LIVE

THURSDAY 30TH MAY, 7:30PM

Understanding exudate and the **importance of wound bed preparation**

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LIVE Q&A

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CONTENTS

- The role of exudate and its production
- The impact of excess exudate
- Assessment and management
- Dressing solutions
- Wound bed preparation
- Biofilm management.

EXUDATE

ROLE IN HEALING

Exudate plays an essential role in the normal healing process by maintaining a moist wound bed – misconceived as BAD.

This is achieved by:

- Supplying essential nutrients to allow cells to metabolise
- Helping tissue repairing cells to migrate where needed
- Allowing dead or damaged tissue to separate from good tissue (autolysis).

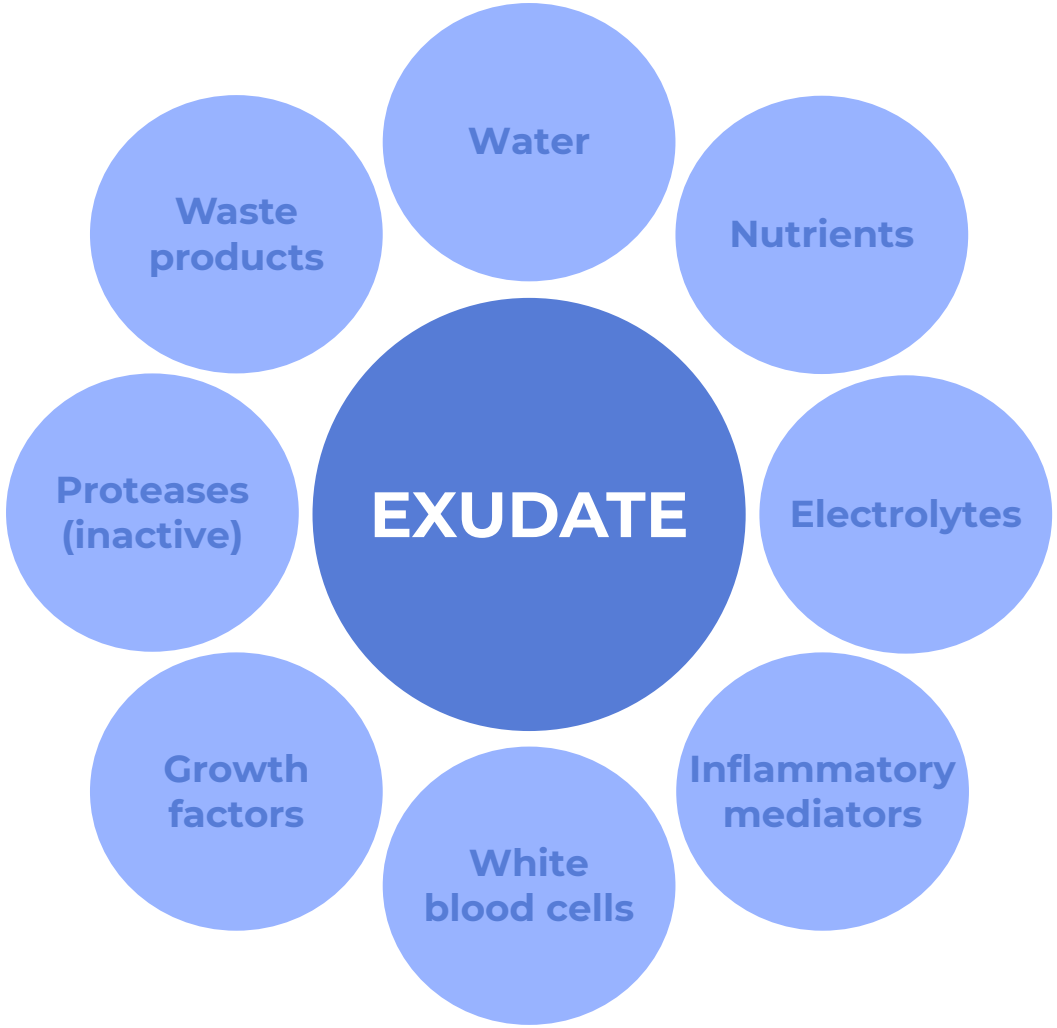
In normal wound healing, the volume of exudate will decrease as healing occurs (Kerr, 2014).

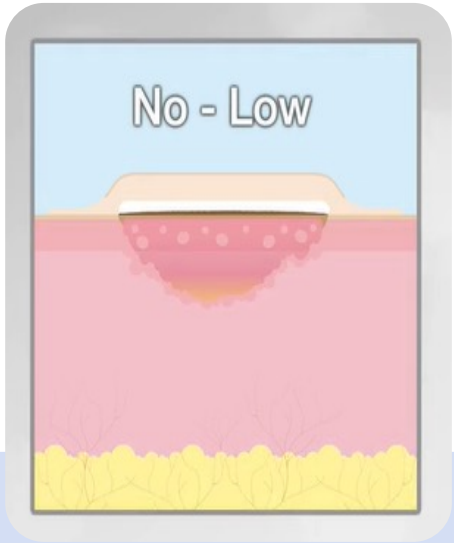
WHAT DOES WOUND EXUDATE CONSIST OF?

FACT

Proteases are enzymes that act on proteins by breaking them down.

