

EDUCATIONAL PREVENTION PROGRAM OF SURGICAL SITE INFECTIONS (SSI) AT A METROPOLITAN PEDIATRIC HOSPITAL

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ABSTRACT

- ❖ **Background:** A surgical site infection (SSI) is an infection that occurs after a surgery in the part of the body where it was performed (Centers for Disease Control and Prevention [CDC], 2018). These infections can be superficial, involving the skin only, or may be more serious and can reach tissues under the skin or organs. Studies have found that SSIs have been one of the most common types of healthcare-associated infections (HAI), accounting for 31% among hospitalized patients (CDC, 2018). The estimated annual incidence of SSIs in the U.S. ranges from 160,000 to 300,000, and estimated costs include \$3.5 to \$10 billion annually (Science Daily, 2017). SSIs are associated with increased morbidity and mortality, increased length of stay, and increased health care costs.
- ❖ **Purpose:** To reduce surgical site infections by improving patient education on preoperative hygiene practices for the day before surgery in a metropolitan pediatric hospital.
- ❖ **Methodology:** A microsystem analysis was conducted prior to creating the SSI Prevention Assessment Audit Tool. SSI Prevention Assessment Tool Audits were distributed to the preoperative nurses to assess the patients' cleanliness prior to surgery. Data collection was to be performed pre-and post-implementation of the educational pamphlet of preoperative bathing prior to surgery. Data analysis is to be performed to evaluate the effectiveness of the educational pamphlet.
- ❖ **Results:** 60 SSI Prevention Assessment Tool audits were collected from June 4, 2018 to June 28, 2018. Of these 60 surveys, 20 were labeled as "N/A" and were omitted from the data analysis. This left a total of 40 audits for the total data collection. Overall, 28 patients were clean and 12 patients were dirty. This meant that of 40 patients, 70% were clean and 30% were dirty.
- ❖ **Conclusion:** Currently, the CNL students are waiting for the approval of the educational pamphlet by the Patient and Family Education Committee. Once post-implementation data is collected, the CNL students will be able to evaluate the effectiveness of the Preventing Surgical Site Infections at Home.

LITERATURE REVIEWS

- ❖ According to the Centers for Disease Control and Prevention Guideline for the Prevention of Surgical Site Infections, patients should shower with an antiseptic agent (antimicrobial or non-antimicrobial) at least the night before the scheduled surgery (2017). The guidelines were developed based on a systematic review of MEDLINE, EMBASE, CINAHL, and Cochrane Library and are now considered accepted practice for prevention of SSI.
- ❖ Tartari et al. (2017) believed that empowering patients with information and education about SSI prevention may be an important role for the implementation of recommendations.
- ❖ According to Badarudeen & Sabharwal (2008), patient education materials readability should be lower than a sixth-grade level but their findings showed that only 2% of the pediatric orthopedic patient education materials were under the sixth-grade reading level.
- ❖ According to a study by Zellmer, Zimdars, Parker, & Safdar (2014) there is much improvement needed for patient education materials regarding SSIs. The study conducted an environmental scan of materials for patient education on SSIs. Findings of the study suggest that materials available need to be optimized from the patient's viewpoints.
- ❖ According to a study by Anderson, Ottum, Zerbel, Sethi, Gaines & Safdar (2013), it was found from surveys of 50 surgical patients that 26% of them believed that education on SSI prevention should be improved with more frequency and educational materials. 40% of participants did not recall receiving an educational leaflet about SSIs. The study concluded that better educational interventions are needed to increase patients' awareness and engagement in preventing SSI.
- ❖ According to Bhaveen, Kapadia, Peter, Julio, & Michael (2016) a study of 3717 individuals who went into the hospital for a total knee amputation, 991 patients used chlorhexidine cloths and 2726 patients did not. Patients received a thorough education course on proper hygiene and results of lack of compliance. In conclusion the use of chlorhexidine cloths resulted in a reduction of SSI rates more than soap and water. Soap and water showed a reduction of SSI rates but not a significant difference compared to chlorhexidine wipes. These findings play an important role for the development of future SSI protocols.

METHODOLOGY

- ❖ This macrosystem is a 334-bed pediatric facility that provides tertiary and quaternary patient care to over 2 million children across four counties in Southern California. Patients range from neonates through the age of 21 years with certain diagnoses up to the age of 25 years. The microsystem observed for this study comprised of the preoperative unit that operates 18 beds.
- ❖ A microsystem assessment was performed using the 5 P's (Purpose, Patients, Professionals, Processes, Patterns)
- ❖ A root cause analysis (RCA) was conducted to identify causes of SSI in pediatric patients and barriers to effective hygiene practices.
- ❖ Audit tools were distributed to OR nurses on the preoperative unit to gather baseline data on patients hygiene before surgery. Data is based on nurses' perception of visual cleanliness observed through patients' clothes, skin, hair, nails, alcohol pad at IV site, and if they received a bath 12 hours prior to surgery or not. This audit tool is used pre- and post-implementation of the educational prevention program to evaluate effectiveness of the educational prevention program on SSI.
- ❖ Two educational tools were developed to address the need of patient education and engagement on SSI.
 - Educational Pamphlet: includes information about SSI, pediatric preoperative bathing instructions, and other hygiene practices
 - Preoperative Phone Call Script: consists two questions and bathing instruction for the PAT nurses to deliver

