ANTICS
Antibiotic Implant in Cardiac Surgery

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ANTICS - Background

- Sternal wound infection following cardiac surgery 2-8%
- Significant impact on mortality/morbidity
  - Antibiotics
  - Additional procedures
  - Length of stay
  - Reconstruction
- Meticulous stable fixation and antibiotic prophylaxis
ANTICS - Gentafleece

- Gentafleece™ (Baxter UK)
- Gentamicin-impregnated collagen implant
- 90 mg Gentamicin for slow local release over 1 – 3 days
- Minimal increase in plasma concentration
- Additional to antibiotic prophylaxis and standard measures
Effectiveness of a gentamicin impregnated collagen sponge on reducing sternal wound infections following cardiac surgery: a meta-analysis of randomised controlled trials

S Greanor, A Barton, A Marchbank

Revised Data (2013): Pooled data analysis assessing incidence of all post-surgery sternal wound infections in all participants.
Random effects model as evidence of significant heterogeneity ($I^2=70\%$).
ANTICS - Objective

- To provide information for planning a definitive trial investigating clinical and cost-effectiveness of gentamicin-impregnated collagen implants (Gentafleece™) to reduce sternal wound infections after cardiac surgery.

RfPB Ref: PB-PG-0808-15115
South West 2 Research Ethics Committee10/H0206/30
ANTICS - Methods

- Single-centre
- Randomised
- Controlled
- Patient and assessor-blind
- Pilot study
- 200 patients randomised (1:1) prior to closure:
  - treatment-as-usual (TAU)
  - Gentafleece into sternal wound
- Blind assessment of wounds during hospital stay and by patient-reports at 8 weeks
- Recruitment between November 2010 and August 2011
ANTICS - Outcomes

- ASEPSIS
- Wound infection rate (CDC 1992)
- Reoperation rate
- Readmission rate
- LOS
- Mortality
- EQ-5D
- Incremental cost effectiveness ratio
ANTICS - Results

- Wound checks as planned on Days 2 and 4 for 98% (195/200) of participants
- 2 deaths
- Post-operative complications, duration of ventilation, ICU and hospital stays similar for both groups
- Average length of time in level 1 longer in TAU:
  - Gentafleece: 9 (6-17) days
  - TAU: 13.5 (6-32) days
- Readmission rates similar
- Little evidence of sternal wound infection (SWI) at Day 2 or Day 4
<table>
<thead>
<tr>
<th></th>
<th>Gentafleece (n=98)</th>
<th>TAU (n=102)</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 weeks follow-up</td>
<td>97% (95/98)</td>
<td>98% (100/102)</td>
</tr>
<tr>
<td>At least one reoperation</td>
<td>8.2% (8/98)</td>
<td>12.8% (13/102)</td>
</tr>
<tr>
<td>Problem with healing</td>
<td>17.9% (17/98)</td>
<td>23.5% (23/102)</td>
</tr>
<tr>
<td>At least one readmission</td>
<td>14.6% (14/98)</td>
<td>17.7% (18/102)</td>
</tr>
<tr>
<td>Median and IQR ASEPSIS</td>
<td>2.5 (0-7.5)</td>
<td>5 (0-12.5)</td>
</tr>
<tr>
<td>Minor infection (ASEPSIS 21-30)</td>
<td>1%</td>
<td>10%</td>
</tr>
<tr>
<td>Moderate infection (ASEPSIS 31-40)</td>
<td>1%</td>
<td>2%</td>
</tr>
<tr>
<td>All SWI*</td>
<td>15%</td>
<td>22%</td>
</tr>
<tr>
<td>Deep SWI*</td>
<td>3%</td>
<td>7%</td>
</tr>
</tbody>
</table>

* Based on clinical review of all available evidence
ANTICS - Results

- Economic evaluation: main cost drivers associated with in-patient stay (90% of average cost/patient)
- Average additional cost associated with a sternal wound infection £2439
- Planned collaborative subsidiary analysis of ASEPSIS data not forthcoming
- Pilot study - not powered to detect between-group differences so further statistical analyses were not undertaken
ANTICS – Future Plans

- Multicentre trial in planning
  - 11 centres interested
  - Possible comparative analysis vs Collatamp
  - >3000 patients
  - HE analysis
  - Recent HTA Rapid Call Application unsuccessful
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ANTICS – Subsidiary Slides
ANTICS - Accrual

Target vs Actual accrual
(as of 25th Aug 2011)
## ANTICS - Outcomes

### DAY 2 POST-OPERATION

**ASEPSIS WOUND SCORES**

<table>
<thead>
<tr>
<th>WOUND CHARACTERISTIC</th>
<th>PROPORTION OF WOUND AFFECTED (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Gastrointestinal</td>
<td>0</td>
</tr>
<tr>
<td>Epistaxis</td>
<td>0</td>
</tr>
<tr>
<td>Pressure/Electric</td>
<td>0</td>
</tr>
<tr>
<td>Separation of deep tissues</td>
<td>0</td>
</tr>
</tbody>
</table>

### CDC WOUND CRITERIA

<table>
<thead>
<tr>
<th>WOUND TYPE</th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local pain</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Local heat</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Local swelling</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drainage of pus</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Isolation of organisms</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Incision and drainage performed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diagnosis of superficial incisional infection made by surgeon/physician</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Additional ASSEPSIS score criteria for wound assessment**

*Score one for appropriate:

- Pain or discomfort
- Fever with wound temperature
- Separation of edges/edema
- Incision and drainage performed
- Other evidence of deep incisional infection
- Diagnosis of deep incisional infection made by surgeon/physician

**Organ/Space Surgical Site Infection**

*Score one for appropriate:

- Presence of drain site
- Organisms cultured from site
- Other evidence of organ/space infection
- Diagnosis of organ/space surgical site infection made by surgeon/physician

**IF ANTIBIOTICS WERE GIVEN RECORD THE MEDICATION TAKEN ON THE CONCOMITANT MEDICATION PAGE (31B)**

**PLEASE RECORD DETAILS OF CLINICAL FEATURES GIVING RISE TO SCORES IN TABLE AS THEY ARE ELICITED. ON THE ADVERSE EVENTS PAGES (32-37)**

**REVIEW THE STATUS OF THE PARTICIPANT'S ADVERSE EVENTS AND UPDATE THE ADVERSE EVENTS RECORD ON PAGES 32-37**