GLOBAL GUIDELINES FOR THE PREVENTION OF SURGICAL SITE INFECTION

World Health Organization

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BỆNH VIỆN NHI ĐỒNG 2

Thân thiện như chính ngôi nhà của bạn

GLOBAL GUIDELINES FOR THE PREVENTION OF SURGICAL SITE INFECTION 11/2016

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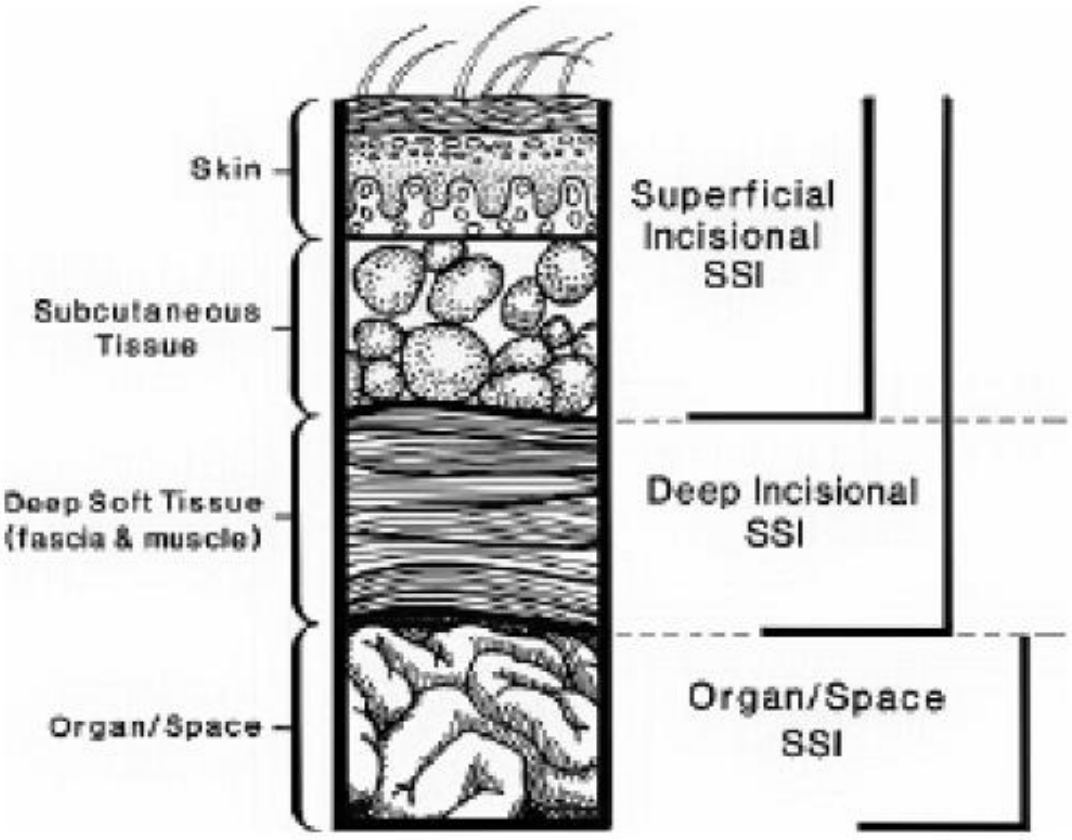
Definition

- SSI: Infection related to an operative procedure that occurs at or near the surgical incision within
  - 30 days of the procedure
  - 90 days if prosthetic material is implanted at surgery

Classification of surgical site infections



Clinical criteria for SSI:

- A purulent exudate draining from a surgical site
- A positive fluid culture obtained from a surgical site that was closed primarily
- A surgical site that is reopened in the setting of at least one clinical sign of infection (pain, swelling, erythema, warmth) and is culture positive or not cultured
- The surgeon's diagnosis of infection

Epidemiology and burden worldwide

- SSIs: significant burden in terms of
  - patient morbidity and mortality
  - prolonged hospital stay
  - additional costs to health systems and service payers worldwide.

Table 3.1.2. **Summary of SSI rates in different countries**

Country (reference)	SSI rate (%) (95% CI [when provided])	Year*	Measurement used	Study design
USA *(5, 15)*	0.9 17% decrease in SSI related to the 10 selected procedures (2014 compared to 2008)	2014	Cumulative incidence (episodes per 100 operations)	NHSN data (incidence design)
European Union *(6)*	9.5 (COLO) 3.5 (CABG) 2.9 (CSEC) 1.4 (CHOL) 1.0 (HPRO) 0.8 (LAM) 0.75 (KPRO)	2010–2011	Cumulative incidence (episodes per 100 operations)	ECDC HAI SSI protocol *(21)*
England *(8)*	Large bowel surgery: 8.3 (7.9–8.7) Small bowel surgery: 4.9 (4.3–5.7) Bile duct, liver and pancreatic surgery: 4.9 (4.1–5.9) CHOL: 4.6 (3.1–6.6) KPRO: 0.4 (0.3–0.4)	2008–2013	Incidence density (episodes per 1000 patient-days)	SSI surveillance - incidence design

