Wound debridement

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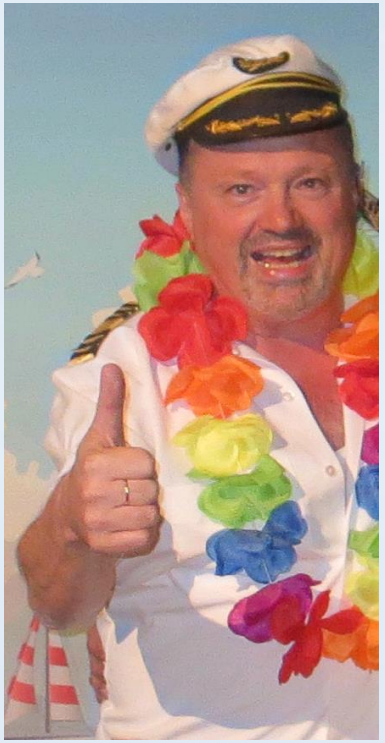
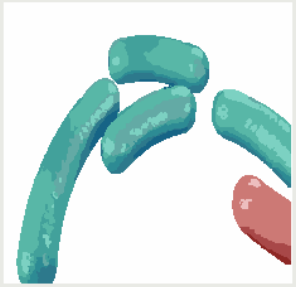
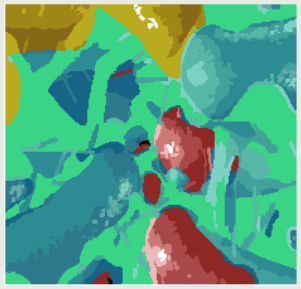
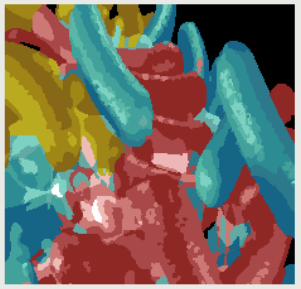


WHAT IS BIOFILM?

