



PRONTOSAN®

WOUND BED PREPARATION. OPTIMAL RENGÖRING AV SÅRBÄDDEN.

Problemet – Biofilm

PROBLEMET

Traditionell sårrengöring med koksalt och vatten är i många sår ineffektiv för att avlägsna sårbeläggningar och speciellt komplexa biofilmer.

FAKTA: Över 90% av svårläkta sår har biofilm, som är ett stort hinder för sårsläkning.¹

ÖVER

90%

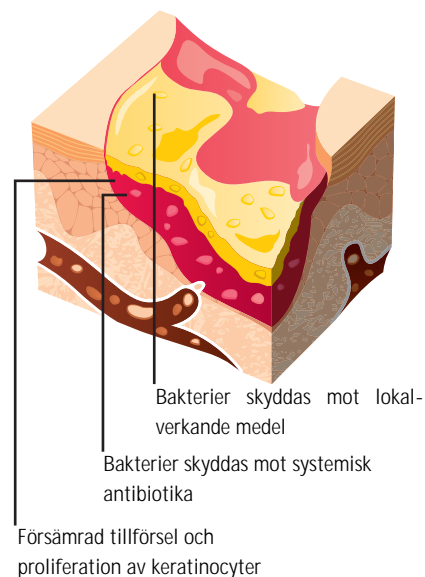
AV SVÅRLÄKANDE SÅR HAR BIOFILM¹

VAD ÄR BIOFILM?

Biofilm bildas när bakterier fäster till ytan genom utsöndring av en tjock, slemmig och klisterliknande substans känd som Extracellulär Polymerisk Substans (EPS).

Denna substans bildar ett skyddande lager, där bakterier inte längre kan röra sig fritt (planktoniskt), men fäster till sårbädden. Nya bakterier produceras och kolonin växer under skyddet av EPS.

Biofilmer är ofta svåra att upptäcka visuellt men fördröjer sårsläkningen genom att de skyddar bakterierna i sårbädden².



HUR UTVECKLAS BIOFILMER?

KONTAMINERING

Fritt flytande bakterier fäster till ytan inom några minuter.

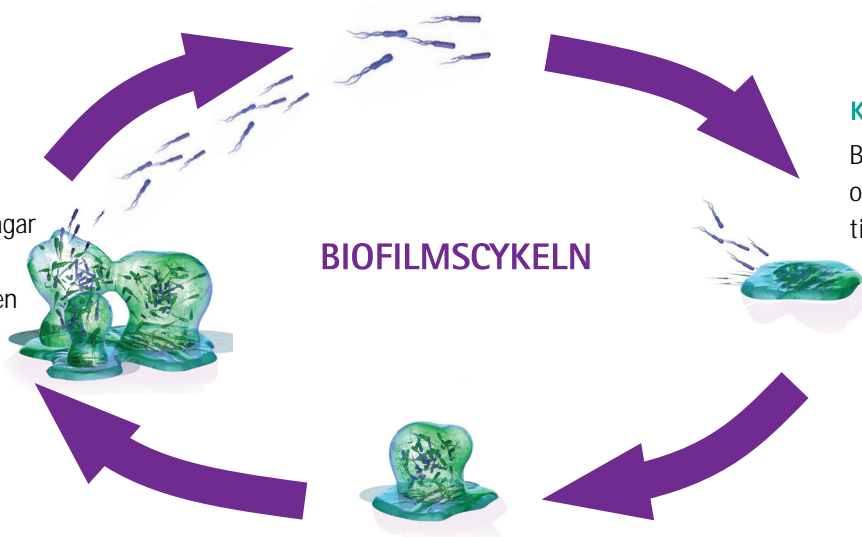
SPRIDNING LEDER TILL SYSTEMISKA INFEKTIONER

Mogen biofilm frisätter och sprider bakterier inom 2-4 dagar och orsakar rekolonisering vilket resulterar i en oavbruten biofilmcykel.

KOLONISERING

Bakterier formerar sig och får fäste inom 2-4 timmar.

