

Executive Summary

Surgical Site Infection Surveillance

Purpose

A Surgical Site Infection (SSI) surveillance assessment was completed on craniotomies performed by the Neurosurgery services at Walter Reed National Military Medical Center from 1 July to 30 September 2014 in order to find out if there were any cases of SSIs that occurred.

Background and Significance

According to the Centers for Disease Control and Prevention (2015), SSIs account for 21% of all healthcare associated infections (HAIs) occurring in acute care hospitals in the United States in 2011. The average cost of SSIs ranges from \$12,000 to \$35,000 (Hsu, 2014). Health care leaders must support SSI prevention initiatives such as surgical site surveillance in order to decrease patient mortality and national health care cost (Spruce, 2014).

Method/Actions

With CNS preceptor, met with the Infection Prevention and Control Chief at Walter Reed National Military Medical Center and discussed the surgical site surveillance assignment. The chosen procedure was craniotomies because this particular procedure had not been evaluated yet as part of the SSI program at WRNMMC. Craniotomies are a low volume, high risk procedure that requires 90 day surveillance per National Healthcare Safety Network (NHSN) guidelines.

Target population: Using S3, a surgery log report was obtained which listed 26 Neurosurgery craniotomies performed from 1 July to 30 September 2014.

Data collection: Retrospectively, a total of 26 cases were tracked from day of surgery until 90 days postoperatively during their hospitalization and/or outpatient hospital visits. The cases were analyzed using the electronic medical records, AHLTA and Essentris.

The NHSN worksheet was used to determine if patients met the criteria for having a surgical site infection (SSI).

NHSN SSI risk index elements were used to identify each patient's Risk Index Category. The three elements were:

- ASA classes 3, 4, 5 = 1 point
- Wound classification 3, 4 = 1 point
- Duration of surgery > 225 minutes (Edwards et al., 2009) = 1 point

The NHSN pooled mean for craniotomies (procedure code CRANI) in each Risk Index Category according to Edwards et al. (2009) are as follows:

- Risk Index Category 0 = 5
- Risk Index Category 1 = 16
- Risk Index Categories 2, 3 = 5

Findings

Neurosurgery cases (total 26):

- Risk Index Category 0 = 5 cases (zero infection)
- Risk Index Category 1 = 16 cases (one infection-organ/space)
- Risk Index Category 2 = 5 cases (zero infection)
- Risk Index Category 3 = 0 cases (n/a)
- $1 \text{ infection} / 26 \text{ cases} \times 100 = 3.84\%$ SSI rate (overall rate)
- $1 \text{ infection} / 16 \text{ cases} \times 100 = 6.25\%$ SSI rate in Category 1
- 6.25% SSI rate is higher than the NHSN pooled mean for Risk Index Category 1 benchmark at 2.15.

There was no information found on past reports concerning craniotomies. Craniotomies had not been evaluated yet as part of the SSI program at WRNMMC. Information from this report will be used as a baseline to determine WRNMMC progress toward meeting the goals for quality improvement related to SSIs regarding craniotomies. From this limited surveillance, it was determined that WRNMMC SSI rate for craniotomies is higher than the NHSN pooled mean for Risk Index Category 1. In exploring this infection, the operation report was reviewed to ensure the wound classification was documented accurately. Below are some recommendations to address this SSI rate.

Recommendations

- Continue surveillance of craniotomies to determine if this limited survey is a true indicator of the hospital's SSI rate for this procedure, which according to this survey is above the national average.
- Share the information from these surveillances with staff to emphasize the importance of adhering to clinical practice guidelines and standards of care and what impact a SSI has on the patient and the organization. An in-service would be a great forum to disseminate such information.
- Use the data collected about SSI rates and continued periodic surveillance of targeted surgical procedures to assist the organization in implementing risk reduction and process improvement initiatives to decrease SSI rates and improve surgical patient care.
- The achievement of desired clinical outcomes, in this case, **zero surgical site infection is the ultimate goal.**

Infection Prevention & Control Surgical Site Infection Surveillance Report

30 January 2015

Reporting Period: CY 2014 (July-September)

Targeted Surveillance of Craniotomies from 1 July 2014 to 30 September 2014. There were a total of 26 surgeries performed during this time by Neurosurgery.

Reviewed a total of 26 procedures:

5 cases were Risk Category 0 with zero infection.

16 cases were Risk Category 1 with one infection (organ/space infection).

5 cases were Risk Category 2 with zero infection.

1 infection / 26 total cases x 100 = **3.84 SSI overall rate** and 1 infection/16 Category 1 cases x100 = **6.25% SSI rate in Category 1**

The National Healthcare Safety Network (NHSN) pooled mean in Risk Categories 0-1, and 2-3 are 2.15, and 4.66 respectively.

The rates are based on NHSN Criteria and Risk Index Category. This information is available for review at your request.

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MAJ Duane Zaricor (Perioperative Clinical Nurse Specialist) briefed on findings of this report. Karen Cromwell shall brief findings at hospital Infection Control Meeting next week.



Table 3. Surveillance Period for Deep Incisional or Organ/Space SSI Following Selected NHSN Operative Procedure Categories. Day 1 = the date of the procedure.

30-day Surveillance			
Code	Operative Procedure	Code	Operative Procedure
AAA	Abdominal aortic aneurysm repair	LAM	Laminectomy
AMP	Limb amputation	LTP	Liver transplant
APPY	Appendix surgery	NECK	Neck surgery
AVSD	Shunt for dialysis	NEPH	Kidney surgery
BILI	Bile duct, liver or pancreatic surgery	OVRV	Ovarian surgery
CEA	Carotid endarterectomy	PRST	Prostate surgery
CHOL	Gallbladder surgery	REC	Rectal surgery
COLO	Colon surgery	SB	Small bowel surgery
CSEC	Cesarean section	SPLE	Spleen surgery
GAST	Gastric surgery	THOR	Thoracic surgery
HTP	Heart transplant	THYR	Thyroid and/or parathyroid surgery
HYST	Abdominal hysterectomy	VHYS	Vaginal hysterectomy
KTP	Kidney transplant	XLAP	Exploratory Laparotomy
		OTH	Other operative procedures not included in the NHSN categories
90-day Surveillance			
Code	Operative Procedure		
BRST	Breast surgery		
CARD	Cardiac surgery		
CBGB	Coronary artery bypass graft with both chest and donor site incisions		
CBGC	Coronary artery bypass graft with chest incision only		
CRAN	Craniotomy		
FUSN	Spinal fusion		
FX	Open reduction of fracture		
HER	Herniorrhaphy		
HPRO	Hip prosthesis		
KPRO	Knee prosthesis		
PACE	Pacemaker surgery		
PVBY	Peripheral vascular bypass surgery		
RFUSN	Refusion of spine		
VSHN	Ventricular shunt		

NOTE: Superficial incisional SSIs are only followed for a 30-day period for all procedure types.

References

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