CASE

For Wound Bed Preparation

START

For better care and wound healing outcomes

essity

Contents

You can access the relevant section by clicking on one of the links below. Press the button to return to this page.

Introduction

The overall goal of wound bed preparation (WBP) is to create an optimal wound healing environment

Wound bed preparation uses the TIMES framework as a structured approach to wound assessment[1]

TIMES identifies barriers to the healing process

Wound bed preparation enhances the effectiveness of therapeutic measures[2,3]

Cause: Identify barriers to wound healing

Holistic wound assessment considers the 'whole' patient and identifies underlying causes that compromise wound healing

Patient factors to consider:					
	Medical and surgical history		Medication		Activities of daily living
	Nutrition and hydration		Pain assessments		Psychosocial issues
			Overall skin integrity		

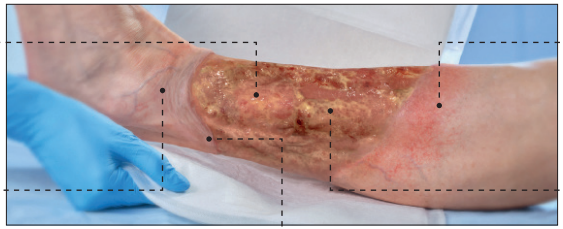
Assess

The five components that underpin Wound Bed Preparation are T.I.M.E.S.

Click on the relevant tab for more information:

T – Tissue

S - Surrounding Skin



E – Edge

I - Infection

M - Moisture

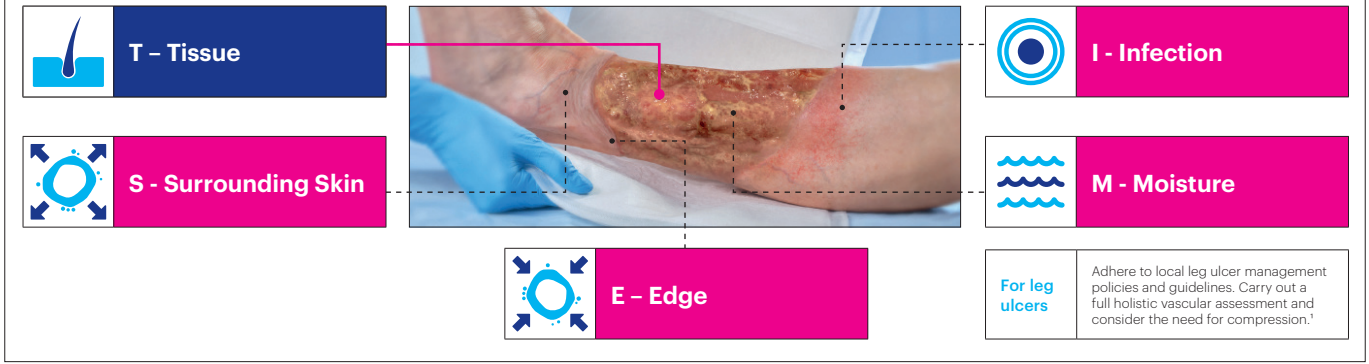
For leg ulcers

Adhere to local leg ulcer management policies and guidelines. Carry out a full holistic vascular assessment and consider the need for compression.[1]

T – Tissue

Close

- Assess whether there is dead or devitalised tissue in the wound
- This can harbour bacteria and hinder wound healing[4,5]
- Consider whether biofilm may be present, which will need to be managed as part of the debridement process



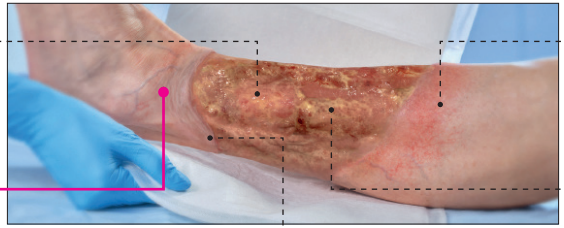
S - Surrounding Skin

Close

As well as managing the wound, we need to manage the skin around it. Dry or macerated skin can hinder healing[6]

Is intervention needed for any of the following?