BIOFILMSCYKELN



UTVECKLING AV BIOFILM OCH INFLAMMATIONSRESPONS HOS VÄRDEN

Utvecklar initial EPS och blir i ökande grad motståndskraftig inom loppet av 6-12 timmar.

Lösningen - Principer för prevention och behandling av biofilm

LÖSNINGEN

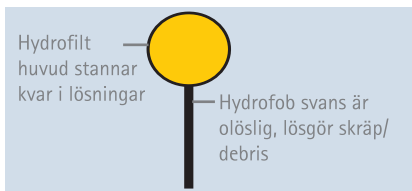
Prevention och behandling av biofilm i svårläkande sår har blivit ett primärt mål vid sårbehandling då kunskapen om biofilm är en orsak till försämrad sårhäkning.³

Prontosan® Lösning och **Prontosan® Gel X** är en av få produkter som är speciellt indikerade för avlägsnande och förebyggande av biofilm. Prontosan® innehåller två nyckelingredienser: **Betain och Polyhexanid**.

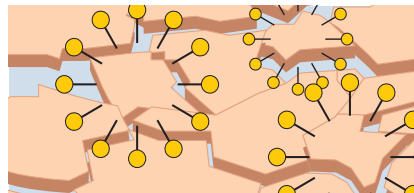
BETAİN

En mild och effektiv surfaktant (tensid) som kan penetrera, förstöra, rengöra och avlägsna biofilm och beläggningar i såret.

BETAİNMOLEKYL

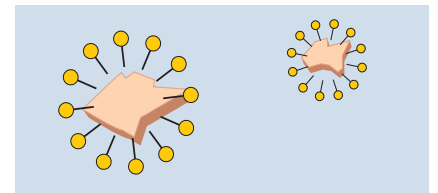


MINSKAR YTSPÄNNINGEN



Löser upp och avlägsnar skräp, sårbeläggning och biofilm.

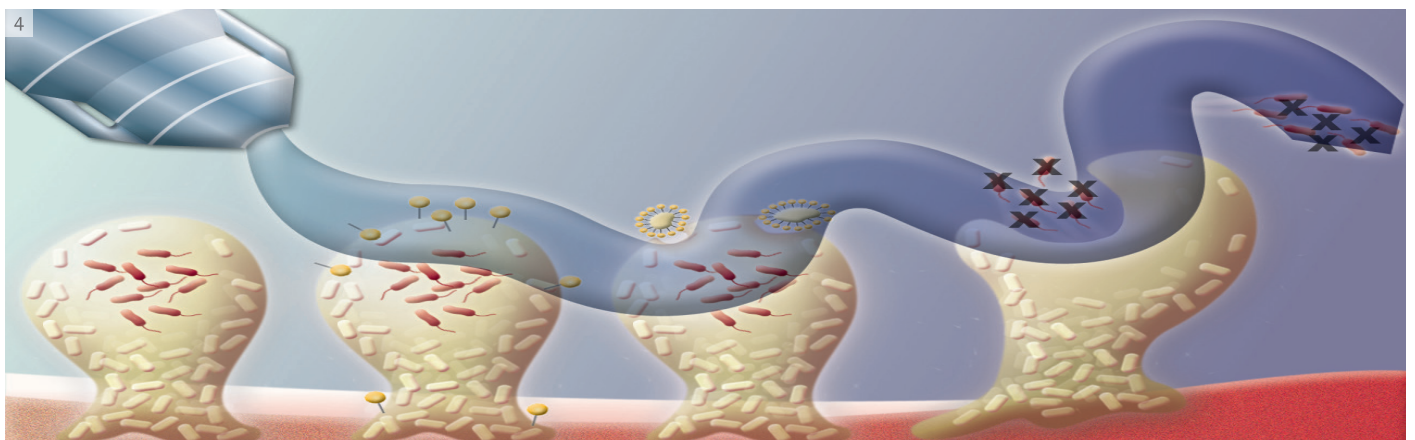
AVLÄGSNAR OCH HÅLLER KVAR I LÖSNINGEN



Håller kvar skräp, sårbeläggning och biofilm i lösningen, och förebygger rekontaminering.

