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# Admission Criteria for the Pediatric Acute Care Unit to Reduce Length of Stay in the Emergency Department

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Admission Criteria for the Pediatric Acute Care Unit to Reduce Length of Stay in the Emergency

Department

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### Abstract

The primary objective as outlined in this prospectus is to develop pediatric admission criteria to reduce length of stay (LOS) in the emergency department for patients being admitted to the pediatric acute care unit. The pediatric acute care unit is a 25-bed licensed bed at a tertiary hospital in San Francisco serving patients from 1 day to 21 years of age. Methods included both qualitative and quantitative data to determine relevance of quality improvement project related to LOS, patient safety, patient satisfaction, and nurse to physician communication. Data collected indicated that average LOS in the ED was significantly higher than organizational goal of 220 minutes.

Implementation of admission criteria was disseminated among charge RNs on the acute care unit. Evaluation of criteria will be based on surveys distributed biweekly for 6 months (starting April 21) to both RN and physicians in the emergency department and acute care unit to determine efficacy. Additional data to be collected will include average LOS for admitted pediatric patients and patients who left without being seen (LWBS). Additional opportunities identified by an intense analysis is the utilization of a pediatric early warning system (PEWS) and advanced respiratory support skills among RNs. The project supports the utilization of a Clinical Nurse Leader that is specifically trained and educated to develop, implement, and evaluate quality improvement initiatives that have a high impact potential for patient safety and cost savings.

## Admission Criteria for the Pediatric Acute Care Unit to Reduce Length of Stay in the Emergency Department

Modern day healthcare in the United States has been deeply challenged with several factors that drive up the costs without necessarily improving the quality of care. Politically powerful industries such as pharmaceuticals, an aging population, and the prevalence of chronic conditions with co-morbidities can all factor into increasing healthcare costs (Sambamoorthi, Tan, & Deb, 2015). Healthcare organizations are often left with the task of maintaining and/or improving standards of care while simultaneously reducing the costs of providing safe and effective healthcare. Quality improvement initiatives, specifically within the microsystem can identify inefficiencies, waste, and unsafe clinical practice.

The following prospectus outlines a quality initiative project by the Clinical Nurse Leader (CNL) related to the patient flow from the pediatric emergency department (ED) to the pediatric acute care unit. The pediatric population is wide-ranging in both age and developmental milestones. Ranging from a new born infant to 21 years old, children can present to the hospital with many serious or life-threatening ailments. Varying conditions include anaphylaxis, asthma exacerbation, sepsis, bone fractures, diabetic ketoacidosis, congenital disorders, neurological conditions, and seasonal illnesses (i.e., flu, respiratory syncytial virus). Due to the unpredictability of illness and the lack of bio-physiological reserve, it's imperative that these patients receive efficient and effective care once it has been medically determined that the child will need to be admitted into the hospital.

One of the obstacles identified for this project was the lack of standardized admission guidelines for patients who present in the ED and will be admitted to the ward. Lack of admission criteria has led to the discord between physicians and nurses, delay in transfer with a subsequent increase in length of stay (LOS) in the ED, and patient/family dissatisfaction. In addition to admission guidelines, the microsystem assessment indicated that nurses didn't have the resources and/or skill set to admit higher acuity patients to the pediatric ward.

The overall intention of this project will be to: collaborate with the interdisciplinary team to establish admission criteria for the pediatric unit; and provide assessment tools and education to the pediatric RNs to build confidence to care for patients who have a complex medical diagnosis and/or history. The evaluation of this project will be measured based on a reduction of LOS in the ED (quantitative), improved satisfaction among RNs and physicians (qualitative), and patient satisfaction (Press Ganey scores).

### **Clinical Leadership Theme**

The global aim of this project was to improve patient flow by reducing LOS from ED to pediatric acute care unit. Consequently, improving relationships between RNs and physicians. Furthermore, the overall aim of the project is aligned with an evidence-based improvement process. Improvement goals will seek to identify areas of improvement that are related to staff, environment, systems, and patients within context of pediatric admissions from ED to the ward. This development process will not benefit any research method, study, or override any clinical decision-making. The project is solely for the purpose of improving *clinical outcomes* that negatively impact both staff and patients. Additionally, this project will not develop new paradigms and/or untested standards of care outside of the national standards of care or the current evidence.

The Pediatric Acute Care Unit has 25 licensed beds for acute care, medical-surgical, and hematology/oncology patients between the ages of 1 month to 21 years old. The theme for improvement is the standardization of admission criteria for varying diagnoses within the Pediatric Acute Care Unit. The Global Aim Statement resolves to improve admission criteria for the acute care unit. The process begins with the current admission guidelines that help determine if a patient should be accepted onto the acute care unit or if they require a higher level of care in the PICU. The process ends with the RN having a general understanding of appropriate admission guidelines for pediatric patients. The problem statement can be further disseminated by examining the cause and effect of the problem within the microsystem.

### **Statement of the Problem**

The problems identified via the microsystem assessment and illustrated by the fishbone diagram are related to a delay in transfer from the ED to the pediatric ward (see Appendix A). Subsequently, causing a delay in treatment plan, dissonance between physicians and nursing, and patient dissatisfaction. A key determinate that was identified qualitatively was related to the lack of admission criteria for the pediatric acute care unit. Data was collected from a multidisciplinary team involving RNs, Physicians, and Clinical Nurse Specialist (CNS).

