluate patients without having actual physical contact. They use their knowledge of symptoms and disease processes, along with evidence-based protocols, to achieve an accurate understanding of the patient's symptoms and to provide the best care plan based on those symptoms (Raheja, 2015).

The quality and consistency of telephone triage services at many community health centers is increasingly being reviewed due to the absence or inconsistent use of established protocols. In the last two decades there has been a growing interest in health centers acquiring established evaluation protocols for triage nurses to use (North, et al., 2014). As a result, community health centers across the United States have begun to develop strategic plans to implement telephone triage systems that are accurate, reliable, and cost-effective (Triage Logic, 2018). The goal is to develop a systematic approach to make efficient use of the community health centers' skilled professionals, increase the ratio of scheduled office visits to emergency room visits, and provide immediate interventions for patients via the telephone using established protocols (Lake, et. al, 2017).

Implementing a telephone triage system is an opportunity to educate and empower patients to manage their own health care by guiding them to the appropriate level of care. Triage calls that are answered immediately, in real time increase patient satisfaction and the quality of care, and decrease inefficiencies in the triage process. Implementing a smoothly operating telephone triage process improves lives through care, education, and community awareness (Lazo & Kirsh, 2017).

### **Problem Description**

Nurse triage originally emerged in the early 1800s as a system for attending to wounded soldiers. During the Napoleonic Wars, Baron Dominique-Jean Larrey, a French surgeon, noticed that the first-come-first-serve practice resulted in the loss of many lives. Larrey hypothesized that lives could be saved if soldiers were prioritized according to the severity of their condition (Raheja, 2015). Subsequently, organizations began utilizing nurse triage in different venues outside the military medical field. Nurse triage began to appear in emergency rooms of hospitals in the United States by the early 1900s. Raheja explained that in the latter half of the twentieth century, nurse triage was nationally adopted, revolutionizing how medical teams cared for their patients and increased efficiency. The first nurse triage call center was established in the late 1960s and the mid-1980s brought about the availability of computerized guidelines and documentation (Raheja, 2015).

Introducing a telephone triage system requires a conscientious regard to the organizational configuration and culture, staff abilities and experience, observed need and expected outcomes, staffing issues, and the physical location in which the system will be introduced (Murdoch et al., 2015). Raheja (2015) found that implementation of a telephone triage system reduces costs and provides a high standard of patient care. Recent technology and

communication tools enable better integration of information between the physician and the triage nurse and create easier methods for patients to access and communicate with nurses (Raheja, 2015). At a Sacramento Community health center, the internal call center manages two clinics during regular business hours. After-hours calls are managed by nurses that work for a contracted call service provider. The nurses do one of three things with an incoming call: schedules patients for an appointment during the health center's business hours, direct patients to urgent care, or direct patients to the emergency room. The community health center's goal is to have standardized, evidence-based triage protocols followed by the nursing staff and the contracted nursing staff.

The community health center's call center, with ten employees, managed approximately 8300 calls during February 2018. Approximately 2000 of those calls needed protocol-based nursing advice, instead, those patients received unstandardized advice from nurses based off of their own experience and training. Current workflow involves all calls needing nursing advice to be transferred from a call center representative to a nurse. The call center representative creates a telephone encounter within the EMR and documents that the patient's call was received and transferred to a nurse. Once the nurse receives the call they open the already created telephone encounter and uses the subjective, objective, assessment, and plan (SOAP) format to chart advice and disposition of the patient. While using the SOAP note format is appropriate, having availability to evidence-based protocols will enhance and improve the nurse-patient triage experience.

As of now, there are not any evidence-based protocols for nurses to refer to when giving nursing advice. This deficit has led to a quality gap in knowing how many patients received treatment in the emergency room and how many of those emergency room patients should have

received primary care treatment. Current data include the amount of hospital discharges the organization has on a weekly basis. This data will help determine how many patients are actually visiting the emergency room for primary care. Due to the quality gap protocols that are symptom-based are needed and will be comprehensive so that no matter what specialty or primary care doctor is involved, the protocols will cover over 99% of symptoms. As a result, the triage nurse will always have guidelines that will apply to the patient's situation (Raheja, 2015).

Clear communication and conversations should be had with all staff regarding the implementation of a telephone triage system and the impact on workflows and costs. Staff resources need to be appropriately allocated in order to ensure staff are not overburdened, and appointment times need to be organized to ensure appointments are not wasted (Murdoch et al., 2015). The benefits of a triage nurse using evidence-based protocols to give patient advice include better patient access, coordinated care, and cost savings. Studies show that as many as 70% of emergency room visits can be avoided with access to nursing staff who use evidence-based protocols to advise patients. Implementing a telephone triage system will reduce medical costs by making sure that patients get the care that they need at the right time (Raheja, 2015).

### **Available Knowledge**

For the implementation of a telephone triage system within this microsystem a scholarly review was performed supporting studies that were completed within a call center or medical clinic. A meta-analysis review was completed on 10 scholarly articles using a systemic approach. The following PICO statement was formulated; Will implementation of a protocol based telephone triage system decrease the incidence of emergency room visits? (Appendix K). Most of the studies evaluated consisted of qualitative findings. Although the outcomes in each study were valuable, direct emergency room visit and hospital discharge findings were not found.

Qualitative findings ranged from an increase in the number of primary care contact via the nurse to diverse experiences and perceptions regarding the implementation of telephone triage. One study found that in a randomized control trial of forty-two practices there was an increase in the number of primary care contact by the nurse. Also, it was discovered that telephone triage might be useful in aiding the delivery of primary care (Appendix K). Overall, the evidence was neither strong nor weak, instead, the evidence showed the importance of nurses and patients having access to a telephone triage system across the board. Findings within each study provided valuable information to support a positive outcome within this microsystem.

The National Center for Health Statistics (2012) shows that an average emergency room visit is close to \$1,100. Many of the people who go to the emergency room could have been treated at home. Patients often call because they have a medical symptom and they need a professional to help guide them and provide advice. The most common reasons for telephone calls include fever, medication questions, colds, vomiting without diarrhea, cough, constipation, diarrhea, head injury, rash or redness, or immunization reactions. While many of these symptoms do not require immediate care, about one-third of the cases require a visit to the doctor within 24 to 48 hours (Raheja, 2015). Beaulieu & Humphreys (2008) also point out that a substantial number, around 35%, of patients call because they want an appointment for a prescription refill. However, a much greater number, around 70%, of patients call because they have concerns regarding symptoms, health problems, or laboratory results.

One recent study demonstrated how effective telephone triage by a nurse could be in reducing unnecessary trips to the emergency room by asking patients what they would do if they did not have access to a telephone triage nurse. Out of the 35,409 patients who answered the study, 11,135 (31.45%) of patients said that they would go to the emergency room if they did not

have access to a telephone triage nurse. Another 22,273 (63%) said that they would have stayed home while the remainder would have gone to a local urgent care center. Those results were then compared to survey results of what a telephone triage nurse would tell patients to do (Raheja, 2015). It was noted that out of the 11,135 patients who said they would have gone to the emergency room, only 3,222 of them were actually told to go to the emergency room. All other patients were able to get home care or see their physicians the next day. That result equates to 30% (3,222/11,135) of the patients who expected to go to the emergency room were actually told to go to the emergency room. This means that access to a telephone triage nurse could have decreased an unnecessary emergency room visit by 70%. Beaulieu & Humphreys (2008) also states in their study that there was an increased number of patients who said they would have visited the emergency room had an advice nurse not been available. There were patients, approximately 7%, who did not think their condition was serious but were told to seek emergency care by a nurse. In addition, 1% of those patients were told to call 911 right away showing that a large number of patients, who are at risk for serious health issues, would not have sought timely medical attention if not told by a telephone triage nurse (Raheja, 2015).