POLYHEXANIDE

Polyhexanid är en högeffektiv bredspektrum antiseptisk substans som är aktiv mot gram negativa och gram positiva bakterier och jäst, inklusive MRSA, Pseudomonas aeruginosa, VRE, etc¹⁰. Polyhexanid har varit i generellt bruk i ca 60 år och har visat en god klinisk säkerhet (se överblick på sida 5) utan någon resistensvidens och med minimal toxicitet^{13, 14, 15}. Polyhexanid har låg till ingen absorption av mänskliga celler och vävnad. Störningar i kroppens metabolism är därför minimal.



Befintlig biofilm

Mekanisk spolning med Prontosan® spollösning

Betain löser upp biofilm (avlägsnar skräp och sårbeläggning)

Polyhexanid som adjuvant antiseptisk substans









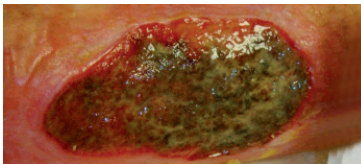

Såret är rengjort, skräp avlägsnat, debriderat, dekontaminerat och fritt från biofilm

Prontosan[®] bryter biofilmcykeln

Använd kombinationen Prontosan[®] Lösning och Prontosan[®] Gel X proaktivt vid sårrengöring för att:

- Reducera biofilm (Prontosan[®] Lösning)
- Förebygga återväxt av biofilm (Prontosan[®] Gel X)

LÄMPLIG VERKNINGSTID FÖR OLIKA TYPER AV SÅR

BESKRIVNING AV SÅR	MÅL	ANVISNING
AKUT SÅR – KIRURGISKT PRIMÄRT & SEKUNDÄRT LÄKANDE <ul style="list-style-type: none"> ■ Högriskpatient* ■ Inga smetigheter ■ Minimalt vätskande 	<ul style="list-style-type: none"> ■ Rengör ■ Förebygger biofilm/ komplikationer 	Spola med lösning 
AKUT SÅR t.ex. TRAUMA <ul style="list-style-type: none"> ■ Smuts 	<ul style="list-style-type: none"> ■ Rengör ■ Förebygger biofilm/ komplikationer 	Blötlägg med Lösningen 
SVÅRLÄKANDE SÅR – GRANULATIONSFASEN <ul style="list-style-type: none"> ■ Högriskpatient* ■ Svagt vätskande 	<ul style="list-style-type: none"> ■ Rengör ■ Förebygger biofilm/ komplikationer 	Blötlägg med Lösningen Överväg Gel X 
SVÅRLÄKANDE SÅR <ul style="list-style-type: none"> ■ En del smetigheter ■ Svagt vätskande 	<ul style="list-style-type: none"> ■ Rengör ■ Förebygger biofilm/ komplikationer 	Blötlägg med Lösningen Applicera Gel X 
SVÅRLÄKANDE SÅR – KRITISKT KOLONISERAT/INFEKTERAT <ul style="list-style-type: none"> ■ Måttligt/kraftigt vätskande ■ Smetigheter ■ Ej läkande sår 	<ul style="list-style-type: none"> ■ Rengör ■ Förebygger biofilm/ komplikationer 	

*Högriskpatient: Så som diabetes, immunsuppression, steroidbruk, patienter med tidigare sårinfektion och/eller biofilm och smetigheter.

Kompatibel med andra förband.

Prontosan[®] Lösning och Prontosan[®] Gel X kan användas i upp till 8 veckor efter öppnandet (patientbundet).