The admission criteria for the pediatric acute care unit can support the facilitation of the admission process for a patient in the emergency department (ED). Currently, there are no clear or recent guidelines for admissions within the pediatric acute care unit often causing a disagreement from the charge RN and the admitting physician related to a patient going to the PICU versus the acute care unit. Furthermore, delay in transfer from the ED to the ward has significant financial ramifications that lends support to the utilization of the Clinical Nurse Leader (CNL).

According to Harris, Roussel, and Thomas (2014), the CNL is trained specifically to design, implement, and evaluate quality improvement projects within the microsystem, that can save the organization millions. The delay in transfer and subsequent increase in lengths of stay (LOS) or patients who left without being seen (LWBS) has a negative impact on the patients, the staff, and the organization.

### **Project Overview**

The absence of admission criteria was attributed by the multidisciplinary team as a direct source of increased LOS in the ED and subsequent delay in patient care. The process improvement objectives are to reduce delay in admission; delay in treatment; reduce negative impact on RN/MD relationship and communication; reduce negative impact on the relationship between the PICU/ED/Acute Care Unit due to unclear guidelines for admissions; improve patient/family satisfaction; reduce inappropriate admissions to the PICU.

The implementation of this project to meet desired outcomes will include the following: regular meetings with the interdisciplinary team; staff engagement within the microsystem; data collection from the electronic health record (EHR); researching best practice evidence and applying it to project improvement process; identifying opportunities for education for staff; identifying tools/resources to support staff to care for varying clinical scenarios (i.e., pediatric early warning system); and empowering staff to have crucial conversations with physicians at point of admission in order to facilitate a more efficient patient flow.

The Global Aim Statement resolves to improve admission criteria for the acute care unit. The process begins with the developing admission guidelines that help determine if a patient should be accepted onto the acute care unit or if they require a higher level of care in the

PICU. The process ends with the RN having a general understanding of admission guidelines for pediatric patients.

Furthermore, a microsystem assessment will address the need for bedside emergency equipment on the acute care floor outside of the self-inflating bag. Additional equipment will include varying oxygen delivery masks/cannulas at each bedside. Having the necessary equipment to manage a pediatric emergency readily available will further assist the ICU and Rapid Response Team (RRT) and better support the pediatric RNs. Based on a cause and effect diagram, a pediatric early warning system (PEWS) will be instituted among staff to help identify patients who may need to be transferred to the PICU. The desired outcome will be to build confidence and competence related to varying pediatric conditions that may present on the acute care ward.

## **Methodology**

### **Rationale**

The rationale for this project was based on an intense analysis of the clinical microsystem as reflected by the fishbone diagram. The fishbone diagram identified four key areas that were part of the problem (Appendix A). These areas were related to physical environment, people, systems, and patients. This quality improvement project will focus on systems and people. The key areas identified under systems were lack of standardized admission guidelines from the ED to the acute care ward. Furthermore, the RCA found that there was distrust among the RNs with varying physicians, lack of clinical competence around assessment and airway management, lack of resources, and general resistance from the nurses. The data collected, indicated the necessity for the project was generated by benchmark information collected from the EHR, stakeholder



interviews (including RNs and physicians), and potential financial impact related to the delay in transfer from the ED to the ward.

The strength, weakness, opportunity, and threat's analysis (SWOT) implied that the microsystem process improvement will have significant challenges (see Appendix B). The strengths and weakness reflect internal factors of the pediatric acute care unit. The strengths include key stakeholder support reflected by interviews from both Charge RNs and physician leads. Additionally, an organizational goal is to reduce LOS for patients to be admitted from the ED. The weaknesses were related to organizational support in terms of finances. This disconnect in supporting the project symbolically and not financially, was a source of frustration for both RNs and Physicians. Opportunities included a systematic approach in identifying the problem and the subsequent action plan. The threats included lack of resources in terms of project sustainability, moving to a new hospital may threaten the "urgency" for project, and cultural barriers that may impede staff compliance towards the implementation of admission guidelines.

The action plan related to data collection in the implementation of admission criteria for pediatric patients who present in the ED will be multifaceted. Utilizing both qualitative and quantitative data, the CNL will determine efficacy for implementation of admission criteria for varying patient conditions/diagnoses. Quantitatively, the ED LOS of stay will be tracked weekly for patients who are to be admitted specifically to the acute care ward. In conjunction with the admission guidelines, an improved Pediatric Early Warning System (PEWS) will be tracked and audited to ensure that RNs are scoring at point of admission and at each set of vital signs. The PEWS score will be a tool to assist RNs in communicating patient acuity and concerns with the

physicians. The PEWS will be part of an initiative for advance clinical assessment skills to be provided to the pediatric staff nurses.

### **Cost Analysis**

The financial analysis (see Appendix D) for the improvement of patient flow in relation to a standardized admission criterion from ED to Pediatric Acute Care has a potential decrease in ED LOS by approximately 30 minutes (Rutman, Migita, Spencer, Kaplan, & Klein, 2016).

