

# Prepare to Heal

Webinar Series  
Prepare



The Coloplast 3 Step Approach



# Wound Preparation

*Removing the barriers to healing*

# Learning Objectives



The Coloplast 3 Step Approach

- Understand the current wound care climate and impact
- Understand the differences in terminology
- Think about why we need to prepare wounds
- Gain knowledge of different wound preparation methods
- Understand the impact of wound preparation on healing
- Discuss which wounds require preparation?
- Think about simplifying our approach to wound management

# The Coloplast 3 Step Approach

*Simplifying wound healing*

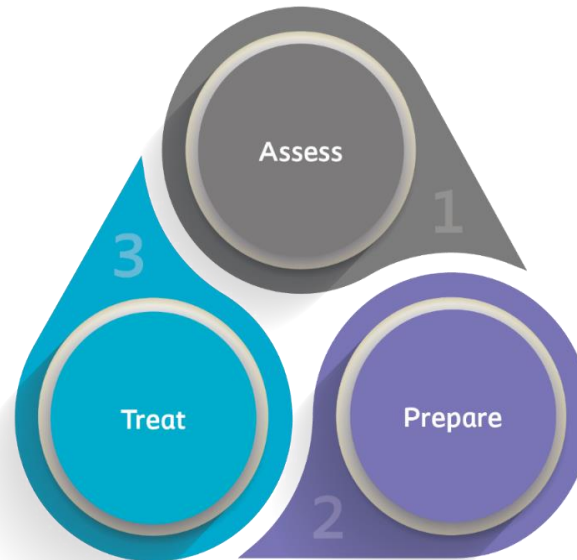
## Step 1: Assess

Assessment is paramount in defining treatment objectives.

*The Triangle of Wound Assessment is a holistic framework that allows practitioners to assess and manage all areas of the wound, including the periwound skin.*

## Step 3: Treat

Portfolio of dressings to manage a wound of any depth and stage of healing.

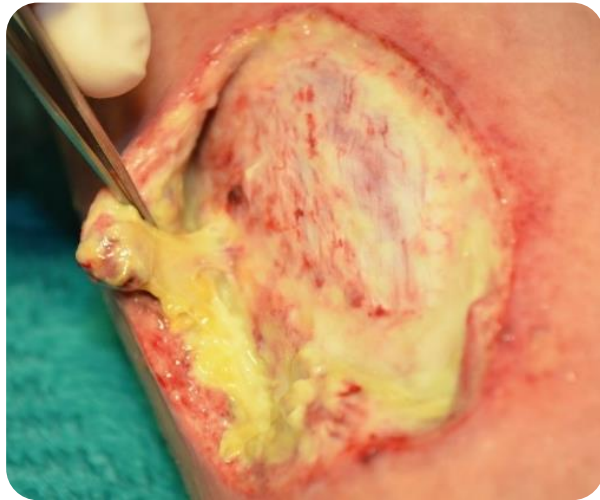


## Step 2: Prepare

Wound preparation is key to remove the barriers to healing, creating an optimum healing environment



# Clinicians may face challenges as below in their clinical practice<sup>1</sup>



Excess fibrin and slough



Necrotic tissue and bacteria



Hyperkeratosis

1. Strohal, R., Apelqvist, J., et al., EWMA Document: Debridement. J wound Care. 2013;22 (suppl.1): S1-S52

# Wound preparation - potential barriers



*"I don't want to disturb the wounds progress by cleansing"*

*"I try not to clean as it drops the wound temperature"*

*"I was always taught to only cleanse the wound edge, never to touch the actual wound bed or peri wound skin"*

*"I don't want to cause trauma by disturbing the wound"*



Carlos, wound patient



## Why is effective wound preparation so important?

Wound cleansing and debridement should be seen as an integral part of wound preparation to optimise the wound environment by removing debris, reducing bacterial load and preventing biofilm activity.<sup>1</sup>