STUDIE	TYP	KONKLUSION
Bellingeri et al., (2016), Effect of a wound cleansing solution on wound bed preparation and inflammation in chronic wound: a single-blind RCT, Journal of Wound care	RCT	The results of this RCT with 289 subjects confirms the superiority of Prontosan® Solution compared to Saline in efficacy as it promotes the wound bed preparation, supports the reduction of inflammatory signs and accelerates the healing of vascular leg ulcers as well as pressure ulcers.
Romanelli M, et al., (2008), Evaluation of the efficacy and tolerability of a solution containing Betaine and PHMB in controlling the bacterial burden of chronic wounds during wound bed preparation	RCT	The results of the RCT with 40 subjects show that the pH value of the wound was significantly ($p<0.05$) lower and that pain control was achieved ($p<0.05$) in the Prontosan treatment group compared to the Saline group Saline group which was the control.
Valenzuela et al., (2008), The effectiveness of a 0.1% polyhexanide gel. Rev ROL Enf;31(4):247-52.	RCT	Both groups were comparable at the start of the study and the results obtained in the final assessment of lesions were as follows: Reversal of positive cultures ($p=0.004$), improvement in the healing process ($p=0.000$), reduction in lesion surface area ($p=0.013$); improvement in granulated tissue % ($p=0.001$), reduction in the % of slough in wound beds ($p=0.002$), reduction of the presence of exudate ($p=0.008$), reduction of the presence of purulent exudate ($p=0.005$), improvement in the condition of surrounding skin ($p=0.021$), reduction in pain ($p=0.049$), reduction in erythema in surrounding skin ($p=0.004$), reduction in surrounding skin edema ($p=0.000$), reduction in surrounding skin warmth ($p=0.004$) and reduction in odor ($p=0.029$).
Cutting K, (2010), Addressing the challenge of wound cleansing in the modern era, British Journal of Nursing, 2010 (Tissue Viability Supplement), Vol 19, No 11	Review	If current thinking, that all chronic wounds are biofilm wounds (Wolcott and Rhoads, 2008), is sustained then we will need to rethink our approach to wound cleansing, as the studies examined above indicate that PHMB, in conjunction with a surfactant, is superior to isotonic solutions. In addition, there is evidence emerging that Prontosan is an effective wound cleanser in longstanding (chronic) wounds and has been found by patients to be pain-free, improve patient quality of life, effectively manage wound infection and to reduce the overall time to healing.
Butcher M., (2012), PHMB: An effective antimicrobial in wound bioburden management, British Journal of Nursing (2012) 21:12 SUPPL. (16-21).	Review	PHMB appears to meet the criteria for an ideal antimicrobial agent, as described by Drosou et al (2003), and is available in presentations that provide clinicians with effective woundcare modalities for most clinical scenarios. Clinical use, both in the UK and the wider healthcare community, has shown PHMB-based wound-care products to be effective options for managing wound colonisation and infection and, so, deserve closer scrutiny.
Dissemond J., et al., (2005), Methicilin-resistenter Staphylococcus aureus (MRSA) in chronischen Wunden, JDDG	Review	Sufficient MRSA eradication could be shown in vivo on patients for the non- cytotoxic Polyhexanide [...] In this article we discuss current therapeutic standards and potential alternatives for eradication of MRSA. There is evident need for effective, novel approaches for elimination of MRSA from chronic wounds that avoid the development of bacterial resistance; otherwise therapeutic alternatives for antibacterial treatment of chronic wounds will become limited.
Andriessen A, Eberlein T (2008), Assessment of a wound cleansing solution in the treatment of problem wounds, WOUNDS; 20(6):171-175	Retrospective	Wounds (Venous leg ulcers) of patients treated with Prontosan® healed significantly faster ($p<0.0001$) and in more cases (97% versus 89%) than the wounds of patients treated with saline solution or Ringer's solution. Additionally the infection rate for the Prontosan group was lower (13% vs. 3%)
Moller et al., (2008), Experiences in using polyhexanide containing wound products in the management of chronic wounds – results of a methodical and retrospective analysis of 953 cases, Wundmanagement; 3:112-117.	Retrospective	Treatment resulted in an improvement of 97% and a complete closure of 80% of the wounds. Infection rates declined from 40% to 3%. Prontosan® Wound Irrigation Solution and Gel were compatible with various wound dressings, induced no skin irritations, reduced odor and were accepted by the patients.
Durante et al., (2014), Evaluation of the effectiveness of a polyhexanide and propyl betaine-based gel in the treatment of chronic wounds, Minerva Chirurgica; 69(5):283-292	Observational	The results of this observational study showed that the treatment of skin wounds of various kinds and types, in different ages, from pediatric age, until the geriatric age , with a polyhexanide and propyl betaine-based gel in combination with a secondary dressing showed significant improvements in the size of the wound, pain at dressing change , and wound characteristics.
Kaehn et al., (2009), In-vitro test for comparing the efficacy of wound rinsing solutions, British Journal of Nursing	In-vitro	Saline solutions were less efficient than a betaine surfactant containing wound rinsing solution in removing protein from adherent test wound coatings. Salt ions hinder the hydration of proteins and decrease protein solubility. Prontosan solubilized denatured proteins and aggregated by inclusion in betaine surfactant micelles. This is an essential property for thorough and gentle wound cleansing. Wound progress of leg ulcers was more positive when the wound was treated with Prontosan compared with saline solution. The wound antiseptic Octenisept did not seem suitable for wound cleansing because proteins were denatured and became insoluble.
Lopez-Rojas et al., (2016), In vitro activity of a polyhexanide-betaine solution against high-risk clones of multidrug resistant nosocomial pathogens, Enferm Infecc Microbiol Clin 35 (1), 12-19.	In-vitro	Prontosan® has high bactericidal activity against the studied multidrug-resistant pathogens. Furthermore, this bactericidal activity occurs rapidly (1 min), within a much shorter period of time than that recommended by the manufacturer.
Hirsch et al., (2010), Evaluation of Toxic Side Effects of Clinically Used Skin Antiseptics In Vitro, Journal of Surgical Research Volume 164, Issue 2	In-vitro	Due to the cytotoxic effect of some antiseptics on human skin cells, it is advised that health care professionals balance the cytotoxicity of the medication, their antiseptic properties, and the severity of colonization when selecting a wound care antiseptic. Lavasept and Prontosan showed best result regarding antibacterial efficacy and cell toxicity, and should therefore be favored in clinical wound care.
Seipp et al., (2005), Efficacy of various wound irrigants against biofilm, ZFW; 4: 160-164.	In-vitro	As far as the clinical practice of biofilm removal based on moist management practices is concerned, our investigations attest to the superior efficacy of the surfactant and polyhexanide solution compared with isotonic saline or Ringer's solution.

