

Therapeutic Nursing Intervention

Eliezer Urbano

Old Dominion University

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The field of nursing is involved the cleanliness of the patient and environment. Cleanliness is of particular importance in a surgical inpatient setting because of the possibility of surgical site infection (SSI). SSIs are often caused by patient's natural flora from contamination of another site of the body, or from the environment. This can become especially dangerous because hospital environments may contain the antibiotic-resistant strains of the virulent *Staphylococcus aureus* (Gould, 2012). There are varying degrees of SSI, ranging from the superficial infection on the skin to the deep infection to the tissue. Superficial infections can cause discomfort and extra stress for the patient, deep infections can cause readmission or at worst, death (Gould, 2012). SSIs are one of the most preventable hospital-acquired infections, and it can be managed with appropriate preparation on the part of nursing (Leaper, Tanner, Kiernan, Assadian, & Edmiston, 2015).

Mary Immaculate Hospital is one hospital that caters to both general medical care patients and surgical patients. It has a large clientele for orthopedic surgeries and it also draws bariatric patients for weight loss surgery in the Virginian peninsula area. The orthopedic cases are so numerous such that a floor of beds caters specifically to that population. Thus, SSIs are a persistent threat for the hospital because of the volume of surgical patients that it sees.

Unfortunately, the hospital has been seeing a rise in SSI as of late.

Surgical Site Infections in Mary Immaculate Hospital

Mary Immaculate sees many orthopedic surgeries daily, both elective and emergent. Patients come with the expectation that the surgery will go well, especially when the surgery was elective. But when one understands the hospital environment and the natural bacteria living on a person's skin, infection becomes a threat. SSI will at least increase health care costs, and at

worst, cause death (Alexander-Magalee, 2012). If SSI is not suppressed, then health providers cannot say that a patient is receiving quality care. Nurses manage the patient environment, and thus becomes responsible for the cleanliness and sterility of the environment. They also monitor for signs of infection in the post-op period. SSIs are not usually immediately apparent after surgery, but they can manifest up to one year after surgery (Alexander-Magalee, 2012). Mary Immaculate Hospital's policy and procedure manual, written by Malliarakis (2010), likewise defines SSI as "an infection occurring within 30 days of an operation not involving surgical implants and within one year of those involving surgical implants."

The threat of SSI is ever-present, but Mary Immaculate has seen an increase in SSI incidents in the course of the past year. There are both subjective and objective accounts. Discussion with nurses who care for orthopedic patients on the surgical and general medicine floors had revealed that there seemed to be an increase in the post-operative infection diagnosis. One gastrointestinal physician had even expressed that there seemed to be more infections affecting his patients. Formally, the hospital tracks SSI for orthopedic surgery through audits for hospital-acquired infections (see Appendix). The audits support the subjective accounts in that SSI has steadily increased since July 2014. Nearly all audited cases were deep tissue infections. One multi-factorial case involved a morbidly obese female with a urinary tract infection who underwent an evacuation and incision and drainage procedures after her original lumbar decompression and fusion. Cultures from her operative site were positive for methicillin resistant *Staphylococcus aureus* (MRSA). Another case with an 87 year old female involved the patient refusing to perform pre-procedure nasal prep and had lack of bathing beforehand. Her SSI infection also involved MRSA and her treatment required an incision and drainage, a peripherally inserted central catheter insertion, and a 40-day course of vancomycin. This data

and accompanying examples demonstrate that SSI have serious implications for both the patients and the hospitals.

Current Practice at Mary Immaculate

The mentioned examples and audit help to clarify points that may need improvement in the current practice at Mary Immaculate. The formal practice and informal practice contrast with what evidence-based practice recommends. There are three points of concern: MRSA detection and precautions, skin cleansing, and SSI surveillance. Many of the SSI cases involve an infection of *Staphylococcus aureus*, and within those cases, MRSA. Literature suggests using contact precautions with gowns, gloves, and handwashing when a patient is known to have MRSA (Anderson, Johnson, & Wendt, 2015). This helps to break the chain of infection and decrease the chance that a patient with MRSA infects a surgical patient without MRSA pre-operatively. Formally, Mary Immaculate supports contact precautions upon every room entry. However, compliance is less likely. Nurses may believe that gowning is not necessary when adjusting equipment in a room and not directly touching a patient. Patients with MRSA also tend to be higher-acuity patients and an emergent event may cause the nurses to forgo gowning in order to save time. These actions endanger the surgical patient, especially if the surgical patient is not the MRSA carrier.