- Is the skin red or inflamed?
- Is there any itching or blistering?
- Are there any signs of hyperkeratosis or dry skin?
- Are there signs of lipodermasclerosis or excoriation?
- Is there any moisture-associated dermatitis?[4]



T – Tissue

S - Surrounding Skin

I - Infection

M - Moisture

E – Edge

For leg ulcers

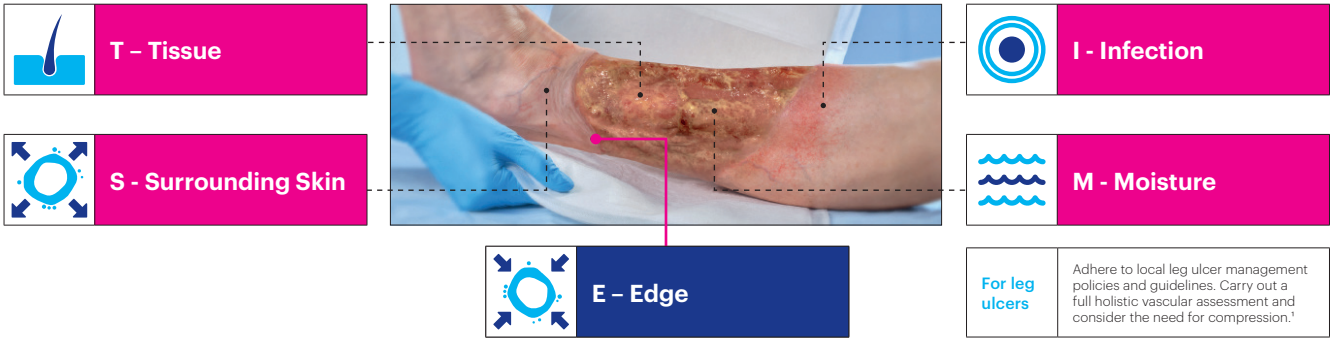
Adhere to local leg ulcer management policies and guidelines. Carry out a full holistic vascular assessment and consider the need for compression.[1]

E – Edge

Close

Assessing the edge of the wound can help you to see whether a wound is progressing. The edges should be contracting[6]

Over granulation and rolled edges may be a cause for concern and may require specialist referral



M – Moisture

Close

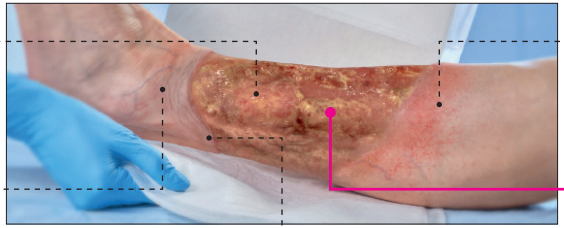
Exudate is fluid which leaks out of the blood vessels into the surrounding tissue. It is produced throughout the wound healing process

Any exudate needs to be assessed for[1]:

Volume	• High volume can indicate increased bacterial levels • Low volume can indicate dehydration or ischaemia
Appearance	• e.g. Green exudate can indicate infection (pseudomonas) • Ideal colour of exudate = white wine
Viscosity	• Thicker viscosity indicates higher protein levels which may indicate infection

T – Tissue

S - Surrounding Skin



E – Edge

I - Infection

M - Moisture

For leg ulcers

Adhere to local leg ulcer management policies and guidelines. Carry out a full holistic vascular assessment and consider the need for compression.[1]

I - Infection

Close

Assess the wound for signs and symptoms of infection or inflammation

Click here for **Infection Continuum**

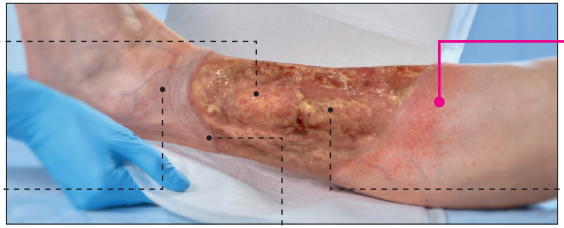
Consider the below criteria for the presence of biofilm

Click here for Biofilm Definition

Failure of appropriate antibiotic treatment	Low-level chronic inflammation
Response to antimicrobial treatment ineffective	Low-level erythema
Recurrence of delayed healing on cessation of antibiotic treatment	Poor granulation/friable hypergranulation
Delayed healing despite optimal wound management and health support	Secondary signs of infection
Increased exudate/moisture	