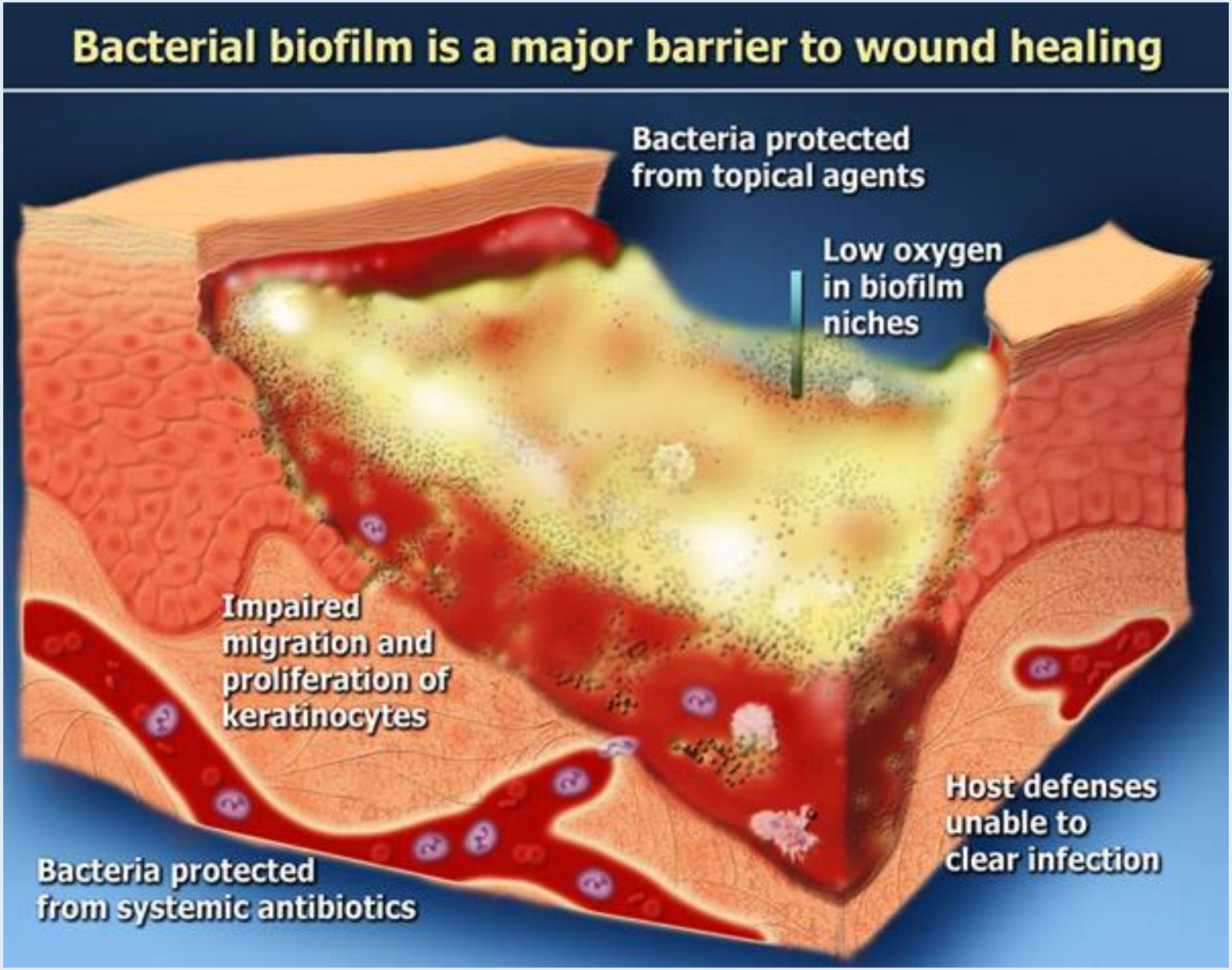
Biofilms

Figur Bacterial Biofilm Formation - 5 Stages:

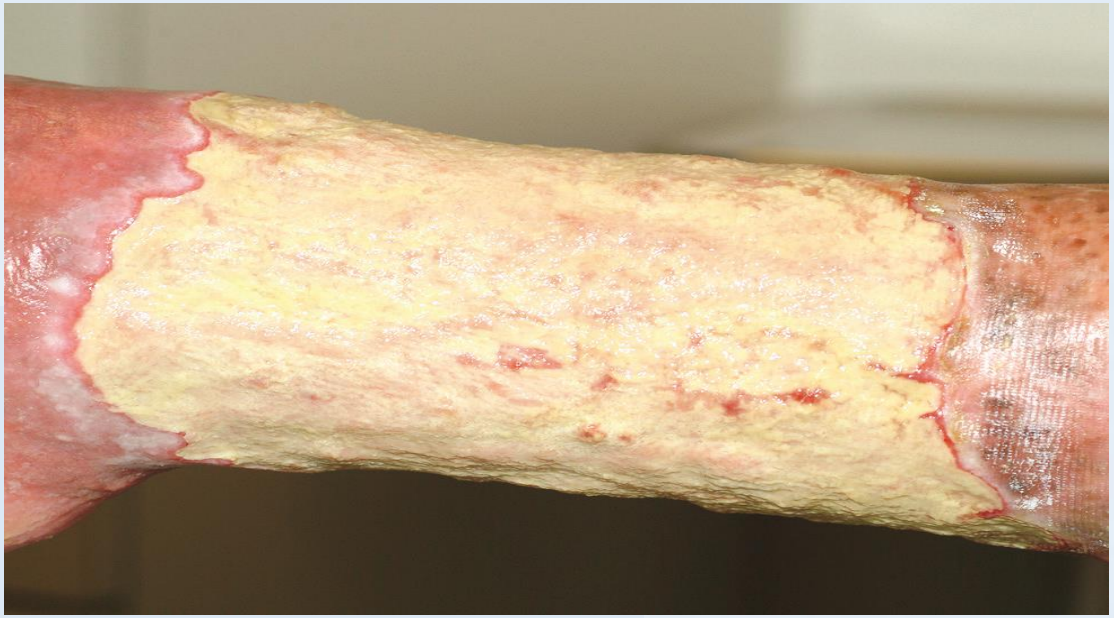
ATTACHMENT	GROWTH	MATURATION	DETACHMENT	RE-DEVELOPMENT
				
Bacteria attach to a variety of surfaces, from metal, to plastic, to skin tissue, using specialized tail-like structures.	The cells grow and divide, forming a dense matrixed structure, many layers thick. At this stage the biofilm is too thin to be seen.	When there are enough bacteria in the developing biofilm the bacteria secrete a slimy extracellular matrix of proteins and polysaccarides.	The slime protects the bacteria from the harsh environments, shielding them from many chemicals, antibiotics and immune systems.	As the colonies mature, the structures created weaken and cast off bacteria that look for new places to grow and prosper.

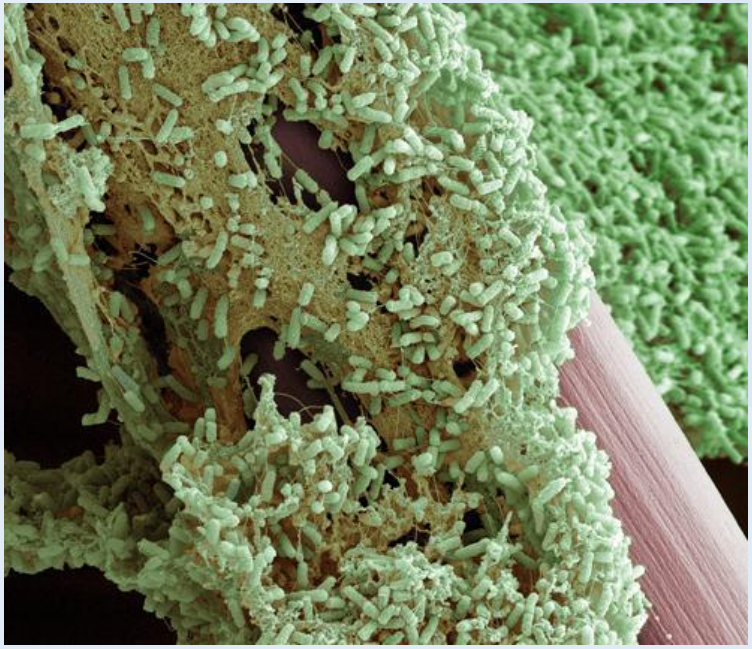
Source: 1. Centre for Microbial Innovation, University of Auckland, New Zealand

Biopsies from chronic wounds show that 60% of the specimens contained biofilm structures [8].