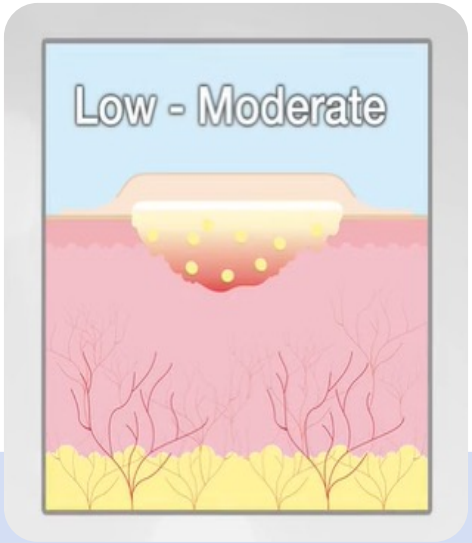
‘Exudate directly influences the process of wound healing’ (Flanagan, 2013)





Too little exudate

- Impaired diffusion of critical factors
- Delayed wound healing



Ideal/optimal exudate

Allows for diffusion of:

- Growth factors
- Cell signalling factors
- Nutrients for epithelial cells
- Promotes a medium for autolysis to occur

Too much exudate

- Maceration of periwound area
- Delayed wound healing
- Dressing saturated too quickly

FACTORS INFLUENCING EXUDATE PRODUCTION

Underlying contributory factors, which make patients prone to high exudate volume must be addressed to manage exudate effectively (Wounds UK, 2013).

Wound healing stage

- Inflammatory stage of healing
- Autolytic debridement.

Local factors

- Size of wound – surface area
- Level of debridement in the wound, oedema.

Systemic factors

- Congestive cardiac, renal or liver failure.

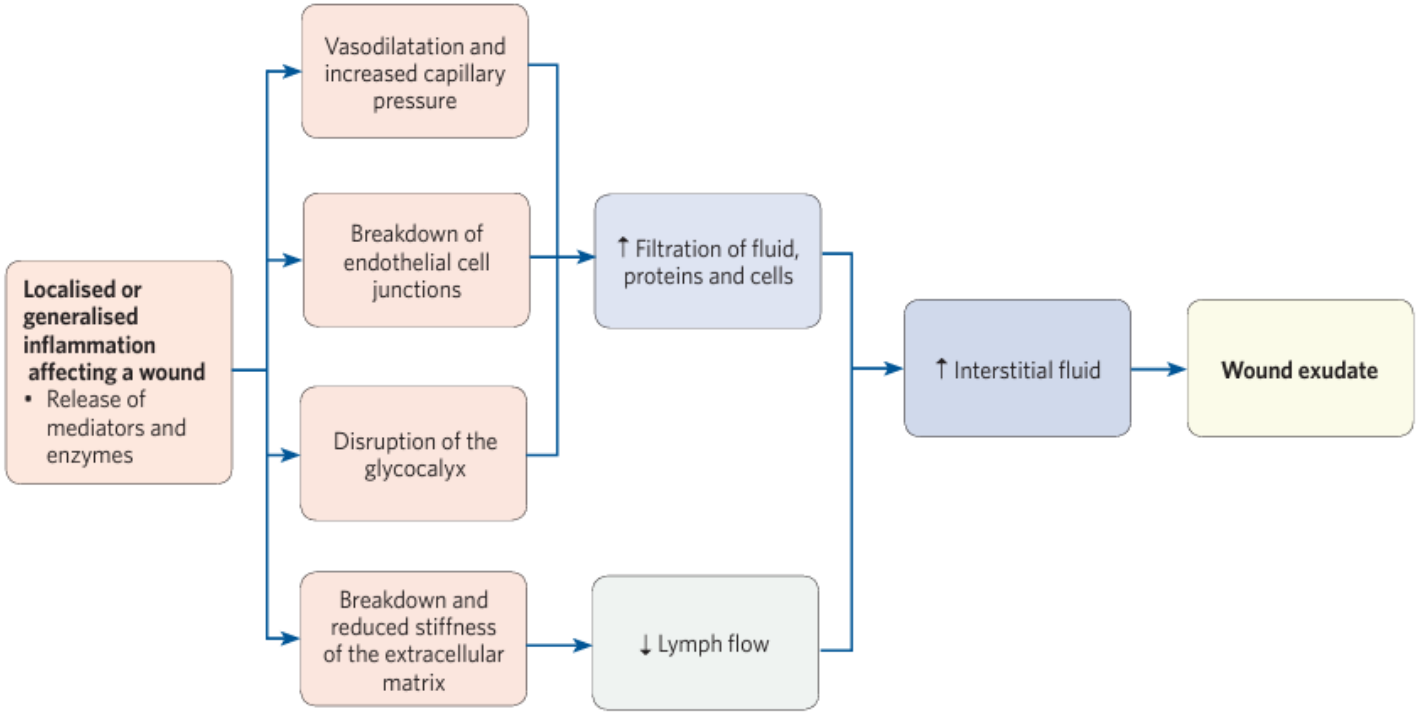
Practical factors

- Position of the wound, e.g. lower limb
- Inappropriate dressing/intervention.

ROLE OF INFLAMMATION IN EXUDATE PRODUCTION

In non-healing wounds, heightened and ongoing inflammation is a likely contributor to increased exudate production.

This may be related to wound infection and/or the presence of biofilm (Schultz et al, 2011; Percival, 2017).