1. The role of wound cleansing in the management of wounds - Wounds International

# Slough, non-viable tissue and biofilms can all delay the wound healing process as they may...<sup>1-3</sup>



**Increase risk of infection**



**Inhibit development of healthy tissue**

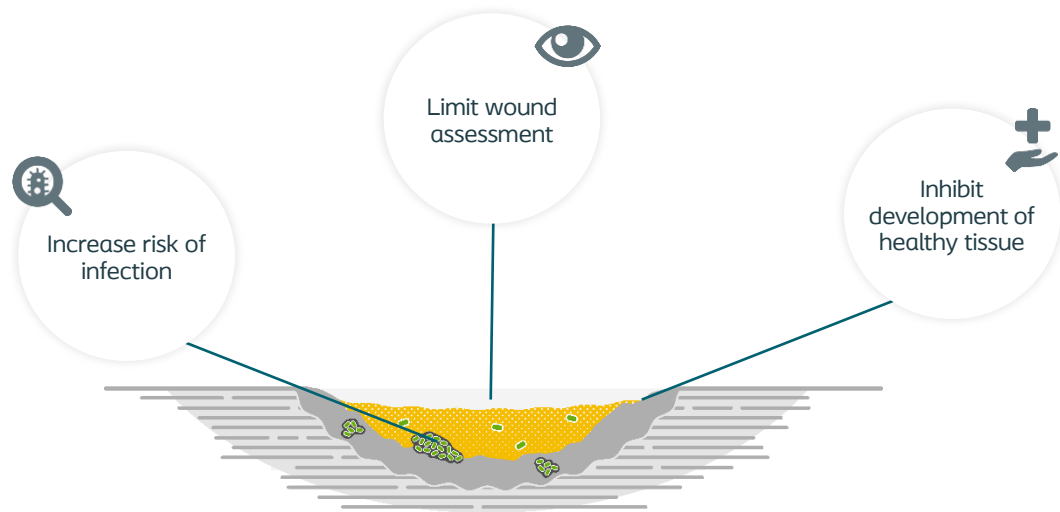


**Limit wound assessment**

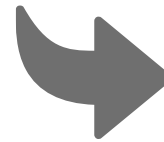
1. Strohmal, R., Apelqvist, J., et al., EWMA Document: Debridement. J wound Care. 2013;22 (suppl.1): S1-S52  
2. Anghel et al., Current Concepts in Debridement: Science and Strategies, Plastic and Reconstructive Surgery, 2016  
3. Day, Kathy, Effective debridement in a changing NHS – A UK consensus. 2013; Wounds UK



# Delayed wound healing<sup>1-3</sup>



**These factors may all delay the healing process**



## Delayed wound healing may lead to:<sup>1-3</sup>



Decreased patient **quality of life**



**Increased time** burden of wound treatment



**Increased cost** burden of wound treatment

1. Strohmal, R., Apelqvist, J., et al., EWMA Document: Debridement. J wound Care. 2013;22 (suppl.1): S1-S52  
2. Anghel et al., Current Concepts in Debridement: Science and Strategies, Plastic and Reconstructive Surgery, 2016  
3. Day, Kathy, Effective debridement in a changing NHS – A UK consensus. 2013; Wounds UK

# Why should we remove devitalised tissue from a wound?<sup>1-3</sup>



## Devitalised tissue could:

- Increase healing time
- Increase the risk of wound infection
- Prolong the inflammatory response
- Increase levels of pro-inflammatory cytokines (signalling proteins which are required for wound healing)



1. Iocono JA, Erlich HP, Gottrup F, Leaper DJ. The biology of healing. In: Leaper DJ, Harding KG (eds). Wounds Biology and Management. 1998; Oxford Medical Publications, Oxford: 10–22.  
2. Young T. Debridement — is it time to revisit clinical practice? Br J Nurs 2011; 20(suppl): 24–28  
3. Young T. Reviewing best practice in wound debridement. Prac Nurs 2011; 22: 488–92.



# How will wound preparation support wound healing? <sup>1</sup>



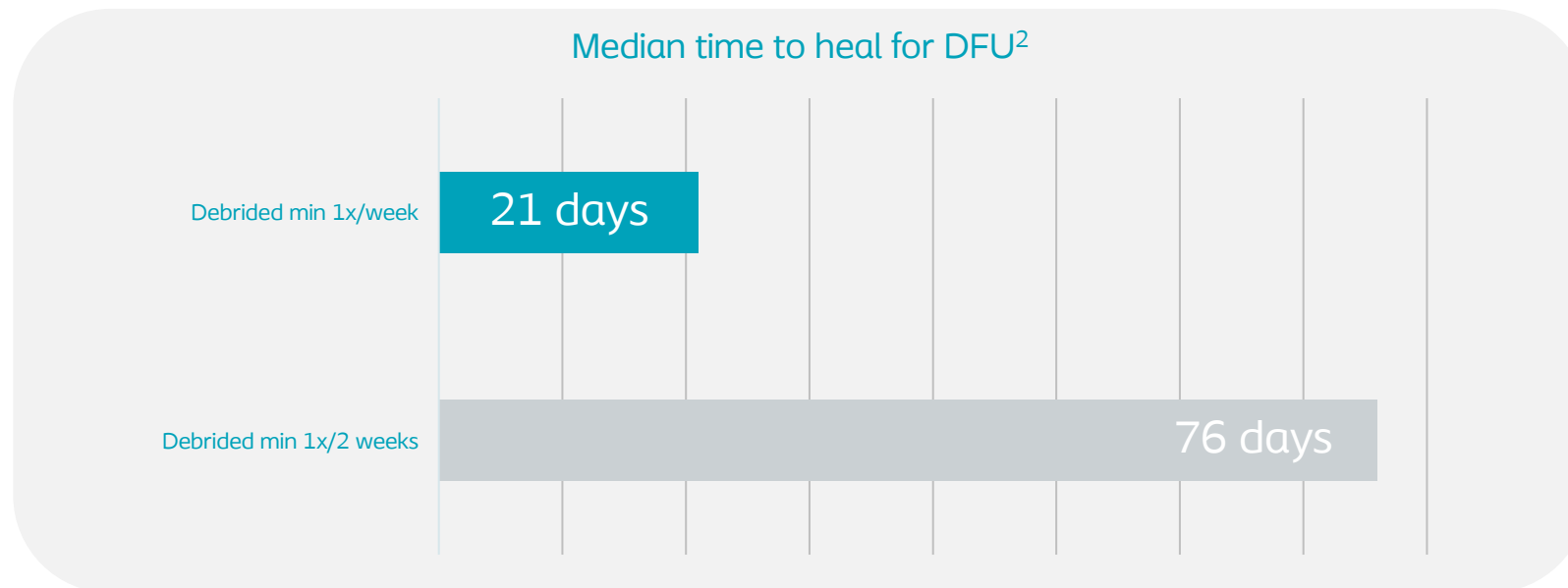
- Reduced risk of infection by removing physical barriers.
- Improve healing outcomes, by creating an optimum healing environment.
- Improve pain levels associated with maceration and breakdown of devitalised tissue.
- Improve quality of life for patient, and reduce time spent living with a wound.