T – Tissue

S - Surrounding Skin



E – Edge

I - Infection

M - Moisture

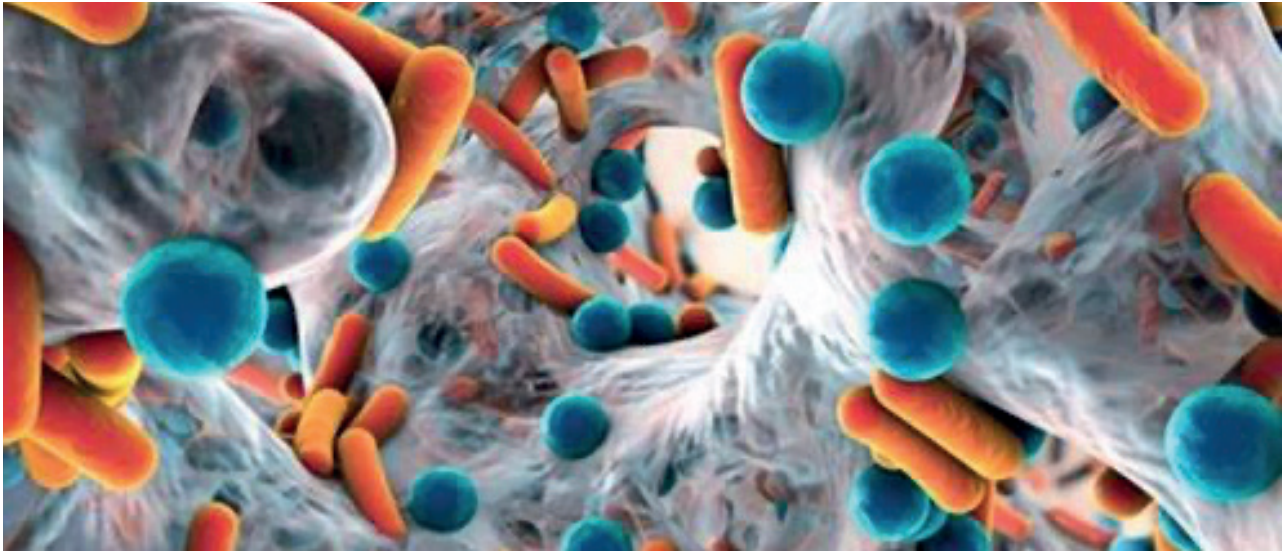
For leg ulcers

Adhere to local leg ulcer management policies and guidelines. Carry out a full holistic vascular assessment and consider the need for compression.[1]

Biofilm definition

Close

Biofilms are bacteria which attach to surfaces. Biofilms produce their own encapsulation that is tolerant to antimicrobial agents (this includes antibiotic and antimicrobial)

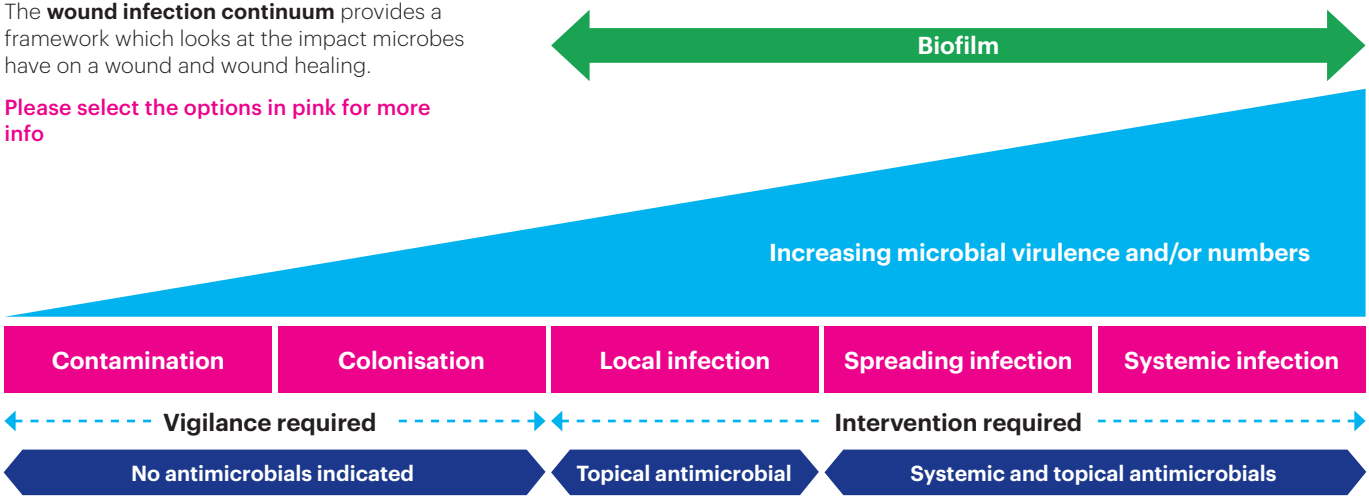


World Union of Wound Healing Societies (WUWHS), Florence Congress, Position Document. Management of Biofilm. Wounds International 2016

Assess: I - Infection

The **wound infection continuum** provides a framework which looks at the impact microbes have on a wound and wound healing.