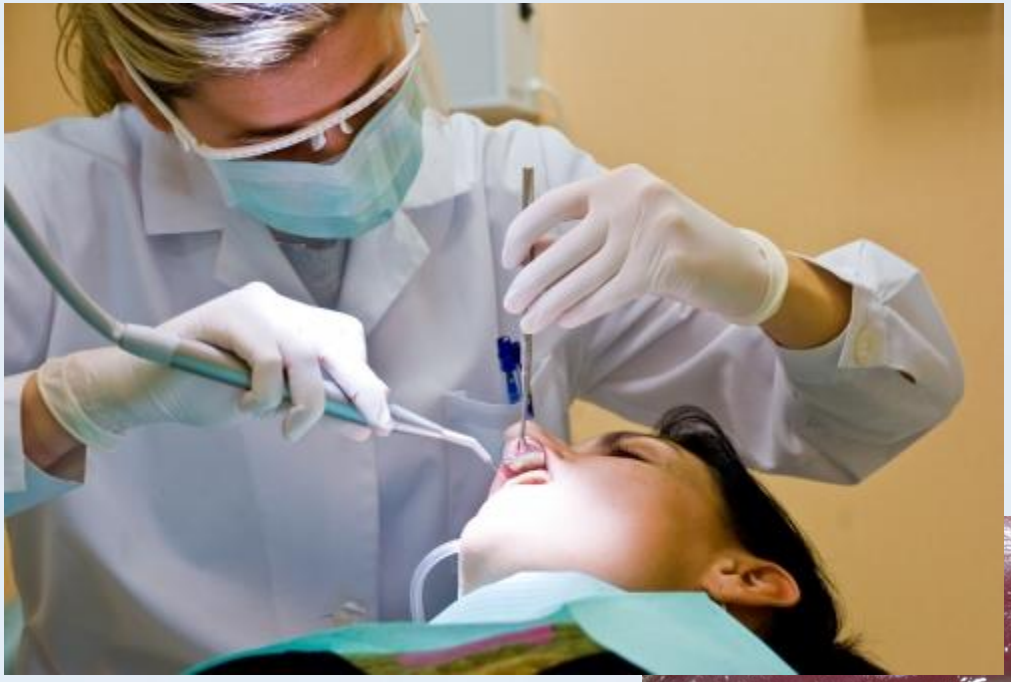

Bacterial biofilm is a major barrier to wound healing
Bacteria protected from topical agents
Low oxygen in biofilm niches
Impaired migration and proliferation of keratinocytes
Host defenses unable to clear infection
Bacteria protected from systemic antibiotics

