

PREVENTION OF SURGICAL SITE INFECTIONS

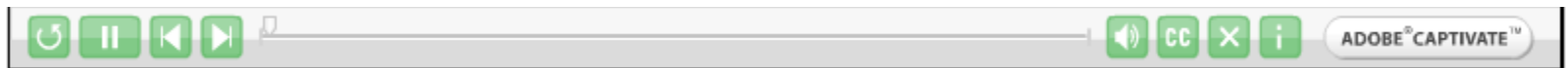
Corporate SSI Prevention Team

Target Audience: All healthcare workers who are taking care of patients before, during and after surgery

Course Navigation

Advance through the course using the navigation bar on the bottom of the screen.

Just click the forward button (*shown below*)



Learning Outcomes



At the end of this session the attendee will be able to:

1. List at least 3 surgical site infection risk factors each which are either patient related, procedure related, or operating room related
2. Discuss “basic” practices that all acute care hospitals can use to reduce surgical site infections
3. Identify at least 3 prevention measures which can be monitored for compliance

Surgical Site Infections

- Surgical site infections lead to increased morbidity, mortality, length of stay, and cost for many surgical patients each year.
- Education on risk factors and compliance with prevention measures may lead to decreased infections in the surgical patient.
- Collaboration between Infection Preventionist and staff can lead to a shared vision of increased patient safety.



Types of Surgical Site Infections (SSI)

Incisional

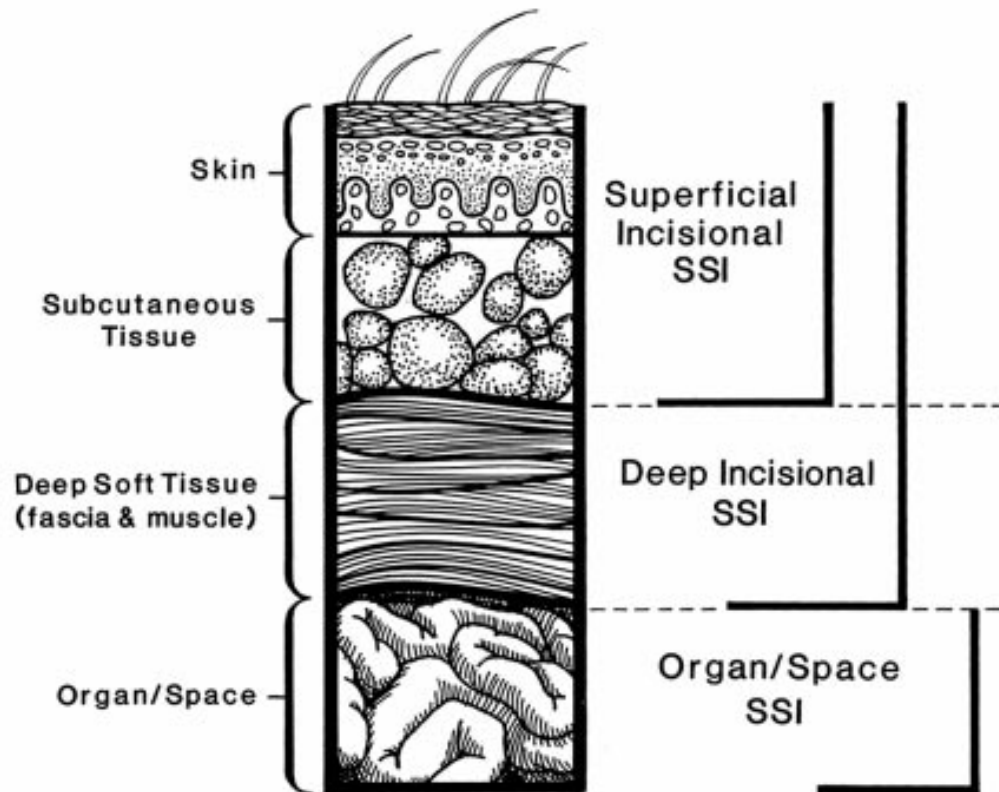
- Superficial SSI- occurs within 30 days after surgery and involves skin or subcutaneous tissue
- Deep SSI – occurs within 30 days after surgery and involves deep soft tissue (fascia & muscle)



Organ Space

occurs within 30 days after surgery if no implant or within 1 year if implant is placed and involves any part of the anatomy (organs, spaces) other than the incision which was opened or manipulated during the surgery.

