

Clinical Focus>

Zorflex® VB-K antimicrobial wound dressings

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Overview

Bacterial colonisation and infection are key challenges in wound management, impairing the healing process in chronic wounds and other wound types. Protracted healing times impact considerably on both patient health and healthcare budgets. This paper examines how antimicrobial Zorflex® VB-K wound contact dressings combat bacterial infection to accelerate the wound healing process and improve healing outcomes.

Zorflex VB-K uses van der Waals attractive forces that entrap and kill pathogens, without having to incorporate additional chemical agents into the dressing textile. Clinical evaluations in the UK, the US and Switzerland have shown the dressings to be effective at eliminating infection and enabling faster healing times than with conventional dressings.

What is Zorflex® VB-K?

Zorflex VB-K is a highly adsorbent, naturally antimicrobial textile. Used as a contact wound dressing, VB-K accelerates the healing process by entrapping and killing microbes on its surface by means of van der Waals forces of attraction.

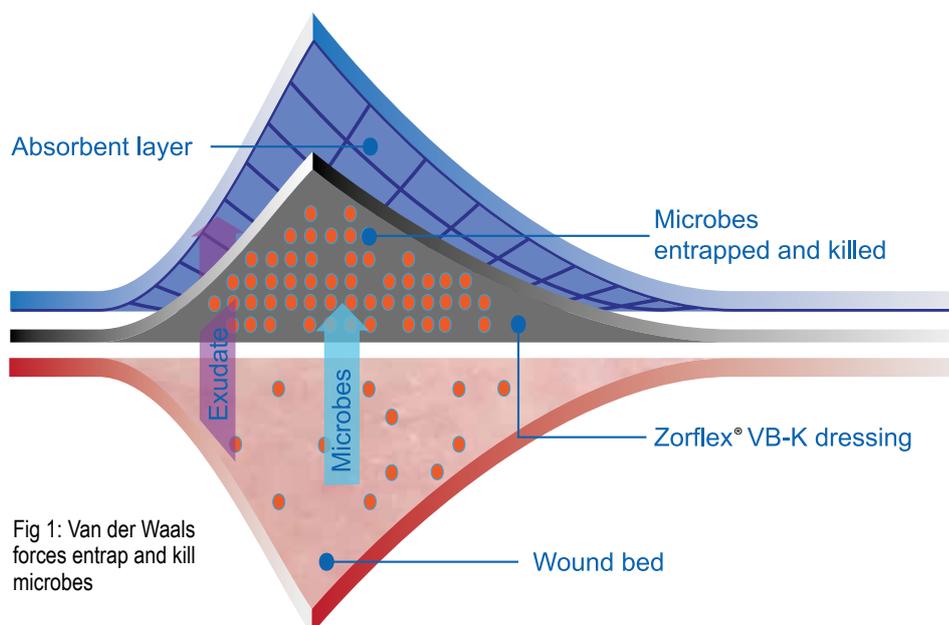


Fig 1: Van der Waals forces entrap and kill microbes

Zorflex VB-K is designated for use with all wound types, ranging from venous leg ulcers, diabetic ulcers and pressure ulcers, to trauma wounds, surgical and post-excision wounds and fungal skin infections. In contrast with most conventional antimicrobial dressings, VB-K dressings contain no added chemical agents.

In tests by the UK Health Protection Agency, VB-K was proven to be both antiviral and virucidal, while evaluations by Wound Healing Centres UK and Newcastle University have demonstrated the textile's antibacterial properties.

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Addressing the economics

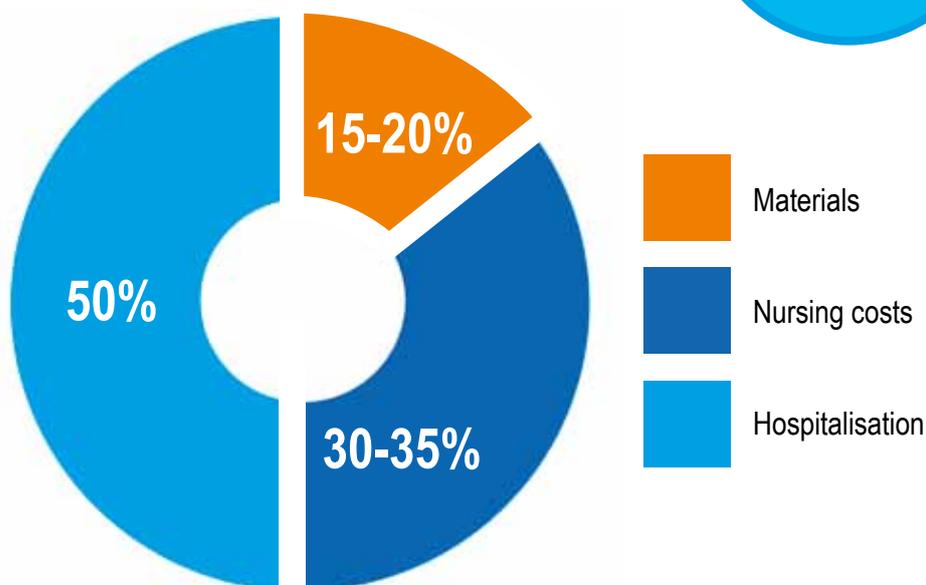
In the US, chronic wounds affect around 6.5 million patients and are estimated to cost more than \$25 billion each year.¹ Chronic wound care is estimated to cost the UK NHS around £2.3-3.1 billion annually (2006 prices), some 3% of the overall NHS budget², while in Australia the figure is estimated at \$3 billion per year.