SSI Prevention Assessment Tool Results

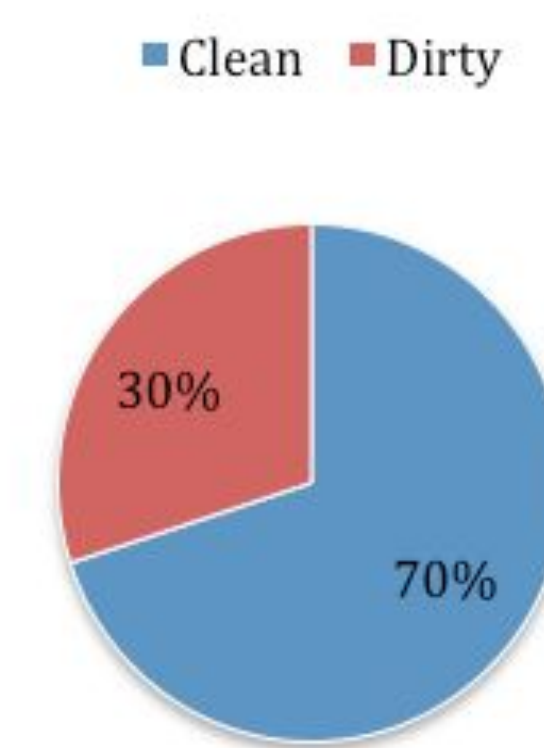


Figure 1: Breakdown of percentages for patients considered "clean" and "dirty".

SSI Prevention Assessment Tool Total Results

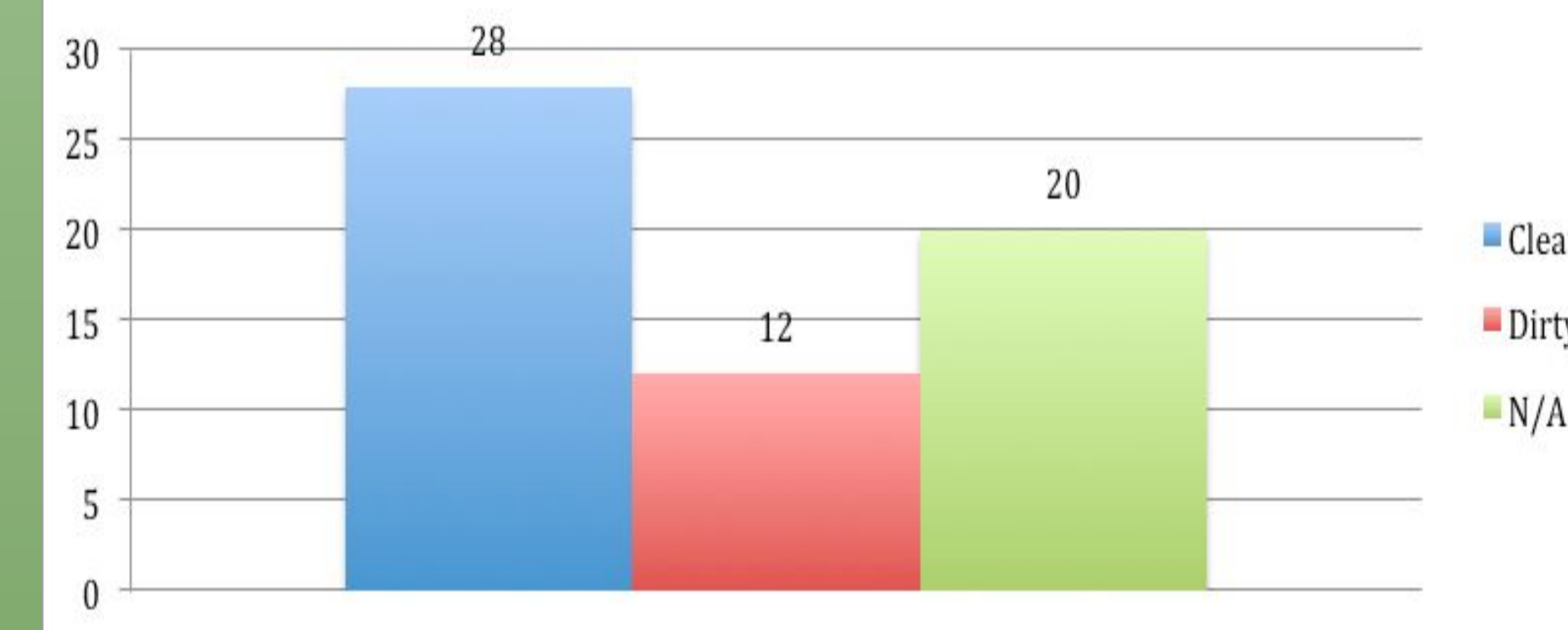


Figure 2: Total results received for "clean", "dirty" or "N/A"