A prolonged LOS in the ED for patients who are to be admitted to an inpatient unit are associated with a decrease in quality of care, a higher morbidity/mortality, decreased patient satisfaction, a higher number of patients who leave without being seen (LWBS), a delay in care, longer LOS for other ED patients, and increased costs for care (Pankaj, Combs, Vinson, 2014). Furthermore, the average outpatient cost is \$500.00 (Becker's Hospital CFO Report, 2012). If just one patient a day left without being seen, that could be a minimum of \$182,500 a year for outpatients (this estimate has not been adjusted to market rate in San Francisco and represents a national average).

According to the organizational data, patients who likely would have been admitted to the ward that LWBS, could cost the hospital an additional **2.2 million annually**. Based on the average cost of inpatient stays are estimated at \$10,000 (Becker's Hospital CFO Report, 2012) and the yearly average LWBS is 0.6 patients per day (Confidential Organizational Data, 2017). The costs can further be evaluated by looking at the relation between ED LOS and overall costs associated with staffing the ED.

The pediatric ED had a total of 9951 patients for 2017. Of those patients seen in the ED, 608 were admitted inpatient. The organizational average LOS of stay during 2017 was 255 minutes with an organizational goal. The improvement project has an inherent goal of

improving the patient flow from ED to Ward by 35 minutes. This reduction in LOS of stay could save the organization over \$176,000 annually.

The improvement project has the potential to save the organization \$2,366,964.48 (see Appendix D). The CNL role is the primary expense to develop, study, implement, and evaluate the quality initiative. The estimated expense for 1.0 Full Time Equivalent (FTE) is approximately \$248,444.96 including salary, certifications, and benefits. The overall organizational net benefit is estimated at \$2,188,519.52.

### **Change Theory**

The theory of change that facilitated the quality improvement project was Lippitt's Theory of Change (see Appendix E). Aligned with Lippitt's theory is the notion that the CNL is positioned as the clinical expert who can lead the interdisciplinary team by empowering the process (Harris, Roussel, & Thomas, 2014). The theory has a seven-step systematic process that navigates change initiatives within the microsystem. The stages include: diagnosing the problem; assessing stakeholders and readiness for change; assess and engage the team for change; develop a plan of action and timeline; identify key players to help manifest the change and manage team dynamics; maintain the change and revise policies and procedures as necessary; and completion of initiation or termination of helping relationship (Harris, Roussel, & Thomas, 2014). This theory's methodical approach has been contributory towards the admission guidelines criteria to reduce LOS for patients being admitted to the ward.

The process required an intense analysis of the microsystem that began with an initial assessment and lead to staff engagement with the multidisciplinary team. The problem of lack of admission criteria was identified through this process, requiring the collection of data to determine an action plan with subsequent timeline. The criteria will be established based on the

timeline and implemented among the front-line staff. The CNL, will be the principal lead of this quality initiative, identifying obstacles and managing the team dynamics for overall success of the project. The CNL will determine the overall success of the process and continue to monitor quality indicators throughout the year. Change theories, such as, Lippitt's can be instrumental in providing an orderly approach towards complex quality initiatives within the microsystem.

### **Data Source/Literature Review**

The needs assessment of the microsystem lent to the determination of admission criteria for the pediatric acute care unit. The data that shows the necessity for the project is generated by both benchmark data collected by the electronic health record, stakeholder interviews (including both RNs and Physicians), and financial impact for delay in transfer. Benchmark data collected for 2017 indicated that the average patient transfer time was 255 minutes.

Stakeholder interviews were conducted with both RNs and Physicians within a small focus group. Among the group were two physicians, four RNs, and a Clinical Nurse Specialist. Unanimously, the participants agreed that the unit lacked a standardized admission criterion for some of the more common medical cases that present in the ED. Among the nurses, all four (100%) agreed to a lack of resources available to help with admissions, especially among patients who present with advanced illness. The nurses, all four (100%) expressed concern related to the varying skill mix among the RNs. Nurses, collectively felt the less clinically competent RNs could not manage many of the new admissions independently, placing additional burden on the more tenured RNs.

Additionally, all four of the RNs (100%) expressed concern that they do not have the skill to manage an emergency situation outside of what they have learned in BLS. They specified that they feel the unit would benefit from additional training, especially during respiratory

emergencies. The two physicians (100%) expressed frustration that they had to “ask permission” from the charge RN to admit a patient to the unit. They indicated how this can cause significant delay in transferring the patient with subsequent delay of a treatment plan.

The evidence to support the project is based on year-to-date organizational data (1/1/18 – 2/11/18) that reveals the average wait time for a patient to be admitted is 255 minutes with the organization goal being less than 220 minutes. Additional data is limited to the multidisciplinary focus group (4 RNs, 2 Physicians, and 1 Clinical Nurse Specialist) that agreed that a standardization of admission criteria will help navigate the admission process more efficiently. The literature reviewed, supported the necessity of the process improvement project to have an affirmative outcome for staff, patients, and organizational finances. The majority of research was built on current, peer-reviewed studies and/or literature to support my aim statement by utilizing a PICO statement.

The following PICO statement and subsequent research strategies were utilized to find studies and literature to support my project. Is there evidence to support that (Problem) patient transfer times to the pediatric acute care unit who present in the ED would improve if there are (Interventions) standardized admission criteria, RN training, and screening tools (Comparison) compared to not having these interventions, that would (Outcome) yield in a reduction in transfer times from the ED to pediatric ward (Harris, Roussel, and dThomas, 2014)? The PICO statement’s key terms were “patient transfer times,” standardized admission criteria,” “Admission criteria,” and “Reduction in ED transfer times.” The PICO statement yielded a comprehensive review of literature to support fundamental components of the project initiative.