1. Barrett S, Dark J, Dowsett C et al (2022) Best practice recommendations: Wound preparation by cleansing and debridement using Alprep Pad. Wounds UK, London.

# It's clinically proven that cleansing and debridement speeds up wound healing<sup>1,2</sup>



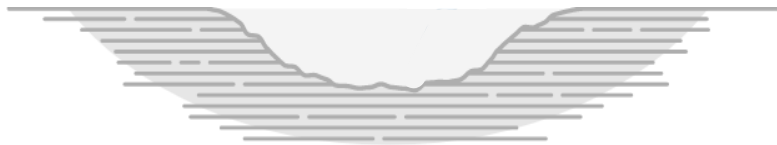
Preparing the wound by cleansing and debridement prior to applying a dressing has positive results because the treatment speeds up wound healing<sup>1,2</sup>



1. Wounds UK. (2013). Effective debridement in a changing NHS: a UK consensus: London.

2. Wilcox, J. R., Carter, M. J. and Covington, S. (2013). Frequency of Debridements and Time to Heal: A Retrospective Cohort Study of 312 744 Wounds. JAMA Dermatology, 149(9): 1050-1058.

# Removing the barriers to healing



By cleansing and wound debridement we can remove barriers to healing such as **slough, non-viable tissue and biofilms<sup>1</sup>**

1. Strohal, R., Apelqvist, J., et al, EWMA Document: Debridement. J wound Care. 2013;22 (suppl.1): S1-S52



What do we mean by the term debridement?

**Debridement is defined as the removal of dead, devitalised or nonviable tissue. Removal of infected or foreign bodies within a wound bed or wound edge.<sup>1</sup>**

What do we mean by the term wound preparation?



**Wound preparation is a concept emphasising a holistic and systematic approach to assess and remove barriers to healing. Allowing the wound healing process to progress normally.<sup>2</sup>**

1. Wounds UK. *Effective Debridement in a Changing NHS: A UK Consensus*. Wounds UK, London. 2013. Available at: <http://bit.ly/13er4dt> [Date accessed 13.05.2013]

2. Falanga V. *Wound Bed Preparation in Practice*. EWMA Position Document. London: Medical Education Partnership Ltd; 2004. Wound bed preparation: Science applied to practice; pp. 2-5.



# Why is wound preparation important?<sup>1-3</sup>



- Dead or devitalised tissue creates a physical barrier preventing epithelial cells migrating across a wound. Slowing down the healing process
- Dead, devitalised tissue and biofilms also block the delivery of topical agents (antimicrobials), making them ineffective
- Wound assessment is also hindered by dead or devitalised tissue at the wound bed, edge or peri wound skin
- Treatment time and costs increase when preparation is not completed

1. Weir D, Scarborough P, Niezgoda JA (2007) Wound debridement. In: Krasner DL, Rodeheaver GT, Sibbald RG (eds) *Chronic Wound Care: A Clinical Source Book for Healthcare Professionals* (4<sup>th</sup> edn). HMP Communications, Malvern  
2. European Wound Management Association (2004) *Position Document: Wound Bed Preparation in Practice*. MEP Ltd, London.  
3. Callaghan R, Stephen-Haynes J (2012) *Changing the Face of Debridement in Pressure Ulcers*. Poster presentation. 15th Annual European Pressure Ulcer Advisory Panel Conference, Cardiff: 19–21 September



## Benefits of wound preparation for the patient<sup>1-2</sup>



- To reduce malodour and exudate associated with tissue breakdown.
- Reduce risk of infection and challenges associated with this.
- Improve healing times/ outcomes.
- Limit the impact the wound has on QOL and ADL's.