Implementing a telephone triage system can help improve health outcomes for many of these patients. Not only can having access to a telephone triage system reduce unnecessary emergency room visits and lower costs, but it can also help people who actually need to go to the emergency room. Murdoch et al. (2014) state that nurses need to have sophisticated communication, technological and clinical skills to ensure patients' presenting problems are accurately captured within the telephone triage system to determine safe triage outcomes. The use of best practice and open-ended questions asked by the triage nurse also allows the patient to

trust the advice even if advice given differ from their own expectations and preferred level of care.

There is a negative correlation between nursing role and preparedness for triage advice and the likelihood that a nurse would recommend a patient for an appointment with a primary care provider or a visit to the emergency room (Varley et al., 2016). All nurses need to have confidence, a communicative competence, with an ability to listen as their assessments and advice are based solely on verbal communication (Ernesater et al., 2015). Non-compliance of the patient to follow triage advice and seek appropriate care could potentially lead to poorer health outcomes among patients. It is imperative for the nurse to assess and encourage patients to follow triage advice keeping in mind their socio-demographics, lifestyle and health characteristics (Tran et al., 2017).

An additional concern is that many patients do not want to pay for the cost of an emergency room visit. Without access to a telephone triage nurse many patients would stay at home and try to treat themselves (Raheja, 2015). Implementation of a telephone triage system is associated with an increase in the number of primary care contacts within 28 days of the patient's request to be seen (Campbell et al. 2014). This evidence supports the notion that a telephone triage system might be useful in aiding the delivery of primary care. Another important issue is how patient access to health care and their social/economic conditions affect their likelihood of seeking emergency care. This changes significantly if we separate patients based on whether they have private or government-sponsored insurance. Studies show a significantly larger amount of emergency room visits by government and uninsured patients. In comparison to privately insured patients, about 12% more patients with government-sponsored insurance planned to either go to the emergency room or seek urgent care. While a greater percentage of patients with

government-sponsored insurance would seek emergency care if no telephone triage nurse was present, these patients did not have more severe symptoms than privately insured patients.

Community health centers that provide government-sponsored insurance plans could significantly benefit from a telephone triage nurse to evaluate their symptoms, educate them, and send them to appropriate level of care. In a similar study 31% of overall population surveyed said that they would seek emergency room care if they had no access to a telephone triage nurse but with a telephone triage system in place nurses were able to prevent 72% of those callers from unnecessary emergency room visits (Raheja, 2015) (Appendix D).

### **Rationale**

Lippitt, Watson, and Westley (1958) suggest a seven-step theory that emphasizes the role of the change agent throughout the development of the change. In the first step the clinical nurse leader and staff of One Community Health have diagnosed a problem and decided that, due to its outpatient setting and rapid expansion to provide additional outpatient services, the telephone triage process is lacking and an evidence-based protocol system should be put in place. The community health clinic started as a grassroots HIV/AIDS organization quickly growing into a Federally Qualified Health Center and expanded its services to dental, behavioral health, obstetrics, pediatrics, podiatry just to name a few. Once this assessment was completed the clinical nurse leader then assessed the motivation and capacity for change, if the change can be accomplished based on available resources, and will come up with solutions that will address future problems that may be encountered on the road to change. Staff, in collaboration with the clinical nurse leader, then need to assess if the change agent can be successful by way of stamina, experience, and is accepted by the nurses and other staff (Kritsonis, 2005).

The next step in the process is to write a plan to implement the change. The plan should contain detailed steps that include timetables and deadlines. Responsibilities are assigned to all parties involved in making the change happen. Roles and responsibilities should be clear and understood by all. The clinical nurse leader should let everyone working on the change project know what their role is within the project so that there will be no confusion as to what everyone's job is, thus preventing misunderstandings or resentment. Lastly, we want to maintain the change through communication, feedback, and group coordination. In this step of Lippitts' change theory, the change project is monitored for progress gradually removing the change agents from relationships as the change becomes part of the organizational culture. At this stage the change is made permanent by creating rules and policies that have to be followed (Kritsonis, 2005).

### **Specific Project AIM**

The specific project AIM statement is to improve the percent of patients who receive protocolized telephone triage by a nurse at One Community Health from a baseline of 0% to 50% by August 2018.

## **Section III Methods**

### **Context**

Both a microsystem assessment and SWOT analysis was completed. The purpose or mission of this community health center is to transform lives through care, research and community awareness. Their vision statement states that they are a recognized national model that sets the standard for comprehensive community health care. Because of their work, all people are empowered to lead healthy lives in a supportive community with access to the best care (One Community Health, 2018).

The health center's patients consist of a large spectrum of diversities. During the early 1980s, AIDS threatened to destroy the Sacramento community. In 1989, the Sacramento community connected with other systems such as University of California Davis Health Systems, CHW Mercy, Sutter Health, the County of Sacramento, and Kaiser Permanente to address the HIV epidemic. Together the Center for AIDS Research, Education and Services (CARES) was created to serve people living with or affected by HIV and AIDS. Today, the Sacramento area is still not only dedicated to preventing and fighting HIV but also to serve those infected. In 2015, CARES expanded its purpose by becoming a Federal Qualified Health Center (FQHC) called Cares Community Health. Now, the newly develop FQHC is called One Community Health. One Community Health serves the expansive needs of the community in an effort to endorse a healthier community in the Sacramento area (One Community Health, 2018).

This microsystem is comprised of many types of professionals such as Patient Service Representatives (PSR), Scribes, Medical Assistants (MA), Licensed Vocational Nurses (LVN), Registered Nurses (RN), Nurse Practitioners (NP), Physician Assistants (PA), specialty doctors, and family practice doctors. Once care is established other specialty departments may become involved in the patient's plan of care such as pharmacy, dental, behavioral health, and, of course, departments related to the management of HIV.

Its core processes vary and is dependent on why the patient is seeking treatment. Essentially, the patient arrives at the front desk, also known as the front office, to check in where their insurance is verified by the PSR and the patient is registered for My Chart. My Chart is an electronic system the patient has access via login to view their own lab results, appointment reminders, and can communicate to their primary care provider. After this process is complete the patient waits in the waiting room filling out any necessary forms. The MA calls the patient

back to the treatment area, also known as the back office, where they will begin their assessment with the collection of the patient's urine, height, and weight. The MA then rooms the patient, collects a set of vitals, documents results in the EMR, and notifies the NP or doctor that their patient has arrived. The NP or doctor enters the room with the Scribe and completes their assessment as the Scribe dictates in the moment by entering orders and progress notes. Once the exam is complete the NP or doctor follows up with the MA regarding any labs or referrals needed by the patient. The MA wraps up the visit with the patient by providing them with an After Visit Summary (AVS) which lists any medication prescriptions, scheduled follow up appointments, and instructions given by the NP or doctor. Once the patient has verbalized understanding the MA walks the patient to the exit greeting them a final time.