(Scallan et al, 2010)

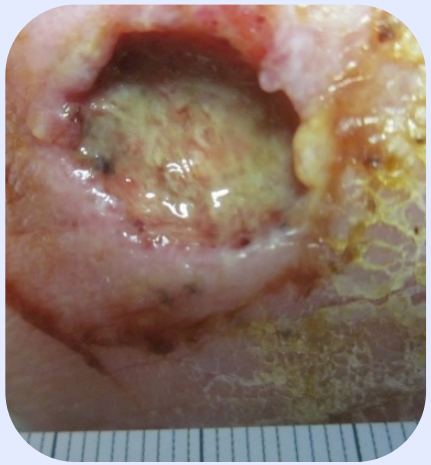
EXUDATE IN THE CHRONIC WOUND

What is in chronic wound exudate that is different/extra?

- Contains not only water, but often cellular debris and enzymes
- Much higher levels of inflammatory mediators and proteases (e.g. MMPs)
- In chronic wounds, exudate prolongs the inflammatory phase
- Chronic wound, exudate may be regarded as a 'wounding agent'.

Chronic wound exudate has a different composition which is more corrosive than acute wound exudate and can be corrosive to the intact skin surrounding the wound (Wounds UK, 2013).

GOOD OR BAD EXUDATE?



Bad exudate

- High levels of inflammatory mediators
- Proteases are excessive/activated
- Exudate high and ongoing = non-healing/slow to heal.

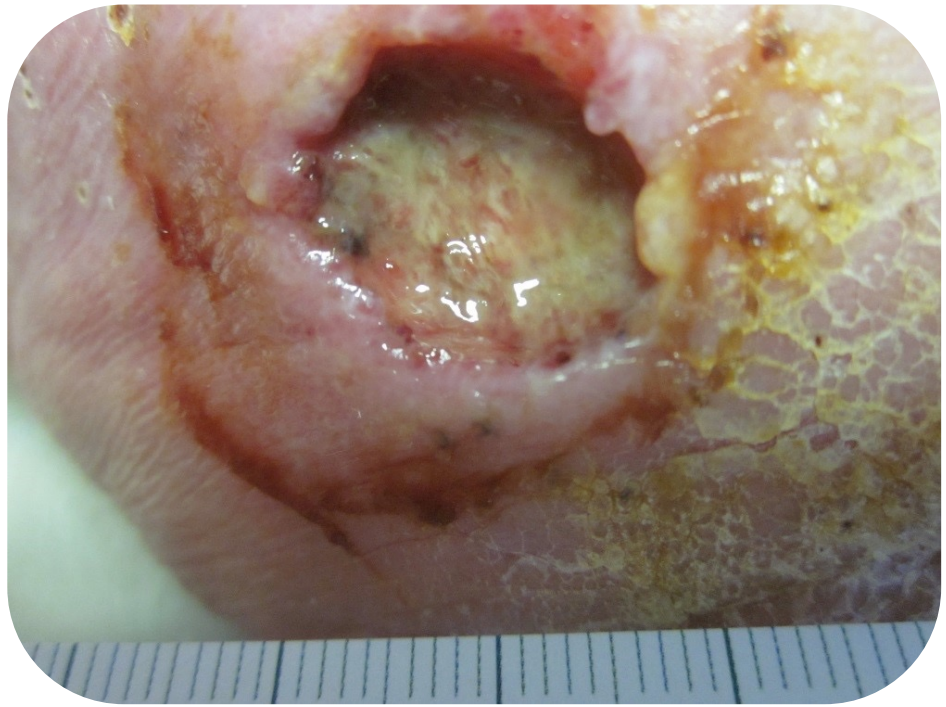
Good exudate

- Promotes healing
- Proteases, e.g. MMPs, play a key role in healing but inactive
- Exudate reduces over time = healing.

PROBLEMS ASSOCIATED WITH EXCESSIVE EXUDATE

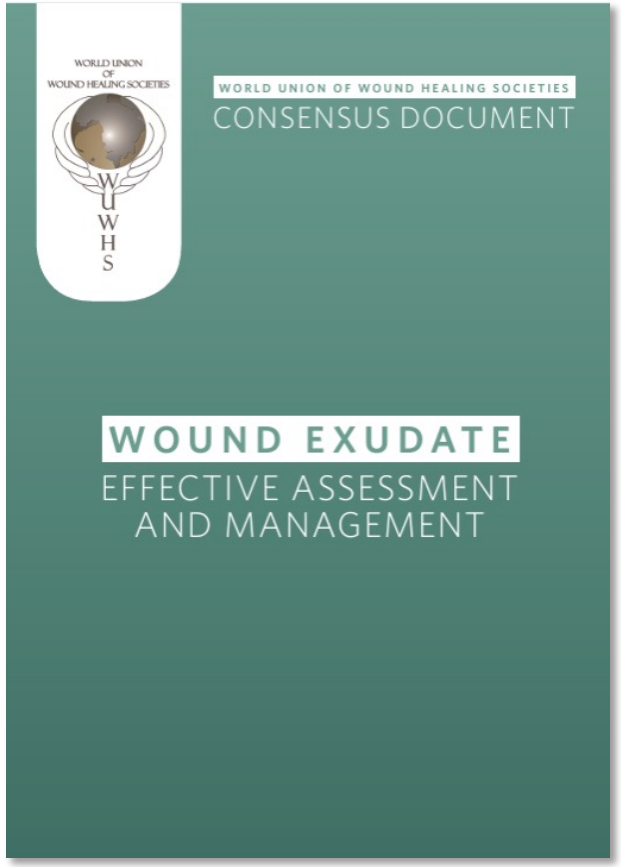
Inappropriate management of exudate can lead to complexities, including:

