Photo at Discharge (PaD) / SSI

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Gold Impact Award & Overall Winner
Overview

• Surgical site infection (SSI) cardiac surgery
• Photo at Discharge (PaD) Scheme
  – Rationale
  – Feedback
  – Outcomes
• Conclusion

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The Patient

Cardiac SSI

• Mental: “The experience of [of an organ/space SSI] is changing who I am. There is a huge financial strain on me and my family from my being in hospital for months...the stress is very difficult to cope with”
• Physical: removal of sternum, part of breast (sub-mammary infection)
• Emotional: suffering
The average cost of cardiac SSI readmission is £28,445.

Audit 2012-14 of Deep Incisional Sternal SSI surgeon + plastics 15-32% more expensive than surgeon alone. Average stay was longer/more returns to theatre when plastics were involved.

Family
Devastated by preventative cardiac surgery

Additional cost of settlement £1,475,000
**Project Context:** Reducing Avoidable Non-Elective Bed Days for Readmissions SSI

Background & burden of SSI readmissions
Photo at Discharge (PaD) scheme

Cost Effectiveness, data from two sources (quality improvement project and propensity score matched data)
SSI are a leading cause of <30 day readmissions

RBHT Cardiac SSI*Readmissions

- £533,300 spent on average, per year
- 391 Non-elective Bed Days used, per annum
- £488,000 in capacity lost a year to non-elective admissions for cardiac SSI

*Lower than benchmark: CABG Public Health England Jan08-Dec12, RBHT SSI Risk 4.1% vs All Hospitals SSI Risk 7.1%
Pooled Estimates Post-Discharge SSI:
CABG 77%, Cardiac 58% (Woelber et al. 2016)

5x More Likely to Be Readmitted
This high proportion is largely due to:

- The time it takes for bacteria to elicit host response
- Delay in treatment
- Fragmented communication/information between acute and community care (Clinton and Obama, 2006)

Early detection: critical in reducing the severity and duration of SSI
Standard Communication to Community
Generic Information to Patients & Carers

- Check your wounds regularly to make sure they are healing well. Look out for changes that may need treatment.
- Wound looks red or angry
- Heat/swelling around a wound
- More pain from a wound
- Pus or more fluid leaking from a wound
- An unpleasant smell from a wound
- Any new opening of the wound

Front-fastening bras are better because the lower front hooks can be left open, to stop rubbing on the wound. The pre-admission clinic can tell you where to buy front-fastening bras.

You will need to wear a bra during the day and at night for about four weeks after your operation.

Body hair

Do not shave or remove hair from your chest, arms, legs or groin for seven days before you come in to hospital. Shaving can damage the skin and increase the risk of infection.

When you come in to hospital, nurses will help you prepare your skin for your operation.

Personal hygiene

You do not need to bring your own soap, towels or gowns in to hospital. When you arrive, we will give you:
- Liquid antimicrobial soap
- Clean, disposable towels and flannels
- A clean gown
- Clean linen on your bed

We provide disposable flannels and towels because bacteria can grow quickly on a damp, re-usable flannel, especially when left in a toilet bag.

You should be able to get two fingers to fit comfortably under your bra band. The band should not dig into your skin.

If your bra irritates the wound after your operation, we advise you to stop wearing it until your wound has healed. Please ask your nurse for more advice.

The night before your operation (at home or in hospital)

It is important to wash thoroughly with liquid antimicrobial soap to reduce the risk of infection. It is also important to use clean towels and flannels.

A nurse will give you a liquid antimicrobial soap at the pre-admission clinic, or in hospital. Antimicrobial soap kills bacteria on your skin.

If you were given antimicrobial soap at your pre-admission clinic:
- Use half the soap the night before your operation.
- Bring the rest of the soap in to hospital, to use later.

How to wash thoroughly

If possible, have a shower, rather than a bath. Running water helps get rid of the bacteria on your skin.

Wet your skin, and put lots of antimicrobial soap on the flannel. Wash your skin firmly with the flannel. Remember to wash well under skin folds, such as breasts and groin.

Leave the soap on for one minute before rinsing. Rinse your skin under running water to get rid of all the soap.

If you don't have a shower, stand in the bath to soap yourself and use a bag of clean water to wash off the soap.

Dry your skin well, with clean towels. Dry your chest first, then dry the rest of your body. If you are in hospital, your nurse can help you. Your nurse will also give you clean towels and flannels.
Patient-centred discharge information (PCDI) which Coleman et al. (2004) describe as having the explicit purpose of engaging patient responsibility and use during the transition of care.