Biofilms

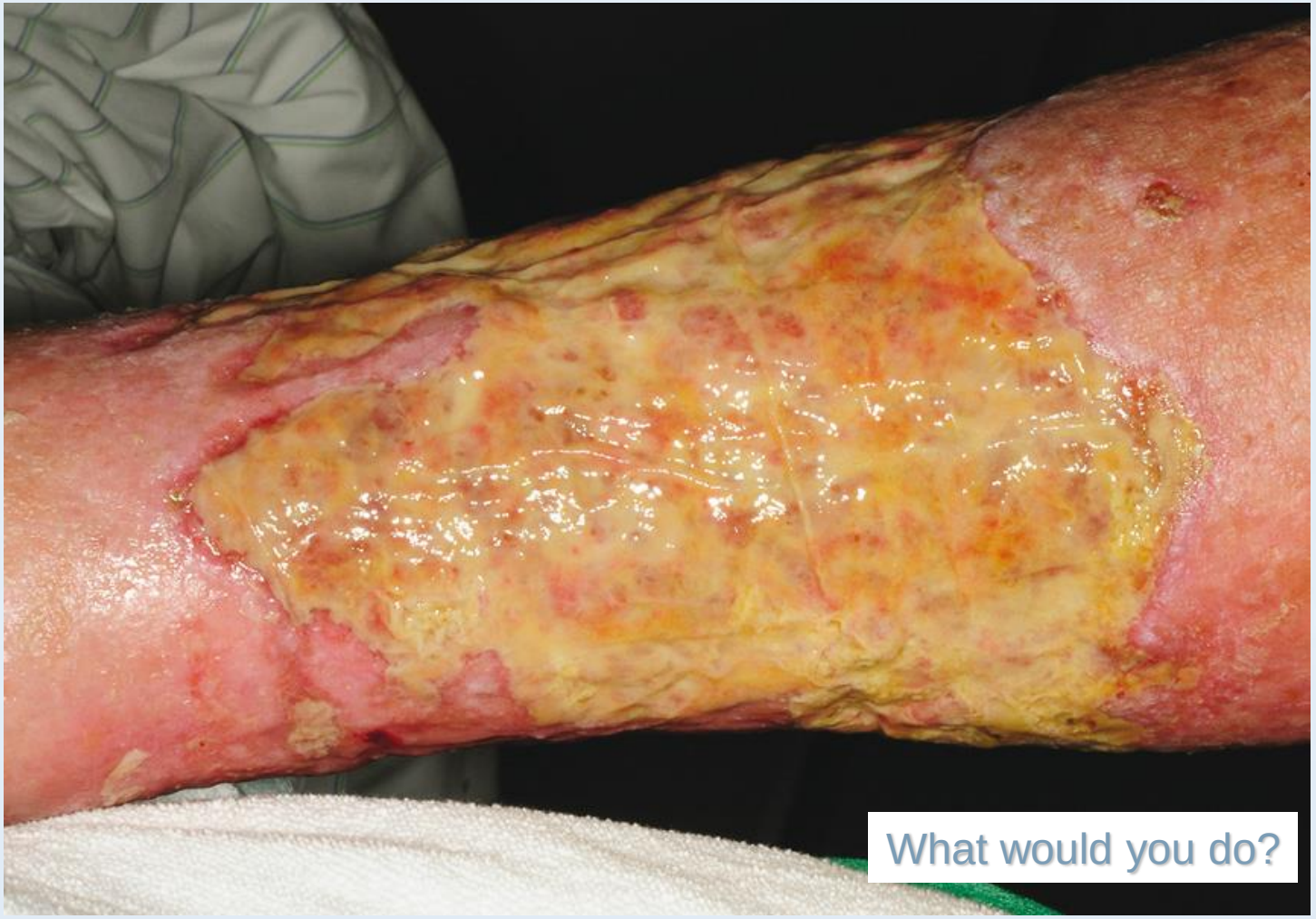




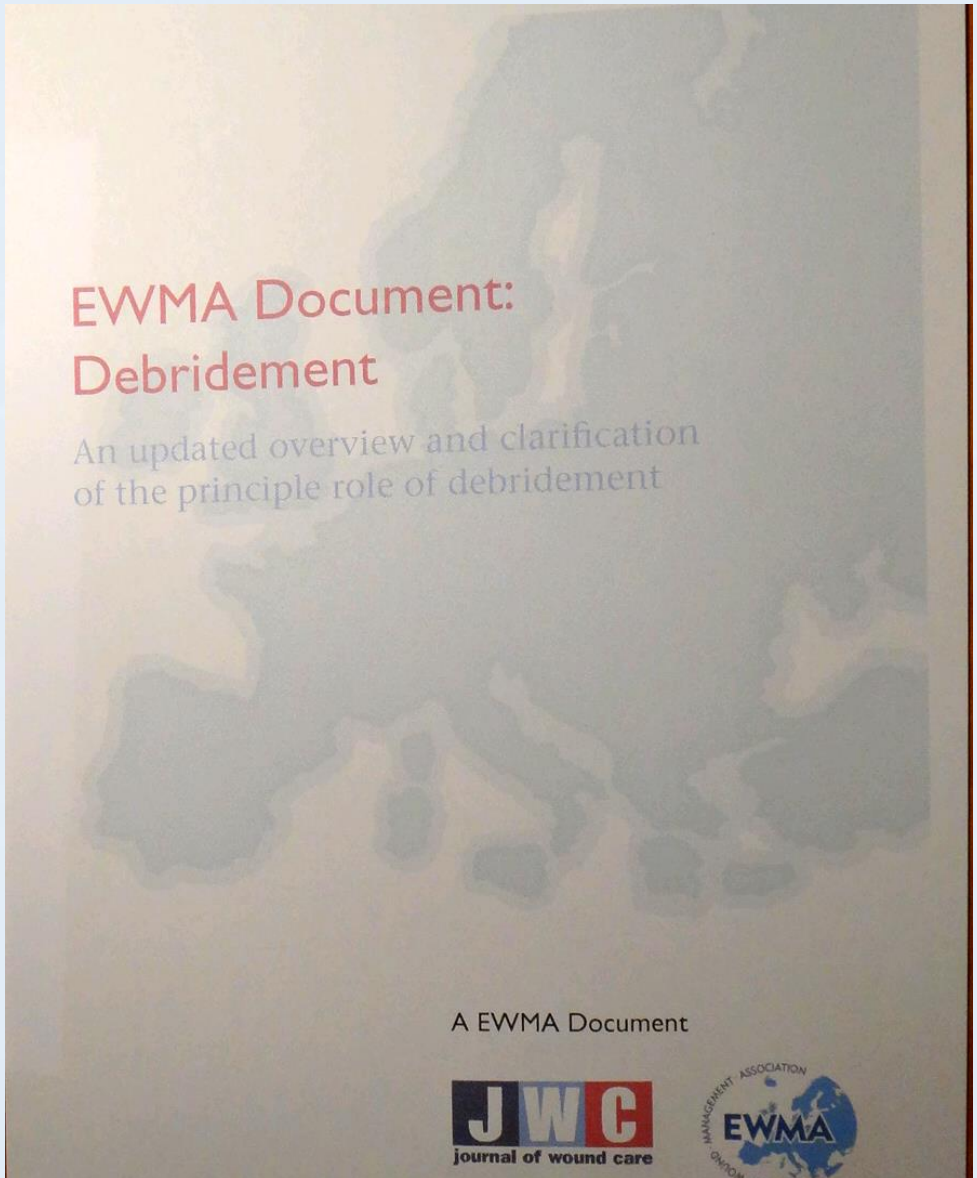
Treatment of biofilms on teeth?