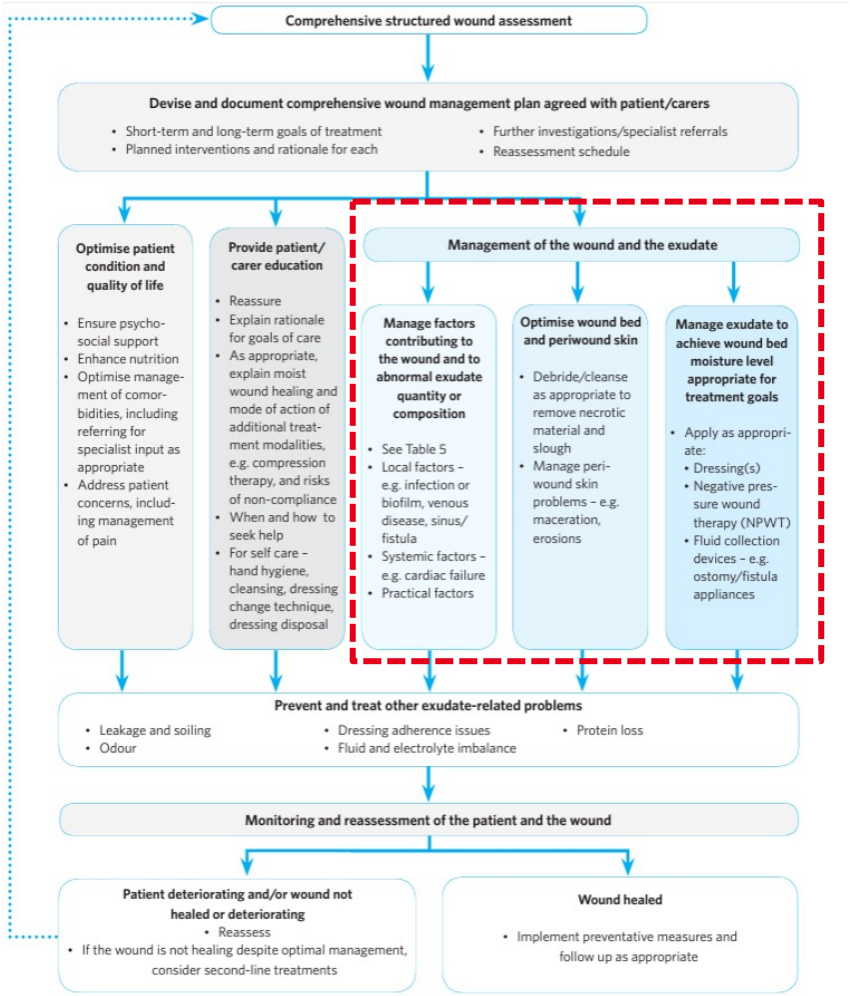
- Periwound skin changes
- Psychological effects/quality of life
- Leakage and soiling
- Frequent dressing change
- Discomfort/pain
- Odour
- Infection
- Delayed healing
- Protein loss/fluid and electrolyte imbalance.



(Wounds UK, 2013)

WUWHS – WOUND EXUDATE CONSENSUS





Detailed on next slide

MANAGEMENT OF WOUND EXUDATE

- Manage factors contributing to the wound and abnormal exudate quantity or composition (local factors/systemic factors/practical factors)
- Optimised wound bed and periwound skin:
  - Cleanse and debride as appropriate to remove devitalised tissue
  - Manage periwound skin
- Manage exudate with appropriate dressings to achieve optimum moisture levels appropriate for treatment goals.

(World Union of Wound Healing Societies [WUWHS], 2019)