1. Vowden KR, Vowden P (1999) Wound debridement, part 1: non-sharp techniques. *J Wound Care* 8(5): 237-40  
2. Wolcott RD, Kennedy JP, Dowd SE (2009) Regular debridement is the main tool for maintaining a healthy wound bed in most chronic wounds. *J Wound Care* 18(2): 54-6



**BEST PRACTICE RECOMMENDATIONS**

**Wound preparation by cleansing and debridement using Alprep® Pad**

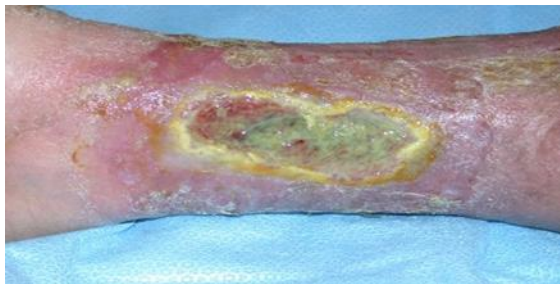
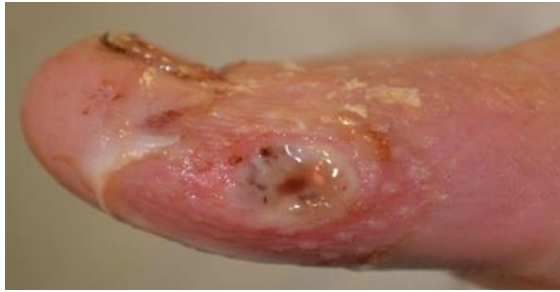
Wounds.co.uk

**Holistic assessment directs wound preparation that includes washing, cleansing and debridement**

	<b>Washing</b> — Washing the surrounding skin and/or limb to maintain a healthy environment and to avoid further complications. <i>e.g. removal of faeces, sweat using water or soap alternative</i>	Does not require extended competencies and training
	<b>Cleansing</b> — The removal of loose surface contaminants, debris, bacteria, excess exudate and wound dressing remnants from the wound bed, wound edge and periwound area and its surrounding skin. <i>e.g. after debridement using water, saline or a wound care cleanser with or without a tool</i>	
	<b>Autolytic debridement</b> — The body attempts to shed the devitalised tissue by the use of moisture. <i>e.g. a moist wound healing dressing can use the body's enzymes in the exudate to separate necrotic tissue from the wound bed</i>	Does not require extended competencies and training but does require some knowledge and skills
	<b>Mechanical debridement</b> — Physical removal of devitalised tissue using friction. <i>e.g. wet-to-dry, hydrotherapy, ultrasound, wipes, debridement pads</i>	
	<b>Biological debridement</b> — Larvae/maggots grown in a sterile environment that are applied to the wound bed to digest the devitalised and dead tissue.	
	<b>Enzymatic debridement</b> — Ointment, gel or dressing containing enzymes that soften and lift necrotic tissue.	
	<b>Sharp or surgical debridement</b> — Use of a scalpel, forceps, curette or scissors to remove devitalised tissue, may require local or general anaesthetic depending on the extent of tissue removal.	Extended skill, competencies, capabilities and expertise required — refer if necessary

Figure 3. Wound preparation continuum

# Types of debridement



*Autolytic*

*Biological*

*Enzymatic*

*Mechanical*

*Surgical /  
Sharp*



# Autolytic debridement



## What is it?<sup>1</sup>

Autolytic debridement is the process by which the body attempts to shed devitalised tissue by the use of moisture.

Dressing choice will support moist wound healing.



1. Gray D, White R, Cooper P, Kingsley A (2005) Applied Wound Management. In: *Wound Healing: A Systematic Approach to Advanced Wound Healing and Management*. Wounds UK, berdeen: 59–96

# Biological Debridement



## What is it?<sup>1</sup>

The use of maggots grown in a sterile environment. These are applied to the wound bed in order for the maggots to digest the devitalised and dead tissue present.



1. <https://www.woundsource.com/print/blog/wound-debridement-options-5-major-methods>

# Enzymatic



## What does this mean?<sup>1</sup>

Enzymatic debridement is performed by the application of a prescribed topical agent that chemically liquefies necrotic tissues with enzymes.