How do you treat biofilms on wounds?



EWMA Document: Principle Role of Debridement



Debridement

- Frequency of Debridement's and Time to Heal: A retrospective Cohort study of 312,744 Wounds JAMA Dermatology July Page 1-8 (Wilcox, et.al.,2013)

  The more **frequent** the debridement's, the better the healing outcome

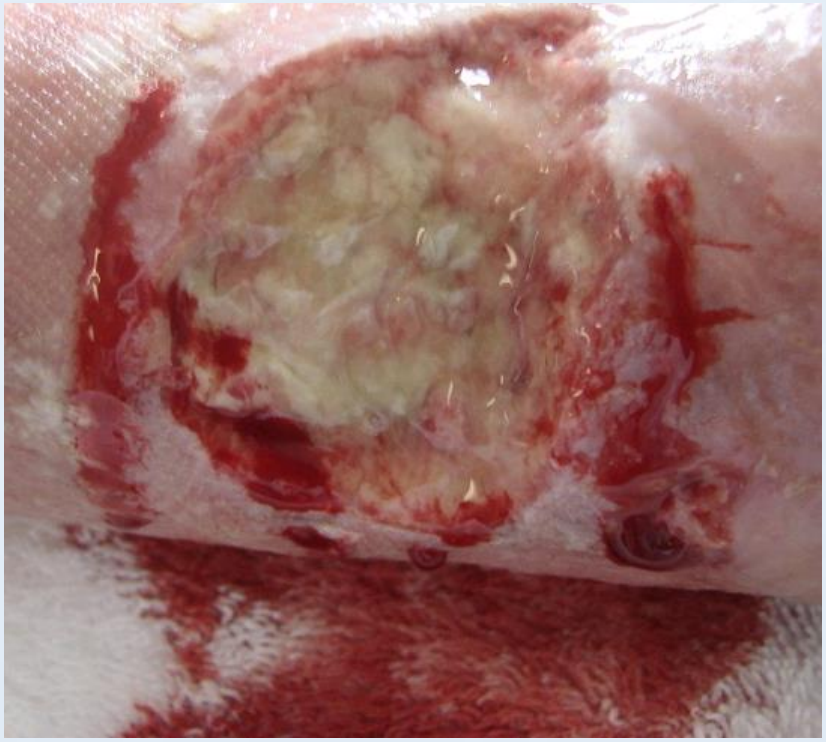
- Diabetic foot wounds that were debrided over 12 weeks had a 5.3 times greater chance of healing (Armstrong, 2011)

Cleansing is not debridement

- Cleansing with water/saline defined as the removal of dirt (loose metabolic waste or foreign material)

Definition of Debridement

- removes adherent, dead or contaminated tissue from a wound
- Including wound edges and the peri-wound skin



Debridement removes

- Exudate
- Slough
- Serocrusts
- Hyperkeratosis
- Necrosis
- Pus
- Haematomas
- Foreign bodies
- Debris
- Bone fragments

Benefits of Debridement

Decrease

- Odour
- Excess moisture
- Risk of infection
- Bacterial burden
- Pain
- **Biofilm**

Stimulate

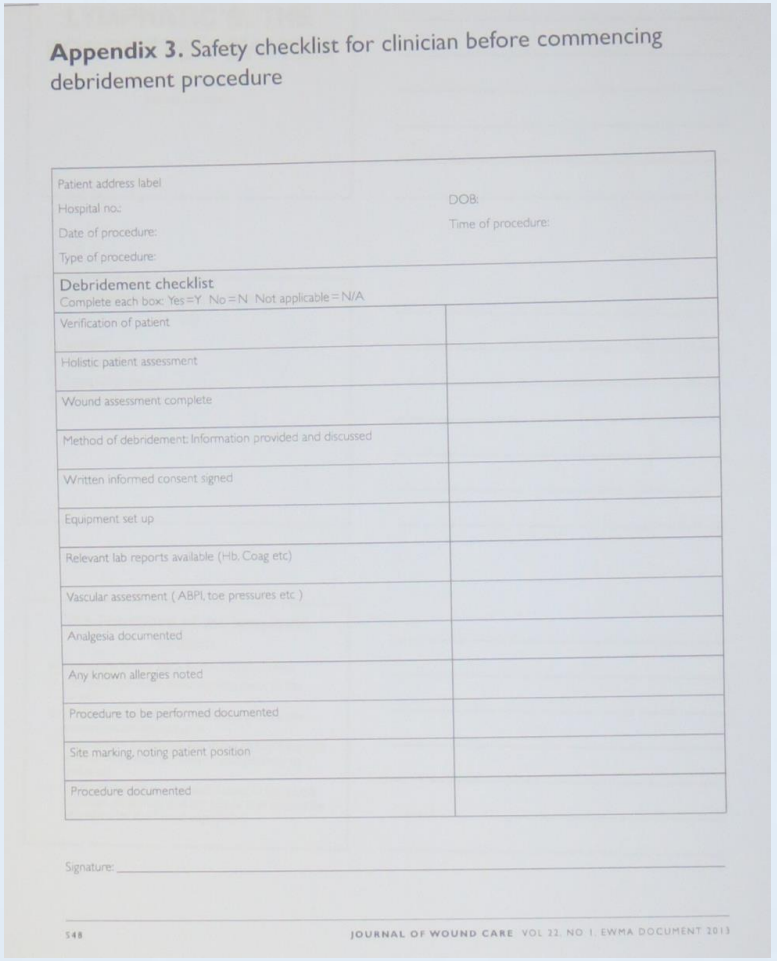
- Wound edges
- Epithelialisation
- Wound healing