Wound bed preparation.

Optimal rengöring av sårbedden.



Klinisk evidens visar att rutinmässigt bruk av Prontosan® innebär bättre resultat för patientens sårhäkning.

- Förbättrad sårhäkning, inklusive förkortad sårhäkningstid⁷
- Bidrar till att förebygga komplikationer¹²
- Bidrar till mindre bruk av antimikrobiella medel och antibiotika¹¹

Prontosan® reducerar kostnader

I en modellberäkning från Storbritannien¹¹, baserad på genomsnittlig reduktion i behandlingstid för patienter med venösa bensår är kostnadsbesparingen i genomsnitt **£400** per patient vid byte från koksalt till Prontosan® i behandlingsförloppet⁸.

Analys av sårbehandlingskostnader ⁵	Kostnadsdrivare	Hur Prontosan® reducerar kostnader
40% Kostnad sjukhuspatient	<ul style="list-style-type: none"> ■ Ökat antal sängdagar ■ Antal komplikationer 	<ul style="list-style-type: none"> ■ Reducerad andel infektioner från 40% till 3%⁶ ■ Reducerade inflammatoriska tecken. BWAT Score p=0.0043⁷ ■ Reduktion av bakteriell belastning⁹
40% Vårdnadstid	<ul style="list-style-type: none"> ■ Behandlingstid 	<ul style="list-style-type: none"> ■ Behandlingstid minskat från 17 till 13 veckor⁸ ■ Reduktion av sårtyta. BWAT score p=0,049. Förbättring av granulationsvävnad. BWAT score p=0,043⁷
20% Förband	<ul style="list-style-type: none"> ■ Förbandskostnader ■ Bytesfrekvens av förband 	<ul style="list-style-type: none"> ■ Förbandsbyten⁶ ■ Silverförband⁶