1. <https://www.woundsource.com/print/blog/wound-debridement-options-5-major-methods>

# Mechanical Debridement

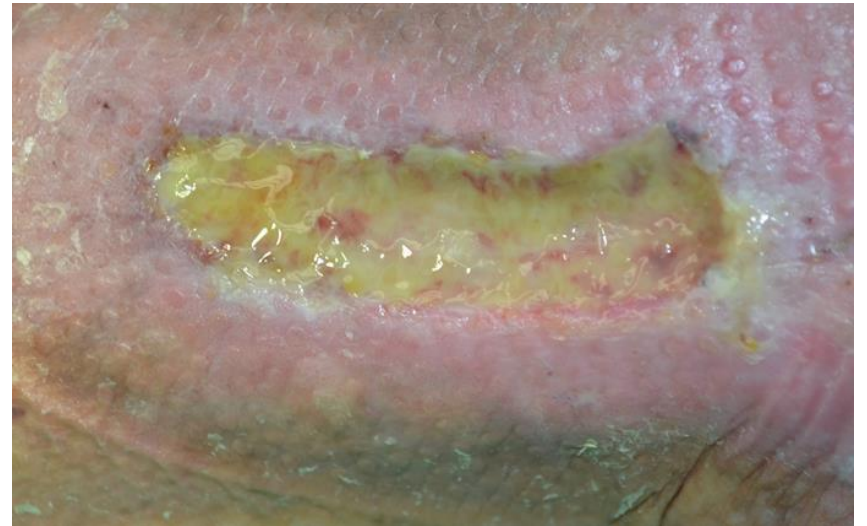


## What is it?<sup>1,2</sup>

Traditional method involves using wet to dry gauze that dries and adheres to devitalised tissue on the wound bed, which is pulled away when the dressing is removed.

Other forms of mechanical debridement would include hydro surgery or ultrasound.

There are now mechanical wound preparation products, accessible to all clinicians managing wounds.



1. Granick MS, Jacoby M, Noruthrum S, et al (2006) Clinical and economic impact of hydrosurgical debridement on chronic wounds. *Wounds* 18(2):35-9.  
2. Gray D, Acton C, Chadwick P, et al (2011) Consensus guidance for the use of debridement techniques in the UK. *Wounds UK* 7(1): 77-84.

# Conservative Sharp Debridement



## What is it?<sup>1,2</sup>

Removal of dead or devitalised tissue using a scalpel, scissors and/or forceps to just above the viable tissue level. This does not result in total debridement of all non-viable tissue and can be undertaken in conjunction with other therapies (eg autolysis).

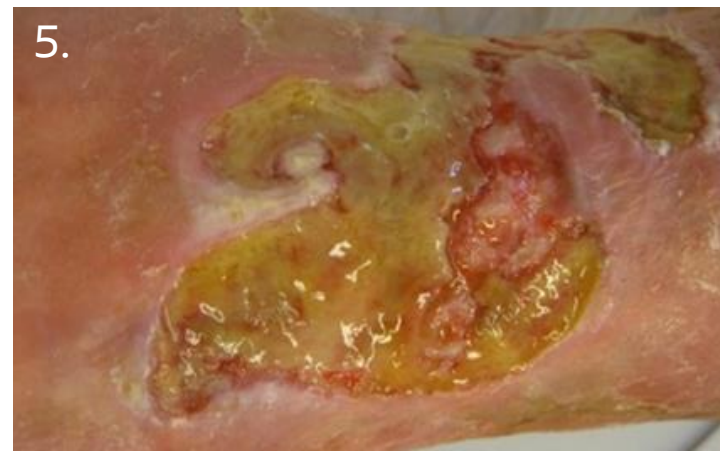
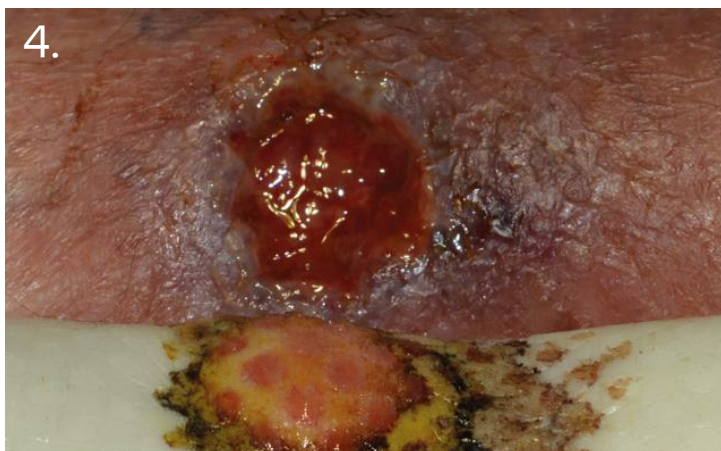
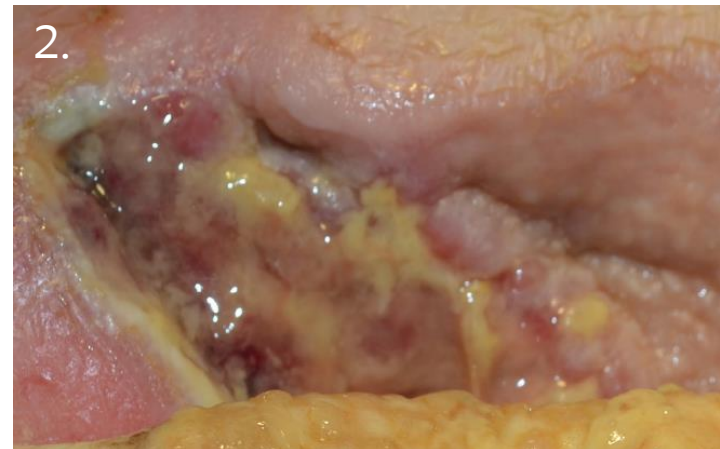
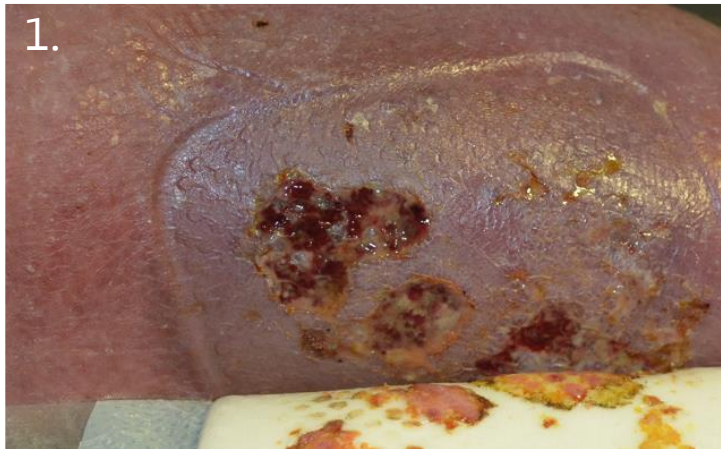
This type of debridement requires extra training and competency.