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ASSESSING WOUND EXUDATE

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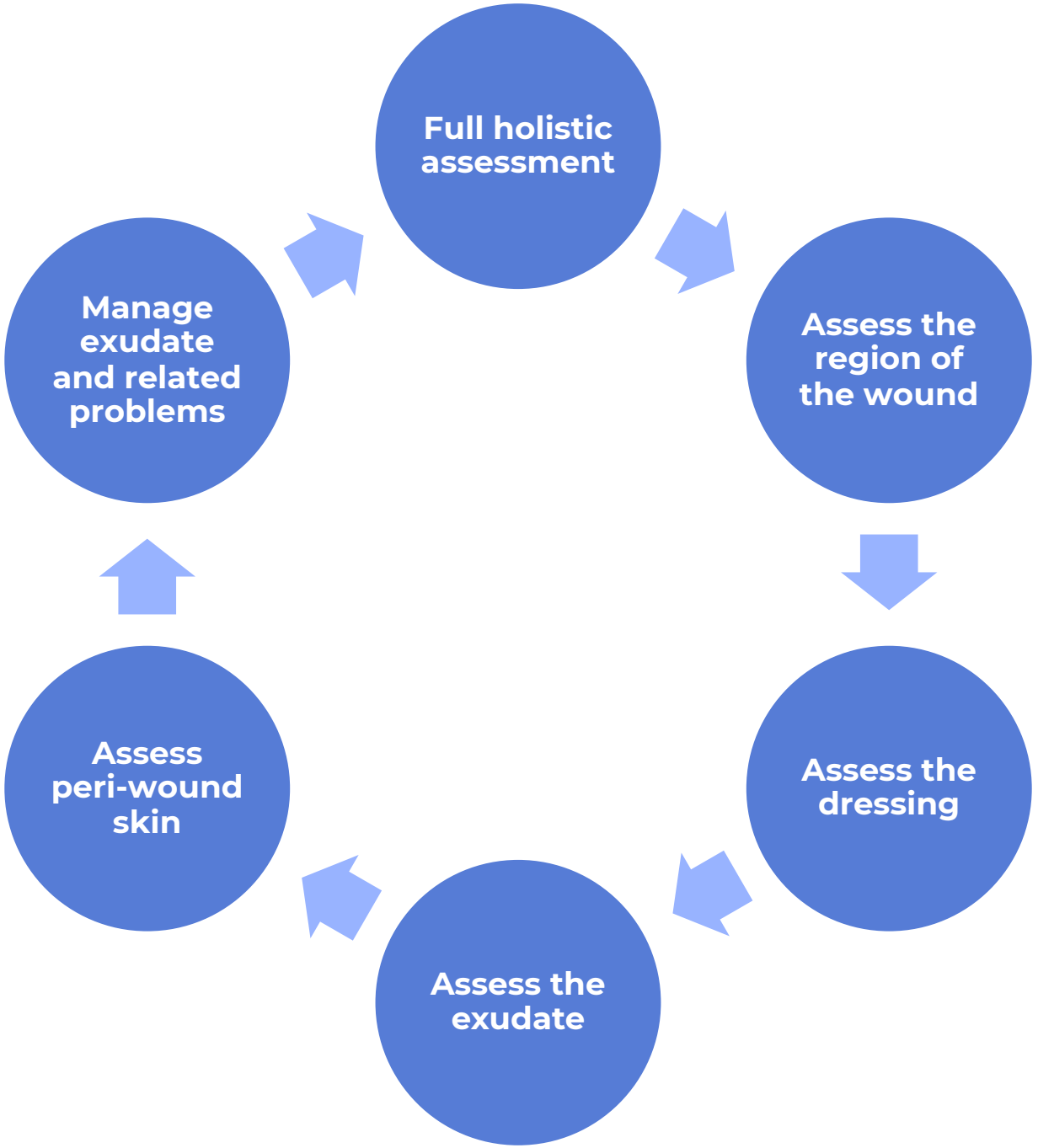


EXUDATE ASSESSMENT

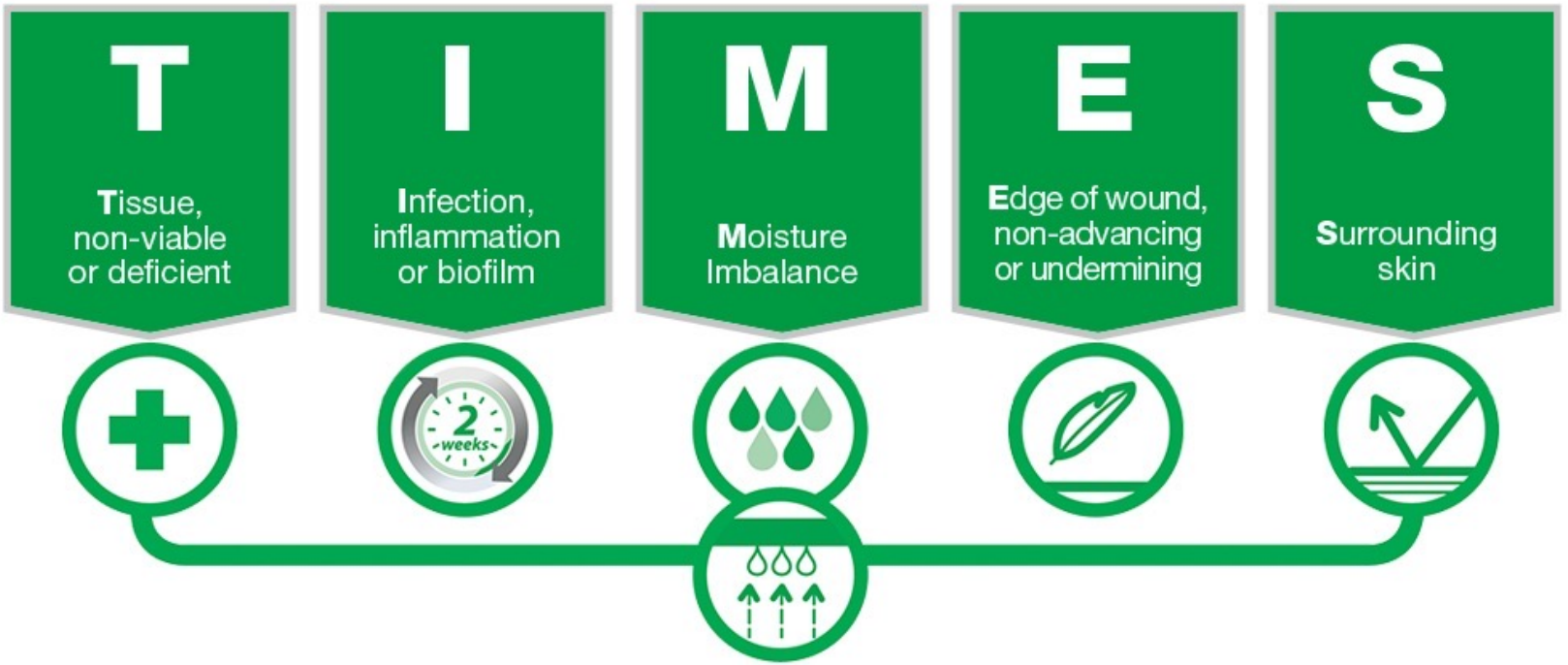
Colour	Viscosity	Type	Cause
Pale amber/yellow	Thin/watery	Serous	Normal
Light red/pink	Thin/watery	Serosanguineous	Normal
Red	Thin/watery	Sanguineous (blood)	New vessel growth or trauma
Cloudy/yellow/tan	Thin/watery	Seropurulent	Critical colonisation/infection
Yellow/tan/green	Thick/opaque	Purulent (pus)	Infection (malodorous)
Almost milky	Thick	Purulent	Contains infective bacteria
Cloudy	Thick	Fibrinous	Contains fibrin
Red/pink	Thick	Haemopurulent	Infective bacteria and capillary damage

