

# Educate the Nurses to Identify & Prevent Surgical Site Infection

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## Abstract

Surgical Site infections are the commonest occurring Hospital acquired infection.

As Nurses are dedicated towards patient care, they assess the patient throughout their hospital stay and also are prime to identify signs of client deterioration so the point brought to the concern through this article is knowledge & training to be given to nurses to prevent & identify signs & symptoms of SSI.

Nurses have the biggest tool to identify the root cause through Surveillance.

So Knowledge, understanding of the SSI & surveillance skills, aids the Nurses in promoting a sense of involvement in patient's speedy recovery, identifying early signs of SSI and earliest notification to the Surgeon for prompt treatment, maintenance of asperis throughout, prevent excessive hospital stay of the patient and to avoid financial & mental turmoil on family members & patient.

**Keywords:** Surgical Site Infection; Training; Surveillance; Holistic approach; SSI Tool.

## INTRODUCTION

SSI accounts for 20% of all hospital acquired Infections (HAI).

Patients with an SSI have a 2–11 times higher risk of death compared with operative patients without an SSI.

Each SSI is associated with approximately 7–11 additional postoperative hospital-days.

SSI is the most costly HAI type with an estimated annual cost of \$3.3 billion and extends hospital

length of stay by 9.7 days, with cost of hospitalization increased by more than \$20,000 per admission.

Approximately 0.5% to 3% of patients undergoing surgery will experience infection at or adjacent to the surgical incision site.

The problem of SSI now has been widely addressed but still SSI accounts for majority of mortality & morbidity among HAI's.

Common organism isolated causing SSI are staphylococcus aureus, Enterococcus, E. Coli etc.

## Meaning

- A SSI is an infection that occurs after surgery in the part of the body where the surgery took place.
- An SSI typically occurs within 30 days after surgery up to a year.
- SSI is common with implant related surgeries done under superficial or deep tissue incision.

## Types of SSI

The CDC describes 3 types of surgical site infections:



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- **Superficial incisional SSI:** This infection occurs just in the area of the skin where the incision was made involving the skin only.
- **Deep incisional SSI:** This infection occurs beneath the incision area in muscle and the tissues surrounding the muscles.
- **Organ or space SSI:** This type of infection can be in any area of the body other than skin, muscle and surrounding tissue that was involved in the surgery. This includes a body organ or a space between organs.

### Surveillance

It should start from 24-48 hours post-operatively.

SSI monitoring requires active, patient-based & prospective surveillance.

Concurrent and post discharge surveillance methods should be used to detect SSIs following inpatient and outpatient operative procedures.

### Methods of surveillance

- **Direct Method** - Direct Observation
- **Indirect Method** - Review of microbiology reports and patient medical records.

#### Direct Methods

It is the method of direct observation of visual characteristics/ features *etc.*

##### 1. Observing Sign & Symptoms of SSI

Following are the sign & symptoms of SSI which the nurse should observe:

- ✓ Fever with or without chills.
- ✓ Site warm on touch.
- ✓ Redness.
- ✓ Pain or Tenderness.
- ✓ Localized swelling
- ✓ A pimple or yellow crust has formed on the wound.
- ✓ Pus or drainage - Superficial and deep wounds
- ✓ Foul smell wound.

##### 2. Awareness about Sign & Symptoms of SSI to Patient & Relative

- ✓ Approximately 50% of surgical site infections (SSI) after elective surgery occur after discharge. Adequate surveillance for these infections requires a mechanism

for post-discharge follow up. - **RCT on incidence of post-discharge surgical site infection.**

- ✓ Post-discharge awareness and education is very vital as it leads to early identification of development of SSI.

Various points to be taught to patient & relatives are:

1. Providing any accessible communication like providing some phone numbers, Apps, community self help groups etc in which if any surgical wound concerns arises then it can be shared & suitable responses or help can be availed by the patient.
2. Educate patient & relative on daily wound monitoring & Do's & Don't in wound care
3. Awareness about Sign & Symptoms of SSI to Relative/ Patient.