1. Gray D, Acton C, Chadwick P, et al (2011) Consensus guidance for the use of debridement techniques in the UK. *Wounds UK* 7(1): 77-84.  
2. Vowden K, Vowden P (1999b) Wound debridement Part 2: sharp techniques. *J Wound Care* 8(6):291-4.



# Which of these wounds do you feel should undergo wound preparation?



# How often will wound preparation be required?



The aim of wound preparation is to accelerate healing or to facilitate the effectiveness of management and treatment plans. It is an approach that should be undertaken at each wound care intervention.

- Assessment
- Clinical judgement
- Treatment goals
- Pain levels



# Can wound preparation help us assess?

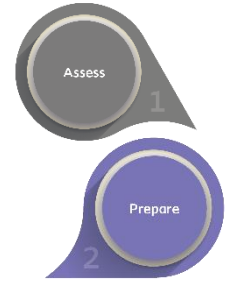


By implementing wound preparation, the formation of healthy granulation tissue will be optimised and the efficiency of biotechnological therapies improved, which would ultimately reduce the time to wound closure<sup>1</sup>.



1. Wound Bed Preparation: The Science Behind the Removal of Barriers to Healing Stuart Enoch, MBBS, MRCSEd, MRCS (Eng), Keith Harding, MB ChB, MRCGP, FRCS Wounds. 2003;15(7)

# Overcoming the physical barriers to healing



Some of the challenges identified in the wound assessment, highlight areas of concern within the wound bed, at the wound edge and on the peri wound skin. These are known to delay wound healing. Effective preparation should look at all of these areas.<sup>1</sup>

1. Dowsett C (2015). Taking wound assessment beyond the edge.

# When should we be cautious with wound preparation?



- If a patient has a wound on a lower limb and is known to be diabetic (this may be suitable but will require specialist advice).
- If a patient has a known arterial flow concern or poor localised tissue perfusion.
- If healing ability is impaired because of medications or underlying medical condition (e.g. cytotoxic medications, immunosuppressed).





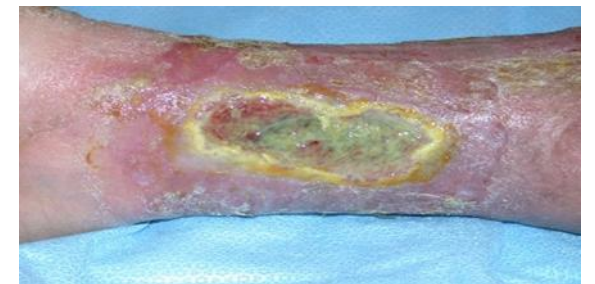
# Biofilms

- A biofilm is a structured community of microorganisms with genetic diversity that creates chronic infection<sup>2</sup>
- Biofilms are characterised by significant tolerance to antibiotics and antimicrobials while remaining protected from host defense<sup>2</sup>