ASSESSING WOUND EXUDATE

1. Is exudate controlled within the topical dressing?
2. Why not?
3. Does the current dressing do what it is supposed to?

WOUND AND SKIN ASSESSMENT

The TIMES or TIMERS framework outlines the principles of Wound Assessment.



This encourages clinicians to follow a structured approach.

TIMERS

R = Repair and regeneration

S = Social

TISSUE

Considerations

- Devitalised tissue provides an ideal environment for bacteria and biofilm growth
- Removal of dead cells will expedite healing

Priority

- Remove devitalized tissue by debridement

Dressing selection

- Hydrogel
- Hydrocolloid
- Gelling fiber

INFECTION, INFLAMMATION, BIOFILM

Considerations

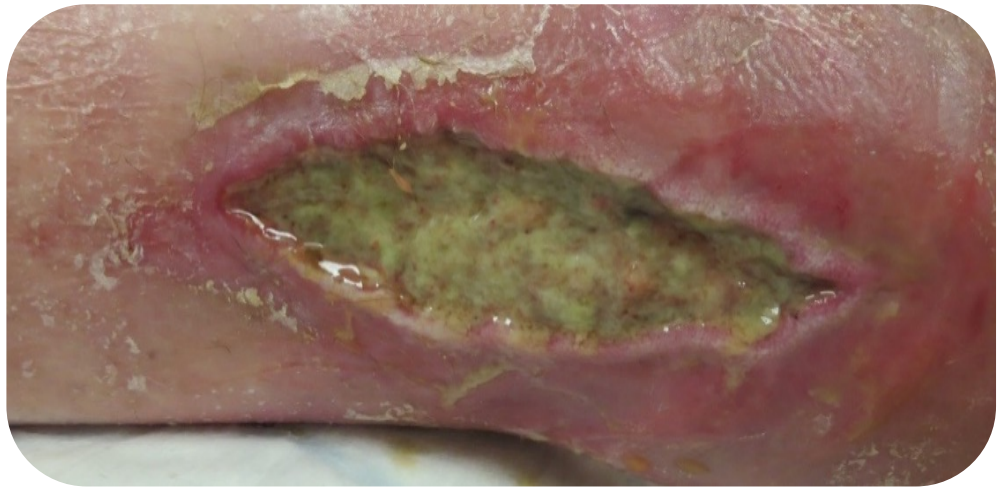
- Bacteria within wounds can proliferate and cause infection. Infection may increase pain, exudate volume and malodour – ultimately delaying healing
- It is important to differentiate between acute inflammation and infection
- Biofilm also affects healing (Keast et al, 2014)

Priority

- Reduce bioburden
- Disrupt biofilm

Dressing selection

- Topical antimicrobial
- Absorb exudate



MOISTURE IMBALANCE

Considerations

Moisture is essential for wound healing, however:

- High levels of moisture have an adverse effect on wound healing
- Low levels of exudate can dry out the wound and prevent migration of tissue repairing cells (Kerr, 2014)

Priority

- Absorb exudate and protect periwound skin

Dressing selection

- Superabsorbent – high to very high exudate
- Foam – low to high exudate
- Gelling fiber - protection of wound edges (maceration)
- Hydrogel and hydrocolloids – donation of fluid

Image courtesy of the Wound Healing Centre, Eastbourne

WOUND EDGE

Considerations

- Rolled edges or undermining?
- Progressing or not?
- If not progressing, or causing suspicion – needs to be referred

Priority

- Protect wound edge and delicate wound bed tissue

Dressing selection

- Contact layer
- Foam, light versions
- Non-adherent dressings

SURROUNDING SKIN

Considerations

- Skin conditions: hyperkeratosis and venous eczema
- Damage caused by exudate excoriation and moisture-associated dermatitis
- Inflammation