Please select the options in pink for more info



< Back to Infection Page

International Wound Infection Institute (IWII) (2016) Wound infection in clinical practice. Wounds International, London. Available at: https://www. woundsinternational.com/resources/details/iwiiwound-infection-clinical-practice (accessed 24.03.20)

Assess: I - Infection

Contamination | Close

- All wounds may acquire micro-organisms. Host defenses will stop them multiplying
- At this stage - their presence is only transient and wound healing is not delayed

Contamination	Colonisation	Local infection	Spreading infection	Systemic infection
Vigilance required		Intervention required		
No antimicrobials indicated		Topical antimicrobial	Systemic and topical antimicrobials	

< Back to Infection Page

International Wound Infection Institute (IWII) (2016) Wound infection in clinical practice. Wounds International, London. Available at: https://www. woundsinternational.com/resources/details/iwiiwound-infection-clinical-practice (accessed 24.03.20)

Assess: I - Infection

Colonisation Close

- Microbial species successfully grow and divide, but do not cause damage to the host or initiate wound infection

Contamination	Colonisation	Local infection	Spreading infection	Systemic infection

Vigilance required — Intervention required

No antimicrobials indicated	Topical antimicrobial	Systemic and topical antimicrobials

< Back to Infection Page

International Wound Infection Institute (IWII) (2016) Wound infection in clinical practice. Wounds International, London. Available at: https://www. woundsinternational.com/resources/details/iwiiwound-infection-clinical-practice (accessed 24.03.20)

Assess: I - Infection

Local infection		Close
Covert (subtle signs of local infection)		
Hypergranulation (excessive 'vascular' tissue)	Epithelial bridging and pocketing in granulation tissue	Delayed wound healing beyond expectations
Bleeding, friable granulation tissue	Wound breakdown and enlargement	New or increasing pain
Increasing malodour		
Overt (classic signs of local infection)		
Erythema	Local warmth	Swelling
Purulent discharge	Delayed wound healing beyond expectations	New or increasing pain
Increasing malodour		

Contamination	Colonisation	Local infection	Spreading infection	Systemic infection
Vigilance required		Intervention required		
No antimicrobials indicated		Topical antimicrobial	Systemic and topical antimicrobials	

< Back to Infection Page

International Wound Infection Institute (IWII) (2016) Wound infection in clinical practice. Wounds International, London. Available at: https://www. woundsinternational.com/resources/details/iwiiwound-infection-clinical-practice (accessed 24.03.20)

Assess: I - Infection

Spreading infection Close

- Extending in duration + / - erythema
- Lymphangitis
- Crepitus
- Wound breakdown / dehiscence with or without satellite lesions
- Malaise / lethargy or non-specific general deterioration
- Loss of appetite
- Inflammation / swelling of lymph glands

Contamination	Colonisation	Local infection	Spreading infection	Systemic infection

Vigilance required — Intervention required

No antimicrobials indicated	Topical antimicrobial	Systemic and topical antimicrobials

< Back to Infection Page

International Wound Infection Institute (IWII) (2016) Wound infection in clinical practice. Wounds International, London. Available at: https://www. woundsinternational.com/resources/details/iwiiwound-infection-clinical-practice (accessed 24.03.20)

Assess: I - Infection

Systemic infection — Close

- Severe sepsis
- Septic shock
- Organ failure
- Death

Contamination	Colonisation	Local infection	Spreading infection	Systemic infection

Vigilance required ← → Intervention required

No antimicrobials indicated	Topical antimicrobial	Systemic and topical antimicrobials

< Back to Infection Page

International Wound Infection Institute (IWII) (2016) Wound infection in clinical practice. Wounds International, London. Available at: https://www. woundsinternational.com/resources/details/iwiiwound-infection-clinical-practice (accessed 24.03.20)

Select: T - Tissue

If dead or devitalised tissue has been identified through the wound assessment then you need to consider debridement within your management plan

Aims of debridement[7]:

Remove:
• Necrotic, devitalised, sloughy tissue
• Sources of infection, inflammation
• Exudate, dried exudate and dry skin/hyperkeratosis
• Pus
• Haematoma
• Debris or foreign bodies
• Any other barriers to healing

Decrease:
• Odour
• Excess moisture
• Risk of infection

Stimulate:
• Wound edges and epithelialisation

Improve:
• Quality of life

NB. It is important to know when to refer to a specialist best qualified to debride (e.g DFU). Remember that NOT debriding / referring can potentially cause harm to your patients; involve your multidisciplinary team where you need to in order to provide the care your patients need[6].