Improve

- normalises biochemistry e.g. normalising the matrix metalloproteinase (MMP) and TIMP balance
- Quality of life

Parameters influencing the decision for debridement and the choice of technique

- Pain
- Skill of the care giver
- Patients environment
- Resources of the care giver
- Patients choice and consent
- Regulations
- co-morbidities
- Local Guidelines
- Quality and stage of life



Appendix 3. Safety checklist for clinician before commencing debridement procedure

Patient address label Hospital no.: Date of procedure: Type of procedure:	DOB: Time of procedure:
Debridement checklist Complete each box: Yes = Y, No = N, Not applicable = N/A	
Verification of patient	
Holistic patient assessment	
Wound assessment complete	
Method of debridement: Information provided and discussed	
Written informed consent signed	
Equipment set up	
Relevant lab reports available (Hb, Coag etc)	
Vascular assessment (ABPI, toe pressures etc)	
Analgesia documented	
Any known allergies noted	
Procedure to be performed documented	
Site marking, noting patient position	
Procedure documented	

Signature: _____

Patient consent for debridement

- Patient fear
- Any procedure should be thoroughly explained to the patient
- The patient should be forewarned about any manipulations (injection, tracking of tissue, application of the tourniquet)
- Pain is a very important issue in the treatment of wounds
- Appropriate anesthesia is essential in all types of debridement
- Some wounds are painless for example diabetic foot ulcers neuropathy, frostbite

Adequate Pain management

Topical

- EMLA 5 %
- Lignocaine 2 % Gel
- Morphine tincture 9 ml hydrogel/10mg Morphine

Systemic

- Fentanyl patches
- Entonox gas
- IV
- Nerve blocks

Indications for debridement

1. Define the problem (necrosis, eschar, slough, sources of infection)
2. Define the exudate levels of the wound bed ranging from dry to wet
3. Diagnosis of different kinds of tissue types and bioburden which cover the wound bed, the state of the wound edges and the peri-wound skin