80% of non-healing wounds contain biofilms<sup>1-2</sup>

Biofilms are not visible to the eye, but signs of infection indicate presence of biofilms, e.g.:<sup>3</sup>

- Delayed wound healing
- Increased exudate and slough
- Increased inflammatory response
- Erythema
- Malodour
- High bacterial load

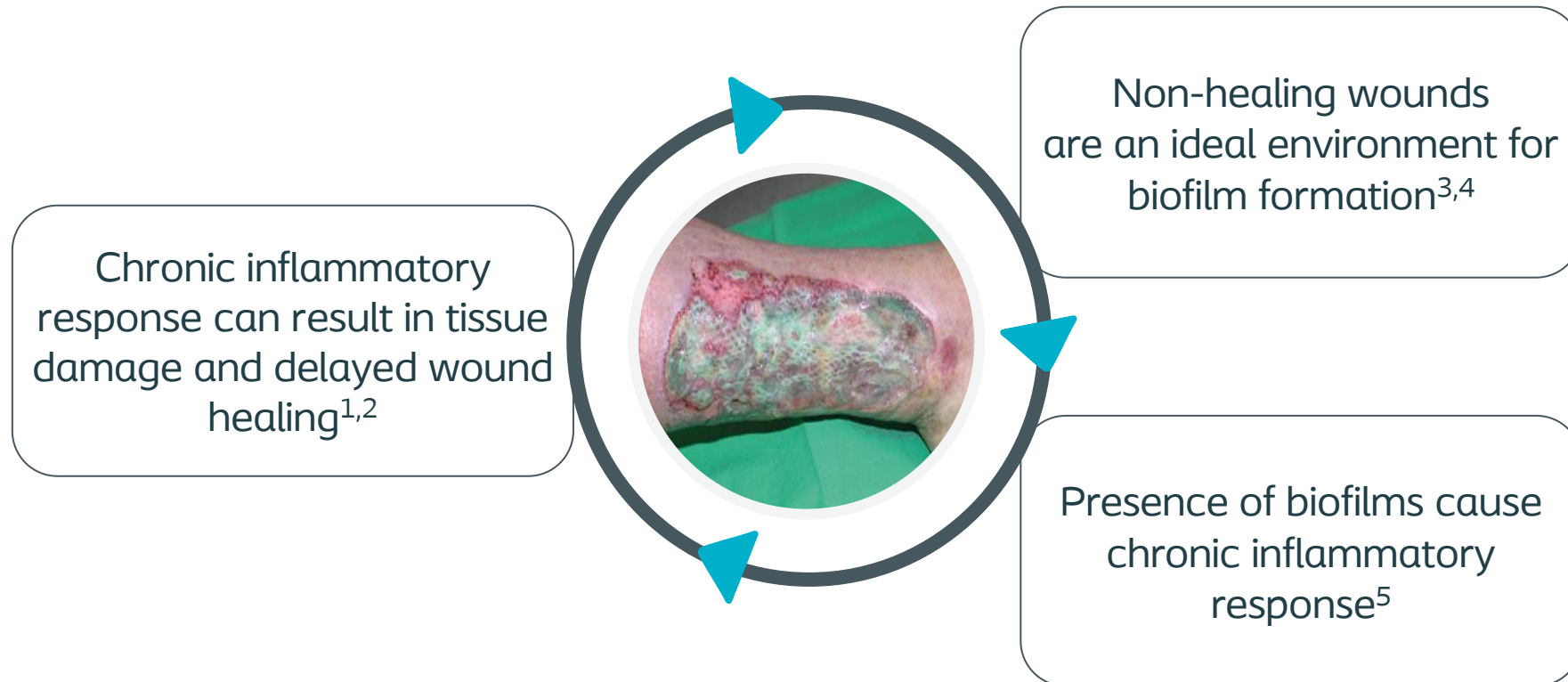


1. Bjarnsholt, T. (2016) The role of biofilm in delayed wound healing

2. Schultz, G. (2017) Consensus guidelines for the identification and treatment of biofilms in chronic non-healing wounds

3. International Wound Infection Institute (2016). Wound Infection in Clinical Practice – Principles of best practice An international consensus update