Without serious action, these figures will rise with an ageing population and the spread of chronic conditions including cardiovascular problems, obesity and diabetes.

Wound dressings account for a minority of overall wound care costs, with estimates ranging from from 15% to 20%. Hospitalisation and nursing time account for the vast majority of the overall cost. As healing times affect bed days and nursing time deployed, wound dressings which can accelerate wound closure will have a positive impact on reducing the overall cost per patient and enabling nursing resources to be more effectively applied.

Below: Fig 2. Material costs account for only 15%-20% of total wound healing costs

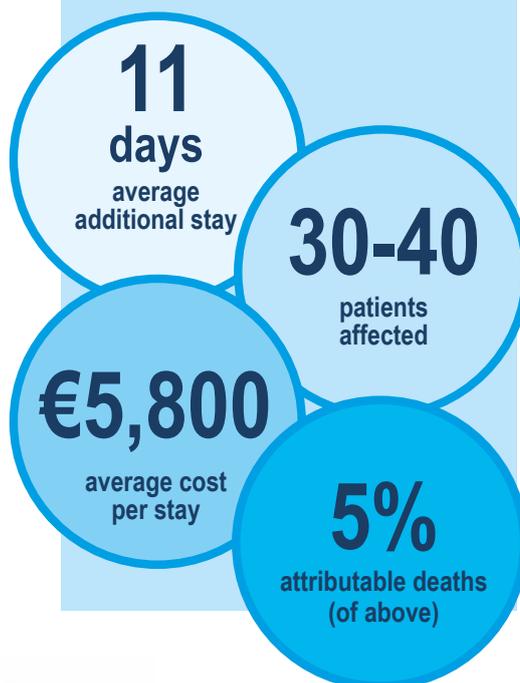
Overall cost of wound healing



The cost of surgical infection

Based on data extrapolated from two recent studies^{3,4}, a hospital undertaking 10,000 operations per year can expect 300-400 surgical infections. These infections would result in 3,300-4,400 extra bed days, and €1.74m-€2.32m in additional costs. The human cost would include increased patient pain, morbidity and distress, as well as, more significantly, some 15-20 deaths attributable to infection.

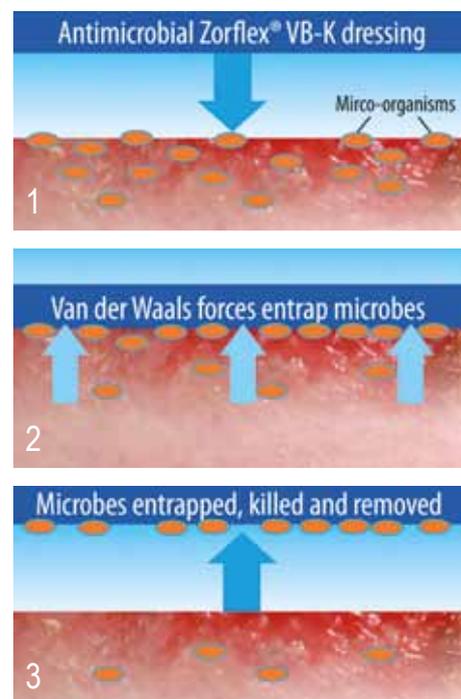
Fig 3: Impacts of surgical infection per 1000 patients



Zorflex® VB-K – how it works

Zorflex VB-K is a highly adsorbent, flexible, knitted textile which is easy to cut, fold or pack into cavities or fistulas, for example.

Placed directly on the wound bed, Zorflex VB-K immobilises and kills bacteria, viruses and fungi on its surface by means of forces of attraction called van der Waals forces.



Conductivity aids trans-epithelial potential

Zorflex VB-K is naturally conductive, and, when placed on the wound, the body's natural trans-epithelial potential is restored, further enhancing the healing process.

¹ Sen, C.K. et al. Human skin wounds: a major and snowballing threat to public health and the economy. *Wound Repair Regen.* 2009, 17, 763-771.

² Posnett J, Franks P (2008) The burden of chronic wounds in the UK. *Nursing Times* 104(3) 44-5

³ Drew P, Posnett J, Rusling L, on behalf of the Wound Care Audit Team. The cost of wound care for a local population in England, 2007

⁴ Posnett J, Gottrup F, Lundgren H, Saal G. The resource impact of wounds on healthcare providers in Europe, 2009

Positive clinical evaluations

A number of clinical evaluations internationally have confirmed antimicrobial Zorflex VB-K contact wound dressings to be effective in treating a variety of different wound types. The textile was used as the primary dressing in the vast majority of cases, sometimes in combination with other therapies.

