Infection Prevention & Control Cardiac Surgical Site Infection (SSI) Surveillance Information Sheet

Purpose

The aim of this document is to inform Interior Health (IH) healthcare staff on key concepts related to surgical site infections (SSIs) following coronary artery bypass grafting (CABG) and repairs or replacement of heart valves (VALVE) procedures.

Context

- Coronary artery bypass grafting (CABG) and cardiac valve repair or replacement (VALVE) procedures improve blood flow to the heart, provide pain relief, and help patients increase their ability for physical activity that has been limited by angina or ischemia; however, surgical site infections following these procedures can lead to post-operative complications including lengthy antibiotic therapy, repeat surgical procedures, and potential death for severe infections.
- Evidence-based steps to decrease the number of SSIs include appropriate pre-operative antimicrobial coverage, skin antisepsis, and nasal decolonization.

Key Messages

- Coronary artery bypass grafting, and cardiac valve surgical site infections complicate and prolong hospital stays and impact resources and costs in the healthcare system.
- There are many initiatives underway to reduce SSIs such as initiatives to educate and evaluate operating room staff on appropriate pre-operative antimicrobial use and implement nasal decolonization widely throughout IH.
- Ongoing surveillance provides timely data and trend information to clinicians and leaders to understand, monitor, evaluate and implement measures to improve patient care.

Methodology

- All adult patients (≥18 years) identified by IH's Surgical Services who have a clean CABG and/or VALVE procedure performed at Kelowna General Hospital.
- Infection Prevention and Control (IPAC) staff review the healthcare records of all patients who may be a SSI case using the surveillance definitions provided by the National Healthcare Safety Network. A case may be identified from a positive microbiology culture report, from the healthcare record, from unit admission logs, or the general practitioner (GP) follow-up tool implemented by cardiac services.
- To be counted as a surveillance case, a deep incisional or organ/space SSI must occur within 90 days of the procedure. Only complex surgical site infections (deep incisional and organ/space) are reported as of July 19, 2024, and onwards – see the Cardiac SSI Protocol.
- SSI rates are reported at the surgical facility, whether the patient presented with an infection at the facility where their procedure occurred or at any other facility in IH.

Calculation

Cardiac SSI rate calculation is shown below. The rate allows for comparability both within a single facility over time, or between different facilities across Canada or internationally.

$$\text{Rate of Cardiac SSI} \ = \ \frac{\textit{Number of Cardiac SSI cases}}{\textit{Number of Cardiac procedures}} \quad X \quad 100$$

Limitations and Explanations

- Infections classified as superficial incisional SSIs are not captured in this surveillance.
- Procedures classified as clean-contaminated, contaminated, and dirty-infected are not captured in this surveillance.
- Procedures in which the patient died within 24 hours from the procedure are not captured in this surveillance.
- Infection is not attributed to the operation if a surgical site infection develops following post operative invasive manipulation for diagnostic or therapeutic purposes (e.g. needle aspiration, irrigation, and debridement) and there is no evidence of infection at that time.
- Determination of infection, as per National Healthcare Safety Network definitions is completed according to what is available in the patient's chart at the time of data entry and what has been documented by front-line healthcare workers.

Background Information about IPAC Surveillance Measures

Surveillance for healthcare-associated infections and for antimicrobial resistant organisms is a mandate for IPAC programs to establish baseline frequency of disease, identify risk factors, measure the impact of prevention initiatives, and provide information to inform and educate healthcare workers. Surveillance is most successful when it is comprehensive and linked to program objectives so that surveillance reports are timely and subsequent actions are meaningful and addressed. IH IPAC surveillance indicators are chosen to monitor quality issues that may need further review and investigation. The data are used by healthcare providers to monitor trends and improve care, and by governments to monitor system performance and for public reporting.

The IPAC program in Interior Health conducts surveillance in every acute care facility in the region. Trained Infection Preventionists perform chart reviews and use the protocols to determine surveillance cases, and the IPAC Epidemiologist reviews all cases for data quality purposes. Surveillance is performed in a web-based app so that no duplicate cases are included, and to ensure complete case capture. The IPAC Data Quality Working Group provides oversight for the surveillance system, surveillance protocols and definitions, and ensuring minimal variability in practices across the health authority so that results are reliable.

Incidence indicators represent the proportion of patients with a new presentation of the condition/event of interest. The IPAC surveillance indicators are presented as a rate for a fiscal year, fiscal quarter, or fiscal period, and allow facilities to compare to their own performance over time.