



# Introduction of a Colorectal Surgery SSI Reduction Bundle

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# Summary

- What is a surgical site infection?
- What is the scale of the problem?
- SSI Reduction Bundle
- Assessment and outcome

# Surgical Wound Classification

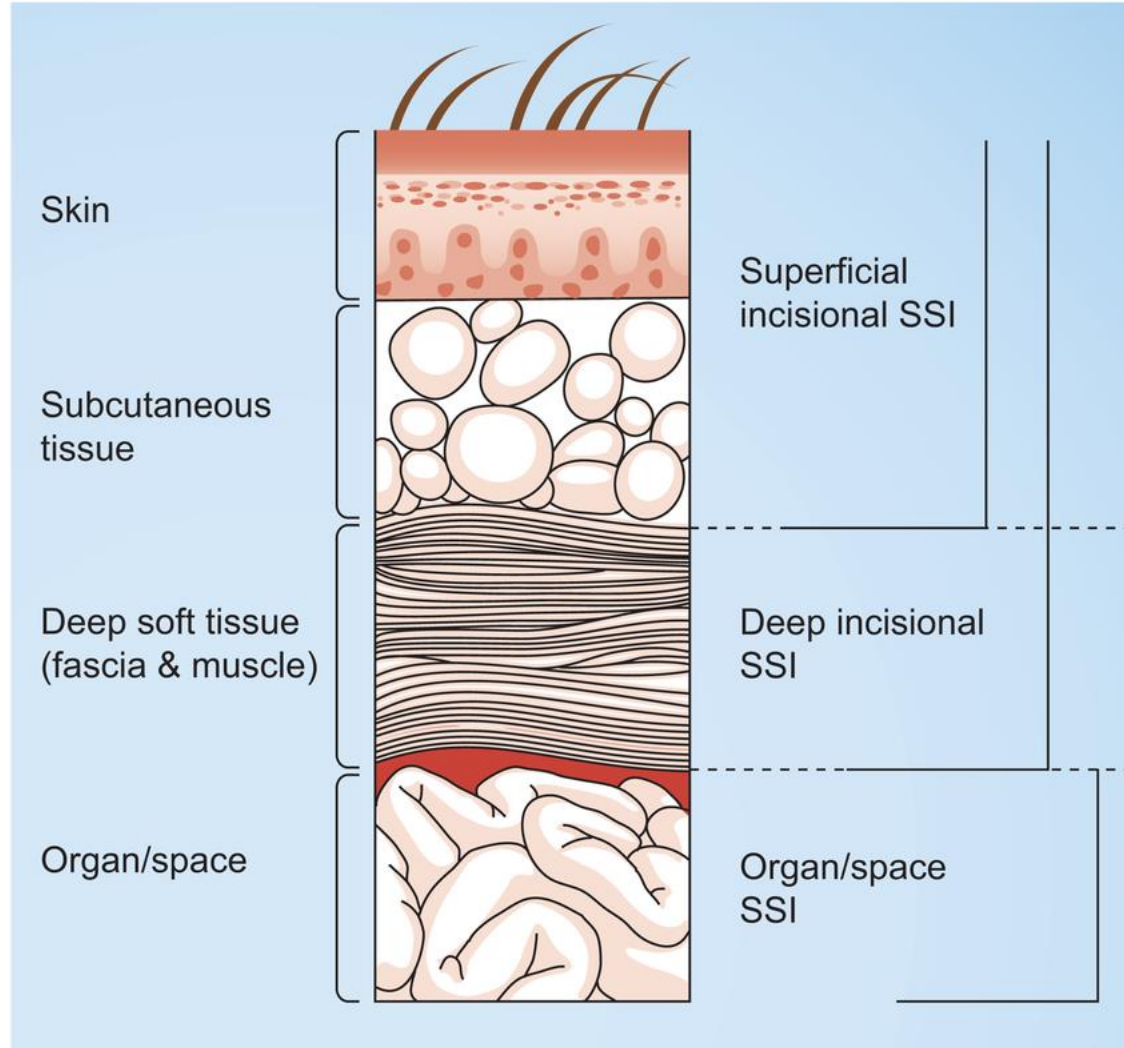
**Clean:** An uninfected operative wound in which no inflammation is encountered and in which the respiratory tract, alimentary, genital, or uninfected urinary tracts are not entered.

**Clean-contaminated:** Operative wounds in which the respiratory, alimentary, genital, or urinary tract is entered under controlled conditions and without unusual contamination.

**Contaminated:** Open, fresh, or accidental wounds; operations with major breaks in sterile technique or gross spillage from the gastrointestinal tract and incisions in which acute, non-purulent inflammation is encountered.

**Dirty or infected:** Old traumatic wounds with retained devitalised tissue. and those that involve existing clinical infection

# SSI Classification



## What is the problem?

- 2012, SSI rate = 16.7% for elective colorectal
  - 1 in 6 patients
- Huge cost in terms of:
  - Length of stay
  - Wound and nursing care
  - Delay / cancellation of further treatment
  - ~£9,000 per infection
  - Impact on patients

# Highland Colorectal SSI Reduction Bundle

- Ward bundle
- Operative / technical bundle
- Theatre bundle

# Ward Bundle

## Pre-operative

- MRSA risk assessment
- No pre-op hair removal
- Pre-op shower / wash with soap

## Post-operative

- Dressing to remain undisturbed for 48hours post-op unless soiled
- Aseptic technique for dressing change