Priority

- Skin care, hygiene and protection of the periwound
- Cleanse and debride

Product selection

- Emollients
- Barrier cream

WOUND BED PREPARATION

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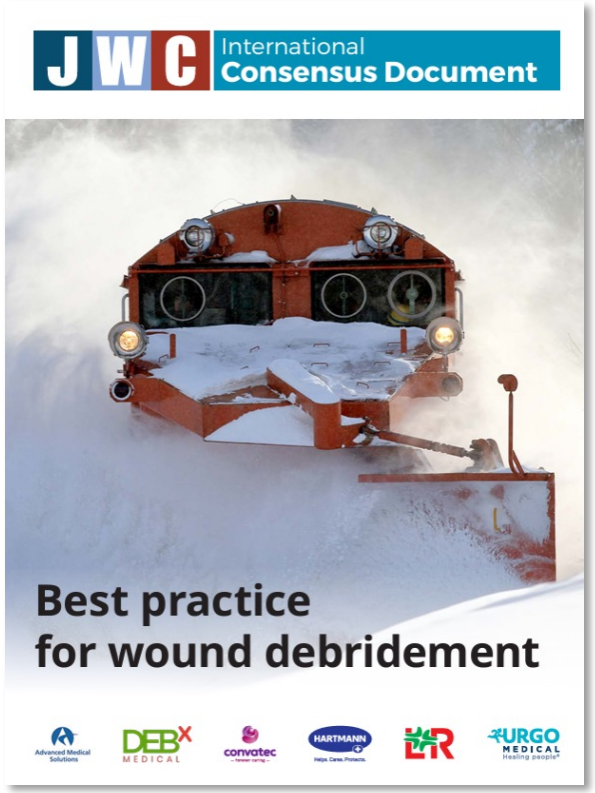
WHAT IS DEBRIDEMENT?

NEW DEFINITION:

‘Debridement is the removal of viable (living) and non-viable wound components, including necrotic material, slough, microorganisms, biofilm, extracellular polymeric substance (EPS) and foreign materials.

Its primary goal is to reduce the presence of both microbial and non-microbial components using the most effective methods with the fewest side-effects.

These methods should be safely executable by a health professional with the knowledge and capability to do so, at the site of service, and within the boundaries of their sphere of practice.’



(Mayer et al, 2024)

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CLEANSE VERSUS DEBRIDEMENT

- Cleansing and debridement have different clinical aims. As such, cleansing should not be confused with debridement, and cannot replace it
- The primary objective of wound cleansing is to minimise bioburden and eliminate surface contaminants, debris and bioburden from the wound with a view to establishing a **clean wound environment**
- Cleansing normally precedes **and** follows debridement
- In contrast to cleansing, debridement aims to **remove** microbial and non-microbial wound components, including necrotic tissue, slough, biofilm and foreign materials. The more these are removed, the more the barriers to healing will be diminished.

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(Mayer et al, 2024)

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WHY DEBRIDE?

Because devitalized tissue...

- Is a physical barrier to healing
- May induce chronic inflammation
- Can prevent effectiveness of topical treatments
- May cause underestimation of the wound extent
- Is a source of nutrients for bacteria
- Can mask or mimic signs of infection
- Can contribute to a septic response.

Photos used with patient's kind consent

(Mayer et al, 2024)

HOW MANY OF YOU DEBRIDE?

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SO, WHO CAN DEBRIDE?

1. **Any HCP** – by applying an autolytic wound dressing.

2. **Specialist** – certain methods of debridement require **extra knowledge, skills and competencies** e.g. surgical and sharp debridement, application of larvae and the more technical solutions (Mayer et al, 2024).

Some methods of debridement are easy to use and require very little training and are therefore ideal for general use.

For example, modern mechanical debridement with Monofilament Fibre Technology (Debrisoft®) (Kerr, 2022).

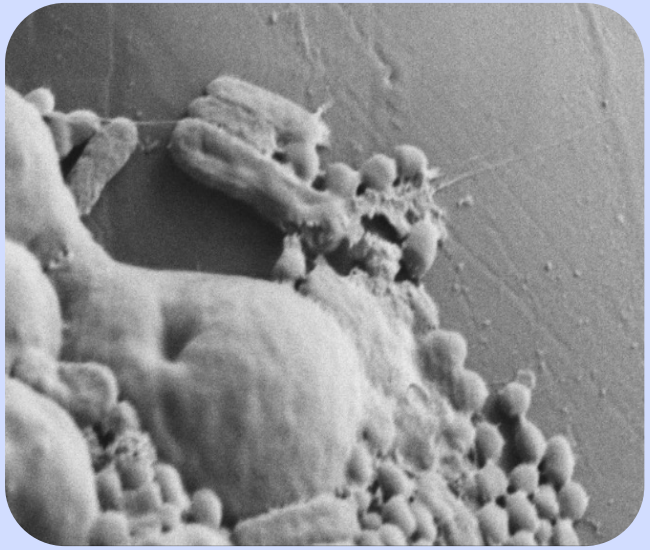
AND WHAT HAPPENS WHEN WE DON'T DEBRIDE?

- The healing process is impeded
- Exudate volume will increase
- The surrounding skin may become damaged
- Bacteria and biofilm will proliferate
- The wound may become malodorous
- Wound infection may develop (Kerr, 2022; Mayer et al, 2024)

Infection and/or Biofilm

WHY SHOULD WE BE CONCERNED ABOUT BIOFILM?

