QUALITY IMPROVEMENT STUDENT PROJECT PROPOSAL: REDUCTION IN POST-OPERATIVE INFECTIONS

1. BACKGROUND

Setting- According to the WHO statistics, Pakistan has life expectancy in the low sixties and the mortality rate under the age of five is roughly around 10%. Healthcare issues are still an unaddressed public health concern with only 2% of the country’s GDP being spent on health care. I will focus my efforts starting with Civil Hospital in Karachi, Pakistan, one of the largest government institutions in Karachi that treats all its patients free of charge, is overcrowded, under-funded, and overwhelmed with patients given its annual census of 1 million. I will begin with the General Surgery inpatient service to reduce surgical infection rates, and if endorsed by that department, further efforts for institutional wide efforts will be pursued.

Health Care Service- I would like to focus on the prevention of post-operative wound infections. Haynes et al show that across the globe, using eight pilot sites from low-income and high-income countries, surgical site infections pose as one of the primary complications.

Problem- Recent data suggests that nearly half of all surgical morbidity and mortality could be avoided with the implementation of universal standard care precautions. Bratzler et al proved that administration of antibiotics within 60 minutes prior to incision reduced surgical infection rates by 50%. Haynes et al study on the implementation of the Safe Surgery Checklist found that the designated four low-income sites had surgical site infections ranging from 4.0-20.5%. They also showed that none of the eight different global sites had a 100% compliance rate of administration of antibiotics 60 minutes before incision.
**Barriers to Quality** - Barriers to implementation is the uptake of the initiative by all faculty involved in operations, incentives to comply with the new process, and a shift in culture regarding taking extra measures to ensure quality. Having access to appropriate antibiotics has been raised as an issue in some circumstances where patients must first come in with antibiotics and IV solutions, however, in the case of Civil Hospital, the antibiotics are provided by the hospital free of charge.

2. **THE INTERVENTION**

**Description** - Protocols are designed to provide a standard approach to practice that helps in eliminating the omission of key steps or processes to occur out of order along with the movement away from relying on individual memory. This provides a guiding tool for practitioners to use when undergoing routine processes. This type of protocol simply formalizes the steps and does not interfere with the complexity that comes with the art of surgical practice and management. It can also be used as a tool to foster communication amongst the team in preparing for any anticipated complications.

Having the protocol of using a checklist for pre, peri, and post operative checks allows the team to confirm that all the necessary steps have been completed at each level, including ensuring that antibiotics have been given within 60 minutes of incision- standardizing the practice in order to reduce complications secondary to human errors.

Haynes et al proved results after implementation showed a reduction in mortality from 1.5% to 0.8% and complication rates from 11.0% to 7.0%. These statistically significant outcomes prove the importance of implementing a standardized protocol globally. We need to ensure that every patient receives evidence-based medicine that has been shown to be effective, one of the rules in addressing current quality concerns.
**Aims**- The development of the WHO Safe Surgery Checklist that has been successful in reducing surgical site infection rates by a third (Haynes 2009). The aim of applying this protocol at Civil Hospital is the hopes to see similar reductions in surgical site infections at least by 33%. Having the protocol of using a checklist for pre, peri, and post operative checks allows the team to confirm that all the necessary steps have been completed at each level, including ensuring that antibiotics have been given within 60 minutes prior to incision.

**Process Defect**- The primary process defect is prior to incision there is no current method of ensuring that antibiotic administration has occurred within the last 60 minutes. The current process relies on individual memory of executing the task. Although proper administration occurs most of the time, it doesn’t happen all of the time.

**3. STRATEGY FOR IMPLEMENTATION**

In order to implement the Safe Surgery Checklist, mechanisms must be established to properly train physicians and residents on how to use the checklist. In order to implement a protocol that will alter processes currently in place requires presenting data for reasons why the change is necessary and subsequent simulation training. A trial in the operating room using one enthusiastic surgeon or a key opinion leader is vital, along with getting surgeons and anesthesiologists to work together as a team, communicating on all aspects of the patient’s care. This cooperation among clinicians is one of the simple rules described in the Institute of Medicine’s Quality Chasm report. The checklist is not only a protocol to reduce human error, but is also an effective communication tool that enhances physician and nurse communication.

**Measures**- Measures used to evaluate the intervention are both on the process and outcome level. An appropriate process measure is to evaluate the compliance in using the checklist during all operations and ensuring that each component of the checklist is addressed. A process measure that could be used is one
that would calculate the number of times the checklist is used over the total number of operations performed at Civil Hospital. This would require incorporating the checklist completion in the patient’s medical record so that proper recording is also ensured.

Since I am focusing mainly on reducing surgical site infections, an outcome measure that can be used is calculating the number of surgical site infections over the total number of operations in a given time frame that the checklist is trialed.

My goal is to be an observer over one month’s time, recording these measures and presenting them to the surgical staff with hopes of a significant reduction in infection rates over that time period. Using the Institute of Healthcare Improvements PDSA cycles (plan, do, study, and act), we can work with the surgical teams to evaluate what aspect of implementing the checklist worked and how we can improve its integration and address the barriers that we find through the study and apply it again.

**Barriers to Implementation**- I anticipate that the greatest barrier to implementation is asking physicians to change their current style of practice. As a growing body of evidence shows the effectiveness of the checklist globally, it is imperative that surgeons and anesthesiologist adapt to the changes in the field, and presenting data will be the greatest leverage in persuading surgeons to change. Most importantly, I’ve learned through my experiences that generating the greatest “buy-in” power is through endorsement from key opinion leaders and head managers of hospitals and surgical departments. Getting the superintendent of Civil Hospital on board changed the enthusiasm of other physicians to partake in this initiative.

Surgeons are currently not paid for performance, solely by the number of surgeries they perform. Including an increase pay incentive or a decrease in malpractice insurance can help increase likelihood that the checklist will be used. Also, limiting reimbursements for surgical site infections will also increase willingness to adopt such a protocol.

**Cost Implications**- Given the checklist does not require any additional resources since it can be performed using a single sheet of paper, other cost implications should be considered. Staff time is not
considered a cost since the total time it takes to run through the checklist is less than 2 minutes. However, if formal training will be done, then time and training should be considered as up front costs but could be limited to a 2-4 simulation training on quality improvement in the OR with certification. Funding should come from hospital administration if the training results in reductions in malpractice insurance. If the institution anticipates incorporating the checklist into the patient’s medical record, a template should be placed in the electronic record and resources should be allocated to those who will be recording data regarding compliance and efficacy.

**References:**