The literature review reflected the need for improved patient flow and how it can positively impact all levels of the organization. For example, Barata, Brown, Fitzmaurice,

Stone-Griffen, and Snow (2014), indicated the overall considerations of LOS improvement include: evidence based-practice; correlation between clinical relevance of the outcomes associated with the performance measure; the degree of the relationship between the performance measure and the outcome; and the expense of implementing the performance measurement. In addition, Bashkin, Caspi, Haligoa, Mizrahi, and Stalnikowicz (2015), utilized a study to identify organizational barriers that contribute an increase in ED wait times. The observational study identified key areas of opportunity for improvement that may contribute to an increase in expense and have varying effects on patient safety. Improvement strategies identified were related to organizational changes, communication improvement, and more efficient time management. Furthermore, Bekmezian and Chung (2012) study, correlated delayed transfer of patients in the emergency department (boarding) with an increase in cost, increase in LOS, mortality, and readmission. The main variable for the study was time to transfer (boarding time) once the patient was accepted to the ward. Additionally, the study provides conclusive results that indicate the correlation between longer boarding times and longer LOS and readmissions. In addition to literature that supported a decrease in LOS for admitted patients, team dynamics, and specifically communication were supported within the literature review.

According to Zwarenstein, Goldman, and Reeves (2009), the emphasis on inter-professional communication deficits had significant impact on patient satisfaction and overall efficiency of the health care provided. The review yielded four studies that met the author's inclusion criteria. Studies that were examined found that practice-based inter-professional communication can improve healthcare processes and outcomes. Additional literature supported the cost effectiveness for improving patient flow from the ED to the ward.

The authors, Stockwell, et al, (2015) employed a three-phase study to understand the financial and clinical impact on boarding patients in the emergency department. The authors conclude that resource expenses for ED bed-hours is more than twice the cost of a non-critical care inpatient unit. Furthermore, quality of care is not increased despite the higher cost in the emergency department. The authors make the argument that the approximated cost for per patient bed-hour were \$58.20 in the ED compared to approximately \$24.80 for the inpatient floor.

Additional evidence by McBeth (2017), suggest that improving communication and utilizing tools such as the huddle has a proven effect on interdisciplinary communication as it's related to patients being transferred and/or discharged between and/or from a unit. The article also provides relevant evidence as it relates to healthcare's rising costs and patient outcomes. The specific goals of this project include better communication between the interdisciplinary team and intent is for the admission criteria to act as a tool for a more cohesive dialogue between RNs and physicians.

### **Timeline**

The project timeline will span over the course of a 6-month period (Appendix C). This period will begin with the initial assessment, data collection, and stakeholder analysis. The development of the admission criteria is an extensive process involving the multidisciplinary team and within the confines of California Title XXII. The guidelines have an expected completion time by March 21<sup>st</sup>, 2018. Immediately following completion of the admission criteria, education and implementation will be initiated. A combined education and evaluation of criteria will be ongoing until May 21<sup>st</sup>. During this time, staff engagement, EHR data (ED LOS in minutes), RN skills/competency, and HCAPPS will be evaluated to gauge progress of

admission guidelines. May 21<sup>st</sup>, skills assessment data will help support the need for both individual and group training. A modified assessment tool (PEWS Score) will be implemented and enforced for the RNs. This will further support assessment skills and assist in providing a framework for patient acuity.

Additional opportunities for education will be held on May 29<sup>th</sup> and June 6<sup>th</sup>. Working with both the manager of respiratory therapy and the clinical nurse specialist, a training module on advance airway management will be designed. This airway teaching strategy will assist pediatric acute care RNs in advanced assessment skills. The education in conjunction with the admission criteria intends to support front-line staff in building confidence in managing a variety of patient scenarios that fall within the admission criteria.

Qualitative and quantitative evaluations will be ongoing and adjustments to both teaching guidelines and admission criteria will be made accordingly. Any modifications to admission criteria will have to be approved by the Pediatric Acute Care of Excellence Committee (PACE). Admission criteria will be reviewed every two years once finalized by the multidisciplinary team.

### **Expected Results**

Qualitatively, subjective data via structured surveys will be conducted with both RNs and physicians to gauge if admission criteria has improved patient flow and RN and physician communication. The surveys will be collected bi-monthly and used as a talking point to identify areas of communication breakdown between RNs and physicians and for continued process improvement. Initial surveys included

Length of stay will be carefully monitored with a goal of less than 220 minutes in the ED to pediatric ward. An additional costly component is that 0.6 patients per day leave without being



seen (LWBS). The goal will be to reduce that number to zero. Additional goals will be based on patient satisfaction score approval greater than 85% (centered on the national standards for Hospital Consumer Assessment of Healthcare Providers and Systems, HCAHPS). Bi-monthly surveys with staff will help indicate if admission criteria has improved patient flow (decreased LOS in the ED), improved communication, and overall job satisfaction among the RNs and physicians.