Patients also have access to their primary care provider through a telephone triage system. This process starts with the patient calling a designated number which connects to the call center. The call center does not staff its department with nurses, however, they are staffed with call center representatives. When a patient calls it is up to the call center representative to determine if the patient needs to speak to a nurse or otherwise. Many times the patient is clear with their communication and will ask directly to speak to a nurse. On this occasion the call center transfers the call to an available nurse. If a nurse is not available, the representative will instant message to ask if there is a nurse available. Once the patient is connected to a nurse the nurse uses her assessment skills to determine the disposition of the patient. A SOAP note is then documented in the patient's EMR. It is here where the quality gap lies due to the variance in nursing advice given. The nurses do not have any evidence-based protocols in place that they can access when giving triage advice.

This microsystem meets regularly to discuss patterns and workflows within the organization that are not effectively meeting quality, costs, and safety outcomes (Nelson, Batalden, & Godfrey, 2007). Metrics that matter include reducing costs associated with patient visits to the emergency room for primary care. Currently, nurses meet quarterly to discuss process changes, workflow improvements, and standardized care. It is in this forum that implementation of a telephone triage system will be introduced. Nurses receive hospital discharge data from the Epic team to determine which patients are in need of a follow-up appointment.

A SWOT analysis (Appendix A) showed that there are strengths associated with implementing a telephone triage system in this microsystem. They include having access to standardized protocols with the ability to offer standardized advice. The only weakness associated with this microsystem include the after-hours nurse's inability to document advice in the EMR due to the Health Insurance Portability and Accountability Act (HIPAA). Opportunities are the re-training of nurse workflows and training of the telephone triage system software while one threat is a perceived decrease in nurse autonomy. A cost savings analysis was completed and found that there is a potential reduction in ED visits/hospital discharges by 30% for a cost savings of \$107,250 in a 30-day period (Appendix I) (Appendix J).

### **Intervention**

Changes to test range from implementation of the telephone triage system itself to the patient's understanding of the advice given (Appendix B). Training was completed by the Triage Logic staff and was introduced in three, one-hour long, lunch and learns provided by clinical nurse managers (Appendix I). The Triage Logic software was explained in detail by a Registered Nurse expert who went through each stage of giving advice to a patient. Example patients were

used in the sandbox portion of the EMR by the nurse providing them a full experience of the software. Once training was established a 10 question knowledge assessment was provided by clinical nurse managers. The patient's understanding of the evidenced-based advice provided and appropriate level of care was also assessed by the nurse and documented within the patient EMR. Documentation of standardized advice that is given to the patient was audited by the clinical nurse manager as well as the disposition of the patient every week after implementation of the telephone triage system. Audits will continue monthly once nurses are comfortable in performing in their workflows.

### **Study of Intervention**

The measurement strategy included chart audits by the clinical nurse manager once a month to determine if workflows and protocols were being used correctly (Appendix B). Training of all nurses was completed and nurses were given a 10 question knowledge test. A yearly assessment will be completed for the benefit of improving nursing triage skill, quality measures, and quality of advice given to patient. The Plan-Do-Study-Act (PDSA) Worksheet tool was used to document the test of change for three cycles (Appendix C). Each cycle was started by planning and identifying a team of nurses who completed the training for Triage Logic. Next, it was identified that the call center and other supporting staff would be affected by the improvement efforts. These employees and other staff became part of an interdisciplinary team that reviewed the AIM statement, assessed the need for a 10 question post-exam, and supported the implementation of the web-based program. Once an AIM statement was established, measures were discussed and identified. Planning the project, trying it out and observing its results was observed on three different occasions prior to implementing. Actions were then taken to adjust to what was learned. Initially, a common adjustment was providing a

thorough lookover of the Health Maintenance section of the EMR prior to giving the patient advice. Another change was toggling between the EMR screen and the Triage Logic screen while talking to the patient. Also, an adjustment was made by establishing a workflow for the nurses when communicating to the providers about the need for over-the-counter medications. Finally, a workflow was established consisting of the nurses logging into the Triage Logic portal, retrieving after-hour triage calls, copy & pasting the advice into the EMR, and following up with the patient by documenting that a follow-up appointment was made with disposition noted.

### **Measures**

This microsystem measured the impact of the implementation of a telephone triage system by measuring the number of patients that were given evidenced-based advice (Appendix B). These measures were performed by a chart audit which reflects if the patient received protocolized advice from Triage Logic and the disposition of the patient. Process measures included up to 80% of nurses being trained by the Triage Logic team. Outcome measures state that 100% percent of patients, starting June 18, 2018, would receive evidence-based advice. Finally, balancing measures state that 100% of patients would be assessed to determine the number of patients who visited the ED or was admitted from the ED outside of advice given (Appendix D).

### **Ethical considerations**

The Nursing and Midwifery Council (NMC) states that a nurse must have the knowledge and skills for safe and effective practice when working without direct supervision. Their guidelines also state that the principles of good record keeping apply to all types of records, regardless of how they are held, to include telephone conversations. Telephone triage is usually unsupervised so this microsystem should teach their nurses to develop those skills and

understanding the importance of telephone triage (Pygall, 2009). Coleman (1997) suggested three ways to protect nurses doing telephone triage from legal liability. First the organization must practice the use of protocols; second, nurses must document the advice to the patient including disposition of patient in the EMR; third, quality assurance measures must be accomplished with regular audits. Without these three processes in place, documentation can be poor because many nurses work without basic protocols and few are actively audited for quality. Giving care over the phone carries great risk, but can be minimized by training and awareness of what one may need to consider in order to protect the nurse and the patients. Telephone triage is widely underestimated, undervalued, underperformed, and under-monitored. Nurses have been shown to take more time on the phone because their time is used more effectively as they engage in patient education and building a rapport. This is vital because it empowers patients to look after their own healthcare until they need to be seen (Pygall, 2009).

For most, telephone triage training is not part of their curriculum. There is a national quality requirement that states that each clinician's work should be audited, but there is no stipulation on how this is done. Because there aren't any quality outcome frameworks associated with telephone triage it's not recognized as a skill set in its own right. Ethically, nurses should be given the right training and supported by the right tools to provide safe telephone triage advice to patients (Pygall, 2009). The project was reviewed by faculty and is determined to qualify as an Evidence-Based change in Practice project. Institutional review board (IRB) review is not required (Appendix E).

## **Section IV Results**

### **Results**

Three plan, do, study, act (PDSA) cycles were implemented on May 8, 2018. After each PDSA cycle, an audit was performed. From May 17, 2018 to June 26, 2018 there were 9486 total calls to the call center in which 6.82% or 647 calls were service calls to nurses (Appendix F). From June 18, 2018 to June 24, 2018 approximately 200 calls or 100% of patients who called nurses received evidence-based protocol advice exceeding the goal of the AIM statement of 50% (Appendix G). Implementation and proper use of Triage Logic should reduce ED visits over time (Appendix H).

## **Section V Discussion**

### **Summary**

Experience does show that many change projects fail to deliver. They do not always lead to total failure, but sometimes lead to misdirection, or only partially achieve the required results (Oakland & Tanner, 2007). Common success factors were identified to produce a successful project. These success factors include the nurse's willingness for change, the appropriate training of the Triage Logic software, ease of software into the patient EMR, and ease of ability to retrieve after-hours calls to document in the patient EMR. The main purpose of this project was to identify and examine the apparent quality gap of advice given to patients by nurses. The quality gap results provided a helpful framework to support future initiatives such as the possible need for increased structuration of the call center (Oakland & Tanner, 2007). A number of insights were identified which showed that successful implementation of this project was dependent upon strategic and operational issues which included the call center. Insights such as the appropriate language the call center should use to identify when a patient needs to talk to a nurse. The key links between the strategic objectives, which are to triage a patient appropriately, and operational improvements of the call center need to be understood, measured and improved.