Sharing expertise

Betydelse för patienten och vårdgivaren av att implementera en standardiserad metod för bättre behandling och resultat. Vid implementering av Prontosan® i era behandlingsrutiner så supporterar vi och erbjuder lämplig utbildning för att möta era behov.

Livskvalitet. Några exempel på patientfall.

"The use of Prontosan® Solution and Gel contributed to the **speedy healing** of these diabetic wounds by reducing bioburden. Their use enabled the **painless** removal of sloughy tissue within one week. The patient spoke of **increased confidence** that his wounds would heal, directly as a consequence of using Prontosan®."

Butters, V and McHugh, J. "A Case Report On The Use Of A Moistening, Cleansing, Surfactant Irrigation Solution And Gel On A Traumatic Wound On A Diabetic Patient In A Busy Acute Department." European Wound Management Association (2012): 481.



07/07/2010



03/09/2010

"The patients quality of life improved with a **reduction in pain and a reduction in exudates levels** requiring only weekly dressings. Her mobility increased and she could begin to walk short distances again, allowing her to go out and **resume normal social activities**. The cost of wound management was reduced with only weekly visits by district nurses being required, compared to daily visits prior to intervention, and through reduced use of antibiotics"

Ovens, L. "Removal Of Biofilm In Infected Venous Leg Ulcers Using Prontosan® Wound Irrigation Solution And Gel". European Wound Management Association (2010)



03/09/2009



10/12/2009

"The benefits in terms of **increased quality of life** for this patient cannot be underestimated and as a result of the **successful wound management** this lady has now started to swim again, is looking forward to a holiday abroad with friends and most importantly is now being considered for the renal transplant list."

Hughes, Nicola. "Calciphylaxis – A Successful Outcome In Wound Management Using Prontosan". European Wound Management Association (2008)



01/04/2008



10/06/2008

"Historically, daily visits from the district nursing staff commenced in January 2001 and took one hour per day. Both the patient and his family found the visits a necessity but they felt that their lives revolved around treating the ulcers. Since commencing Prontosan®, visits from the district nurse were reduced to alternate days and the patient and his wife attended their son's wedding, with no detrimental effect to either ulcer. **This was the first time the patient had left his house to attend a social occasion for over 5 years**. It has made significant improvements to both wounds which the patient, his wife and district nursing service did not expect to see. This has **improved the patient's morale** and the results have motivated all nursing staff."

Horrocks, A. "Successful Treatment of two grade 4 pressure ulcers of 5 years duration using Prontosan® Solution and Gel. European Wound Management Association (2006)



12/04/2006



14/04/2006



17/02/2006





17/03/2006

För fullständiga studiedokument besök www.prontosan.co.uk

Prontosan® Lösning & Prontosan® Gel X

Beställningsinformation

Produktbeskrivning	Storlek	Förpackning	Artikelnummer	Bild
Prontosan® Lösning	40 ml ampull	24	400484	
	350 ml flaska	10	400415	
	1000 ml flaska	10	400446	
Prontosan® Gel X	50 g tub	20	400517	
	250 g tub	20	400508	
Prontosan® Gel	30 ml flaska	20	400515	
Prontosan® Adapter NPWT instillation	-	10	3908437	

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13. Fabry, W. & Kock, In-vitro activity of polyhexanide alone and in combination with antibiotics against *Staphylococcus aureus*. H.-J. *Journal of Hospital Infection*. 2014
14. Hirsch et al., Evaluation of Toxic Side Effects of Clinically Used Skin Antiseptics In Vitro, *Journal of Surgical Research* 2010 202010 Volume 164, Issue 2
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