Select: T - Tissue

Debridement

Debridement methods require varying levels of expertise. You need to consider your skills and competency to perform the task and refer to a specialist if necessary[5].

Debridement Methods

Select the appropriate debridement methods

- Autolytic
- Mechanical
- Larval
- Sharp
- Surgical
- Ultrasonic
- Hydrosurgical

Select: T - Tissue

Autolytic

Close

- Using moisture to soften hard necrotic tissue and liquify slough e.g. hydrogels, hydrocolloids, hydrofibres, but the process may be slow
- Suitable for self-care by patients and carers

- Autolytic
- Mechanical
- Larval
- Sharp
- Surgical
- Ultrasonic
- Hydrosurgical

Select: T - Tissue

Mechanical

Close

- Use monofilament pads or debridement cloths containing a surfactant. Monofilament pads can help remove bacteria and biofilm
- Suitable for self-care by patients and carers

Autolytic

Mechanical

Larval

Sharp

Surgical

Ultrasonic

Hydrosurgical

Select: T - Tissue

Larval

Close

- Sometimes referred to as biosurgical and uses the sterile larvae of the greenbottle fly
- Rapid debridement, but not always acceptable with patients or healthcare workers

Autolytic

Mechanical

Larval

Sharp

Surgical

Ultrasonic

Hydrosurgical

Select: T - Tissue

Sharp Close

- Using a scalpel, scissors or curette to remove tissue. Often used in conjunction with other methods
- Requires specialist assessment prior to implementation


Autolytic


Mechanical


Larval


Sharp


Surgical


Ultrasonic


Hydrosurgical

Select: T - Tissue

Surgical

Close

- Excision and removal performed by a specialist in an acute, operating theatre environment

- Autolytic
- Mechanical
- Larval
- Sharp
- Surgical
- Ultrasonic
- Hydrosurgical

Select: T - Tissue

Ultrasonic

Close

- Using ultrasound either directly on the wound bed or by an atomised solution
- Requires specialist assessment and implementation

Autolytic

Mechanical

Larval

Sharp

Surgical

Ultrasonic

Hydrosurgical

Select: T - Tissue

Hydrosurgical

Close

- The use of a high energy saline beam as a cutting implement
- Requires specialist assessment and implementation


Autolytic


Mechanical


Larval


Sharp


Surgical


Ultrasonic


Hydrosurgical

Select: I - Infection

Biofilm management

Removing biofilm is part of the wound bed preparation process. This is an essential step to facilitate healing[5]

A pathway for the management of biofilm:

Debridement, using monofilament pads, can help remove bacteria and biofilm.

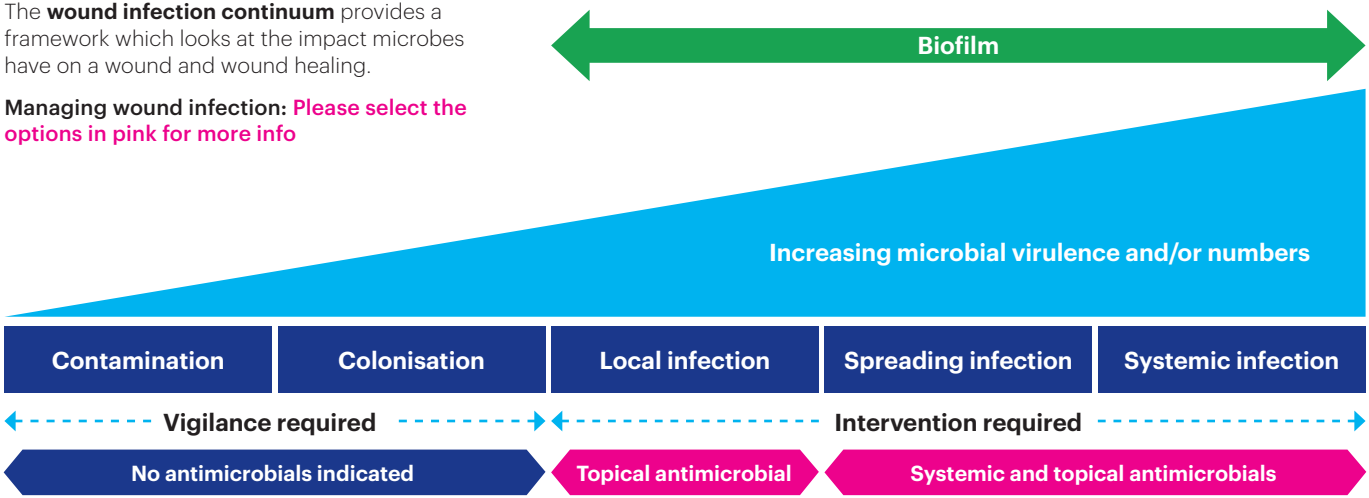
- Static chronic wound
- Suspected Biofilm
- Reduce biofilm - debridement/vigorous cleansing
- Prevent recontamination - topical antimicrobials suppress biofilm reformation - repeat debridement
- Reassess

