Wounds UK

CATEGORY: SURGICAL SITE INFECTION

LEUKOMED® SORBACT®

MAKING THE CASE

INTRODUCTION: SURGICAL SITE INFECTION (SSI)

Surgical site infection (SSI) is the third most common type of healthcare-associated infection (HCAI), accounting for about 16% of all HCAIs; they are estimated to affect 6.4% of patients in healthcare systems in England (Health Protection Agency, 2011). The Centers for Disease Control (CDC) define superficial incisional infection, deep incisional infection and organ/space infection as occurring within 30 days of surgery or 1 year if an implant is in place, with at least one of the following present:

- Erythema, swelling, localised pain or tenderness
- Fever (>38 degrees˚C)
- Positive organism isolation in the wound
- Purulent drainage
- Wound dehiscence or abscess
- Diagnosis of superficial incisional infection, deep incisional infection or organ/space infection made by surgeon or attending physician.

Another method for assessing post-operative wound infection is ASEPSIS. A score of ≤10 to 21 indicates infection, whilst a score of ≥10 represents satisfactory healing (Wilson et al, 1986).

ASEPSIS SCORING SYSTEM CHARACTERISTIC	SCORE
Wound characteristic	
Serous exudate	3
Erythema	3
Purulent exudate	6
Separation of wound edges	6
Additional treatment	
Post-operative antibiotics	10
Abscess draining	5
Wound debridement	10
Isolation of bacteria	10
Prolonged	5

- ✓ **A** – Additional treatment
- ✓ **S** – Serous discharge
- ✓ **E** – Erythema
- ✓ **P** – Purulent exudate
- ✓ **S** – Separation of deep tissues
- ✓ **I** – Isolation of bacteria
- ✓ **S** – Stay (extended duration of inpatient stay)

WHAT ARE THE CONSEQUENCES OF SSI?

Consequences for the patient:

- **Physical**: pain, reduced mobility
- **Emotional**: low mood, psychological effects of scarring
- **Social**: isolation, financial burden
- **Significant morbidity and mortality**: 1 in 3 post-operative deaths are related to an SSI (NICE, 2008)

Consequences for the healthcare system:

- **Extra costs** due to extended hospital stays, readmissions to hospital, re-operations and additional wound management
- **Antibiotic treatment** poses considerable financial costs and exacerbates the problem of antibiotic resistance
- **Patient dissatisfaction** due to an infection acquired in hospital may lead to substantial litigation costs to the healthcare system (NICE, 2008)

Q HOW DOES SSI AFFECT YOUR ORGANISATION?

ABOUT LEUKOMED SORBACT

Leukomed® Sorbact® (BSN medical) is a post-operative dressing that protects wounds from external contamination and prevents colonisation by harmful microbes via a dialkyl carbomoyl chloride (DACC)-coated antimicrobial contact layer (*Figure 1*). It can be used on all post-operative/traumatic wounds: surgical incisions, post-operative dehisced wounds, lacerations, cuts, abrasions, and minor burns (BSN medical, 2016). The DACC contact layer irreversibly binds and inactivates bacteria through hydrophobic interaction, keeping the bacterial cell wall intact, allowing for natural healing and long-term infection prevention. This technology utilises the moderate-to-high surface hydrophobicity of the majority of SSI pathogens and the interaction between hydrophobic molecules in the presence of an aqueous medium (Stanirowski et al, 2016a).

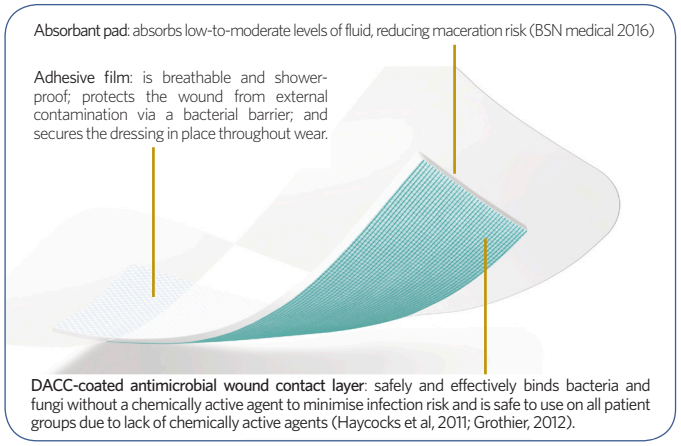

Figure 1: Components of Leukomed Sorbact

CLINICAL EVIDENCE FOR LEUKOMED SORBACT

A recent randomised trial evaluated the presence of SSIs following a caesarean section (CDC criteria), with patients treated using Leukomed Sorbact (n=272) or a standard dressing (n=271). Fourteen SSIs were present with the standard dressing (5.2%) versus five with Leukomed Sorbact (1.8%) (p=0.04), representing a clinically significant 65% relative risk reduction (Stanirowski et al, 2016b). In another study undertaken at a single vascular centre, 100 patients were followed before and 100 after introduction of Leukomed Sorbact. Wounds were evaluated at days 5 and 30 to determine the presence of an SSI (ASEPSIS). A significant reduction in SSI rates was seen in patients using the Leukomed Sorbact dressing at 5 days (p=0.01); the relative risk reduction was 47% (Bua et al, 2016).