If the links are broken between the call center and the nurses the change is largely ineffective (Oakland & Tanner, 2007).

### **Conclusions**

There is no doubt that primary care patients visit the emergency room for primary care. The identified quality gap can provide a framework that could enhance primary care health reforms, integration, sustainability and acceptance of models such as an evidence-based triage system model in population healthcare outcomes. The training received by the nurses show that when given proper advice, patients do tend to avoid use of the emergency room for primary care. The implications for practice clearly show that with implementation and proper use of a telephone triage system advice given to patients should reduce emergency room visits over time.

## **Section VI**

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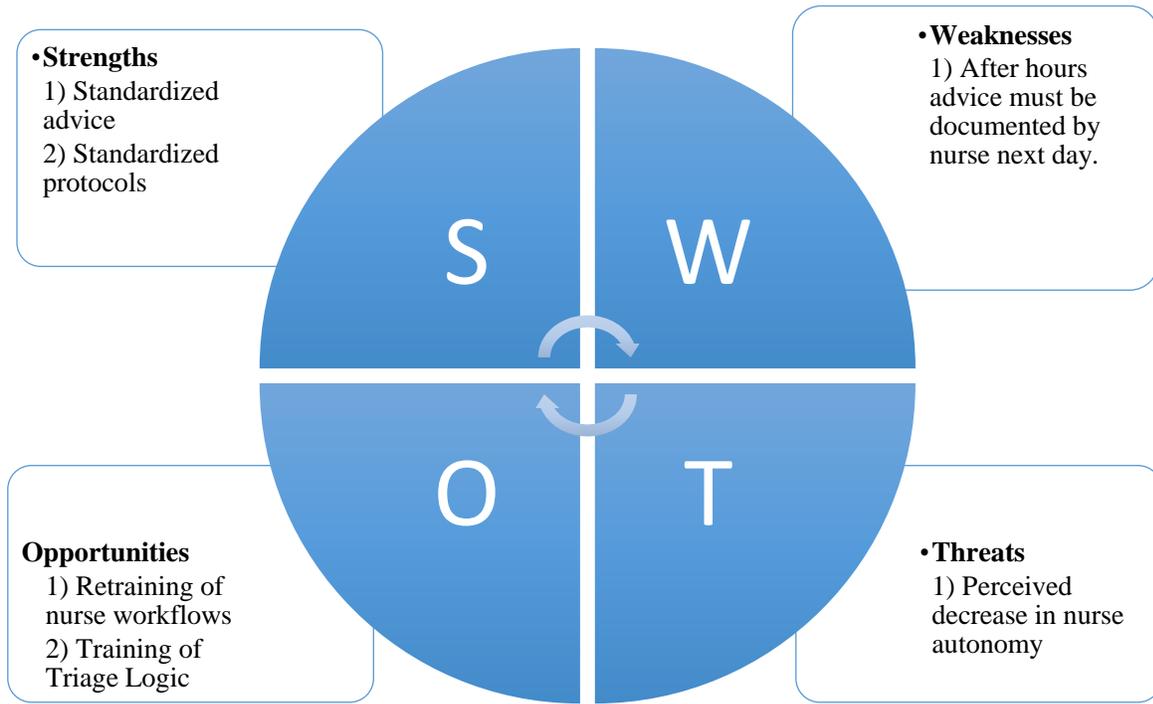
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secondary analysis of cross-sectional data from the ESTEEM trial. *International Journal of Nursing Studies* 58:12-20. DOI: 10.1016/j.ijnurstu.2016.02.

**Section VII Appendices**

**Appendix A**



## Appendix B

**Project Charter:** Implementing a Telephone Triage System.

**Global AIM:** Implement a telephone triage system that will provide evidenced based & best

practice protocol advice to patients at One Community Health clinics.

**Project Specific AIM:** To improve the % of patients who receive protocolled telephone triage by a nurse at One Community Health from a baseline of 0% to 50%/month by August 2018.

**Background:** One Community Health’s nurses currently do not have a standardized method of providing evidence based telephone triage advice to their patient population which has led to increased emergency room visits. The goal is to implement a Triage Logic telephone system that uses evidence based protocols to standardize advice to its patient population.

**Sponsor:** Christy Ward, CEO

**Champions:**

Chief Operating Officer	Kathleen Marshall
Registered Nurse Champion	Kimberly Vue
Licensed Vocational Nurse Champion	Stephanie Smith
MD Champion	Dr. Khan
Nursing Director Champion	Tracy Sisemore
Clinical Nurse Manager Champion	Joanyett Mays-Scott

**Goals:**

1. Implement an evidenced based telephone triage software at One Community Health.
2. Patients will be telephone triaged by a nurse using evidence based protocols.
3. Patient will voice understanding of advice given.

**Measures:**

Measure	Data Source	Target
Outcome		

Patients will be telephone triaged by a nurse	Triage Logic protocols/OCHIN Epic chart review	50%
<b>Process</b>		
Implement training of Triage Logic protocols	Triage Logic team training reports	80%
<b>Balancing</b>		
Unexpected increased visits to emergency rooms after implementation of protocols	OCHIN/Epic Chart review	100%

**Team:**

Chief Operating Officer	Kathleen Marshall
Registered Nurse Co Lead	Kimberly Vue
Licensed Vocational Nurse Co Lead	Stephanie Smith
MD Co-Lead	Dr. Khan
Nursing Director	Tracy Sisemore
Nurse Manager - Midtown	Joanyett Mays-Scott
Epic-OCHIN	Eulitia Flowers
IT	Chris Mack

**Measurement Strategy**

**Population Criteria:** All patients who receive care at One Community Health.

**Data Collection Methods:** Data will be collected by chart review.

**Data Definitions:**

Data Element	Definition
Telephone triage advice	Process of registered nurses using evidenced based protocols to give telephone advice

Training of nurses	10-question knowledge assessment provided by clinical nurse managers
Decrease ED visits/Hospital discharges	Patients who visit local hospital emergency rooms admitted to hospital