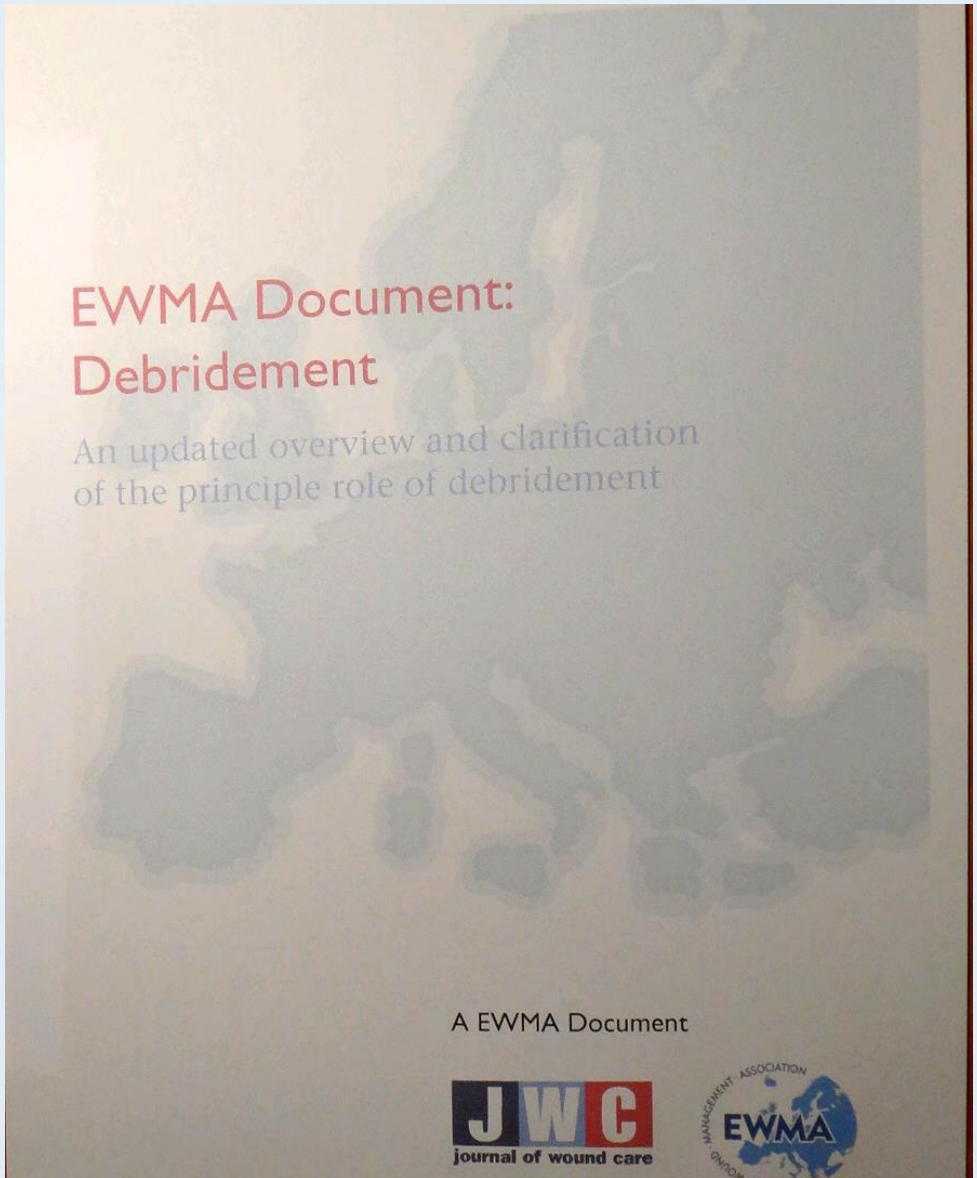
Have a plan

- Define an aim
- Define a timeframe
- Define a method

<u>Wound Characteristic</u>

- Available skills
- Available resources

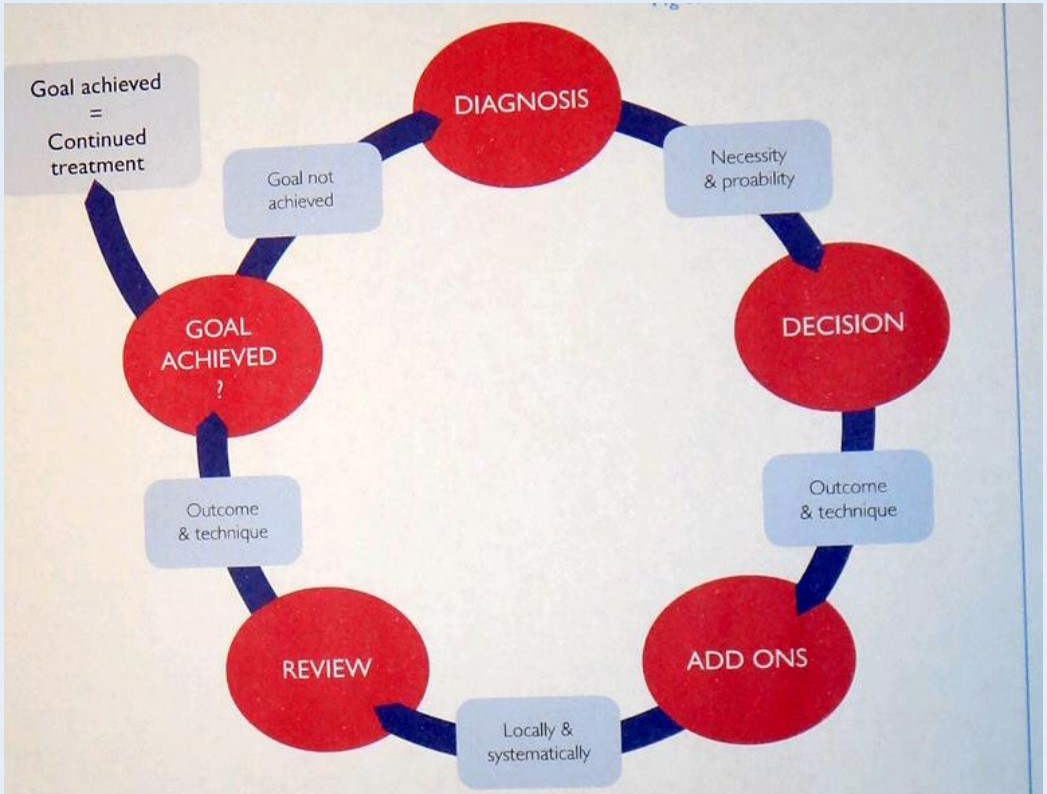
EWMA Document: Principle Role of Debridement



Debridement – integrated management plan

Debridement is an integrated part of the management of a person with a wound, achieving certain goals and therefore creating a healthy wound bed, edges and peri-wound skin, with the objective of promoting and accelerating healing

Debridement Quality cycle



Terminology

Diagnosis:
Diagnosis of bioburden, tissue type and factors influencing debridement.

Decision:
Decision on the outcome that should be achieved, the time by which it can be achieved and, depending on this, the techniques that should be used.