The goal of the project will be to assess, plan, implement, and evaluate specific guidelines for admission to the acute care unit. Additionally, an assessment of clinical competencies and survey of skills will provide information to help focus educational opportunities among the staff. This goal will be measured quantitatively as reflected by ED wait times for a patient who will be admitted to the ward. Qualitatively, the RNs and physicians will be interviewed via survey to measure improvement in work-flow and communication at the point of admission.

Given the scope of this quality improvement initiative, it is likely to yield other quality improvement needs related to patient flow. Pediatric RNs do not have the advanced monitoring systems that often times provide early warning signals to the care team. This technological limitation will be null when the organization moves to a new state of the art hospital in March 2019. The acute care unit will have advanced monitoring, further supporting the front-line staff. However, technologies do not replace critical thinking and/or assessment skills. There will likely be a need for focused education on new technology. With the advanced ability to monitor patients in the new hospital, this may further influence the admission criteria established by this project with subsequent modifications.

### **Nursing Relevance**

In today's complex and rapidly changing healthcare system, quality improvement initiatives are both necessary and relevant in terms of improvement performance related to patient outcomes. According to Shigeko (2012), inefficient system processes are at the forefront of quality problems within healthcare. Despite the prevalence, there is a lack of evaluation tools to help determine if there is measurable improvement on quality. The role of the CNL is pivotal in developing systems, at the microsystem level, to design and implement measurable quality improvement initiatives. In addition to the role of the CNL, nurses in general play a pivotal role in sustaining meaningful change within healthcare.

Statistically, nurses are the most dominant in terms of numbers within the healthcare workforce. According to the Bureau of Labor Statistics (BLS), there are an estimated 11.8 million with 2.7 million of that workforce being nurses. Nurses are in a unique position to organize nationally to drive quality improvement initiatives that can assist in driving healthcare costs down, with improved patient outcomes.

### **Summary Report**

The Plan-Do-Study-Act model are implicit with the following summary report for admission criteria within the pediatric acute care unit. The development of the criteria was an extensive approach involving a multidisciplinary team. The primary method for project implementation was to collect pediatric acute care guidelines outlined in Title XXII and from outside organizations. The development of the admission criteria was a protracted improvement process due to regulatory guidelines dictated by Title XXII, the synergy of ideas among key stakeholders, and pediatric specific considerations.

The guidelines that were delineated included pediatric patients who presented with a respiratory illness, cardiovascular disease, neurological disease, hematologic/oncologic disease,

endocrine/metabolic, gastrointestinal disease, renal disease, psychiatric, and toxic ingestions. Additional criteria were developed related to surgical illness (ie., appendectomy), foreign body aspirate, urological, and orthopedics. Some of the guidelines were easier to establish based solely on limited resources.

For example, if a patient presented in the ED with a psychiatric condition (attempted suicide, depression, etc.) and subsequent 5150 hold, the patient would go to the PICU. The physical space of the pediatric unit did not lend to a safe environment for patients that were at risk for harming themselves or others. More difficult guidelines were with patients that presented with a respiratory illness.

The respiratory illness guidelines determined that a patient should go to the ICU versus the acute care unit if: they were receiving albuterol nebulizers every 2 hours or more frequently; high flow nasal cannula was required; oxygen requirements greater than specified flow related to age (ie., greater than 1 liter/minute for age 1-90 days). Additional obstacles for this specific guideline was related to frequency of intervention (ie., suctioning) and individual RN competence in managing a patient in respiratory distress.

A significant barrier identified for admission criteria for the pediatric population was due to each clinical presentation and consequent guideline was not “one size fits all.” Each criterion developed needed to reflect the varying ages both chronological (1 day to 21 years old) and developmental. Many factors have been identified in the initiation of admission criteria that were not originally considered at the commencement of the project improvement process. For example, a pediatric patient who presents medically appropriate for the unit may not have the social support necessary to maintain safety within the acute care unit. One such case was a two-year-old with a single mother. The mother had three other children at home and was not able to

stay in the unit to watch the toddler. The patient to RN ratios are 4:1 on the acute care unit, making it an additional challenge in watching the toddler consistently and safely. Such occurrences had to be factored in when developing the admission criteria.

Based on the timeline presented, the data to be collected will consist of bi-monthly surveys developed for the multidisciplinary team (RN and physicians) in both the ED and acute care unit (see Appendix F). This qualitative data will assist in determining the sustainability of the project and intends to guide any revisions necessary for the admission criteria. Additionally, the surveys aim to maintain staff engagement and awareness towards quality initiative as it relates to improving LOS in the ED. Results from both surveys (bi-monthly) and EHR reports (emailed daily) will be shared with the leadership team and posted on the unit's Daily Engagement System (DES) boards for staff to see results of the improvement process on a regular basis. During this period, additional cycles of change will be evaluated and implemented. These change initiatives will include the introduction of a modified PEWS system, pediatric sepsis screening tool, advanced respiratory RN skills, and how the processes will carry over to the new hospital.

The sustainability is dependent on the consistency of implementation strategies and subsequent evaluation of the admission criteria. Additionally, the utilization of systems thinking, succession planning, and change management are inherent within the CNL's role (Harris, Roussel, & Thomas, 2014). The foundational support of this relies heavily on the hiring of a CNL for the pediatric acute care unit to effect change and the continuity of quality improvement projects that can systematically improve patient outcomes within the clinical microsystem.