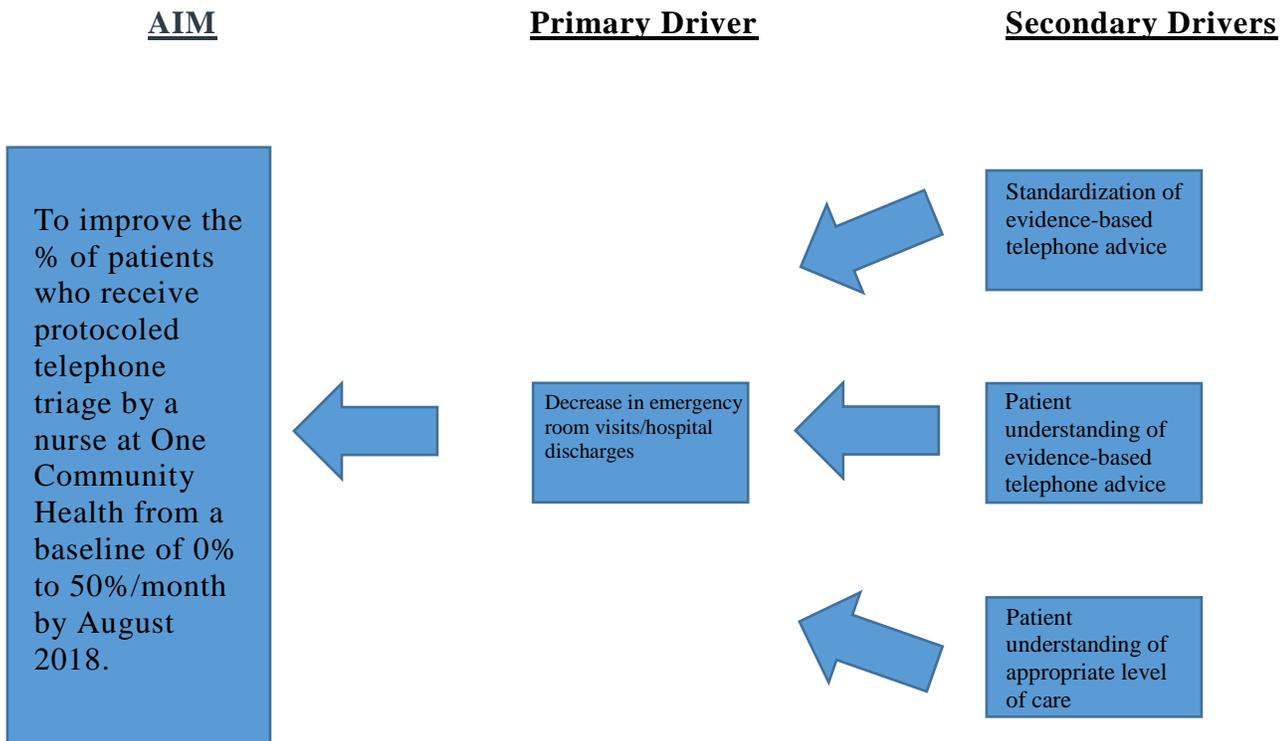
**Measure Description:**

Measure	Measure Definition	Data Collection Source	Goal
Decrease in emergency room/hospital discharges	X=Number of patients who visited emergency room  Y= Number of patients who visited emergency room following telephone advice	Chart review	Less than X per month

**Changes to Test:**

1. Implementation of Triage Logic evidence based protocols workflow.
2. Patient understanding of evidence based advice.
3. Patient understanding of appropriate level of care.
4. Documentation of standardized advice.
5. Documentation of disposition of patient.

**Driver Diagram**

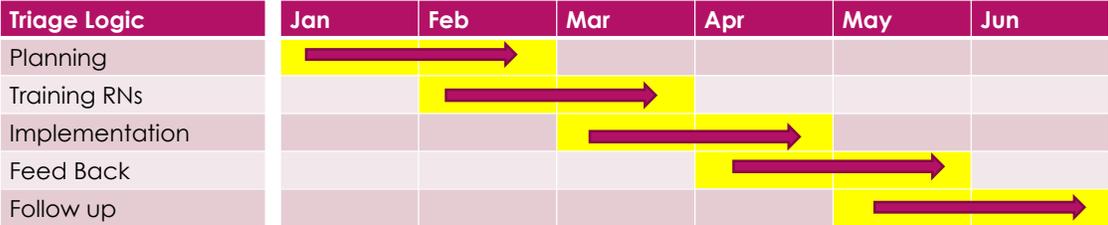


**Recommendations for Changes**

- With the CNL paving the way in the healthcare delivery system the essential goal is to lead in all settings in which healthcare is delivered (American Association of Colleges of Nursing, 2013).
- The CNL assumes accountability for patient-care outcomes through the assimilation and application of evidence-based information to design, implement, and evaluate patient-care processes and models of care delivery (American Association of Colleges of Nursing, 2013).
- The CNL is a provider and manager of care at the point of care to individuals and cohorts of patients anywhere healthcare is delivered (American Association of Colleges of Nursing, 2013).

### **Project Timeline**

# Triage Logic Gantt Chart



**Lessons to review**

- Facilitate culture change by first tackling resistance.
- Prioritize strategic communication.
- Approve changes based on the organization's specific needs and cultures.
- Include frontline staff and appoint champions for every quality improvement effort.
- Continually train.
- Offer timely and relevant feedback and celebrate success.

### **Microsystem Assessment**

- Identify key players such as champions and staff with access to statistical data in microsystem.
- Identify leadership and staff that will provide guidance during project.
- Allot administration time for collection of data and scheduling of meeting with champions.

### **Evidence Based Research**

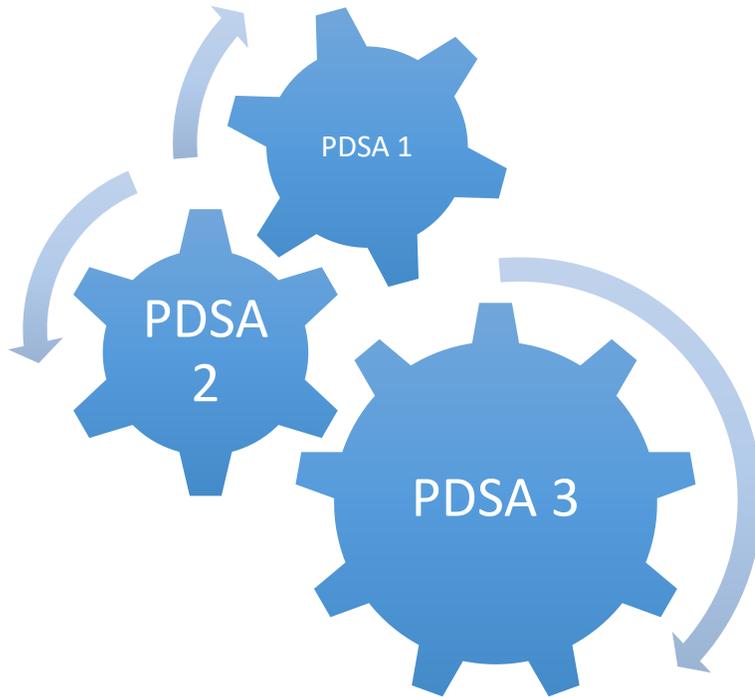
- Research evidence that is in alignment with implementing telephone triage.
- Research evidence that is relevant to statistical data surrounding telephone triage.
- Access data from patient charts to provide statistical data for decreased emergency room visits.

### **CNL Competencies:**

The CNL's goal in this microsystem would be to implement change in quality improvement and safety.

1. A comprehensive microsystem assessment is needed to provide the context for problem identification and action. Once this is achieved the evidence should be used by the CNL to design and direct system improvements that address trends in the safety and quality of evidence based triage advice (American Association of Colleges of Nursing, 2013).
2. Performance measures should then be used to assess and improve evidence-based practices and promote outcomes that demonstrate the delivery of higher-value care. Promoting a culture of continuous quality improvement within this microsystem is crucial to aiding in the decrease of emergency room visits (American Association of Colleges of Nursing, 2013).
3. The best way to engage the staff within this microsystem would be to demonstrate professional and effective communication skills, including verbal, non-verbal, written, and virtual abilities. All CNL implementation reports and studies describe improved care quality outcomes after introduction of the role into a microsystem (Bender, 2014).