Add on:
Additional measures needed to secure a successful debridement process, such as optimising tissue for debridement, locally and additional systemic measures to secure successful debridement, e.g. relieve pressure, treat infection, induce blood flow and optimise comorbidities.

Review:
Review whether the outcome has been successfully achieved and whether the chosen debridement technique had proven to be valid in the specific treatment case.

Goal:
If optimal debridement result has been achieved, continue the management of the individual with the wound. If optimal debridement has not been achieved, re-diagnose and repeat the debridement process cycle.

www.ewma.com


0 1 2 3
Patient's Name:
Date: 10 / 6
Customer Services: 0800 8


1 2 3

Methods of Debridement

- Mechanical
- Autolytic
- Enzymatic
- Larval
- Ultrasound
- Sharp
- Surgical

Mechanical Debridement

- Mechanical wound debridement involves the use of dry gauze dressings or wet to dry gauze dressings to remove non-viable tissue from the wound bed

Limitations

- Gauze as a debridement agent is associated with significantly more pain for
- Frequent dressing changes to avoid pain
- The use of wet-to-dry, plain gauze and paraffin tulle as debriding agents has little to support their use

Monofilament pads

- Mono filament pads e.g. Debrisoft
- Can be quick and effective
- Less pain removes debris and exudate from wounds

Autolytic debridement

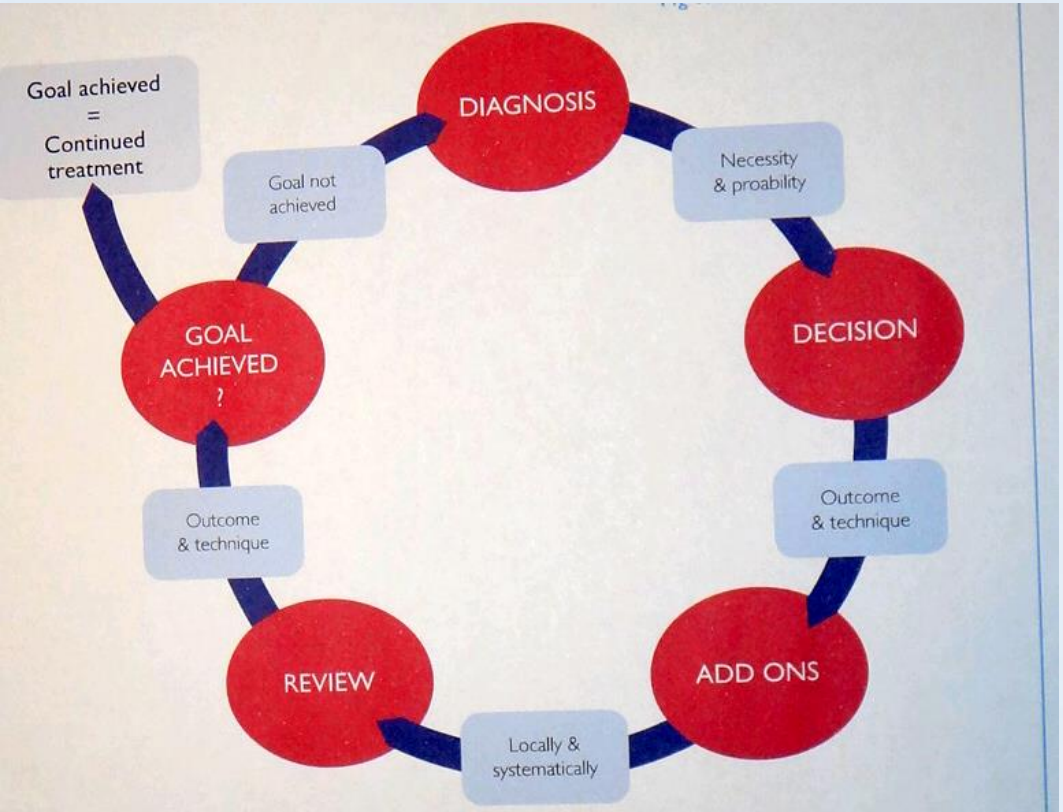
- Moist interactive wound dressings
- Hydrocolloids
- Hydrogels
- Occlusive dressing
- Semi-occlusive dressing
- Facilitates healing

Indications

Autolytic dressings are indicated for wounds with necrotic tissue or fibrin coatings to rehydrate, soften and liquefy hard eschar and slough

Remember….

- **Moist interactive dressings not always appropriate**
- If there is no blood supply keep it dry
- Unless you are 100% sure there is viable tissue beneath or you have been advised by a WCNS or responsible physician



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Wet slough

Compression!

Local infection

Wound Irrigation solution and gels containing antimicrobials

- Cleansing, rinsing and decontamination of acute and chronic skin wounds
- Helpful in the prevention of biofilm

Acetic Acid (Vinegar) soak

- 1 part of 5 % vinegar and 9 part saline/water = 0.5 %
- Soak gauze and leave on wound for 10 minutes
- Wash off mixture
- Continue with dressing plan
- Repeat daily for 5-7 days
- Especially beneficial against *Pseudomonas aeruginosa*

The solution to the pollution is in the dilution