(Phillips et al, 2010)

Select: I - Infection

The **wound infection continuum** provides a framework which looks at the impact microbes have on a wound and wound healing.

Managing wound infection: Please select the options in pink for more info



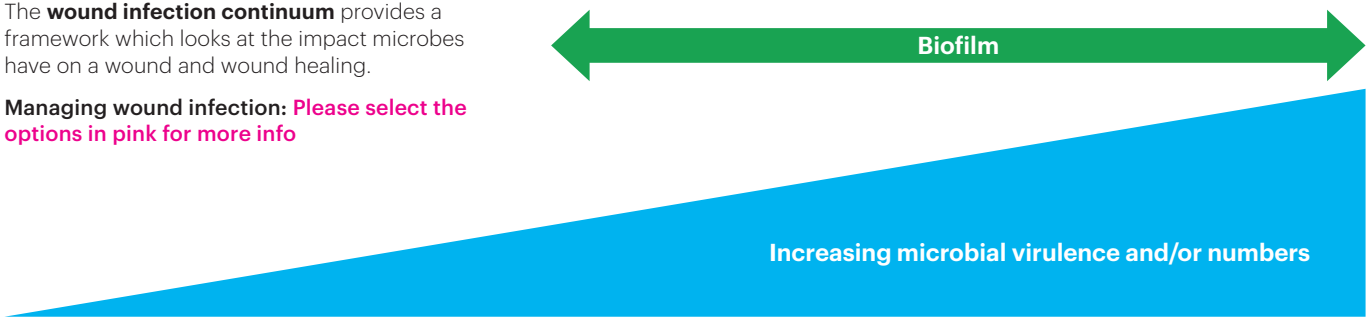
Reviewing treatments interventions:	To understand whether your treatment regime is working, you should be **looking for signs of improvement such as a reduction in:**			If your current treatment plan is not working, consider a reassessment and change of management plan
	• Pain • Malodour	• Exudate • Oedema and Erythema	• Non-viable tissue • Wound size / depth	

International Wound Infection Institute (IWII) (2016) Wound infection in clinical practice. Wounds International, London. Available at: https://www. woundsinternational.com/resources/details/iwiiwound-infection-clinical-practice (accessed 24.03.20)

Select: I - Infection

The **wound infection continuum** provides a framework which looks at the impact microbes have on a wound and wound healing.

Managing wound infection: Please select the options in pink for more info



Topical antimicrobials:

Local infection can be managed using a range of antimicrobial agents.
Antimicrobial agents include:

Close

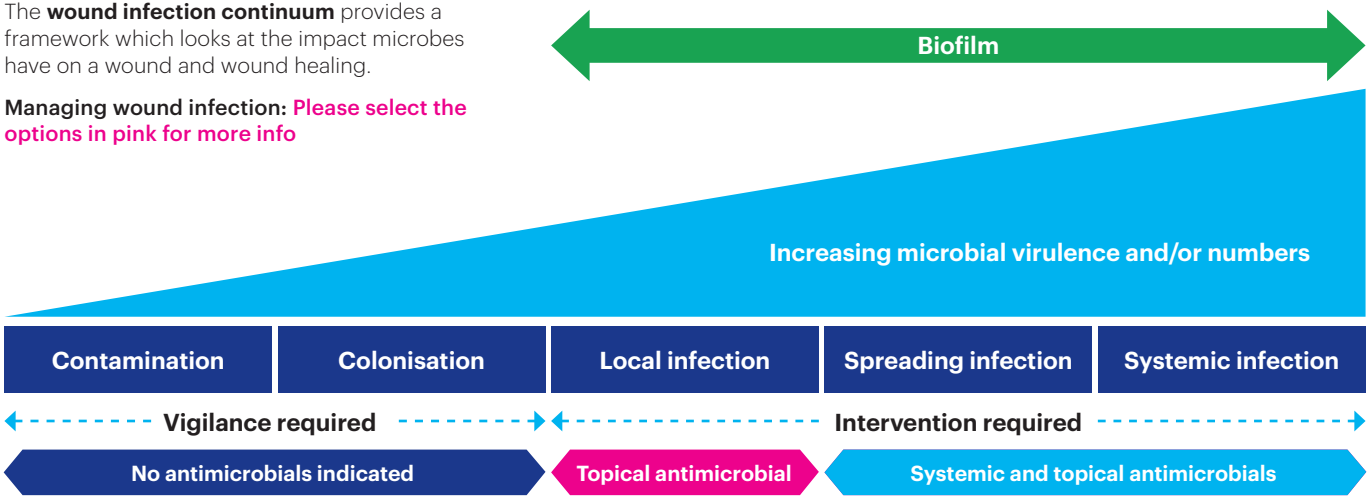
- Iodine
- Silver
- DACC (diakyl carbamoyl chloride)
- Honey
- PHMB (polyhexamethylene biguanide)

