IV0300: Surgical Site Infections (SSIs)

EFFECTIVE DATE: September 2006

REVISED DATE: November 2010, July 2014 June 2016

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1.0 PURPOSE

To identify the potential risks associated with surgical procedures and Surgical Site Infections (SSIs) and include this information in the risk stratification and data analysis of SSIs with the intent to improve patient outcomes.

2.0 DEFINITIONS

SSIs – Surgical Site Infections occur as a complex interaction between the microbial contamination of the surgical site, the host response, and the local environment at the site of contamination. An SSI is generally considered to be present when purulent drainage is identified at the surgical site. SSI rates are the percentage of surgical operative sites that are infected and are usually stratified based on the Surgical Wound Classification.

Surgical Wound Classification – a system of categorizing surgical procedures into risk groups based on the likelihood of contamination of the surgical site at the time of the operative procedure. Each operative wound is assessed and categorized as per the classes noted below and is to be done upon *completion of the surgery* in consultation with the surgeon.
If a change in wound classification occurs, the reason must be documented on the OR Case Record (i.e. gross break in technique, glove perforation, etc.).

The **four classes of wounds** include:

Clean Wounds (Class I) – uninfected operative wound in which no inflammation is encountered, involve access only to the sterile body sites and carry the lowest risk (e.g. less than 5%) of surgical site infection. Clean wounds are primarily closed and, if necessary, drained with *closed drainage*. Operative incision wounds that follow non-penetrating (blunt) trauma should be included in this category if they meet the criteria. There is **no** break in sterile technique

Clean-Contaminated Wounds (Class II) – an operative wound in which the respiratory, alimentary, genital or urinary tracts are entered under controlled conditions and without unusual contamination. A minor break in surgical sterile technique in an otherwise clean procedure would fit into this class. Operations involving the biliary tract, appendix, vagina, and oropharynx are included in this category, provided no evidence of infection or major break in technique is encountered.

Contaminated Wounds (Class III) – carry a high risk (e.g. 10 to 15%) of infection often because they involve unusual contamination from a non-sterile site. Examples include:

- Open, fresh, accidental wounds less than 8 hours old from a relatively clean source
- Gross spillage from the gastrointestinal tract
- Incisions in which acute, non-purulent inflammation is encountered
- Acute inflammation seen – without frank pus

- The GU or biliary tracts are entered in the presence of infected bile or urine
- Operations with **major** breaks in sterile technique

  Examples of **major breaks** in sterile technique include: open cardiac massage, gross spillage from the GI tract, use of unsterile instruments, drapes or supplies, perspiration in the wound, unsterile foreign bodies in the wound, and insects in the OR suite.

Dirty or Infected Wounds (Class IV) – Old traumatic wounds (over 12 hours) with retained devitalized tissue or wounds where there is an existing clinical infection or perforated viscera or fecal contamination.

Surgical Site Infection surveillance definitions include the following:

Superficial Incisional Infection – occurs within 30 days of procedure and involves only skin and subcutaneous tissue of incision.

Patient **has at least 1** of the following:

1. Purulent drainage from superficial incision
2. Organisms isolated from aseptically-obtained culture of fluid or tissue from superficial incision
3. Superficial incision that is deliberately opened by a surgeon and is culture-positive or not cultured. (A culture negative finding does not meet criterion.) **AND** Patient has at least 1 of the following S&S: - pain or tenderness - localized swelling - redness - heat
4. Diagnosis of SSI by surgeon or attending MD

Deep Incisional Infection – [occurs within 30 or 90 days of surgery and has implant if after the 30 days] and involves deep soft tissues of incision (i.e. fascial and muscle layers)

Patient **has at least 1** of the following:

1. Purulent drainage from deep incision
2. Deep incision that spontaneously dehisces or deliberately opened by surgeon & is culture positive or not cultured. (A culture negative finding does not meet criterion.) **AND** Patient has at least 1 of the following S&S: - fever (>38°C) - localized pain or tenderness
3. Abscess or other evidence of infection involving deep incision found on direct exam, during invasive procedure, or by histopathologic exam or imaging test
4. Diagnosis of SSI by surgeon or attending MD

Organ/Space Surgical Site Infection – [occurs within 30 or 90 days of surgery and has implant if after the 30 days] & involves any part of the body excluding the skin incision, fascia or muscle layers, that is opened or manipulated during the operative procedure

Patient **has at least 1** of the following:

1. Purulent drainage from drain that is placed into the organ/space
2. Organism isolated from an aseptically-obtained culture of fluid or tissue in the organ/space
3. Abscess or other evidence of infection involving organ/space found on direct exam, during invasive procedure, or by histopathologic exam or imaging test
4. Diagnosis of SSI by surgeon or attending MD

3.0 GUIDING PRINCIPLES

3.1 SSIs remain a substantial cause of morbidity and an associated mortality rate of 3% has been attributed to them. Most SSIs are caused by the host's own endogenous flora. The Centres for Disease Control and Prevention (CDC) estimates that 2.7% of surgical procedures are complicated by SSIs which translates into an extra hospital stay of approximately 6.5 days for each SSI.

3.2 Prevention of SSIs consists of:

- Minimizing access of bacteria to the surgical site through the use of antiseptic scrubs, skin prep procedures, sterile barriers used during operative procedure, environmental controls and prophylactic antibiotics.
- Enhancement of the Host during the operative procedure through administration of supplemental oxygen and prevention of hypothermia and hyperglycemia.
- Delayed Primary/Secondary Closure is a viable option for massive disruptions of the colon (e.g.) gunshot wound or pancreatic abscess.

4.0 PROCEDURE

Classification of Surgical Procedures is done by the Operating Room staff

Decision Tree – All procedures except C-sections

Decision Tree C-sections

5.0 REFERENCES

5.1 **CDC/NHSN surveillance definition of healthcare associated infection and criteria for specific types of infections in the acute care setting;** 2013.

5.2 **CDC/NHSN surgical site infection event**; 2013.