RESULTS

- ❖ There were 60 audits collected over a month-long period.
- ❖ The definition of "clean" was defined by the nurse circling "YES" for the supplemental question stating, "Did the patient receive a bath/shower within 12 hours?" prior to surgery and circling "NO" for all the categories asking for "Visible Dirt" on the areas of the patient's body. The definition of "dirty" was defined by the nurse circling "YES or NO" for the supplemental question stating, "Did the patient receive a bath/shower within 12 hours?" prior to surgery and circling "NO or YES" for all the categories asking for "Visible Dirt" on the areas of the patient's body.
- ❖ Patients who had showered within 12 hours but still had visible dirt were considered "dirty," which accounted for 6 patients. Patients who had not showered but had no visible dirt were considered "dirty," which accounted for 2 patients. Patients who had not showered and had visible dirt were considered "dirty," which accounted for 4 patients.
- ❖ Therefore, the results from the pre-implementation audit tool data showed 28 "clean" patients and 12 "dirty" patients. Any audits with an "N/A" in any section was omitted from the data analysis. Thus, 20 audits were omitted and only 40 audits were used in the data analysis. 30% of the patient population that was considered "dirty" prior to surgery.

COST ANALYSIS

- ❖ The Global Guidelines for the Prevention of Surgical Site Infection (2016), stated that patients spend more than 400,000 extra days in hospital at a cost of an additional US \$10 billion per year. In a study conducted at the Veterans Affairs (VA) hospital system, 1,756 (3.2%) patients contracted an SSI (Schweizer, Cullen, Perencevich, & Sarrazin, 2014). The average cost for a patient who had undergone surgery and did not contract an SSI was \$31,580 (Schweizer et al., 2014). While, the average cost for a patient who underwent surgery and contracted an SSI was \$52,620 (Schweizer et al., 2014). This makes the relative costs 1.43 times higher for patients with an SSI compared to patients without an SSI (Schweizer et al., 2014). The results of the study found that by reducing SSIs, the VA hospital system would save about \$6.7 million per year (Schweizer et al., 2014). After meeting with the clinical advisor, the CNL students were told the implementation of the educational pamphlet would not add an additional cost to the hospital's preoperative educational packet. Thus, possibly saving the hospital more money without the extra cost of educational materials.

LIMITATIONS

- ❖ The patient population consisted of both inpatient and outpatient. Lack of control over the patient population made it difficult to determine which patient had access to methods of hygiene prevention prior to the preoperative unit.
- ❖ Opinions regarding the cleanliness of a patient are subjective. Even though the preoperative nurses stated that most patients come dirty to the unit, results indicated that majority of them were found to be clean.
- ❖ The nurses seemed confused by the directions in the SSI Prevention Assessment Tool audits. Several returned surveys had hand-notes written as well as scribbles and arrows indicating what they meant to circle.
- ❖ Several surveys were discarded due to lack of completion. This resulted in using a smaller sample size of the population.

CNL & NURSING RELEVANCE

- The Clinical Nurse Leader students demonstrated the following competencies:
- ❖ **Organizational and Systems Leadership:** the CNL students assumed a leadership role in implementing patient safety and quality improvement initiatives within the context of the interprofessional team using effective communication skills.
 - ❖ **Quality Improvement and Safety:** the CNL students used evidence-based research and trends analysis to quantify the impact on quality and safety.
 - ❖ **Interprofessional Collaboration for Improving Patient and Population Health Outcomes:** The CNL students were advocate for the value and role of the professional nurse as member and leader of interprofessional healthcare teams.
 - ❖ **Clinical Prevention and Population Health for Improving Health:** The CNL students integrated clinical prevention and population health concepts in the development of culturally relevant and linguistically appropriate health education, communication strategies, and interventions.
- Nursing Relevance:** nurses play a critical role in reducing surgical site infections. As front-line health providers, they could provide important patient education on the recommended guidelines for hygiene practices for prevention of SSI. The nurses at the hospital are the ones responsible for distributing SSI Educational Pamphlets and conducting phone call reminders and instructions prior to their surgery appointments. (AACN, 2013)

FUTURE DIRECTIONS

- ❖ Educational pamphlets are going through an approval process to further educate the parents on proper hygiene techniques for their children pre operatively.
- ❖ Once the educational pamphlets are approved and utilized for 3 months the same audit tool will be redistributed to reevaluate the SSI rates with the implementation of the educational pamphlet.
- ❖ After the 3 month period, audit tools will be collected and reevaluated to further assess the outcomes and to evaluate if goals were met.

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