International Wound Infection Institute (IWII) (2016) Wound infection in clinical practice. Wounds International, London. Available at: https://www. woundsinternational.com/resources/details/iwiiwound-infection-clinical-practice (accessed 24.03.20)

Select: I - Infection

The **wound infection continuum** provides a framework which looks at the impact microbes have on a wound and wound healing.

Managing wound infection: Please select the options in pink for more info



Systemic and topical antimicrobials:

Spreading and systemic infection requires systemic and topical antimicrobials. Systemic antibiotics can also be used. These can be either narrow or broad spectrum.
Antibiotic effectiveness is dependent upon:

Close

- The location of the infection
- The ability of the antibiotic to reach the site of infection
- The ability of the bacteria to excrete the antibiotic

International Wound Infection Institute (IWII) (2016) Wound infection in clinical practice. Wounds International, London. Available at: https://www. woundsinternational.com/resources/details/iwiiwound-infection-clinical-practice (accessed 24.03.20)

Select: M – Moisture:

When selecting the appropriate product the following criteria should be considered

Fluid handling capacity	Select the appropriate dressing suitable for the level of exudate
Correct size and shape	Select the dressing appropriate for the anatomical location and size of the wound
Dressing fixation	Consider whether you will use bordered dressings or a secondary fixation such as bandages. The dressing should be secure yet provide atraumatic dressing removal
Retention of fluid under compression	Select the appropriate dressing to handle the level of exudate under compression

Select: M – Moisture:

Effective exudate management can promote healing, improve quality of life and enhance healthcare effectiveness. Absorbent products vary in the materials they are made from and in their ability to manage exudate. Knowing how they manage fluid is key to selecting the most appropriate and effective dressing/ technology for each wound.

Exudate management dressings

Click to find out about the different exudate management dressings available

Select: M – Moisture:

Foams

Close

Composition:

- Vary in thickness
- With or without a silicone wound contact layer
- Bordered or non-bordered options

Action:

- Absorb exudate, allowing evaporation to occur via a polyurethane top film

Advantages:

- Easy to apply
- Minimises trauma and pain (for silicone wound contact layer products)
- Suitable for many wound types

Wound characteristics:

- Traditionally, thinner foams have been designed for lower exudate levels
- More absorbent (thicker) foams can be used for highly exuding wounds

Select: M – Moisture:

Superabsorbers

Close

Composition:

- Multi-layered polymer construction

Action:

- Wick moisture from the wound and lock fluid inside the dressing

Advantages:

- Enhanced absorbency
- Longer wear times
- Less-frequent dressing changes

Wound characteristics:

- Heavily exuding wounds

Select: M – Moisture:

Gelling fibres/Alginates

Close

Composition:

- 100% carboxymethlycellulose (CMC)
- 100% alginate
- Or a combination

Action:

- Transforms into a moist, gel-like sheet or conformable gel when absorbing exudate
- Transmits water from the wound surface

Advantages:

- Maintain moist wound environment
- Comfortable
- Conforms to wound
- Can be used in deep wounds

Wound characteristics:

- Moderate to heavily exuding wounds
- Not to be used on fragile skin

Select: M – Moisture:

Hydrocolloids

Close

Composition:

- Gel-forming agents
- Waterproof backing, usually polyurethane
- Available in various shapes and thicknesses
- Bordered or non-bordered

Action:

- Absorbs exudate and forms a gel

Advantages:

- Maintains a moist wound environment
- Stimulates granulation
- Does not stick to the wound
- Are flexible to mould around skin and body contours

Wound characteristics:

- Light to moderately exuding wounds

Select: E – Edge

Where wound edges are rolled management of the wound is going to be complex and may need early specialist referral

