

Preliminary Findings: Targeting CABG patients at high risk of surgical site infection

M. Rochon, C. Morais, F. Mahiout, C. Papandreou, M. Cannoletta, J. Jarman, R. Yadav, A. Desouza
The Royal Brompton Hospital
Contact: Melissa Rochon m.rochon@rbht.nhs.uk

THE PROBLEM

The impact of surgical site infection (SSI), which constitutes 15.7% of HCAI¹, is well established. In addition to pain and distress, patients with SSI have double the mortality risk and are five times more likely to be readmitted to hospital². Royal Brompton and Harefield NHS Foundation Trust (RBHT) readmission costs for cardiac SSI exceeded £1.6 million over a three year period (2010-12 F/Y).

In addition to increased mortality and morbidity, patients with SSI experience longer ITU and general stays – RBHT length of stay is almost three times longer for a patient with a cardiac SSI (median primary LoS 30.75 vs 11.45 days no SSI) which also affects resources to other patients, as well as intangible and opportunity costs.

ASSESSMENT

Brompton & Harefield Infection Score (BHIS) effectively predicts SSI risk in our patient group (Figures 1 and 2), but no strategy existed to target the patients at greatest risk³ (ie BHIS ≥4, approximately 8% of CABG patients).

Brompton & Harefield Infection Score (BHIS)				
SSI predictive score for CABG +/- additional procedures (see reverse for details)				
Diabetic = 1 OR HbA1c >7.5% = 3	Group	Score	% patients	SSI risk
BMI ≥35 = 2	Low risk	0 - 1	66%	2.6%
Female = 2	Medium risk	2 - 3	26%	6%
Emergency=2	High risk	≥4	8%	16%
LVEF <45% = 1				

Figure 1

BHIS Predictive Model

- Good prediction of outcome
- Area under ROC curve 0.727 (0.827 for preliminary dataset)
- Hosmer & Lemeshow test 0.149

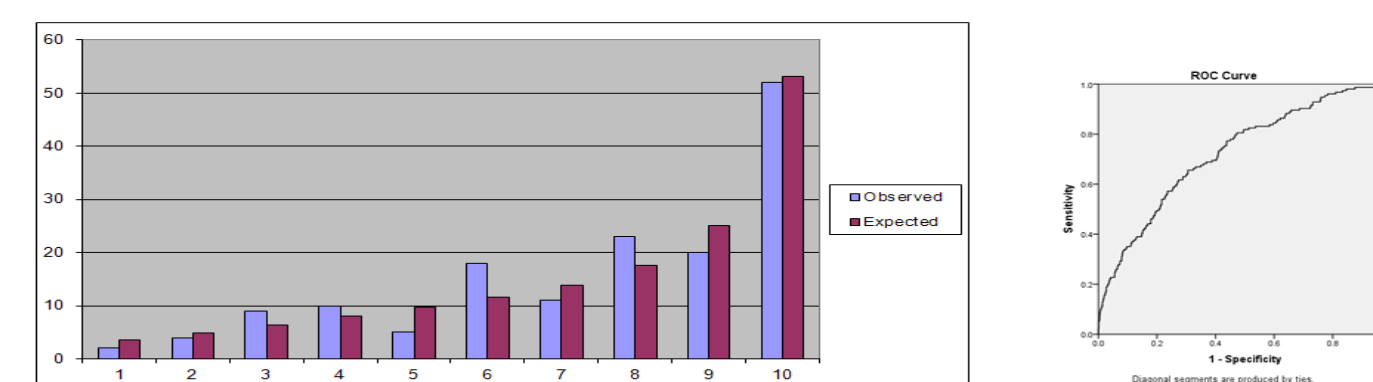


Figure 2

STRATEGY

Continuous, prospective surveillance data on surgical site infection was collected and validated via external audit bodies.

Development of BHIS-IP, an intervention package for high risk patients based on best practice including best available evidence and expert opinion.

Multidisciplinary team (MDT) identification and management of patients with BHIS ≥ 4 across the CABG integrated care pathway (Figure 3).

Expansion of BHIS-IP to other surgical teams.

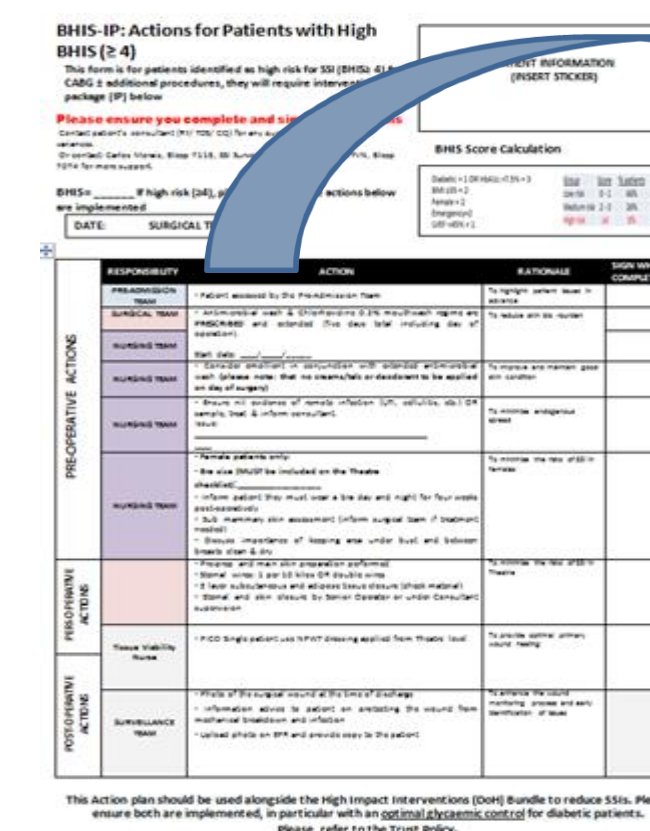


Figure 3

Key Points

- Extend antimicrobial decolonisation
- Agreed surgical technique
- Well fitting support wear for females, worn day and night
- Negative pressure therapy on clean, closed wounds and aseptic technique for all wound care
- Improve and increase information/resources available to patients and carers

OUTCOMES

November 2013 – January 2015 639 CABG RBH, 12 patients with intervention

Low risk (BHIS 0-1): 418, 7 SSI 1.7%

Medium risk (BHIS 2-3): 176, 6 SSI 3.4%

High risk (BHIS ≥ 4): 45 patients, 33 no intervention, 3 SSI 9.1% BHIS-IP (intervention) 12 patients, 0 SSI

Although non-significant due to low numbers (p=0.3845 by Fisher's exact test), RBH data suggests implementation of a multidisciplinary approach to identification and management of those at high risk of infection is successful and warrants continuing

Costs for High BHIS actions £225.12 (female patient) vs average of cost of readmission for surgical site infection of £25,164 (based on 2010-12 RBHT data, all SSI categories)

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