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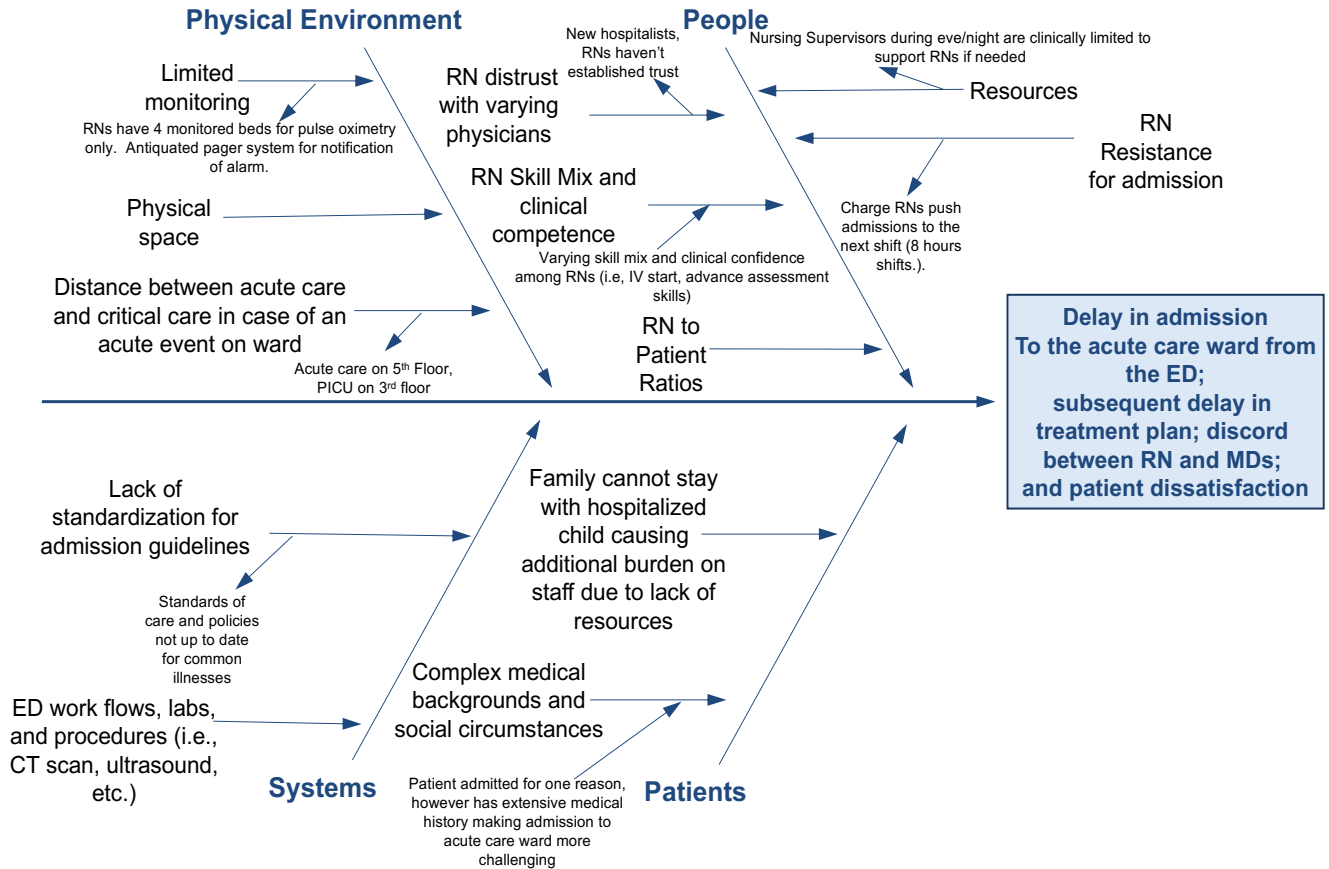
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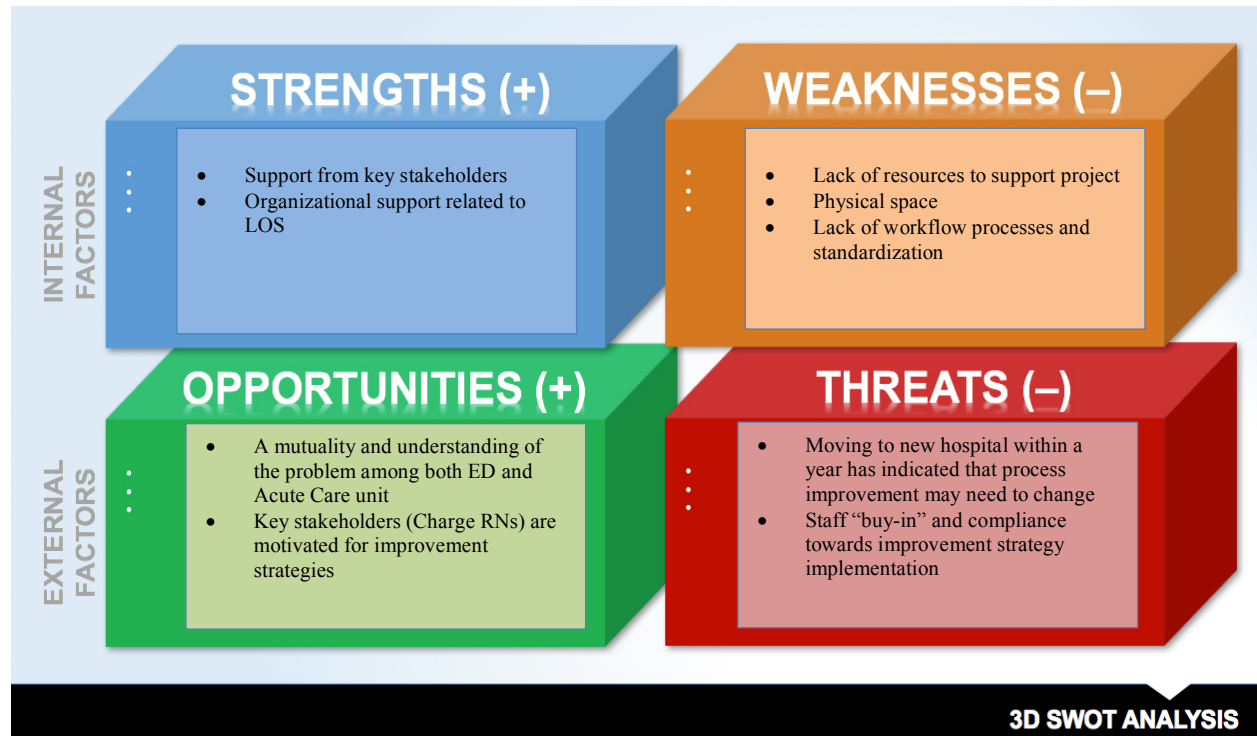
Appendix A