**Challenges:**

- Patient engagement with IP to reduce SSI ‘in infancy’ (Tartari et al. 2017)
- Overwhelmed by information and stressed at discharge (Flink et al. 2019)
- Proportionate: most wounds heal well, avoid unnecessary ‘workload’ burden for patients and healthcare systems (Zellmer et al. 2015; Sanger et al. 2016)
Patient-centred

Link between acute and community care

Low cost, practical tool

Misnomer?
GP: ‘A positive, progressive step. Will provide the patient with reassurance with ongoing management, and useful for clinicians when reviewing the wound’
‘Watertight’ Incision
Median: Readmission Length of Stay (Days)
SSI Category
Standard Wound Care vs Photo at Discharge
2013 - 2018 RBHT data

Superficial Incisonal: Standard wound care 13.5 vs Photo at discharge 5
Deep Incisonal: Standard wound care 18 vs Photo at discharge 10
Organ/Space: Standard wound care 45 vs Photo at discharge 49
Readmission SSI incidence following cardiac surgery, England hospitals participating in PHE's SSI Surveillance Service, 2011 to 2017

Data provided by Public Health England Jan 2009 – Dec 2017
Table 1. Unmatched and matched variables with standardised mean difference.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Unmatched</th>
<th>Matched</th>
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<tbody>
<tr>
<td></td>
<td>PaD (n = 568)</td>
<td>No PaD (n = 1179)</td>
</tr>
<tr>
<td>Vein (mean (SD))</td>
<td>1.07 (0.42)</td>
<td>1.15 (0.42)</td>
</tr>
<tr>
<td>Gender (mean (SD))</td>
<td>0.17 (0.38)</td>
<td>0.18 (0.38)</td>
</tr>
<tr>
<td>Age, years (mean (SD))</td>
<td>65.34 (10.19)</td>
<td>65.73 (10.30)</td>
</tr>
<tr>
<td>Diabetes (mean (SD))</td>
<td>0.79 (1.12)</td>
<td>0.72 (1.09)</td>
</tr>
<tr>
<td>Smoking (mean (SD))</td>
<td>0.74 (0.67)</td>
<td>0.76 (0.63)</td>
</tr>
<tr>
<td>Emergent surgery (mean (SD))</td>
<td>0.45 (0.55)</td>
<td>0.45 (0.56)</td>
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<tr>
<td>Renal function (mean (SD))</td>
<td>0.58 (0.67)</td>
<td>0.55 (0.64)</td>
</tr>
<tr>
<td>CPB (mean (SD))</td>
<td>0.61 (0.49)</td>
<td>0.71 (0.46)</td>
</tr>
<tr>
<td>IMA (mean (SD))</td>
<td>1.13 (0.61)</td>
<td>1.12 (0.47)</td>
</tr>
<tr>
<td>BMI (mean (SD))</td>
<td>0.12 (0.32)</td>
<td>0.11 (0.31)</td>
</tr>
<tr>
<td>DurOp, min (mean (SD))</td>
<td>221.62 (63.88)</td>
<td>238.97 (69.91)</td>
</tr>
<tr>
<td>Stay, days (mean (SD))</td>
<td>9.53 (7.49)</td>
<td>10.16 (7.74)</td>
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SMD, standardised mean difference; Vein, open or endoscopic vein harvest; CPB, cardiopulmonary bypass; IMA, internal mammary arteries; BMI, body mass index; DurOp, duration of operation; Stay, length of primary hospital stay.
There was a significant difference in risk of readmission for SSI (relative risk = 0.2, 95% confidence interval [CI] = 0.04–0.91). This suggests that PaD reduced the risk of SSI readmission by 80% and that this was statistically significant (p = 0.037).
Cost Avoidance

‘Costs avoided’ by reducing SSI readmissions (based on running costs)

Absolute Risk Reduction of 80%

Propensity Case Score Matched (PCSM) Analysis (minimum)

£133,948

Absolute Risk Reduction 86%

Non-matched Quality Improvement (QI) project (maximum)

£221,539

Indirect costs excluded: incapacity to work (temporary or permanent), income lost by family members, lost leisure time, home care, travel costs (Dohmen, 2013) and years of productive life lost (latter exceed direct costs 8 times [Alfonso et al, 2007] and intangible costs excluded ie Trust reputation)
By reducing readmissions for SSI....

313 cardiac surgical bed days released (PS)
Equivalent to one month ISO CABG activity
↑ 45 patients having CABG surgery

336 cardiac bed days released per year (QI)
↑ 48 patients having CABG surgery
For every £1 spent, the steady-state PaD scheme generates between £1,172 and £1,938 of benefits in ‘cost avoided’.

What our Clinicians Say
“This is a very important tool...especially if there is an issue with the wound, we have something to compare. Helps us to decide how the treatment is working”.

What our Patients Say
“The photo, information and instructions ...great! It gave a sense of security and eliminated worry while recovering.”
Thank you for listening
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