# Theatre Bundle

- Antibiotic Prophylaxis
  - IV Abx given <60mins of incision
  - Amoxicillin / metronidazole / gentamicin
  - Repeat dose (amoxicillin) at 4hours / 1.5L blood loss
- Skin preparation
  - Limited depilation of surgical site with clippers
  - Chlorhexidine skin prep (Chloraprep)



# Theatre Bundle

- Patient temperature  $>36^{\circ}\text{C}$ 
  - Active patient warming
    - Warmed IV fluids
    - Bair Hugger / warmed blankets
- In diabetics, BMs kept  $<11$

# Operative Bundle

- Alexis wound protectors

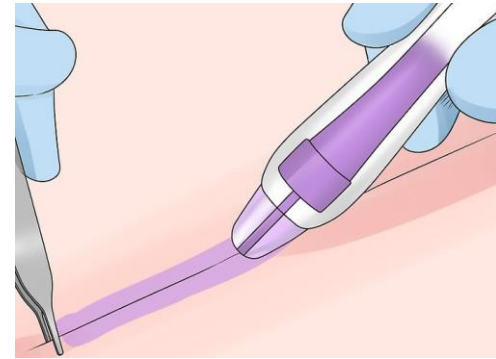
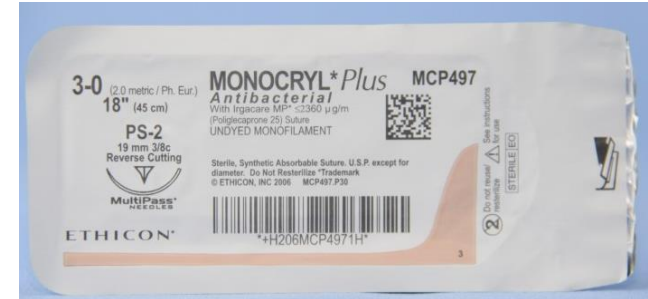


# Operative Bundle

- Fresh surgical instruments for closure
- Fresh gowns / gloves for closure
- Limited re-draping of wound for closure / fresh light handles etc

# Operative Bundle

- Standardised skin closure
  - Antimicrobial sutures
    - 3/0 Monocryl Plus
  - Tissue glue for skin
  - Padded Tegaderm dressings
- Stoma appliance to be secured prior to Tegaderm dressing placement



# Surveillance

- Prospective bundle compliance assessment
- All SSIs have root cause analysis
  - SBAR
  - Bundle compliance assessed
- Surgeon specific outcomes published monthly

**Reduction of Surgical Site Infection Data collection: COLORECTAL SURGERY 0.4**

Please file top copy in patient's notes & duplicate in blue data collection folder

Form completed by: .....Theatre:.....Consultant:.....

Date: ..... Elective/Urgent/Emergency (circle)

Name of Operation : .....

Patient  
Label  
(small)

Contamination type: clean / clean contaminated / contaminated / dirty (circle)

TIME of operation closure: ..... Estimated Blood Loss: .....mls

Did the patient receive pre-surgery prophylactic oral antibiotics	YES / NO or N/A
Antibiotics: (circle) Amoxicillan / Gentamicin / Metronidazole / Teicoplanin Other:..... Comment:.....	YES / NO or N/A
Time of bolus antibiotic? (Aim within 60 minutes before knife to skin)	___ ___ ( 24hr) or N/A
Time LAST infusion antibiotic started?	___ ___ ( 24hr) or N/A
Time of knife to Skin?	___ ___ ( 24hr) or N/A
Time of repeated anti-biotic? ( procedure ongoing 4hours after 1 <sup>st</sup> done antibiotics) List antibiotic .....	___ ___ ( 24hr) or N/A
Time of repeat antibiotic given for blood loss over 1500mls? List antibiotic.....	___ ___ ( 24hr) or N/A
Did the patient require hair removal?	YES / NO or N/A
Hair removed using clippers?	YES / NO or N/A
Skin prep: CHLORAPREP solution? OR Povidone Iodine or other?..... Comment:.....	YES / NO YES / NO
Alexis wound protector used?	YES / NO
Separate wound closure tray used for abdominal wall closure?	YES / NO
Change of gown for closure?	YES / NO
Change of gloves for closure?	YES / NO
Limited re-draping around the abdominal wound for closure?	YES / NO
Skin closure: absorbable subcuticular antimicrobial sutures used? : dermabond applied	YES / NO YES / NO
Stoma bag required?	YES / NO
Stoma bag placed on BEFORE dressing?	YES / NO or N/A
Dressing: Tegaderm + Pad used?	YES / NO

**Normothermia: 36.0 – 37.5 degrees celsius**

Temperature at START of operation: \_\_\_\_\_

Temperature MAINTAINED at >36 YES / NO

Temperature at END of operation: \_\_\_\_\_

Did warming of IV FLUIDS take place? YES / NO  
Mechanical WARMING DEVICE used? YES / NO

**Normoglycaemia : BM 4-11mmols**

Is the patient DIABETIC YES / NO

Blood Glucose PRE-operation \_\_\_\_\_

Blood glucose DURING operation \_\_\_\_\_

Blood glucose POST operation \_\_\_\_\_

Was normoglycaemia MAINTAINED 4-11mmols  
throughout procedure? YES / NO



# Highland Colorectal SSI: The Results

- 2012: SSI rate = 16.7%
  - 1 in 6 patients had SSI
- Bundle started July 2014
- 2018: SSI rate = 4.4%
  - 1 in 23 patients had SSI



## Future Development

- Role of oral antibiotics and mechanical bowel prep for left sided / rectal resection
- Roll out to other surgical specialties
- Roll out to emergency setting

Thank You