B|BRAUN
SHARING EXPERTISE

PRONTOSAN®

SÅRBUNNSOPTIMALISERING. TATT PÅ ALVOR.

Problemet - Biofilm

PROBLEMET

Tradisjonell sårrengjøring med saltvann og vann er i mange sår lite effektivt for fjerning av belegg og sårrester, spesielt vanskelig biofilm.

FAKTA: I over 90 % av kroniske sår er biofilm til stede, noe som vesentlig forsinker sårtilhelingen[1].

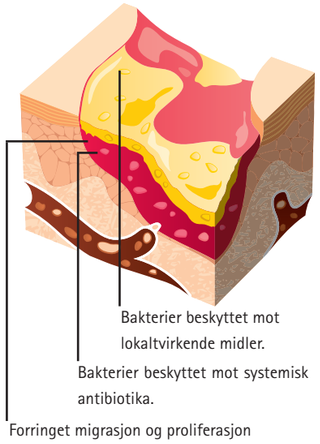
OVER
90%
AV SÅRENE HAR BIOFILM[1]

HVA ER BIOFILM?

Biofilm dannes når bakterier fester seg til overflater ved å skille ut en tykk, slimete, limaktig substans, kjent som Extracellulær Polymerisk Substans (EPS).

Denne substansen danner et beskyttende lag, hvor bakterien ikke lenger kan bevege seg fritt (planktonisk), men fester seg til sårsengen. Nye bakterier dannes, og kolonien gror under beskyttelse av EPS.

Biofilm er ofte vanskelig å oppdage visuelt, men forsinker sårtilhelingen pga. beskyttelsen den gir bakteriene i sårsengen[2].

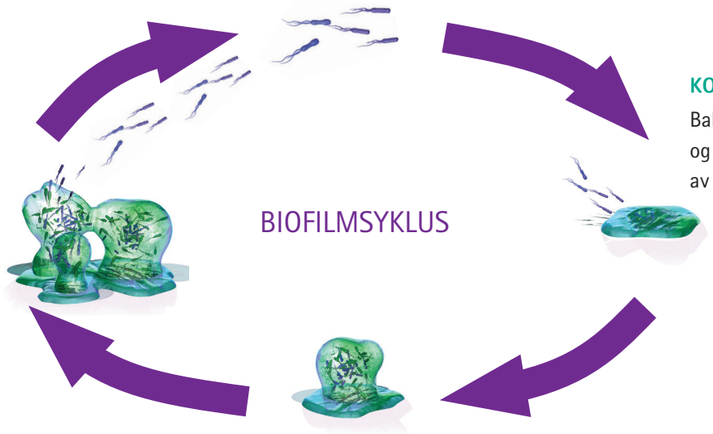


HVORDAN UTVIKLES BIOFILM?[2]

KONTAMINERING
Frittflytende bakterier fester seg til en overflate i løpet av minutter. Begynnende feste er reversibelt.

KOLONISERING
Bakterier formerer seg og får godt feste i løpet av 2 – 4 timer.

SPREDNING FØRER TIL SYSTEMISKE INFEKSJONER
Utviklet biofilm frigjør bakterier i løpet av 2-4 dager og forårsaker rekolonisering, som igjen resulterer i en kontinuerlig biofilmsyklus.



UTVIKLING AV BIOFILM OG VERTENS INFLAMMASJONSRESPONS
EPS blir i økende grad motstandsdyktig i løpet av bare 6 - 12 timer.

Løsningen - Prinsipper for forebygging og håndtering av biofilm

LØSNINGEN

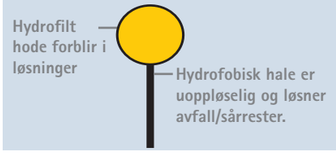
Forebygging og håndtering av biofilm i kroniske sår har raskt blitt en hovedmålsetting innenfor sårbehandling fordi tilstedeværelsen av biofilm er sett på som en viktig årsak til forsinket sårtilheling[3].

Prontosan® Sårskylleløsning og Prontosan® Gel X er blant få produkter spesifikt indikert for forebygging og fjerning av biofilm. Prontosan® inneholder to nøkkelingredienser: **betain og polyhexanid.**

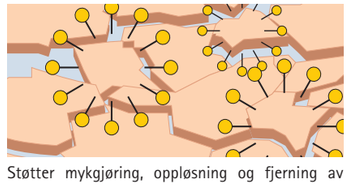
BETAIN

En skånsom, effektiv surfaktant (rengjøringsmiddel), som kan penetrere, forstyrre, rengjøre og fjerne biofilm og sårrester.