In two evaluations, Zorflex VB-K roughly halved average wound healing times. M Kaiser et al saw these reduce from 12 weeks to six weeks, while M J Winkler found VLU healing times to be roughly half the 29-week US average.

M J Winkler, MD FACS (USA)

“As an antimicrobial contact layer during elastic compression therapy (Zorflex VB-K) appears effective to: 1. improve wound bed appearance and decrease pain at 7 days; 2. efficiently transport exudate into absorptive dressings; 3. speed VLU healing.”

Presented at EWMA 2015, London

M Tadej et al, Wound Healing Centres UK, 2013

“Zorflex (VB-K) demonstrated, over 7-14 days of use, a strong ability to diminish and alter the bacterial loading of wounds, which reduced... associated pain and effectively ‘cleaned’ the wound bed to allow healing to occur.”

Presented at EWMA 2013, Copenhagen

Of the four evaluations cited here, the largest was conducted by Michaela Kaiser, wound care specialist at Limmattal Hospital in Zürich-Schlieren, Switzerland. Presented at EWMA 2014, her initial findings were based on using Zorflex VB-K on 45 patients with a variety of wound aetiologies. The results with surgical wounds were particularly impressive.

M Kaiser et al, (Switzerland), 2014
“Its (Zorflex VB-K’s) advantages are: rapid elimination of odour and control of infection; exudation stops and spontaneous wound healing begins; overall costs are reduced by faster wound closure times.”

Presented at EWMA 2014, Madrid

Case study: Female patient (44), infected excision wound



15.12.14 Infected paravertebral wound, 14cm diameter, following NPWT and failed skin graft



15.12.14 Zorflex VB-K therapy commenced following debridement



16.02.15 Wound closure achieved following only Zorflex VB-K therapy

F Russell, CNS Tissue Viability, NHS Grampian (Scotland)

“This product has shown positive outcome measures on a number of cases I have evaluated it on - some with NPWT and some with conventional secondary dressings.”

Presenter at EWMA 2015, London

Case study: Female patient, necrotic wound in left cervical region.



16.03.15 Zorflex VB-K therapy about to commence, in conjunction with NPWT and non-adherent contact dressing



20.03.15 At dressing change, black necrotic tissue had turned yellow



23.04.15 Necrotic tissue and slough absent, wound substantially healed, patient discharged

Treatment using Zorflex® VB-K dressings

Because Zorflex VB-K dressings are naturally antimicrobial, using van der Waals forces to entrap and kill microbes on the dressing surface, microorganisms cannot become resistant to its mechanism. This means that, in contrast with most other antimicrobial dressings, treatment does not have to be ceased after two weeks.

To use Zorflex VB-K, cleanse the wound bed with sterile water, ensuring that the wound bed is free from any traces of creams or ointments, which will hinder the dressing's performance.

Cut the dressing to shape, covering the periwound if maceration is evident. Apply the dressing directly to the wound surface either way up, with the direction of stretch running along the limb to allow movement. Secure VB-K using an appropriate secondary dressing/ compression therapy, or with a retention sheet, tape or bandage.

Zorflex VB-K can be left on the wound bed for up to 7 days. It allows the transfer of exudate into the secondary dressing, which should be changed more frequently without disturbing the Zorflex VB-K contact layer.

Antimicrobial dressings and bioburden

Antimicrobial dressings play an important role in reducing wound bioburden by killing bacteria. Some of the most common examples use silver, honey or iodine as antiseptic agents, while others contain polyhexamethylene biguanide (PHMB).

In contrast with conventional antimicrobial dressings, Zorflex VB-K is naturally antimicrobial and microbicidal and contains no antiseptic agents. It works by adsorbing bacteria and other pathogens onto the

dressing surface, with no donation of chemical agents or fibres to the wound bed and no systemic absorption. Microorganisms adhere to the dressing, where they are killed and removed at each dressing change.

Where indicated, Zorflex VB-K can be used instead of topical or systemic antibiotics. In treating cases of systemic or spreading infection, the dressings should be used in conjunction with prescribed treatments such as systemic antibiotics.

Clinical advantages summary

The main clinical advantages of using antimicrobial Zorflex VB-K are as follows:

- Clinically proven acceleration of wound healing across various wound types
- Inherently antimicrobial dressing – no chemically active substances
- Easy to cut into shape, to apply and remove
- Conformable to wound bed
- Conductivity may restore the body's trans-epithelial potential
- May be used with secondary dressings
- No donation of chemical agents/ fibres to wound



Chemviron Carbon Cloth Division

Zorflex VB-K is manufactured in the UK and supplied internationally to the healthcare industry by Chemviron Carbon Cloth Division. For more information please contact Bob Brown, General Manager, Chemviron Carbon Cloth Division, on:

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