- ✓ Training of Nurses
- ✓ Testing of Nurses & Practice
- ✓ Workflow discussion of OTC meds
- ✓ Workflow revision retrieving after-hours calls
- ✓ Audit



<b>Measure</b>	<b>Data Source</b>	<b>Target</b>
<b>Outcome</b>		
<b>Patients will be triaged using protocols</b>	<b>OCHIN/Epic chart review</b>	<b>50%</b>
<b>Process</b>		
<b>Implement Triage Logic training to nurses</b>	<b>Triage Logic team training report</b>	<b>80%</b>
<b>Balancing</b>		
<b>Unexpected increased visits to emergency rooms</b>	<b>OCHIN/Epic chart review</b>	<b>100%</b>

**Appendix E**

**CNL Project: Statement of Non-Research Determination Form**

**Student Name: Joanyett Mays-Scott**

**Title of Project:** Implementing a Telephone Triage System

**Brief Description of Project:** Implement a telephone triage system in a Federally Qualified Health Center (FQHC) in the Sacramento area.

**A) Aim Statement:** The specific project AIM statement is to improve the % of patients who receive protocolized telephone triage by a nurse at One Community Health from a baseline of 0% to 50%/month by August 2018.

**B) Description of Intervention:** A telephone triage system will be implemented within this microsystem where nurses can give triage advice using evidence-based protocols.

**C) How will this intervention change practice?** This microsystem will now offer evidence-based protocolized advice to patients who call requesting nursing triage advice during business hours and after-hours.

**D) Outcome measurements:**

- Process measure – Implement Triage Logic training to 80% of nurses.
- Balancing measure – Unexpected increased visits to emergency rooms/hospital discharges in 100% of patients.
- Outcome measure – 100% of patients will be triaged using protocols.

To qualify as an Evidence-based Change in Practice Project, rather than a Research Project, the criteria outlined in federal guidelines will be used:

<http://answers.hhs.gov/ohrp/categories/1569>

This project meets the guidelines for an Evidence-based Change in Practice Project as outlined in the Project Checklist (attached). Student may proceed with implementation.

This project involves research with human subjects and must be submitted for IRB approval before project activity can commence.

Comments:

**EVIDENCE-BASED CHANGE OF PRACTICE PROJECT CHECKLIST \***

**Instructions: Answer YES or NO to each of the following statements:**

<b>Project Title:</b>	<b>YES</b>	<b>NO</b>
The aim of the project is to improve the process or delivery of care with established/ accepted standards, or to implement evidence-based change. There is no intention of using the data for research purposes.	<b>X</b>	
The specific aim is to improve performance on a specific service or program and <b>is a part of usual care</b> . ALL participants will receive standard of care.	<b>X</b>	
The project is <b>NOT</b> designed to follow a research design, e.g., hypothesis testing or group comparison, randomization, control groups, prospective comparison groups, cross-sectional, case control). The project does <b>NOT</b> follow a protocol that overrides clinical decision-making.	<b>X</b>	
The project involves implementation of established and tested quality standards and/or systematic monitoring, assessment or evaluation of the organization to ensure that existing quality standards are being met. The project does <b>NOT</b> develop paradigms or untested methods or new untested standards.	<b>X</b>	
The project involves implementation of care practices and interventions that are consensus-based or evidence-based. The project does <b>NOT</b> seek to test an intervention that is beyond current science and experience.	<b>X</b>	
The project is conducted by staff where the project will take place and involves staff who are working at an agency that has an agreement with USF SONHP.	<b>X</b>	
The project has <b>NO</b> funding from federal agencies or research-focused organizations and is not receiving funding for implementation research.	<b>X</b>	
The agency or clinical practice unit agrees that this is a project that will be implemented to improve the process or delivery of care, i.e., <b>not</b> a personal research project that is dependent upon the voluntary participation of colleagues, students and/ or patients.	<b>X</b>	
If there is an intent to, or possibility of publishing your work, you and supervising faculty and the agency oversight committee are comfortable with the following statement in your methods section: <i>“This project was undertaken as an Evidence-based change of practice project at X hospital or agency and as such was not formally supervised by the Institutional Review Board.”</i>	<b>X</b>	

**ANSWER KEY:** If the answer to **ALL** of these items is yes, the project can be considered an Evidence-based activity that does NOT meet the definition of research. **IRB review is not required. Keep a copy of this checklist in your files.** If the answer to ANY of these questions is **NO**, you must submit for IRB approval.

\*Adapted with permission of Elizabeth L. Hohmann, MD, Director and Chair, Partners Human Research Committee, Partners Health System, Boston, MA.

**STUDENT NAME (Please print): Joanyett Mays-Scott**  
**Signature of Student:**

**DATE: 2/4/18**

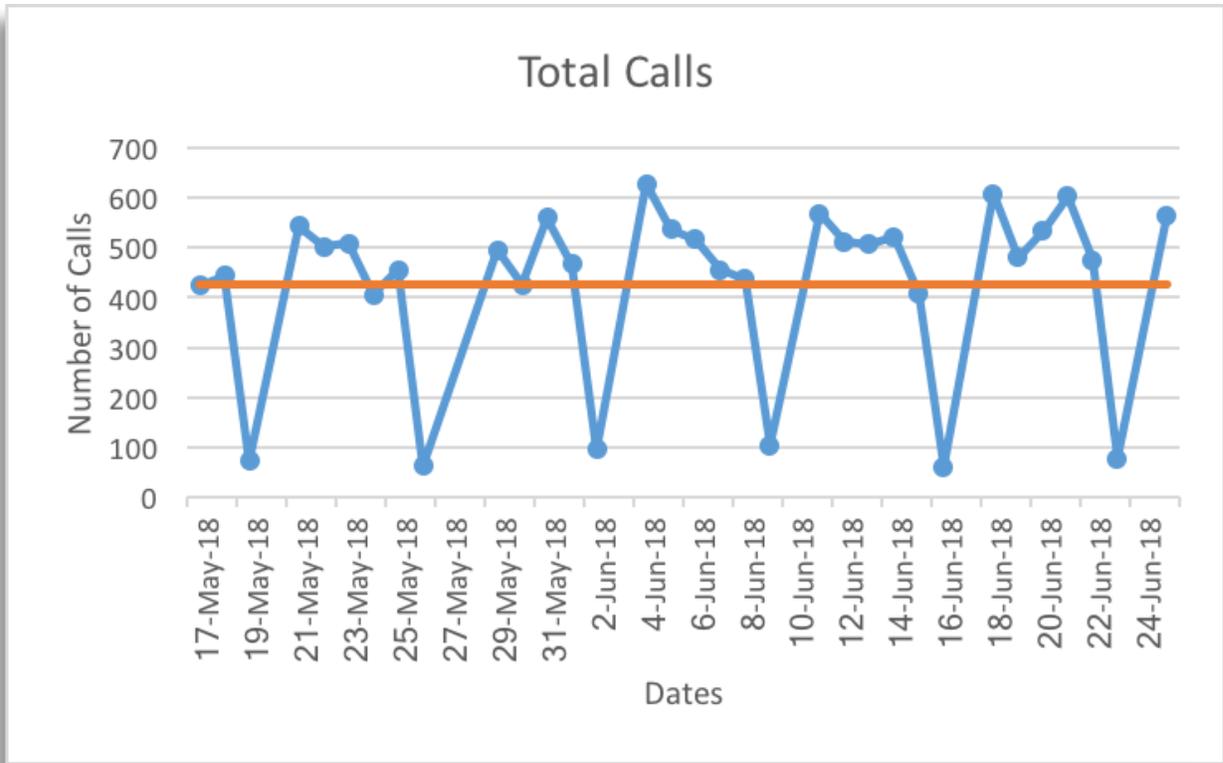
**SUPERVISING FACULTY MEMBER NAME (Please print):**