BETAINMOLEKYL

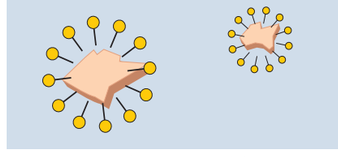


REDUSERER OVERFLATESPENNING



Støtter mykgjøring, oppløsning og fjerning av avfall, sårrester og biofilm.

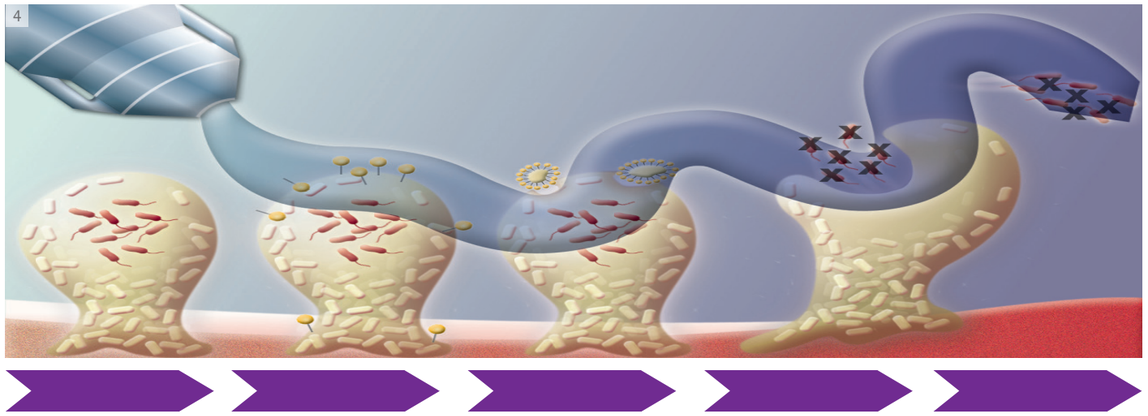
FJERNER OG HOLDER TILBAKE



Holder smuss, sårrester og biofilm tilbake i løsningen og hindrer/reduserer risiko for rekontaminering.

POLYHEXANID

Polyhexanid er en svært effektiv, bredspektret antimikrobisk substans, som er aktiv mot gram negative og gram positive bakterier og gjær, inkl. MRSA, pseudomonas aeruginosa, VRE etc.[10]. Polyhexanid har vært i generell bruk i ca. 60 år og har vist gode kliniske sikkerhetsdata uten resistensevidens og med minimal toksisitet. Polyhexanid har lav til ingen absorpsjon i menneskeceller og vev. Forstyrrelser i kroppens metabolisme er derfor minimal.



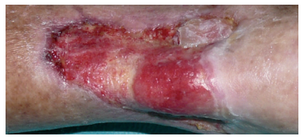
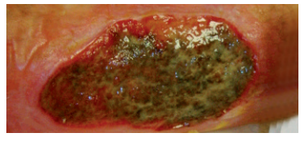
Biofilm til stede → **Mekanisk skylling med Prontosan® Sårskylleløsning** → **Betain løser opp biofilm (fjerner avfall og sårrester)** → **Polyhexanid som adjuvant støtter rengjøring og hindrer rekolonsering** → **Sår er rengjort, avfall fjernet, debridert, dekontaminert og fri for biofilm**

Prontosan® bryter biofilmsyklusen

En proaktiv tilnærming ved bruk av kombinasjonen Prontosan® sårskylleløsning og Prontosan® Gel X, som del av sårbunnsoptimaliseringen, kan vise seg å være nyttig og har som formål å:

- Redusere biofilmbyrden **(Prontosan® sårskylleløsning)**
- Forebygge gjenoppbygging av biofilm **(Prontosan® Gel X)**

Riktig tidsbruk til hver sårtype

SÅRBESKRIVELSE	MÅL	HVORDAN BRUKE
KRONISK SÅR – GRANULASJONSFASE		Rens med sårskylleløsning
■ Høyrisikopasient* ■ Lite eksudat		■ Rengjør ■ Forebygger biofilm / komplikasjoner	 Bløt opp med sårskylleløsning
KRONISK SÅR - KONTAMINERT		
■ Lite slough ■ Lite eksudat		■ Rengjør ■ Forebygger biofilm / komplikasjoner	Rens m/ sårskylleløsning Vurdér Gel 
KRONISK SÅR – KRITISK KOLONISERT/INFISERT		Bløt m/ sårskylleløsning Påfør Gel X
■ Medium/mye eksudat ■ Statisk sår ■ Slough		■ Rengjør ■ Forebygger biofilm / komplikasjoner	 Bløt m/ sårskylleløsning Påfør Gel X

*Høyrisikopasient: Komorbiditet, som f.eks. diabetes, immundefekt, steroidbruk, pasienter med tidligere sårinfeksjon og/eller biofilm og slough.

