

Biofilm Management Pathway

This pathway is designed to help you identify the signs of biofilm present within the wound and give guidance on how to effectively manage it to allow wound healing to progress, see page 2 for information on biofilm.

Step 1

Signs of biofilm

- Any non-healing wound after 2 weeks
- Any wound on Stage 2 or above on the Scottish Ropper Ladder for Infected Wounds
- Delayed healing despite optimal wound management and delaying factors addressed, for example underlying venous disease which requires a full lower limb assessment and consideration of compression therapy, has been completed.
- Lack of response to antibiotics or antimicrobial wound dressings

Step 2

Cleansing

Consider pain management if this is painful for the person
At every dressing change:

- Use a dressing pack and follow aseptic non-touch technique
- Use a surfactant wound cleansing solution (e.g. Prontosan Solution), ensuring a minimum of 10 minute soak time
- Cleanse the skin surrounding the wound by 20cm or the full limb if under a bandage

Step 3

Debridement

Consider pain management if this is painful for the person.
At every dressing change:

- Use a mechanical debridement product such as: UCS Cloth or Debrisoft Pad or Lolly as per manufacturers guidelines.
- Use sufficient pressure similar to that of brushing your teeth to remove devitalised tissue and debris.

Step 4

Management

- Apply Antimicrobial wound dressing using the East Region Formulary in line with the Scottish Ropper Ladder for Infected Wounds.

Step 5

Evaluation

After 2 weeks is there improvement?

Yes

Some

No

- If there are no further signs of biofilm follow maintenance wound cleansing and debridement and **discontinue** antimicrobial dressing and surfactant

- If the wound is improving but there is not a 40% decrease in the size of the wound continue or change antimicrobial based on the wound assessment and continue for another **2 weeks** before reviewing, some biofilms may require a longer treatment duration (Wolcott et al, 2010, IWII, 2022)

- Go back to step 1 and follow the pathway again
- Discuss with senior nurse for assessment and advice
- Refer to specialist services for support and consideration for sharp debridement

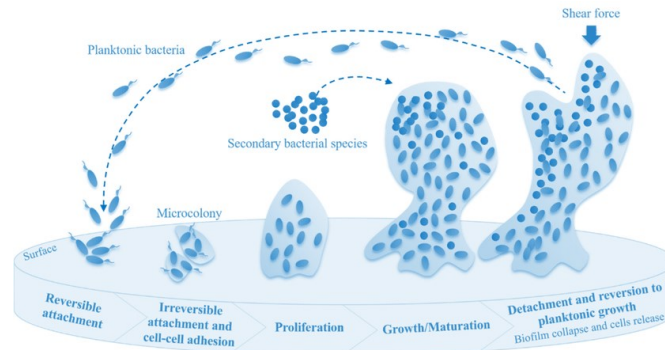
Please Note:

- If after discontinuing treatment deterioration is noted **OR** signs of biofilm are increasing please return to step 1 and follow pathway

Please turn over for more information on biofilm

What are biofilms?

- A biofilm is a community of micro-organisms that attach to a surface by creating a sticky substance called extracellular polymeric substance (EPS) which surrounds and protects the bacteria
- A biofilm can be made up of a single species or a mixture of species
- A mature biofilm can develop in as little as 24-48 hours after which it will disperse bacteria into the air to land in other areas of the wound bed or surrounding skin (Pinto et al, 2020)



How Biofilm Develops, Pinto et al, 2020

This might be the first time you've heard the term biofilm, but they're actually all around us even on our teeth! We brush twice a day to manage the biofilm on our teeth and need a similar consistent approach to wound biofilm.

How does biofilm affect wound healing?

- Biofilm are an important cause of delayed healing in wounds, they are thought to delay wound healing by creating an inflammatory response in the wound bed and surrounding tissues which does not allow healing to progress through the normal steps
- There is increasing evidence that biofilm are present in most, if not all, chronic, non-healing wounds (IWII, 2023)

How do I know there is a biofilm in the wound?

- There is currently no diagnostic test for wound biofilm, swabbing can be incorrect due to the way that biofilm grows in small pockets rather than laterally across a wound bed
- It is not possible to make a diagnosis of wound biofilm by eye
- The determination that a wound is not healing because of biofilm is based on eliminating other possible causes of non-healing by identifying underlying causes and ensuring that the patient is optimised and receiving the correct wound management (IWII, 2023)

How do I manage a biofilm in a wound?

- See the pathway overleaf for a step by step guide
- Literature says that wound cleansing and debridement should be done consistently and regularly to disrupt a biofilm and best practice is a 4 step technique of cleansing, debriding, management of wound edges and appropriate dressing selection (Murphy et al, 2022; BBraun, 2021; Choudhury and Downie, 2022)

References:

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