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Surgical Site Infection Reduction Through the Use of Double Gloving in Surgery

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Background/Problem:

Surgical site infections (SSIs) are a safety clinical priority that has the potential to affect all surgical patients, whether inpatient or outpatient, and is an important nursing practice issue to address since maintaining excellent sterile technique and standards of practice in the perioperative setting is integral to reducing SSIs. Working in the perioperative area and witnessing various practices triggered an interest to review best practice recommendations aimed at reducing SSIs to provide the best possible care aimed for the surgical patient.

PICOT:

P- (patient population/patients of interest): Surgical Patients
I- (Intervention): Double gloving during surgical procedures
C- (Comparison): Single gloving during surgical procedures
O- (Measurable outcome): Reduction in SSIs
T- (Time frame in months): 6 months

Practice Question:

In surgical patients, does double gloving during surgical procedures compared to single gloving decrease the amount of surgical site infections over 6 months?

Evidence Summary: Strength and Quality of Evidence :

* **Al Maqball, M.A. (2014). Level 1, High Quality.** 3 randomized control trials and studies from 9 categories, 14 trials included a combined sample size of 8,885 gloves: was a 9% perforation rate when single gloving compared to 2% perforation rate of the innermost glove when double gloving. 19-25% increase in perforation rate in gloves that were worn for more than 2 hours.

* **Guo, Y.P., Wong, P.M., Li, Y., & Or, P. P. L. (2012). Level 1, High Quality.** Double gloving vs single gloving has yielded the following: Double gloving inner glove perforation rate of 0.5% versus 7.4% in single glove.

* **Rozario, D.(2018). Level 1, High Quality.** Double gloving has been shown to reduce the incidence of SSIs as part of a bundle of measures used together during orthopedic and general surgery.

* **Storch-Borges, E., Ferreira, S. & Cruz, M. (2016). Level 1, High Quality.** Implant procedures including the placement of external ventricular drainage, a 50% reduction in infections was noted when double gloving and glove changes before handling the implanted device was used.

* **Tao, L.T. & Basnet, D.K. (2014). Level II, Good Quality.** Glove changes every 1-2 hours and after draping shown to reduce contamination rates during all types of surgery, including orthopedic surgery where perforation rates are higher.

Database Search Strategy:

- Full text
- Selected publication dates less than 10 years old
- Subject, title or author search
- Truncation
- Academic or scholarly peer reviewed journals
- Selected key terms from PICOT

Recommendations for Change Based on Evidence Synthesis:

The evidence supports double gloving and glove changes at timed intervals and prior to handling implants as a component of practice that results in a reduction in microbial contamination and decrease in SSI rates. Despite this evidence, there is not consistency with the practice by physicians, nurses and ancillary staff. SSI reduction is of the highest priority in the perioperative department and while ultimately the prevention of SSIs is a multi-departmental, collaborative effort, double gloving during surgery is one way that we can work to achieve this patient safety goal.

Recommendations:

- ALL surgeons and scrub personnel double glove during surgery except when tactile issues arise.
- All scrubbed personnel should perform outer glove change prior to the handling of instrumentation (after draping).
- In the case of procedures that run longer than 1 hour, the surgeon and scrub personnel should perform glove changes at one-hour increments.
- For all implant cases, outer glove changes should be done before the handling of implant.

Keywords:

- Surgical site infections, SSI reduction, double gloving v. single gloving, surgical site infection prevention/protocol

Translation of Evidence into Practice:

- The current policy on the gloving during surgery should be updated to reflect the recommendations for change.
- Educate all physicians, nursing and ancillary staff on updated policy.
- Circulating nurses will be responsible for timing surgeries at one-hour increments and on opening of implants will remind scrubbed staff to perform glove changes and ensure that glove changes occur.
- Tracking of SSIs from the time these changes are implemented for a time period of 6 months (and quarterly thereafter) is important to determine the effectiveness of these patient safety measures and the possible reduction in SSIs.

Evaluation of Practice Change/Outcomes:

This practice is under review for policy change, education, implementation and evaluation. Circulating Nurse will track double gloving compliance and outer glove changes with implants and long cases. Compliance with process changes will be reported monthly for 6 months, then quarterly and correlated with SSI rates.