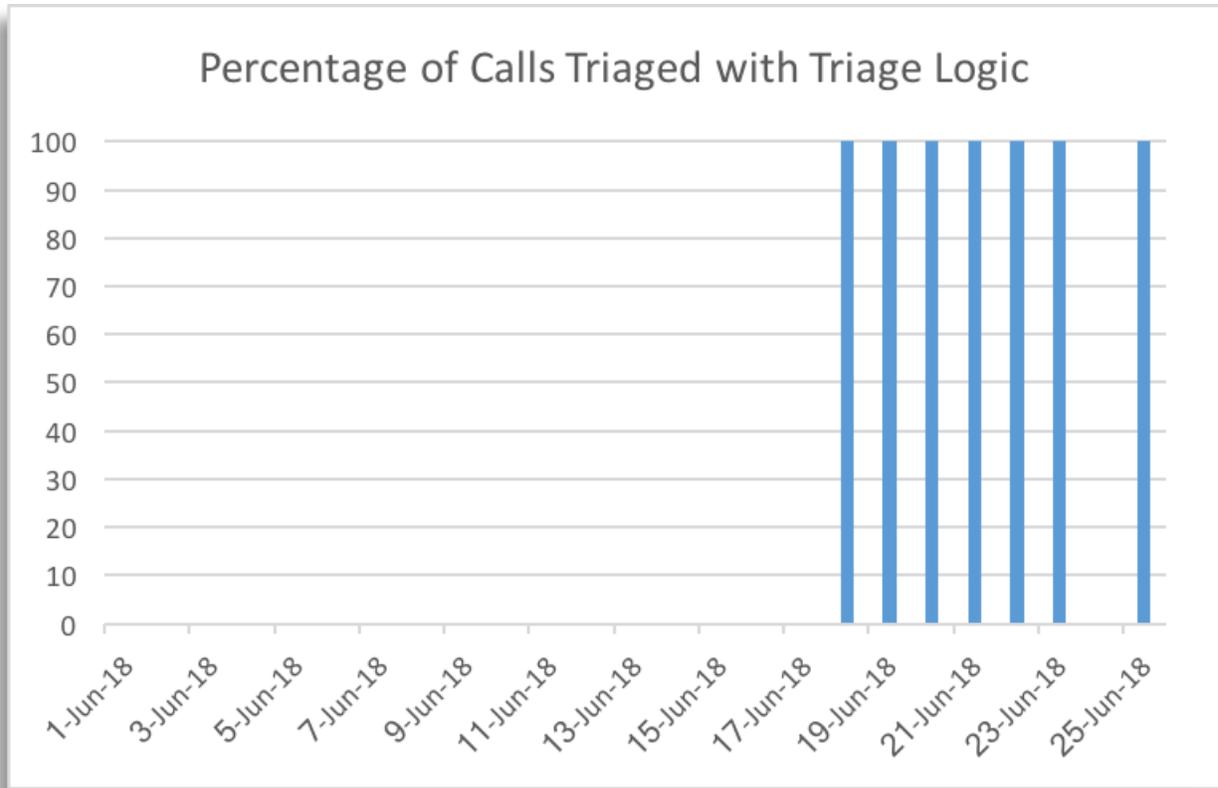
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**Signature of Supervising Faculty Member**

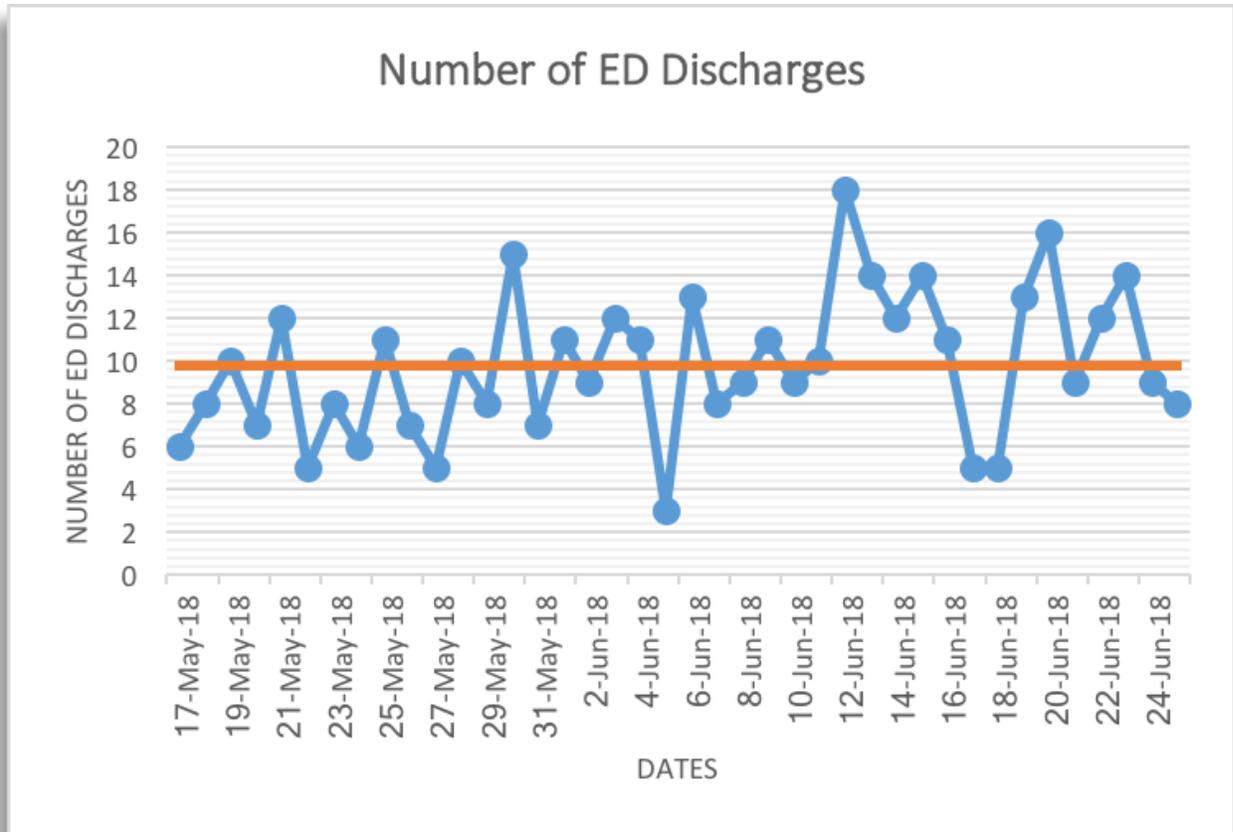
**DATE**

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**Appendix H**



**Budget**

<b>Expenses</b>	<b>Description</b>	<b>Rate</b>	<b>Quantity</b>	<b>Amount</b>
Nurse 1	Meeting/Training	\$45	10	\$450
Nurse 2	Meeting/Training	\$45	10	\$450
Nurse 3	Meeting/Training	\$45	10	\$450
Nurse 4	Meeting/Training	\$45	10	\$450
Nurse 5	Meeting/Training	\$45	10	\$450
Nurse 6	Meeting/Training	\$45	10	\$450
Nurse 7	Meeting/Training	\$45	10	\$450
Nurse 8	Meeting/Training	\$45	10	\$450
Nurse 9	Meeting/Training	\$45	10	\$450
Nurse 10	Meeting/Training	\$45	10	\$450
Nurse Manager	Meeting/Initial Training	Salary	20	\$1201
Nurse Director	Meeting/Initial Training	Salary	20	\$1682
Call Center Representative	Meeting/Initial Training	\$12	10	\$120
Epic Site Specialist	Meeting	\$28	5	\$140
IT Generalist	Meeting	\$20	10	\$100
Provider	Meeting	Salary	5	\$540
Set up fee	Meeting	\$400	1	\$400
Supplies for Training & Testing	Printed materials	\$500	1	\$500
		<b>Total Expenses</b>		<b>\$9183</b>