The next area is skin cleansing. This involves the skin pre-op and post-op. One of the above examples involved a patient who refused to complete the nasal swab as part of the skin-prep. There are also situations in the audits where patients did not complete bathing for three days prior to the procedure. Literature recommends bathing and chlorhexidine wipe-down prior to surgery in order to reduce bacterial load on the skin (Spruce, 2014). Mupirocin-based nasal swab has also shown to be effective in decreasing MRSA SSI (van Rijen, Boten, Wenzel,

Kluytmans, 2008). Mary Immaculate's policies state that chlorhexidine with alcohol is the hospital's antiseptic of choice prior to procedure, and that patient showering, washing of surgical site prior to admission or immediately before applying antiseptic should be performed (Garrett-Harris & Massey, 2010). The hospital has also implemented mupirocin nasal swab during Summer 2015. On the floor, nurses perform the chlorhexidine wipe and nasal prep during the night before to the procedure if the patient had been admitted prior to the surgery, regardless if the patient had bathed or not. But interestingly, patients who had extended stays after surgery reported that they haven't bathed since surgery. The skin's bacterial load can increase during that time. While staff compliance might be consistent, there may also be a problem with skin cleanliness after the procedure. Also, the hospital's audit does not indicate why the patient refused a nasal swab, but there is the possibility that it is a patient education reason.

A third identifiable point is SSI surveillance and communication. Surveillance techniques involve the ability to assess for SSI signs and then communicate them to the physician (Young, Reese, Knepper, & Price, 2015). However, communication breakdown may contribute to the incidence of SSI (Leaper, Tanner, Kiernan, Assadian, & Edmiston, 2015). Mary Immaculate has annual computer-based education sessions about SSI, but it does not formally indicate what signs are important enough to inform a doctor about. Therefore, relaying the information is dependent on the nurse's skill level and knowledge. There may be weakness in communication skill on the floor: many of the nurses in Mary Immaculate's surgical and medical units have less than two years of experience. Newer nurses naturally try different settings and move on to different units while more newly-graduated nurses take their places. It can be difficult to maintain the group's knowledge base.

Possible Interventions

Interventions to combat SSI can involve the educational level and the practical level. Presented here are three possible interventions. The first involves contact precautions and MRSA. Literature suggests that MRSA screening occur as early as possible in an encounter so that nursing staff can begin appropriate precautions. If the surgical patient has MRSA, then appropriate prophylaxis may begin (Harbarth et al., 2008). Noncompliance from nurses may be mitigated by appropriate education with simulation and reinforcement of germ theory knowledge (Anderson, Johnson, & Wendt, 2015). A second intervention could be in the bathing culture of the patients. Patients would need to be educated about bathing prior to surgery and reinforced about SSI and cleanliness through all phases of care. Since Mary Immaculate patients have reported not bathing for an extended period of time after surgery, bathing can be reinforced by the nurse. Right now, post-op bathing does not have sufficient evidence to cause or prevent SSI (Toon, Sinha, Davidson, & Gurusamy, 2015). However, that does not mean that post-op bathing doesn't have the potential to decrease SSI. Chlorhexidine wipes decrease the bacterial load on the skin (Afonso, Llauro, & Gallart, 2013). If patients are bathed with chlorhexidine wipes post-op, then contamination from other parts of the body may become less likely. A third intervention could strengthen the SSI surveillance of the nursing staff. Research says that surveillance improves with increased lab interpretation skill and ability to communicate with two or more care providers (Young, Reese, Knepper, & Price, 2015). Some parameters that nurses can be taught and reinforced with nurses are the white blood cell count, erythrocyte sedimentation rate, and c-reactive protein, which all detect inflammation (Alexander-Magalee, 2012). Nurses can also be taught to report about visual signs of SSI, such as induration, increased warmth, fever more than 101 degrees Fahrenheit, prolonged erythema, and foul drainage. The education could be taught during the onboarding process for new nurses and reinforced

periodically afterward. That way, newer nurses would be supplied with adequate knowledge and older nurses' knowledge would be refreshed.