Lack of Standardized Admission Criteria for the Pediatric Acute Care Unit from the ED with Subsequent Delay in Admission



## Appendix B

## SWOT Analysis for Clinical Microsystem

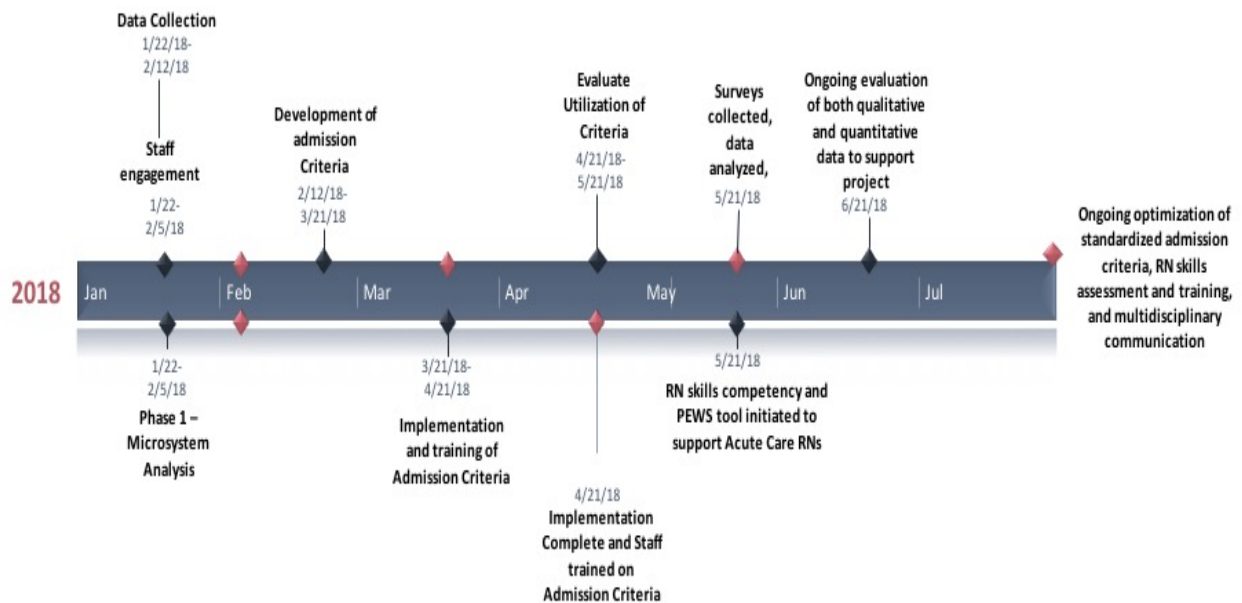




Appendix C

# Admission Criteria for Pediatric Acute Care

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Appendix D

# Financial Analysis

As a Clinical Nurse Leader employed at a hospital:		ED yearly Statistics and daily costs analysis (2017)	
		Variable	Statistic
<ul style="list-style-type: none"> <li>• Employment based on an exempt FTE of 1.0                             <ul style="list-style-type: none"> <li>- Job Title: Clinical Nurse Leader for Pediatric Services</li> <li>- Annualized Projected Salary: \$159,224.00                                     <ul style="list-style-type: none"> <li>▫ Based on San Francisco market rate of \$76.55/hr and 40-hour week.</li> </ul> </li> </ul> </li> <li>• Benefits paid by employer:                             <ul style="list-style-type: none"> <li>- Medical: \$15,785.04</li> <li>- Dental: \$619.20</li> <li>- Vision: 128.76</li> <li>- Basic Life Insurance: \$214.02 (\$205,000.00 coverage)</li> <li>- AD&amp;D: \$29.52</li> <li>- Long Term Disability: \$806.36</li> <li>- 2016 Retirement Plan (Pension): \$7146.42</li> <li>- Social Security: \$10,195.15</li> <li>- Retiree Healthcare Account: \$1,000</li> </ul> </li> <li>• Total Compensation:                             <ul style="list-style-type: none"> <li>- \$195,148.47</li> </ul> </li> <li>• Additional benefits:                             <ul style="list-style-type: none"> <li>- Paid Time Off (PTO): \$22,052.52</li> <li>- Tuition Reimbursement: \$5,000</li> <li>- Extended Sick Leave: \$22,646.12</li> <li>- Education Leave (40 hours per year): \$3,062</li> <li>- Mandatory Education:                                     <ul style="list-style-type: none"> <li>▫ PALS: \$382.75 per year (based on a 2 year renewal)</li> <li>▫ BLS: \$153.10 per year (based on a 2 year renewal)</li> </ul> </li> </ul> </li> <li>• Total Salary/Benefits for 1.0 FTE Clinical Nurse Leader: <b><u>\$248,444.96</u></b></li> </ul>		<b>Total no. of patients</b> 9951 <b>patients Admitted</b> 608 <b>average IOS (minutes)</b> 255 minutes for transfer to acute care pediatric unit. (35 minutes more than organizational goal of 220 minutes per patient) <b>ED Costs per day for staff</b> <ul style="list-style-type: none"> <li>- Physicians \$4800</li> <li>- RNs \$5,040</li> <li>- unit clerk \$528</li> <li>- child life \$640</li> <li>- registration \$528</li> <li>- housekeeping \$480</li> </ul>	
		<b>Total Cost for staff</b>	<b>\$12,016/day</b> Average wait time over the organizational goal of 220 minutes is 35 minutes. Approximate cost per minute for ED staff is \$8.34 (\$12,016/90=\$8.34). 35 x 8.34= \$291.90 additional cost per patient based on an additional LOS of 35 minutes. 291.90 x 608= <b>\$176,964.48</b> per year for potential additional costs for patients who are waiting in the ED to be transferred to the Acute Care Ward. LWBS: 0.6 patients x \$10,000=\$6000 per day. 365 days x \$6,000= <b>\$2,190,000</b>

•Net benefit:

- Developing pediatric acute care admission criteria to improve patient flow from the ED to the ward has the potential to save a significant amount of money.