# Biofilms keep the wound in an inflammatory state<sup>1-5</sup>

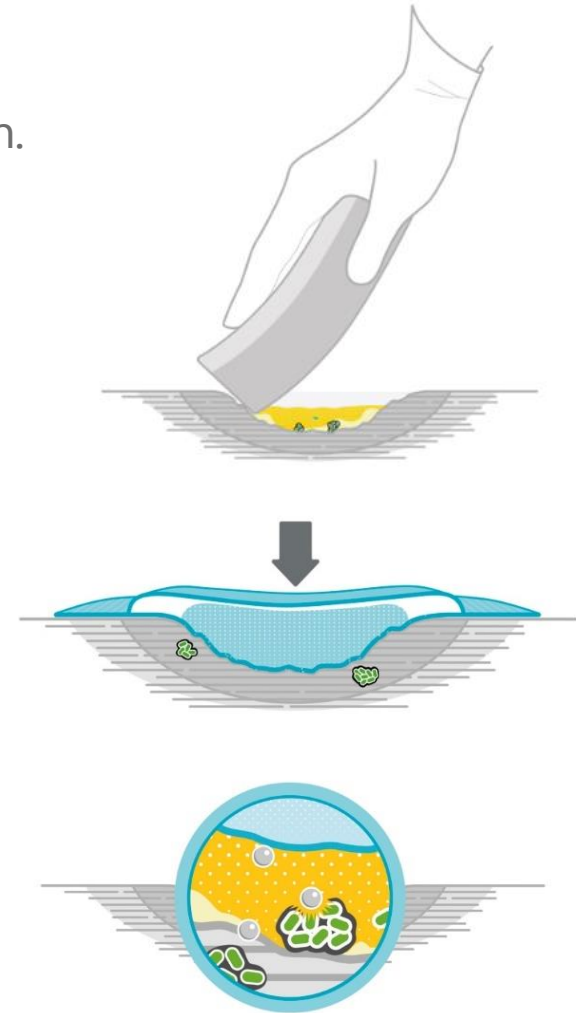


1: Bjarnsholt T (2013). The in vivo biofilm. 2: Zhao G (2013). Biofilms and Inflammation in Chronic Wounds. 3: Gottrup, F. (2013). EWMA Document: Antimicrobials and Non-healing Wounds—Evidence, Controversies and Suggestions. 4: Martin M (2013). Chapter 3: Physiology of Wound Healing. 5: World Union of Wound Healing Societies (WUWHS). (2016). Position Document. Management of biofilm

# International best practice for management of biofilms and infection

The management of biofilms must recognise that there is no one-step solution. Different treatment strategies must be used.<sup>1,2</sup>

- 1 Wound preparation**<sup>1,2</sup>  
Cleanse and debride to reduce the number of microorganisms by disturbing and removing some of the biofilms.
- 2 Apply a barrier dressing**<sup>2</sup>  
Prevent maceration, by management of exudate, and prevent recontamination.
- 3 Infection management**<sup>1,2</sup>  
Suppress biofilm formation and reduce existing biofilms and microorganisms with an active agent in the dressing.



1: International Wound Infection Institute (2016). Wound Infection in Clinical Practice – Principles of best practice  
2: World Union of Wound Healing Societies (WUWHS). (2016). Position Document. Management of biofilm

# Frequency of preparation in management of Biofilm<sup>1-2</sup>:



Further research is required to establish the optimal frequency of debridement; however, expert opinion suggests that debridement should be performed at least weekly. To disrupt biofilm attachment and prevent dispersal, use a combination of debridement strategies together with application of antimicrobial wound therapy dressings.

It has been demonstrated that debridement provides a window of opportunity in which the biofilm defences are temporarily interrupted, allowing increased efficacy of topical and systemic management strategies.



1. Wolcott RD, Kennedy JP, and Dowd SE. Regular debridement is the main tool for maintaining a healthy wound bed in most chronic wounds. J Wound Care 2009; 18(2):54-6.  
2. Wolcott RD, Rumbaugh KP, James G, Schultz G, et al. Biofilm maturity studies indicate sharp debridement opens a time-dependent therapeutic window. J Wound Care 2010; 19(8):320-8.

# Case Study: Mr D

## The Patient



- 55 year old male.
- Left Hallux (big toe) amputation due to Type 2 Diabetes and arterial insufficiency.
- Multiple dressings and a daily dressing change regime to manage exudate levels.



## Assess

### Management Goals

- Create optimal healing environment by preparing the wound bed, edge and periwound skin:
- Remove non-viable tissue
  - Manage exudate
  - Manage bacterial burden
  - Protect granulation/epithelial tissue
  - Protect skin



## Prepare

Alprep® Pad



## Treat

Biatain® Silicone Ag



The Coloplast 3 Step Approach



## Results

- Wound has decreased in size from 18cm x 7cm to 4cm x 1cm in 14 weeks.
- The top of the wound where the toe was has now healed.
- The exudate levels to the remaining open area are low, there are no signs of localised infection and the patient's pain score is only 2/10.
- The wound no longer requires an antimicrobial to manage bacterial load and is being treated with Biatain® Silicone.



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- Understand the current wound care climate and impact
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- Gain knowledge of different wound preparation methods
- Understand the impact of wound preparation on healing
- Discuss which wounds require preparation?
- Think about simplifying our approach to wound management



**Coloplast**