

Yale SCHOOL OF MEDICINE

Yale  
NewHaven  
**Health**  
Yale New Haven  
Hospital

# *Surgical Site Infections*

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# Background: Impact

## **Burden-US**

- Third most common Hospital Acquired Infection (HAI)
- ~500,000 SSIs/yr
- 3%-5% of patients undergoing elective surgery
- Account for 20% of all hospital acquired infections annually

## **Mortality**

- 3 % mortality
- 2-11 times higher risk of death
- 75% of deaths among patients with SSI are directly attributable to SSI

## **Length of Hospital Stay**

- ~7-10 additional postoperative hospital days

# Background: Pathogenesis

## **Exogenous Flora**

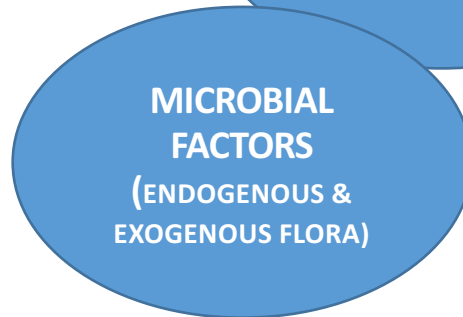
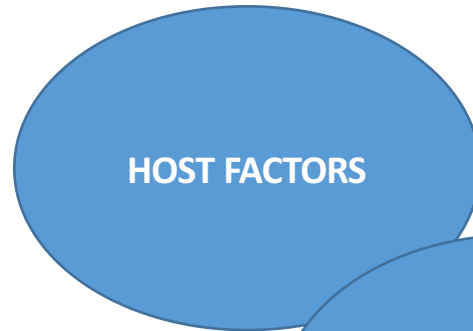
- Surgical Personnel (Surgeon and team)
  - Soiled attire
  - Breaks in aseptic technique
  - Inadequate hand hygiene
- Operating room environment including ventilation
- Equipment/instrumentation brought to the operative field

## **Endogenous Flora**

- Patient flora
  - Skin
  - Mucous membranes
  - GI tract
  - Seeding from a distant focus of infection

# Background: SSI Risk Factors

- Increased Age
- Obesity
- Malnutrition
- Cancer
- Diabetes
- Immunosuppression
- Comorbidities
- Smoking



- Patient Flora
  - Nasal/Skin Carriage
  - GI tract
- Surgical Personnel
- OR Environment

- Operating Room Environment
  - Improper Ventilation, temperature, and humidity
  - Increased OR traffic
  - Contaminated surfaces
- Procedure factors
  - Wound Class
  - Long Duration
  - Surgical Technique
  - Emergency
  - Trauma

# Strategies to Prevent Surgical Site Infections

## Pre-operative period

- *S. aureus* Screening and decolonization select surgeries
- Chlorhexidine Bathing
- Glucose Control
- Normothermia maintenance (Bair Paw Gowns)
- Hair clipping outside of the OR
- Hand Antisepsis with alcohol based solution

## Intra-operative period

- Antimicrobial Prophylaxis (Appropriate selection, dose, and timing)
- Normothermia Maintenance (Forced Air Warming)
- Surgical skin preparation with an alcohol based agent (chloraprep or Duraprep)
- Increased oxygen (FiO2 80%)
- Glove and gown change prior to closure
- Separate closing kits for colorectal procedures
- Minimize OR traffic
- Maintain sterile field
- Cleaning and disinfection of environmental surfaces

## Post-operative period

- Wound care
- Maintaining surgical dressing 24-48 hours
- Normothermia maintenance in PACU
- Glucose control <200mg/dl
- Discontinuation of prophylactic antibiotics within 24 hours
- Post op phone calls
- Ongoing feedback of missed opportunities provided to surgeons, surgical staff, and leadership.
- Patient education