Country (reference)	SSI rate (%) (95% CI [when provided])	Year*	Measurement used	Study design
Republic of Korea *(35, 37)*	Overall: 2.1 Gastrectomy: 3.1 (522/16 918) Total hip arthroplasty: 2.0 (157/7656)	2010–2011 2008–2012	Cumulative incidence (episodes per 100 operations)	National surgical site infection surveillance system – incidence design
Uruguay *(42)*	Appendectomy: 3.2 Cardiac surgery: 2.5 Cholecystectomy: 6.2 COLO: 15.4	2014	Cumulative incidence (episodes per 100 operations)	National nosocomial infection surveillance system
Chile *(43)*	Coronary bypass surgery: 3.1 Hip joint replacement: 1.9	2013		National HAI infection surveillance system
LMICs-WHO	Average: 6.1 (5.0–7.2)	1995–2015	Cumulative incidence (episodes per 100 operations)	Incidence/prospective
South-East Asia *(40)*	7.8 (6.3–9.3)	2000–2012	Pooled incidence review	Systematic literature

Introduction

- No full guidelines to prevent SSIs have been issued by WHO.
- Some national guidelines are available, especially in Europe and North America, but several inconsistencies
- The aim of these guidelines is to provide a comprehensive range of evidence-based recommendations for interventions to be applied during the pre-, intra- and postoperative periods for the prevention of SSI

GRADE categories for the quality of evidence

High	**very confident** that the true effect lies close to that of the estimate of the effect.
Moderate	**moderately confident** in the effect estimate: the true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different.
Low	Our confidence in the effect estimate is **limited**: the true effect may be substantially different from the estimate of the effect.
Very low	**very little confidence** in the effect estimate: the true effect is likely to be substantially different from the estimate of the effect.

Categories for recommendation

Strong	The panel was **confident** that the benefits of the intervention **outweighed** the risks
Conditional	The panel **considered** that the benefits of the intervention **probably outweighed** the risks

Preoperative measures

1. Preoperative bathing

- It is good clinical practice for patients to **bathe or shower prior to surgery**. The panel suggests that either a **plain** or **antimicrobial soap** may be used for this purpose. *(Conditional recommendation, moderate quality of evidence).*
- No recommendation on the use of **chlorhexidine gluconate (CHG)** impregnated cloths for the purpose of reducing SSI due to the limited and very low quality evidence

2. Optimal timing for preoperative surgical antibiotic prophylaxis

- The panel recommends
  - the **administration of SAP prior to the surgical incision** when indicated (depending on the type of operation) *(Strong recommendation, low quality of evidence)*
  - the administration of SAP **within 120 minutes before incision**, while considering the half-life of the antibiotic *(Strong recommendation, moderate quality of evidence)*

3. Mechanical bowel preparation and the use of oral antibiotics

- **Preoperative oral antibiotics combined with mechanical bowel preparation** should be used to reduce the risk of SSI in adult patients undergoing **elective colorectal surgery** *(Conditional recommendation, moderate quality evidence)*

4. Hair removal

- In patients undergoing any surgical procedure, hair should either **not be removed** or, if absolutely necessary, it should be removed only with a clipper. **Shaving is strongly discouraged** at all times, whether preoperatively or in the operating room. *(Strong recommendation, moderate quality of evidence)*

5. Surgical site preparation

- The panel recommends **alcohol-based antiseptic solutions based on CHG** for surgical site skin preparation in patients undergoing surgical procedures. *(Strong recommendation, low to moderate quality of evidence)*

6. Antimicrobial skin sealants

- Antimicrobial sealants **should not be used** after surgical site skin preparation for the purpose of reducing SSI. (*Conditional recommendation, very low quality of evidence)*

7. Surgical hand preparation

- The panel recommends that surgical hand preparation be performed either by **scrubbing with a suitable antimicrobial soap and water or using a suitable ABHR** before donning sterile gloves. *(Strong recommendation, moderate quality of evidence)*

Preoperative and/or intraoperative measures

8. Enhanced nutritional support

- Considering the administration of **oral or enteral multiple nutrient-enhanced nutritional formulas** for the purpose of preventing SSI in underweight patients who undergo major surgical operations. *(Conditional recommendation, very low quality of evidence)*

9. Maintaining normal body temperature (normothermia)

- The use of **warming devices** in the operating room and during the surgical procedure for patient body warming with the purpose of reducing SSI. *(Conditional recommendation, moderate quality of evidence)*

10. Perioperative discontinuation of immunosuppressive agents

- The panel suggests **not discontinuing** immunosuppressive medication prior to surgery for the purpose of preventing SSI. *(Conditional recommendation, very low quality of evidence)*

11. Perioperative oxygenation

- Adult patients undergoing general anaesthesia with endotracheal intubation for surgical procedures should receive a **FiO_2 80% intraoperatively** and, if feasible, in the **immediate postoperative period for 2-6 hours** to reduce the risk of SSI. *(Strong recommendation, moderate quality of evidence)*

14. Use of protocols for intensive perioperative blood glucose control

- The panel suggests the use of protocols for intensive perioperative **blood glucose control** for both diabetic and non-diabetic adult patients undergoing surgical procedures to reduce the risk of SSI. *(Conditional recommendation, low quality of evidence)*

16. Wound protector devices

- The panel suggests considering **the use of wound protector devices** in clean-contaminated, contaminated and dirty abdominal surgical procedures for the purpose of reducing the rate of SSI. *(Conditional recommendation, very low quality of evidence)*

- Drapes and gowns
- Use of surgical gloves
- Changing of surgical instruments
- The panel suggests that laminar airflow ventilation systems should not be used to reduce the risk of SSI for patients undergoing total arthroplasty surgery.

Conclusion

- SSIs: associated with substantial morbidity and mortality, prolonged hospital stay, and increased cost.
- This guideline is to provide pre-, intra-, and posto-measures to **improve the quality of care and outcome** of patients undergoing surgical procedures through the prevention of SSI.