- Total cost per year of hiring CNL (including initiation of program): **\$248,444.96**
- Potential cost savings per year for reduction of LWBS and LOS is estimated at: **\$2,366,964.48**
- Hospitals Net Benefit: **\$2,188,519.52**

## Appendix E

**Lippitt's Theory of Change**

<b>1</b>	Diagnose the problem and include those who will be affected by a change.
<b>2</b>	Assess motivation for the change and engage in small group discussions about the pros and cons of the change.
<b>3</b>	Assess resources and motivation of those who will need to make change.
<b>4</b>	Choose elements that need change and develop and plan a time line to address the change.
<b>5</b>	Choose those who will lead the change and manage the team dynamics and any conflicts that arise.
<b>6</b>	Maintain the change and revise policies and procedures.
<b>7</b>	Terminate the helping relationship.

(Harris, Roussel, &amp; Thomas, 2014)

Appendix F

Evaluation of Pediatric Acute Care Unit Admission Criteria Survey

**page 1**

The pediatric acute care unit admission criteria/guidelines have been developed by a multidisciplinary team within the framework of Title XXII guidelines. The guidelines have been in effect since March 3/21 with the intention to reduce the length of stay (LOS) to an organizational goal of 220 minutes. Please take a few minutes to evaluate the admission guidelines.

When you contact the staff in this department with questions or problem-solving concerns, the information that you receive is best categorized as:

**1. Do you think the admission guidelines have helped improve patient flow from the ED to the Pediatric acute care unit?**

	Absolutely	Generally	Somewhat Accurate	Not so much	Not Applicable
(a) Nurse (Select one option)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(b) Physician (Select one option)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**page 2**

Are the admission guidelines reflective of the general population for pediatric patients that present to the ED?

**2.**

	Absolutely	Generally	Somewhat	No way	Not Applicable
(a) Nurse (Select one option)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(b) Physician (Select one option)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

If you are a staff RN in the ED, and your patient has been accepted to the acute unit by the pediatric physician, how prompt is it for you to give report for transfer to the Pediatric RN?

**3.**

	Very Prompt	Mostly Prompt	Somewhat Prompt	Not Prompt	Not Applicable
(a) ED Nurse (Select one option)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**page 3**

How would you rate the helpfulness of the admission criteria in understanding what patients are appropriate for the pediatric acute care unit versus the PICU?

**4.**

	Very Helpful	Helpful	Not Helpful	Very Unhelpful	Not Applicable
(a) Nurse (Select one option)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(b) Physician (Select one option)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**page 4**

Do you feel that communication with RNs and physicians has improved since the implementation of admission criteria?

**5.**

	Absolutely	Generally	Somewhat	No way
(a) Nurse (Select one option)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(b) Physician (Select one option)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>