All three interventions seem to have potential to decrease SSI, but there may be difficulty in their implementation. Quick screening for MRSA and precaution will decrease MRSA SSI, but that would be specific to MRSA infections. SSI can be caused by other infectious agents. Training and reinforcement may be time consuming. For post-op bathing, there may be a problem with compliance. Finally, onboarding education and training for SSI could also be time consuming and it doesn't guarantee staff retention. Of the three, perhaps the easiest to implement would be the post-op chlorhexidine baths. Giving baths does not require special skills or extra training, and mostly demands a change in mindset. The baths also provide an opportunity for nurses to talk with patients about SSI prophylaxis.

Identification of a Potential Research Study

Intervention with post-op chlorhexidine baths may be an opportunity for a study. Evidence for post-op bathing may not be strong yet, but that is because a lack of studies (Afonso, Llaurodo, & Gallart, 2013). Data could be collected with the facility and documented. The hypothesis would be the following: if patients are given chlorhexidine wipe baths after surgery, then the incidence of SSI should decrease. Implementing the change would require informing the staff of a date of when post-op bathing will begin. Afterwards, staff would need to hold each other accountable for performing the post-op bath. In the meantime, data for cost-benefit analysis should also be tracked.

Summary

Mary Immaculate Hospital has been having an increase in SSIs. This clinical problem affects both the health and outcomes of surgical patients as well as the hospital's

financial bottom line. The causes of the SSIs may be tracked to the incidence of MRSA, the bacterial load of the skin, and the surveillance skill of the nurses. Nurses might not be compliant with MRSA contact precautions, which cause MRSA SSIs; the bacterial load on the skin may be high prior to or after surgery, thus causing contamination of the site; or the staff's knowledge base may not be strong enough to detect SSI. Possible interventions aim at educating staff. Rapid MRSA detection and enforcement of precautions could decrease SSI, but the intervention is limited to MRSA. Strengthening the knowledge base of the nursing staff would be beneficial, but the nurse staff will always change. It could take more time to keep SSI knowledge consistent. Perhaps the most immediate and potentially effective intervention would be to decrease bacterial load on the skin through chlorhexidine wipe. Considering that post-op bathing has not been well-tested, the hospital may be able to contribute to the effectiveness of the intervention.

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Name: Eliezer Urbano

Signature: Eliezer Urbano

Date: 10/4/15

**Therapeutic Nursing Intervention
Grading Rubric**

Content Area	Comments	Points
Introduction <ul style="list-style-type: none"> • including clear discussion of practice setting • nursing practice issue to be discussed (15) 		15
Clinical Problem clearly defined <ul style="list-style-type: none"> • why it is a problem in this practice setting • why chosen for this discussion • Specific examples used (15) 		15
Current Practice <ul style="list-style-type: none"> • Formal mechanisms (present or absent) • Informal mechanisms related to the problem (present or absent) • Rationale for discrepancies between the formal and informal 		15

<p>method</p> <ul style="list-style-type: none"> Literature to support formal and informal mechanisms (15) 		
<p>Nursing Interventions</p> <ul style="list-style-type: none"> 3 Interventions identified which are not currently in practice At least one intervention is from a primary research article, or evidence based practice literature Consider an intervention that reflects an understanding of the culture. Interventions are based on current literature and could be incorporated into your environment. <i>This is not just a review of literature, it is to be applied to your practice setting.</i> A specific strategy to implement (15) 		15
<p>Use of literature support</p> <ul style="list-style-type: none"> Total 6 sources of professional literature At minimum 2 sources are primary research, or evidenced based practice literature Analysis of relationship between clinical problem, research support and other literature (15) 		15
Summary (5)		5
APA format (10)		10
Grammar/Syntax (10)		10
Grade	Excellent paper. I really enjoyed reading this!	100