- Biofilm = aggregate of bacteria often embedded within the wound (Bjarnsholt et al, 2022)
- Studies have shown biofilm is present in over 78% of chronic wounds (Malone et al, 2017)
- Biofilm is most active on wound edges and periwound skin (Murphy et al, 2020)
- Debridement is one strategy to support the immune system in combatting biofilm-related infection (Nowak et al, 2022)
- Debridement means removal of bioburden from the wound and especially wound edges and periwound skin (Murphy et al, 2020)
- **Debrisoft® shown to significantly reduce biofilm cells independent of the organism (Liepins et al, 2023).**



This is an ElectonMicroscopy image of a mixed community. Extracellular matrix can otherwise be difficult to see.

Image supplied courtesy of V Edwards-Jones

HOW DO WE KNOW A BIOFILM IS PRESENT?

- Cessation/delay in healing
- Little response to appropriate therapy
- Change in exudate colour
- Change in amount of exudate
- Change in granulation appearance texture
- Increased pain at wound site
- No systemic signs of infection.

Reducing the bioburden in a wound with the least amount of damage to local healthy tissue, can tip the balance in favour of healing (Mayer et al, 2024).

METHODS OF DEBRIDEMENT

Methods requiring an adjunct therapy

(such as mechanical or selective sharp debridement)

- Chemical or chemo-mechanical
- Enzymatic
- Osmotic (such as honey or hypertonic gels)
- Autolytic (such as dressings e.g. hydrocolloids, gelling fibers).

Standalone methods

- Biological (larvae)
- Mechanical (such as Debrisoft®)
- Technical (hydrosurgery, ultrasound)
- Selective sharp/surgical debridement (scalpel, scissors, curette)

A number of factors may influence choice of debridement method, including the clinical and patient need, clinician experience or competency, and treatment objectives.

(Mayer et al, 2024)

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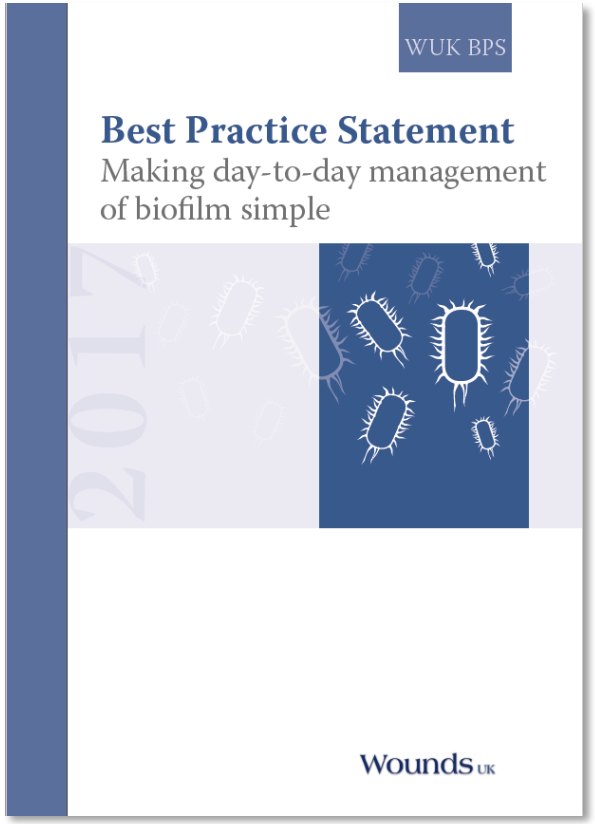
REMOVING BIOFILM

Reducing the amount of biofilm in a chronic wound may tip the balance in favour of healing.

- The foundational principle of management of wound biofilm is debridement
- Disrupt and remove the biofilm by repeated vigorous active cleansing and debridement (Schultz et al, 2017):

1. **Break up the biofilm**
   Physical disruption, e.g. Debrisoft®
2. **Inhibit microbial cell-to-cell communication**
   Strategy for suppressing microbial growth, e.g. antimicrobial, as per local wound care formulary
3. **Prevent biofilm re-formation**
   Repeat Debrisoft® and antimicrobial as per local wound care formulary for up to 14 days, then re-evaluate.



WHY USE DEBRISOFT®?

Highly effective, absorbs and removes debris and exudate

Easy to use, and has rapid application

Well accepted by patients and is gentle on intact tissue

Only form of mechanical debridement recommended by the National Institute for Health and Care Excellence (NICE, 2019).

The NICE committee concluded that the technology is (NICE, 2019):

- Well tolerated by patients
- Likely to debride wounds more quickly
- Results in fewer nurse visits
- Is more cost-effective than other debridement methods.

NICE is recommended for Debrisoft® Pad

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CASE STUDY

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REMOVES VISIBLE BARRIERS TO HEALING

Photos used with patient's kind consent

REMOVES BARRIERS TO HEALING NOT VISIBLE TO THE EYE

BEFORE

BEFORE

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AFTER 1ST DEBRISOFT® TREATMENT

BEFORE

BEFORE

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AFTER 1ST DEBRISOFT® TREATMENT

BEFORE

BEFORE

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SUPPORTED BY EVIDENCE

- Options for all wound shapes and sizes (including cavities)
- Debrisoft® is the most evidenced form of mechanical debridement, proven to reduce overall wound dressing and total woundcare spend
- Indicated for all tissue types including granulating tissue and can help to reduce excess exudate through wound progression
- Debrisoft® is the only form of mechanical debridement recommended by **NICE**

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LEARN MORE

LohmannRauscherUK

Learn more about the Debrisoft® family and how to tackle chronic wounds by visiting **LeaRn On Demand** today!

https://lohmann-rauscher.co.uk/learn-on-demand

Request a sample

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