**Appendix J**

**Cost Benefit Analysis Table**

<b>Cost Description</b>		
Item	Description	Cost
Revenue/Cost Avoidance	Average cost of ED Visit/\$1100	\$ 1100

**Cost of ED Visits**

<b>2016</b>		<b>2017</b>		<b>Triage Logic Project</b>	
Quantity	Amount	Quantity	Amount	Quantity	Amount
1000	\$ 1, 100,000	1200	\$ 1,320,00	325	\$ 107,250

**Cost Savings/Cost Avoidance**

<b>Description</b>	<b>Cost Avoidance Measure</b>	<b>Potential reduction of ED visits by 50%</b>	<b>Cost savings</b>
325 ED visits/hospital discharges	Average Cost of ED Visit \$1100	30% (325 x 0.30) = visits 97.5	\$ 107,250

**Appendix K**

**PICOT Question** Will implementing a protocol based telephone triage system decrease the incidence of emergency room visits?

Study	Design	Sample	Outcome/Feasibility	Evidence rating
<p>Beaulieu, R., &amp; Humphreys, J. (2008). Evaluation of a telephone advice nurse in a nursing faculty managed pediatric community clinic. <i>Journal of Pediatric Health Care</i>, 22(3):175-81. DOI: 10.1016/j.pedhc.2007.05.006.</p>	<p>Quasi-experimental</p>	<p>Parent/Caregivers in urban pediatric nurse-managed health center</p>	<p>Differences were found on two items from survey; the reason for calling and the importance of being involved in decision making</p>	<p>Level II-B <a href="#">Beaulieu &amp; Humphreys</a></p>
<p>Campbell, J. L., et al. (2014). Telephone triage for management of same-day consultation requests in general practice (the ESTEEM trial): a cluster-randomized controlled trial and cost-consequence analysis. <i>The Lancet</i>, 384(9957):1859-1868. DOI: <a href="https://doi.org/10.1016/S0140-6736(14)61058-8">https://doi.org/10.1016/S0140-6736(14)61058-8</a>.</p>	<p>Pragmatic cluster-randomized controlled trial</p>	<p>Forty two practices within four clinics to general practice triage, nurse triage, or usual care</p>	<p>There was an increase in the number of primary care contact. Telephone triage might be useful in aiding in the delivery of primary care</p>	<p>Level I-A <a href="#">Campbell et al.</a></p>
<p>Ernesater, A., et al. (2015). Telephone nurses' communication and response to caller's concern –a mixed methods study. <i>Applied Nursing Research</i>, 29:116-21. DOI:10.1016/j.apnr.2015.04.012.</p>	<p>Qualitative content analysis</p>	<p>A call center within Swedish Healthcare direct</p>	<p>Telephone nurse's reluctance to use open-ended questions and to follow up on caller's understanding might be a threat to concordance, and a potential threat to patient safety</p>	<p>Level III-B <a href="#">Ernesater et al.</a></p>
<p>Murdoch, J., et al. (2015). Implementing telephone triage in general practice: a process evaluation of a cluster randomized controlled trial. <i>BioMed Central Family Practice</i>, 16:47. DOI: 10.1186/s12875-015-0263-4.</p>	<p>Qualitative interviews</p>	<p>Eight general practices consisting of four general practice triage and four nurse triage. Also</p>	<p>Diverse experiences and perceptions regarding the implementation of telephone triage</p>	<p>Level III-B <a href="#">Murdoch et al.</a></p>

Study	Design	Sample	Outcome/Feasibility	Evidence rating
		forty four staff members		
Murdoch, J., et al. (2015). The impact of using computer decision-support software in primary care nurse-led telephone triage: Interactional dilemmas and conversational consequences. <i>Social Science &amp; Medicine</i> 126:36-47. DOI: 10.1016/j.socscimed.2014.12.013.	Qualitative conversation Analysis	Two general practices using computer decision support software	Primary care nurse telephone triage may be viewed as an unfamiliar activity for many patients and nurses to be engaged in with vague boundaries, rules and communicative expectations	Level III-B <a href="#">Murdoch et al.</a>
Tran, D.T., et al. (2017). Compliance with telephone triage advice among adults aged 45 years and older: An Australian data linkage study. <i>BioMed Central Health Services Research</i> 17:512. DOI: 10.1186/s12913-017-2458-y.	Qualitative follow up study	A total of 8406 adults aged forty five and older	Outcome compliance with advice “attend emergency room immediately,” “see doctor immediately,” “self-care,” and “self-referral” varied substantially	Level III-A <a href="#">Tran et al.</a>
Varley, A., et al. (2016). The effect of nurse’s preparedness and nurse practitioner status on triage call management in primary care: A secondary analysis of cross-sectional data from the ESTEEM trial. <i>International Journal of Nursing Studies</i> 58:12-20. DOI: 10.1016/j.ijnurstu.2016.02.001.	Qualitative survey	Forty five nurse practitioners	Valid responses from thirty-five nurse practitioners. Nurse characteristics were associated with disposition of patients	Level III-B <a href="#">Varley et al</a>
North, F., et al. (2017) Clinical decision support improves quality of telephone triage documentation - an analysis of triage documentation before and after computerized clinical decision support. <i>BioMed Central Medical Informatics and Decision Making</i> 14:20 DOI:10.1186/1472-6947-14-20.	Qualitative analysis	50 triage documents were examined before and after a CDS tool was used in nursing triage	Three of five AAACN documentation standards were significantly improved with CDS	Level III-A <a href="#">North et al.</a>
Lake, et al. (2017). The quality, safety and governance of telephone triage and advice services – an overview of evidence from systematic reviews. <i>BiMed Central Health Services Research</i> 17:614 DOI: 10.1186/s12913-017-2564-x.	Qualitative analysis	Ten systemic reviews of 291 searches of PubMed,	Measures of the safety of TTAS tended to show that there is no major	Level III-A <a href="#">Lake et al.</a>

Study	Design	Sample	Outcome/Feasibility	Evidence rating
		MEDLINE, EMBASE, CINAHL	difference between TTAS and traditional care.	
Lazo, E., & Kirsh, S. D. (2017). Prompt response by clinic telephone triage staff improves satisfaction. <i>American Academy of Ambulatory Care Nursing</i> . Retrieved from content.ebscohost.com.ignacio.usfca.edu.	Quasi-experimental	83 families called in the pre-intervention period, 52 answered their phones and agreed to participate	Findings suggest providing prompt responses at least 50% of the time in an 8-hour workday increased P/C satisfaction and decreased ED visits by an average of 20.6 visits per month.	Level II-A <a href="#">Lazo &amp; Kirsh</a>