Introduction of a Colorectal Surgery SSI Reduction Bundle

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Scottish Antimicrobial Prescribing Group
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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

- Skin
- Subcutaneous tissue
- Deep soft tissue (fascia & muscle)
- Organ/spaces

Types of SSI:
- Superficial incisional SSI
- Deep incisional SSI
- Organ/spaces SSI
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 48 hours 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°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

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

**Form completed by:** ___________________________ **Consultant:** ___________________________

**Date:** ___________________________ **Elective/Urgent/Emergency (circle):** ___________________________

**Name of Operation:** ___________________________

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

**Time of operation closure:** ___________ **Estimated Blood Loss:** ___________ mls

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

<table>
<thead>
<tr>
<th><strong>Normothermia: 36.0 – 37.5 degrees celsius</strong></th>
<th><strong>Normoglycaemia: BM 4-11mmols</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Temperature at START of operation:</strong> ___________</td>
<td><strong>Is the patient DIABETIC:</strong> YES / NO</td>
</tr>
<tr>
<td><strong>Temperature MAINTAINED at &gt; 36</strong></td>
<td><strong>Blood Glucose PRE-operation:</strong> ___________</td>
</tr>
<tr>
<td><strong>Temperature at END of operation:</strong> ___________</td>
<td><strong>Blood glucose DURING operation:</strong> ___________</td>
</tr>
<tr>
<td><strong>Did warming of IV FLUIDS take place?</strong> YES / NO</td>
<td><strong>Blood glucose POST operation:</strong> ___________</td>
</tr>
<tr>
<td><strong>Mechanical WARMING DEVICE used?</strong> YES / NO</td>
<td><strong>Was normoglycaemia MAINTAINED 4.11mmols throughout procedure?</strong> YES / NO</td>
</tr>
<tr>
<td>Post operative data</td>
<td>Postoperative data</td>
</tr>
<tr>
<td>---------------------</td>
<td>-------------------</td>
</tr>
<tr>
<td>Please write male number and use numbers or a cross in the appropriate box using a black pen.</td>
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</tr>
</tbody>
</table>

**Surgical Site Infection Surveillance**
NHS Highland
Large Bowel Surgery

**Microbiology**
Please round the 3rd microorganism identified and enter the name as outlined in the latest protocols.

<table>
<thead>
<tr>
<th>Microorganism</th>
<th>Name</th>
<th>Microorganism 2</th>
<th>Name 2</th>
<th>Microorganism 3</th>
<th>Name 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>

**Address**
Site on the patient receiving antibiotics? | Yes | No | Yes | No | Yes | No |

**Local Data Source**
Site in which the operation performed? | Local Data Source | Local Data Source 2 | Local Data Source 3 |
<table>
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**Please refer to the latest SSC protocol version and contact NSS-SA@nhs Highland for any advice.**
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