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Jessica.seidelman@duke.edu

Cutting Through the Data: A Comparative Analysis of Surgical Site Infection Surveillance in Peripheral Vascular Bypass Surgery

Young Kim, MD[1], Becky Smith, MD[2,3], Brittain Wood, Polly Padgette, Deverick Anderson, MD, MPH[2,3], Jessica Seidelman, MD, MPH[2,3]

Duke Center for Antimicrobial Stewardship and Infection Prevention

1- Division of Vascular and Endovascular Surgery, Department of Surgery, Duke University, Durham, NC, 2-Division of Infectious Disease, Department of Medicine, Duke University, Durham, NC, 3- Duke Center for Antimicrobial Stewardship and Infection Prevention, Duke University School of Medicine, Durham, NC

Duke University School of Medicine

Background

- Different societies and organizations use different surgical site infection (SSI) definitions for surveillance.
- With multiple definitions in use, validation of surveillance findings becomes paramount, particularly for maintaining surgeon buy-in during data review and developing countermeasures.
- The goal of our study was to assess the concordance between SSI diagnoses following peripheral vascular bypass (PVBY) surgery derived from a review by a vascular surgeon (vascular) and those identified through SSI surveillance performed by the infection prevention (IP) team.

Methods

- IP team performs SSI surveillance using EPIC “Bugsy” tool to identify potential SSIs from NHSN-selected CPT codes.
- EPIC then identifies cultures within the infection window period and IP reviews the case to ensure it meets SSI criteria.
- Conversely, the vascular surgeon reviewed every PVBY CPT-coded surgery to determine if an SSI occurred.
  - The vascular review used the Southampton Scoring System.
- Both surveillance systems queried PVBY surgeries from 1/1/2018 to 12/31/2022 and used a 90-day surveillance period.

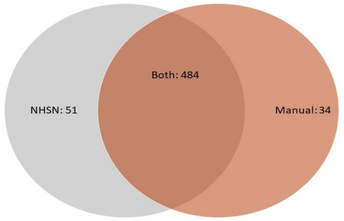
Methods (continued)

- Southampton Scoring System

Grade		Appearance
0	Normal healing	
I	Normal healing with mild bruising or erythema	A—some bruising
		B—considerable bruising
		C—mild erythema
II	Erythema plus other signs of inflammation	A—at one point
		B—around sutures
		C—along wound
		D—around wound
III	Clear or haemoserous discharge	A—at one point only (<2 cm)
		B—along wound (>2 cm)
		C—large volume
		D—prolonged (>3 days)
IV	Pus/purulent discharge	A—at one point only (<2 cm)
		B—along wound (>2 cm)
V	Deep or severe wound infection with or without tissue breakdown;	

Results

- 569 PVBY surgeries and 133 SSIs (23.4%)
- Figure 1 PVBY Denominators



Results (continued)

- Figure 2 SSI Numerators

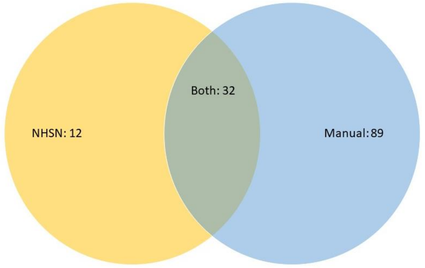
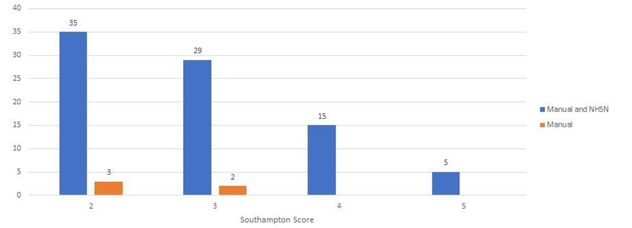


Figure 3: Southampton Scores for SSIs identified by Manual and NSHN/Manual Review



Southampton Score	Description
0	Normal healing
1	Normal healing with mild bruising or erythema
2	Erythema plus other signs of inflammation
3	Clear or haemoserous discharge
4	Pus
5	Deep or severe wound infection with or without tissue breakdown; hematoma requiring aspiration

- Of the 89 SSIs picked up in the vascular review, 5 SSI surgeries not in the IP denominator
- Other 84 SSIs included in the denominator, but not denoted as SSI
- Among the 84, 64(76%) were Southampton scores of 2 or 3 (Figure 3)
- Of the 84, 51 (61%) did not have associated cultures

Conclusions

- The vascular SSI review identified 89 additional PVBY SSIs compared to the IP surveillance over the 5-year period.
- NHSN has limitations in PVBY SSI surveillance, particularly for superficial incisional SSIs.
- Although IP is not resourced to perform surveillance on every surgery, IP working with surgical teams to understand differences in surveillance can facilitate the alignment needed to develop successful SSI prevention initiatives.