Lehigh Valley Health Network LVHN Scholarly Works

**USF-LVHN SELECT** 

#### Implementation of a Surgical Site Infection Bundle at at the LVHN Children's Hospital

Joseph Wasselle USF MCOM- LVHN Campus

Follow this and additional works at: https://scholarlyworks.lvhn.org/select-program

Part of the Medical Education Commons Let us know how access to this document benefits you

#### Published In/Presented At

Wasselle, J. (2018, March). *Implementation of a Surgical Site Infection Bundle at at the LVHN Children's Hospital.* Poster Presented at: 2018 SELECT Capstone Posters and Presentations Day. Kasych Family Pavilon, Lehigh Valley Health Network, Allentown, PA.

This Poster is brought to you for free and open access by LVHN Scholarly Works. It has been accepted for inclusion in LVHN Scholarly Works by an authorized administrator. For more information, please contact LibraryServices@lvhn.org.

# Implementation of a Surgical Site Infection Bundle at at the LVHN Children's Hospital

## Joseph Wasselle, Mentor: Marybeth Browne, MD Lehigh Valley Health Network, Allentown, PA

#### Introduction

Surgical site infections (SSI) are a significant cause of patient harm both during and after hospitalization. The postoperative cost of a patient with a surgical site infection is much greater than the cost of patients without. In efforts to reduce healthcare costs and patient harm, comprehensive bundles have been used at other pediatric surgery programs with measurable reduction in SSI in high-risk surgeries.

Five evidence-based components comprised the SSI bundle: Completion of pre-operative bathing, avoidance of razors for hair removal, use of active perioperative warming (forced air warmer), use of alcohol-containing skin preparation, and proper antibiotic use. Insufficient data was recorded for preoperative bathing – 52% of patients had missing data in the patient chart. There was 100% compliance with avoidance of razors for hair removal. 36% of patients were actively warmed during the perioperative period with the remaining 64% receiving passive warming. Alcohol-containing skin prep solutions were used in 76% of patients. Antibiotics were timed appropriately in 100% of cases where prophylactic antibiotics were indicated.

#### Results

Surgical Site Infection Bundle LVHN Children's Hospital

Five evidence-based interventions have been identified in an effort to reduce the rate of surgical site infections at the LVHN Children's Hospital for both inpatient and outpatient surgical procedures. These guidelines shall be universal for pediatric

## **Problem Statement**

Do current preoperative protocols align with an evidence-based bundle to prevent SSI in pediatric patients? operations and may be supplemented with additional interventions if indicated.

- 1. Preoperative shower or bathing<sup>1</sup>
  - \* All patients should have a full-body shower or bath the night before and the morning of a planned surgical procedure.
  - \* Hospitalized patients should also undergo full-body bathing to whatever extent possible (including bathing wipes if unable to shower/bathe).
  - \* Patients may use any soap or solution that they prefer no specific solution has been shown to reduce SSI more than another.
- 2. Do not shave prior to operation<sup>2</sup>
  - \* Removing hair should be avoided if possible.
  - \* If indicated, use clippers in the operating room to remove hair.
  - \* Never use a razor to remove hair preoperatively.
  - \* Patients should be informed to refrain from shaving at least 1 week prior to planned procedures.
- 3. Active perioperative warming<sup>3,4</sup>
  - \* Patient temperature should be kept at or above 36.1 degrees Celsius.
  - \* Patient warming should be started in preoperative holding using warmed blankets.
  - \* Patient warming should be continued perioperatively, preferably with active warming devices.
- 4. Skin preparation<sup>5</sup>
  - \* Skin should be prepped using one of many available solutions prior to procedure start.
  - \* Alcohol-containing solutions are preferred.
- 5. Prophylactic Antibiotics<sup>6</sup>
  - \* Antibiotics used should be in accordance with the LVHN antimicrobial stewardship committee recommendations, which can be found on the LVHN intranet.
  - \* Administration should generally be less than 30 minutes before incision time, with exception of certain antibiotics.
  - \* Antibiotics continued past the time of incision closure do not reduce the rate of SSI.

- Tanner J, Norrie P, Melen K. Preoperative hair removal to reduce surgical site infection. Cochrane Database Syst Rev. 2011 Nov 9;(11):CD004122. doi: 10.1002/14651858.CD004122.pub4. Review. PubMed PMID: 22071812.
   Multiser AG, Ali B, Casta FM, Langue DJ, Effective of memory and principal surgical site insidence of surgery distributions of the surgery of t
- Melling AC, Ali B, Scott EM, Leaper DJ. Effects of preoperative warming on the incidence of wound infection after clean surgery: a randomised controlled trial. Lancet. 2001 Sep 15;358(9285):876-80. Erratum in: Lancet 2002 Mar 9;359(9309):896. PubMed PMID: 11567703.
   Madrid E, Urrútia G, Roqué i Figuls M, Pardo-Hernandez H, Campos JM, Paniagua P, Maestre L, Alonso-Coello P. Active body surface warming systems for
- preventing complications caused by inadvertent perioperative hypothermia in adults. Cochrane Database Syst Rev. 2016 Apr 21;4:CD009016. doi: 10.1002/14651858.CD009016.pub2. Review. PubMed PMID: 27098439.
  Dumville JC, McFarlane E, Edwards P, Lipp A, Holmes A, Liu Z. Preoperative skin antiseptics for preventing surgical wound infections after clean surgery.
- Bratzler DW, Houck PM; Surgical Infection Prevention Guideline Writers Workgroup.. Antimicrobial prophylaxis for surgery: an advisory statement from the National Surgical Infection Prevention Project. Am J Surg. 2005 Apr:189(4):395-404. Review. PubMed PMID: 15820449.

## Methodology

Studies evaluating surgical site infections were identified using a PubMed search with MeSH terms conducted in June 2017. High quality systematic reviews were the primary evidence type comprising four of the five bundle elements. In addition, expert consensus guidelines comprised one of the five bundle elements. A retrospective chart review was conducted to evaluate current practices of each bundle component. 50 patients were selected chronologically in November 2017 to represent the most current practices. Included were only patients at LVHN-CC and the Children's Surgery Center, 16 years old and younger, undergoing general and orthopedic surgery.

#### **SSI Bundle Compliance November 2017**



### **Conclusions** and **Future Implications**

LVHN Children's Hospital practices align with the current literature and recommendations for pre-operative hair removal and prophylactic antibiotic use. There is opportunity for improvement in use of forced air warmers. Use of alcoholbased solutions for skin preparation may be limited by other factors. Data entry on pre-operative bathing must be improved to make any useful conclusions about compliance. Demonstrated here is the opportunity for continuous improvement of a health system.

© 2018 Lehigh Valley Health Network

SELECT Scholarly Excellence. Leadership Experiences. Collaborative Training.

Experiences for a lifetime. A network for life.™





<sup>1.</sup> Webster J, Osborne S. Preoperative bathing or showering with skin antiseptics to prevent surgical site infection. Cochrane Database Syst Rev. 2015 Feb 20;(2):CD004985. doi: 10.1002/14651858.CD004985.pub5. Review. PubMed PMID: 25927093.