Risk Assessment and Reduction Rationale

Patients undergoing fusion surgical procedures were assessed for patient risk in relation to preparation for surgery. Surveillance data of surgical site infections (SSI) noted trends in patient risk factors in relation to the preoperative assessment. The areas of focus include: increased BMI, elevated A1C, smoking history, poor nutrition, patient optimization for surgical intervention preoperative vs patient's presenting urgently.

Other risk factors associated with the surgical procedure include: the level of surgical intervention, antimicrobial selection and timing, extended time of drain placement, extended use of post operative antimicrobial therapy, EBL, irrigation, and other various elements.

Preoperatively, scheduled surgery patients present to the Pre-Operative Medical Clinic (POMC) for a health assessment. In POMC an overall health and skin assessment was completed, medical records reviewed and, preop work-up included lab tests including an A1C, EKG, preoperative nasal screen for MRSA/MSSA, nutritional assessment, and BMI. Patient education related to the procedure was provided. If the patient's A1C is above 8, the POMC provider notifies the surgeon who determines whether to proceed with the procedure. Patients who test positive for MRSA/MSSA will receive decolonization including Mupirocin in addition to CHG preoperative bathing.

At the time of pre-registration, the patient receives education on smoking cessation, BMI reduction, nutrition screening, SSI prevention measures, diabetes education (if applicable), ERAS and I-cough protocols, equipment needs, and discharge planning.

Analysis from FY23 surveillance data noted the following opportunities and action items to optimize the patient preoperatively:

• POMC pre op visit: 74%

• Diabetes A1C >8: 9% of patients overall, 60% of the diabetic patients had an A1C >8. Patients are referred to the Diabetes Center for control. The hospitalist and surgeon are informed. The hospitalist takes the lead on managing glucose levels before surgery.

• BMI: 26% of SSI's had a BMI >40 and 5 with a BMI >50. Patients are counseled for weight management, but the associated barriers present few options to manage this risk.

• Current smoker: 29% - smoking cessation offered. Patients to refrain from smoking weeks prior to surgery.

• CHG bathing received at least 5 days of CHG bathing: 44%. Ensure CHG bathing is completed pre op or continue in the post op phase.

• MRSA/MSSA Screen: 7%, MRSA+, 4 MSSA+ and 1 MRSA and MSSA+. Two patients were not decolonized. Action plan – ensure decolonization protocol is completed or complete postoperatively. An order set was developed for this plan. Staff education was provided on the decolonization protocol.

• Apply iodophor nasal swab to patients who screen negative. 100% completion.

Perioperative Analysis, FY24 surveillance data of SSI Events:

• Pre-op steroid: 59% received; recommendation to suspend preop steroids, exception cervical cases if ordered by the surgeon.

• Traffic control remains an opportunity. Vendors were present in 94% of cases, 21% had 3 or more and 1 surgeon had 5 vendors present. 43% of cases had 15 or more staff in the operative procedure.

• Post op antibiotics – 41% received post op antibiotics >24 hours with up to 10 doses x4, 11-15 doses x7, and 16-26 doses x11 patients. Recommendation to suspend post op ATX within 24 hours post op unless infection is present.

• Hair removal - not recommended unless interferes with the procedure.

• Antibiotic timing - recommended to administer at 30 minutes to 1hour of incision time; Vancomycin administer 1-2 hours of incision time. Anesthesia was addressed and developed an action plan for timely administration.

• Antibiotic redosing – within 4 hours of the procedure; criteria was met.

• Drains were present in 91% of patients, with 73% left in place >5 days, some with minimal output. Timely removal of drain is recommended.

• EBL- 44% of patients had >500ml and 1 patient had 3500ml of blood loss. 38% received PRBC's. The patient with the high volume of blood loss received multiple units of PRBC, FFP and the cell saver volume.

• Irrigation: 50% received irrigation with GU. Practice changed to saline irrigation only or betadine solution for posterior case.

• Procedure duration : 54% of cases had a duration of >4h with a maximum of 9 hours 14 minutes.

Pathogen trends noted Staph aureus x8, MRSA x8, Pseudomonas x7, coagulase negative Staph x6, Enterobacter cloacae x5 and Klebsiella pneumoniae x4 as the most common pathogens associated with the SSI's. An environmental assessment was completed to identify a potential source – none noted.

46% of patients were discharged to a LTC/Rehab Facility.

Risk reduction methods were implemented for each opportunity.

I notify members of the surgical/perioperative teams, POMC, and the post op unit of patients who develop a SSI. A task force with the key stakeholders was developed to conduct a drill down process to identify deficiencies and if the standard of care was met. Members of the team include: OR team and manager, pre and post op locations, POMC team, nurse navigator, SPD manager, surgeon, post operative unit, NP, and the Quality Manager for neurosurgery. Action items are identified and brought to the Infection Prevention Committee, the Spine Division Meeting and Executive Council. Action plans are developed to address opportunities. Ongoing monitoring and education is provided. Practice changes are recommended based on research and best practices. Other members of the healthcare team, Anesthesia, are engaged to improve the preoperative antibiotic timing and steroid utilization.

Data is presented to the key stakeholders of the Spine Division and EC to address trends, surgeon opportunities, and to ensure the standard of care is met. SSI data is reviewed at the Infection Prevention local and system Committee, Quality Council, and Patient Safety Committees. Decision for changes in patient management are recommended and referred to the Spine EC for decision making.