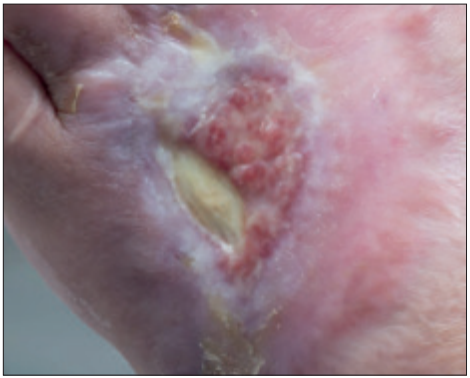
Indicators of non-advancement:

Select: S – Surrounding Skin

Surrounding skin may be compromised by the current wound management plan

There may be signs of:

- **Maceration, excoriation, oedema**



- **Dry skin, hyperkeratosis**

For leg ulcers

Adhere to local leg ulcer management policies and guidlines. Carry out a full holistic vascular assessment and consider the need for compression

Select: S – Surrounding Skin

Surrounding skin may be compromised by the current wound management plan

There may be signs of:

Maceration, excoriation, oedema

Close

Maceration, excoriation and oedema can be prevented by effective exudate management.

Dry skin, hyperkeratosis

For leg ulcers

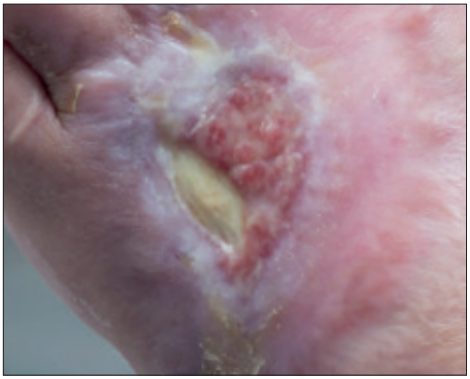
Adhere to local leg ulcer management policies and guidelines. Carry out a full holistic vascular assessment and consider the need for compression

Select: S – Surrounding Skin

Surrounding skin may be compromised by the current wound management plan

There may be signs of:

Maceration, excoriation, oedema



Dry skin, hyperkeratosis

Close

Manage and prevent hyperkeratosis through good skin care.
Washing, drying and application of emollients should be an integrated part of every patients care plan

For leg ulcers

Adhere to local leg ulcer management policies and guidelines. Carry out a full holistic vascular assessment and consider the need for compression

Evaluate

Wound healing is a dynamic process, meaning that your assessment and management needs to be constantly evaluated. If current treatment plan is not working, consider a reassessment of TIMES and modify the care plan as needed.

Supported self care

On consideration of a patients ability to participate in supported self care refer to CASE - Assessing a patients ability to self care.

Patients need to know what to look for and when to ask for help

These might include:

- Unusual wound leakage, pain or smell
- Wound increasing in size
- Increasing redness around the wound
- Generally feeling unwell

Patients can be advised to photograph their wound to measure its progress.

References

1. Wounds UK (2016) Best Practice Statement: Holistic Management of Venous Leg Ulceration. Wounds UK, London Available online: www.wounds-uk.com
2. Atkins L, Bucko Z, Conde Montero E et al (2019) Implementing TIMERS: The race against hard-to-heal wounds. Journal of Wound Care 28(Suppl 3) S1-S49
3. Falanga V. Classifications for wound bed preparation and stimulation of chronic wounds. Wound Repair Regen. 2000; 8(5): 347-52.
4. Atkin L (2016) A guide to wound debridement. Independent Nurse. MA healthcare Ltd, London. 04 February, 1-4
5. Vowden K and Vowden P (2011) Debridement made easy. Wounds UK 7(4) S1-S4
6. Harries R, Bosanquet D, Harding K (2016) Wound bed preparation: TIME for an update. International Wound Journal 13(Suppl.S3) 8-14
7. Strohal R, Apelqvist J Dissemond J, et al (2013) EWMA document: Debridement. J Wound Care 22(Suppl 1): S1–S52
8. JB4 40031908, In vitro evaluation of removal of viable biofilm by Cutimed® DebriClean and Cutisoft Cotton. August 2018, BSN medical data on file.
9. JB4 40031810, In vitro evaluation of the cleansing effect of Cutimed® DebriClean and Cutisoft Cotton. August 2018, BSN medical data on file.
10. JB4 40031811, In vitro evaluation of the bacterial adhesion to Cutimed® DebriClean and Cutisoft Cotton. July 2018, BSN medical data on file.
11. NHS Clinical Evaluation Team (2018): Clinical Review: Superabsorbent Dressings.