COST OF LEUKOMED SORBACT

Size	Pad size	Hospital Price per dressing
5cm x 7.2cm	3cm x 4cm	£1.68
8cm x 10cm	4cm x 6cm	£3.74
8cm x 15cm	4cm x 11cm	£5.60
10cm x 20cm	5cm x 16cm	£9.34
10cm x 25cm	5cm x 20.5cm	£11.68
10cm x 30cm	5cm x 25cm	£14.01
10cm x 35cm	5cm x 30cm	£16.34

Explanation of how to use this guide: This document can be used to make the case for implementing effective prevention and management measures and may be supported by data from your own care setting. As well as economic impact, it is important to know the impact of interventions on patient quality of life and outcomes.

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APPROACHES TO SSI PREVENTION

Pre-operative
- ✓ Pre-operative showering; hair removal in theatre with clippers; correct patient theatre wear; nasal MRSA decontamination; mechanical bowel preparation; antibiotic prophylaxis

Intraoperative
- ✓ Hand decontamination; sterile drapes; antiseptic skin preparation; patient warming; appropriate closure method

Post-operative
- ✓ **Wound dressing choice**; appropriate frequency of soiled dressing changes; SSI surveillance; topical antimicrobial agents; debridement (NICE, 2008)

CLINICAL BENEFITS OF LEUKOMED SORBACT

Leukomed Sorbact effectively prevents wound infection and reduces bacterial load in infected and at-risk wounds, with all types of wound pathogen immediately and irreversibly bound to the dressing (i.e. Gram-positive bacteria, Gram-negative bacteria, and fungi) and then removed when the dressing is changed (Cutting and McGuire, 2015; Stanirowski et al, 2016; Mosti et al, 2015; Ciliberti, 2016; Kammerlander et al, 2008; Ronner et al, 2014). Leukomed Sorbact has no contraindications due to its purely physical mode of action (Bateman, 2015). It can be used as part of burns management regimen (Jeffery, 2014); may help kick-start healing where bacterial load is a barrier (Bateman, 2015); and may also have a role in removal of biofilm (tested *in vitro*) (Cooper and Jenkins, 2016; Kleintjes et al, 2015).

PATIENT BENEFITS OF LEUKOMED SORBACT

Use of Leukomed Sorbact also positively impacts patient wellbeing and comfort: as it is suitable for prolonged use – with the bacteria being rendered inactive – it may be left in place for up to seven days (Bateman, 2015), potentially reducing the number of dressing changes required. There is also a low level of allergy risk and no formation of bacterial resistance (Bateman, 2015). The dressing is breathable, shower-proof, and stays in place securely throughout wear, even under compression, since its mechanism of action is not compromised by external pressure (Brambilla et al, 2013).

ECONOMIC BENEFITS OF LEUKOMED SORBACT

Jenks et al (2014) examined SSIs over a 2-year period in an English hospital (April 2010 – March 2012) in order to estimate their cost to the healthcare system. Surveillance/patient level information and cost system datasets for patients who had undergone major surgery were consolidated, with the following primary outcome measures:
- Attributable post-operative length of stay (LOS)
- Impact on profitability of surgical procedure (of the SSI).

Median attributable LOS was 10 days, with 4694 bed days lost to SSIs over the 2-year period. The median additional cost attributable to SSIs was £5239, with an aggregate additional cost of £2,491,424 over the 2-year period (Jenks et al, 2014). In another study, Stanirowski et al (2016b) estimated post-caesarean SSIs lengthen hospital stays by 4 days, generating an additional cost of 3716 EUR per patient. The total cost of prophylaxis and treatment with Leokomed Sorbact was 1065 EUR, compared with 5775 EUR (control). Control group costs included additional expenses due to prolonged hospitalisation, extra nursing care and systemic antibiotic medications, whereas Leukomed Sorbact costs covered only ambulatory visits. The relative risk reduction in SSIs with Leukomed Sorbact (versus control) has been estimated between 47% (Bua et al, 2016) and 65% (Stanirowski et al, 2016b). Given the substantial economic burden of SSIs, the effect of using a dressing such as Leukomed Sorbact to reduce their impact could be substantial.

POTENTIAL COST SAVINGS WITH LEUKOMED SORBACT
- ✓ Number needed to treat* = 12 (extrapolated from Bua et al, 2016)
- ✓ Dressings required per patient = 2
- ✓ Average additional cost of Leukomed Sorbact versus standard dressing = £3
- ✓ Cost of 1 SSI = £1500 to £10,000

- ✓ 12 x 2 = 24 (dressings)
- ✓ 24 x £3 = £71 (additional cost)

- ✓ £1500 to £10,000 x £71 = **£1428 to £9928 per patient**

Q COULD LEUKOMED SORBACT REDUCE YOUR COSTS THROUGH SSI PREVENTION?

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This Making the Case guide was developed using the literature and data provided by BSN medical

*Number needed to treat: the number of patients that need to be treated for one patient to benefit compared with control in a clinical trial