Reducing the risk of Surgical Site Infections

3M™ Ioban™ 2 Antimicrobial Incise Drapes
Impact of Surgical Site Infections.

5% of all surgical patients develop a SSI

Costs at least £3000 to treat

Quality of life affected

Twice as likely to die

Doubles stay in hospital

Increased nursing care

Low patient satisfaction

Increased litigation

Antibiotic treatment contributes to increase in antibiotic resistance

Reducing the risk of surgical site infections
Risk of SSI is linked to number of skin microbes.

The Centers for Disease Control and Prevention (CDC) states that the risk of surgical site infection (SSI) can be measured according to three distinct variables:

1. **The dose of microbial contamination**
i.e. how many microbes there are.

2. **The virulence of contaminating microbes**
i.e. how infectious the microbes are.

3. **The resistance of the host**
i.e. how good the patient’s immune system is.

This relationship can be represented as:

\[
\text{Risk of SSI} = \frac{\text{Number of microbes} \times \text{Virulence of microbes}}{\text{Host’s immune system}}
\]

Human skin contains up to 100,000 microbes per sq cm.

**Just 100 microbes per sq cm can result in an SSI.**
We know that most surgical site infections (SSI) are caused by the contamination of a surgical incision with microbes from the patient’s own body during surgery. Infection caused by microorganisms from an outside source following surgery is less common.\(^6\)

Whilst skin preps reduce microbes on the skin surface, bacteria in the deeper skin layers will remain. Over time these microbes can recolonise the skin surface.

New evidence now demonstrates that iodine released from 3M™ Ioban™ 2 Antimicrobial Incise Drapes is able to penetrate these deeper skin layers at a concentration required for microbial death.\(^10\)

**Helping to prevent skin recolonisation and defend against SSIs.**
Works in the deeper skin layers.

In 2015, a study by Elliott et al\(^\text{10}\) measured the permeation of iodine from 3M™ Ioban™ Drapes by inoculating samples of human skin with MRSA epidemic strain EMRSA-15 and applying Ioban to the skin surface for six hours. The drape material was then removed from the skin surface and the skin samples were immediately cryogenically frozen. Samples of skin 100µm in diameter (to a depth of 1500µm) were then sectioned. Iodine was then extracted from each section and the concentration of iodine measured.

Iodine from the Ioban drapes was found to be present at levels required for microbial death at a depth of 1000 to 1100µm – thereby reaching the deeper skin layers.

Chlorhexidine gluconate (CHG) skin prep by contrast is able to permeate skin at a concentration required for microbial death to a depth of only 300µm.
Reducing the risk of SSIs. The proof.

Yoshimura et al. 1

The objective of this study was to investigate the risk factors associated with wound infection, with special reference to the use of 3M™ Ioban™ 2 Antimicrobial Incise Drapes.

Methodology
A retrospective study on 296 patients undergoing high risk liver surgery. Of these patients, 122 were treated using an Iodophor skin prep and Ioban incise drape; the other 174 patients were treated with the Iodophor skin prep alone. Wound infection (SSI) rates were then measured.

Results
The SSI rates of patients treated with Iodophor skin prep alone was 12.1%. In contrast the SSI rates of patients who were treated with Iodophor skin prep and an Ioban incise drape was 3.1%. This result was statistically significant (p=0.001).

The author concluded: "The non-use of Ioban is a possible risk factor for wound infection after liver surgery."
The objective of this study was to compare the efficacy and cost of 3M™ Ioban™ 2 Antimicrobial Incise Drapes versus standard incise drapes.

Methodology

A prospective randomised study of 5100 patients undergoing cardiac surgery. Of these patients, 1016 were matched in terms of risk factors. One group consisting of 808 patients received Iodine based skin prep and a standard incise drape; the other group of 808 patients received Iodine based skin prep and an Ioban incise drape.

The overall costs for each group were then measured, taking into consideration the cost of drapes, antibiotics, VAC therapy, sternal wound revision, staff salaries and extended hospital stay.

Results

The SSI rate for each group of patients was measured. The group which received a standard drape reported a SSI rate of 6.5%. The group of patients which received Ioban drapes reported a SSI rate of 1.9%. This difference is considered significantly different (p= 0.001).

A cost analysis demonstrated that although the upfront cost of an Ioban incise drape was greater than a standard incise drape, once the additional costs associated with SSI were accounted for, the use of the Ioban incise drapes offered cost savings of €957 per patient.
3M™ Ioban™ 2 Antimicrobial Incise Drapes offer the following clinical benefits for you and your patients:

- Creates a barrier, reducing the risk of bacteria transferring into the surgical wound
- Antimicrobial impregnated film ensures constant contact with a patient’s skin – even during irrigation
- Provides continuous broad-spectrum antimicrobial activity all the way to the incision edge
- Adheres securely to the skin to help prevent drape lift and prep wash-off
- Low memory stretch allows limb mobilisation or heavy retraction with reduced tension to the skin
- Made from a breathable, latex-free film
What clinicians say...

Ioban is a part of our golden standard of care that we provide to all of our patients. It is quick, easy and efficient to use.

Frank McDermot
Head of Neurosurgery
Edinburgh Western General Hospital

“You can never fully sterilise skin, but you can clean skin to give a sterile field by using a sterile impregnated incise drape... where nothing can grow. The site is then sealed under plastic in a sterile environment.”

Mr Phillip Roberts
Consultant Orthopaedic Surgeon
University Hospital of North Staffordshire

NICE recommendations.

If an incise drape is required for surgery, use an iodophor-impregnated drape unless the patient has an iodine allergy.

Did you know...

Around 30% of infections can be prevented through application of existing knowledge and tools. 3M™ Ioban™ Incise Drapes are one of the most underused tools across the surgical pathway.
### Product codes: 3M™ Ioban™ Incise Drapes.

#### 3M™ Ioban™ 2 Antimicrobial Incise Drapes

<table>
<thead>
<tr>
<th>3M Cat No.</th>
<th>Product</th>
<th>Overall size</th>
<th>Adhesive area</th>
<th>Items/box</th>
<th>Boxes/case</th>
<th>Recommended application</th>
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<tr>
<td>6635</td>
<td>Treatment incise</td>
<td>15cm x 20cm</td>
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<td>Large incise</td>
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<td>Knees, shoulders, abdominal procedures</td>
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#### 3M™ Ioban™ 2 Antimicrobial Incise Drapes EZ

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<td>Frame delivery</td>
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Product codes: 3M™ Ioban™ Speciality Drapes.

3M Drapes with Ioban 2 Incise Area (Specialty Drapes)

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<td>1</td>
<td>Neurosurgery</td>
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</tbody>
</table>

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References


6 NICE Clinical Guidelines, No. 74. Prevention and treatment of surgical site infection.


www.3M.co.uk/ioban