The surgical site starts pulling, Redness, Fever, Discharges, Fatigue and malaise, abnormal warmth, Pain or discomfort occur, swollen area, unusual odour comes from the surgical site, Dehiscence, Bleeding delayed or non healing of the wound, abscess formation.

#### Who are at risk for developing a surgical wound infection?

- Who have poorly controlled diabetes Mellitus?
- Who's immune system is weak?
- Who are overweight or obese?
- Who is a chain smoker?
- Who takes corticosteroids (for example, prednisone)?
- Who underwent long lasting surgeries?

#### Indirect Method

Observation done through sources which are not having direct connection or not directly determined.

##### 1. Lab test for confirmation of SSI

- ESR
- TLC
- C - Reactive Protein

These tests are generally elevated in the presence of systemic inflammation. Measurement of CRP is popular because it is a quantitative test with predictable kinetics. It is more reliable to monitor postoperative infection based on comparison with ESR.

**2. Patient medical records**

**Other things needed to observed are**

- ❖ Was any Surgery or especially implant based surgery was done.
- ❖ Incision site at skin or subcutaneous tissue
- ❖ Delayed wound healing in patients
- ❖ Post operative vital events like Temperature Rise, Oxygen Saturation dropping, Elevated Blood Glucose
- ❖ Any Discontinuation of antibiotic before 24 hours

**Holistic Approach is needed to tackle SSI**

- ❖ Create a postoperative wound surveillance checklist form mentioning the sign & symptoms of SSI and do the surveillance of all patient undergone surgery daily, on discharge & on follow through that checklist.
- ❖ Chlorhexidine/Antiseptic Bath of the patient prior to the surgery & keep site in good aseptic condition by proper skin preparation before surgery.

- ❖ Aseptic practice in Pre operative & especially during Intra operative & post operative period.
- ❖ Control of OT traffic and prevent overcrowding during Intra operative period & also prevent frequent OT door opening during surgery.
- ❖ Attention to surgical technique which starts from Hand washing, proper Donning (covering arms) & doffing & sterility of the articles & equipment's.
- ❖ Prophylactic antibiotics to be administered as indicated.
- ❖ Sterile dressing to be kept for 1 to 3 days post surgery.
- ❖ Educate Patient & relative or provide informational leaflet on wound handling & care.
- ❖ Use of evidence based approaches or using modern technologies such as microbial sealants, offer the ability to seal and immobilize skin flora for the duration of a surgical procedure.



| Post Operative wound Surveillance Checklist |                                      |                              |
|---|--------------------------------------|------------------------------|
| Patient Name & IPD No. -                    |                                      |                              |
| Surgery Name & Surgery Date -               |                                      |                              |
| Implant Used -                              |                                      | Type of Incision -           |
| Criteria                                    | Daily Surgical site Wound Assessment | Wound Condition on Discharge |
| Fever with or without chills                |                                      |                              |
| Site warmon touch                           |                                      |                              |
| Redness                                     |                                      |                              |
| Pain or Tenderness                          |                                      |                              |
| Localized swelling                          |                                      |                              |
| A pimple or yellow crust                    |                                      |                              |
| Pus or drainage                             |                                      |                              |
| Unusual odour comes from the surgical site  |                                      |                              |
| Non Healing Wound                           |                                      |                              |

**DISCUSSION**

The article highlights the importance of training/in service education to nurses to combat and prevent surgical site infection and early identification of SSI by nurses for prompt treatment. Implications of the article which have

a huge impact in dealing with SSI as nurses will also be skillful do understand and adopt strategies to prevent SSI, thus helpful in reducing the morbidity & mortality related to SSI.

Further studies can be carried out in this field like developing anSelf Instructional module on SSI, Planned teaching programs on SSI etc.

## CONCLUSION

As surgeries will go on and on and there may be a chance to pick up such surgical site infections if aseptic measures & post operative SSI precautions not followed.

Hence aseptic measures, timely assessment & care would not cost additional health deterioration of the patient, reduce burden on family & patient due to such hospital acquired infections.

And if nurse is knowledgeable, skillful and well versed about the preventive aspects to prevent SSI while assisting during surgeries & during post operative care & monitoring can be a great hand as a part of Health care team to lower the incidence of SSI and prevent health hazards due to SSI.

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