CDC Definition of SSI



The “Guideline for Prevention of Surgical Site Infection, 1999”

Consequences of Surgical Site Infections

- Surgical site infections (SSIs) result in up to \$10 billion in costs every year.
- The patient infected with a Surgical Site infection:
 - Is hospitalized 7 days longer.
 - Is 60% more likely to spend time in the ICU.
 - Is 5 times more likely to be readmitted within 30 days of discharge.
 - Is twice as likely to die.

Surgical Risk Factors that Influence development of SSI

- Duration of scrub
- Skin antiseptics
- Surgical attire
- Sterile draping
- Duration of surgery
- Wound class
- Prophylaxis
- Traffic in the OR
- Temperature and Humidity
- Glucose control of the patient
- Temperature control of the patient
- Foreign materials
- Surgical drains
- Surgical technique

Other Risk Factors of SSI

- Compromised state of health prior to surgery, chronic illnesses, unhealthy lifestyle and advanced age.
- Most infections are caused by germs found on and in a patient's body that enter surgical site.
- Outside sources of contamination- surgical personnel, surgical environment, instruments and air.

Calculating Risk of SSI

- The dose of bacteria present multiplied by the aggressiveness of the bacteria divided by patients immune status equals the risk of development of an SSI.

$$\frac{\text{Dose of Bacterial Contamination} \times \text{Virulence of Microorganism}}{\text{Resistance of Patient to Infection}} = \text{Risk of SSI}$$

Prevention- Gloves

- ❑ Gloves reduce transmission of pathogens on the hands but do not provide complete protection. Gloves may contain small defects.
- ❑ When integrity of gloves is compromised, change immediately. Gloves may swell, expand and loosen from absorption of fluid and fat.
- ❑ Use of petroleum-based hand lotions or creams may adversely affect the integrity of latex gloves.
- ❑ The use of gloves does not replace the need for hand washing and/or hand sanitizer use.

Pre-operative Prevention of SSI- Patient Education

- Optimize health- Control risk factors such as excess weight, malnutrition, hypertension, weakened immune system, smoking, and uncontrolled diabetes.
- Bathing prior to surgery – A preoperative antiseptic shower or bath decreases skin microbial colony counts.
- Assess for other infections- such as UTI, skin infections, dental infections, etc.

Pre-operative Prevention of SSI- Patient Preparation

- ❑ Meticulous Hand Hygiene
- ❑ Skin preparation- to remove harmful bacteria
- ❑ Adhere to appropriate scrub and drying times
- ❑ Clean gown and head covering
- ❑ Hair removal- In many cases, hair removal is not necessary. When required, single use head clippers are to be used. No shaving. Razors leave microscopic cuts on the skin that are all potential entry points for bacteria.

Prevention

- Skin Preparation- the goal is to remove as much potential harmful bacteria as possible. Patients are colonized with bacteria, fungi, and viruses – up to 3 million germs per square centimeter of skin.
- Hand Hygiene
- Appropriate surgical techniques- the types of incisions made, the amount of manipulation of the tissue required, the amount of time the procedure takes and the technique used to close the incision can increase or reduce the risk of infection.
- Avoid flashing of surgical instruments

Intra-operative Prevention of SSI- Surgical Attire

- Head Covering – Wear a cap or hood to fully cover hair on the head and face.
- Hospital provided scrubs.
- Mask- Wear a surgical mask that fully covers the mouth and nose when entering the OR sterile hallway or OR room. Remove when surgery is complete and discard in trash.
- Shoe covers
- Eye Shield- when splatter is anticipated.



Intra-operative Prevention of SSI- Controlling OR Traffic

- ❑ Each person entering OR brings in additional skin flora and increases the risk of contamination.
- ❑ Opening and closing of doors causes air currents to swirl and potentially sweep in bacteria from outside the OR.
- ❑ 15 air exchanges can not be maintained to ensure clean air and removal of bacteria.