Kompatibel med andre bandasjer.
Prontosan® Sårskylleløsning og Prontosan® Gel X kan brukes i opp til 8 uker etter åpning (pasientbundet).

STUDIE	TYPE	KONKLUSJON
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	Sufficent MRSA eradication could be shown in vivo on patients for the non- cytotocic 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	Retro-spective	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.	Retro-spective	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 polihexanide and propyl betaine-based gel in the treatment of chronic wounds, Minerva Chirurgica; 69(5):283-292	Obser-vational	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 postitive when the wound was treated with Prontosan comapred 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.

For fullstendige dokumenter og andre studier, besøk www.bbraun.no og https://www.facebook.com/Prontosan/

Sårbunnsoptimalisering. Tatt på alvor.

Klinisk evidens viser at rutinemessig bruk av Prontosan® i sårbehandling vil bedre resultatet av pasientbehandlingen.

- Forbedret resultat for pasienten, inkludert sårtilhelingstiden[7]
- Bidrar til å forebygge komplikasjoner[12]
- Bidrar til mindre bruk av antimikrobielle midler og antibiotika[11]

Hvordan Prontosan® reduserer kostnader

I en modellberegning fra UK[11], basert på gjennomsnittlig reduksjon i behandlingstiden for pasienter med venøse leggsår, er kostnadsbesparelsen på gjennomsnittlig £ 400 pr. pasient[8] ved å bytte fra saltvann til Prontosan® i behandlingsforløpet.

Analyse av sårbehandlings-kostnader[5]	Kostnadsdrivere	Hvordan Prontosan® reduserer kostnader
40 % kostnader sykehuspasient	■ Økt antall liggedøgn ■ Antall komplikasjoner	■ Infeksjonsratene redusert fra 40 % til 3 %[6] ■ Betennelsestegn redusert. BWAT score p=0,0043[7] ■ Reduserer bakteriell belastning[9]
40 % sykepleietid	■ Behandlingstid	■ Behandlingstid redusert fra 17 til13 uker[8] ■ Reduksjon i sårstørrelse. BWAT score p=0,049. Forbedring i granulasjonsvev. BWAT score p=0,043[7].
20 % bandasje	■ Bandasjekostnader ■ Hyppighet på bytte av bandasjer	■ Bytte av bandasjer[6] ■ Sølvbandasjer[6]

Sharing Expertise

B. Braun ser viktigheten av utarbeidelse og implementering av standardiserte metoder og pasientforløp for å bedre pasientbehandling og resultat. Ved bruk av Prontosan® i behandlingsforløpet, kan vi samarbeide med ditt fagmiljø om opplæring og faglige oppdateringer.

Livskvalitet. Utdrag fra pasienthistorier.

"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.


03/09/2010


07/07/2010

"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 Treatmen 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

For fullstendige dokumenter og andre studier, besøk www.bbraun.no og https://www.facebook.com/Prontosan/

Prontosan® Sårskylleløsning og Gel X
Bestillingsinformasjon

Produktbeskrivelse	Størrelse	Pakningsstørrelse (stk.)	Artikkelnummer
Prontosan® Sårskylleløsning	40 ml ampulle	24	400484
	350 ml flaske *)	10	400415
	1000 ml flaske	10	400446
	1000 ml flaske m/NPWT adaptere **)	10	400240
NPWT adapter til Prontosan® Sårskylleløsning, enkeltpakket		10	3908437
Prontosan® Gel X	50 g tube 250 g tube	20 20	400517 400508

**) godkjent for refusjon under hjemmel 513 EB.*
***) kompatibelt med V.A.C.ULTA™ Negative Pressure Wound Therapy System, with V.A.C. VERAFLO™ Therapy*

Les mer om sårbunnsoptimalisering
på våre hjemmesider.

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