Prevention of SSI- Room and Equipment Cleaning



- Clean OR between each procedure
- Terminal cleaning daily is critical in preventing health care associated infections.
 - Dust contains human skin and hair, fabric fibers, pollens, mold, fungi, glove powder and paper fibers.
- Disinfect non critical equipment
 - Equipment should be disassembled, cleaned, disinfected, cleaned with an EPA-registered disinfectant and dried before reuse and/or storage.
- Sterilization of Critical equipment/ supplies
- High level disinfection

Prophylactic Prevention of SSI - Antibiotic Therapy

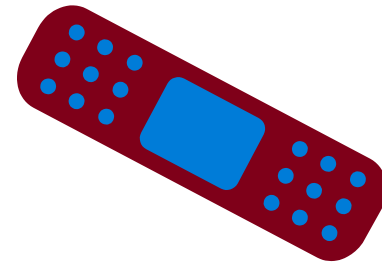
- For some surgeries, one of the ways to prevent surgical site infections (SSI) is by giving patients antibiotics 0 to 60 minutes (for usual antibiotics) or 0 to 120 minutes (Vancomycin or Fluroquinolones) before surgery.

Post operative Prevention of SSI- Nursing care

- Maintain Normothermia (> 96.8)- Hypothermia impairs the patient's immune function and causes vasoconstriction at the incision site.
- Use proper hand hygiene
- Maintain sterile dressing as directed
- Ensure delivery of antibiotics as directed
- Monitor and Maintain adequate blood glucose control
- Provide balanced nutrition

Discharge Instructions

- ❑ Dressing maintenance
- ❑ Proper incision care
- ❑ Symptoms and reporting of SSI
- ❑ Hand Hygiene at home- before and after dressing changes and any contact with the incision site.
- ❑ Nutrition guidelines
- ❑ Medications
- ❑ Blood glucose monitoring
- ❑ Bathing instructions
- ❑ Follow-up appointments



Signs and Symptoms of Surgical Site Infection

- Pain, swelling, tenderness, and/or redness at surgical site
- Fever
- Drainage – purulent (greenish-yellow) or bad smelling



Treatment of SSI

- Wound care – dressing instructions,
- Debridement
- Medications
- Oxygen therapy
- Wound VAC therapy (negative pressure)
- Controlling other diseases impacting healing (ex: Diabetes)

References

- The “Guideline for Prevention of Surgical Site Infection, 1999”, CDC
- AORN Standards and Recommendations, 2008.
- Current Approaches for the Prevention of Surgical Site Infections 3 (1): 51-61, 2007, American Journal of Infectious Diseases
- Preventing Surgical Site Infections (SSI), The Joint Commission Perspectives of Patient Safety, September 2008, Volume 8, Issue 9



CONGRATULATIONS!

**You have now completed
Prevention of SSI**

Please continue to the test instructions on the next slide

Post Test

1. A patient related risk factor for SSI includes:

- a. diabetes/ chronic illness
- b. infection at distant site
- c. smoking
- d. all of the above

2. A procedure related risk factor for SSI is:

- a. inadequate sterilization
- b. improper environment
- c. lack of understanding of asepsis
- d. all the above

3. An operating room related risk factor for SSI includes:

- a. hair removal
- b. antibiotic prophylaxis
- c. surgical attire
- d. traffic in the OR
- e. all of the above

Post Test (cont'd)

4. A basic practice to reduce SSI is:

- a. proper skin preparation
- b. hand hygiene
- c. a clean environment and equipment
- d. speak up when policy/procedure is broken
- e. all of the above

5. Prevention measures you can monitor to prevent SSI are:

- a. hand hygiene
- b. proper surgical attire
- c. traffic in the OR
- d. temperature and humidity in the OR
- e. all of the above

Answer Key

- 1. D
- 2. D
- 3. E
- 4. E
- 5. E

Certificate of Completion
is hereby granted to

to certify that he/she has completed

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