

Integrated Care System Nottingham & Nottinghamshire

Skin and Soft Tissue Infections Wound Infection Updated Guidance Launch

Nottinghamshire Area Prescribing Committee (APC) Guidance

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Wound infections



- A physical wound comprises of a break or damage to the skin or underlying tissues caused by injury, surgery or diseases affecting the integrity of the skin.
- The skin acts as a protective barrier preventing harmful microorganisms from entering the body and causing infections.
- Not all wounds require antibiotic treatment as the body's immune response can prevent an infection developing.
- Proper wound care usually is sufficient for most wounds this includes flushing of wound and appropriate dressings.
- Antibiotics should be reserved for wounds that are showing signs and symptoms of infection and wounds that have been exposed to contaminated material e.g. faeces, soil.

Signs and symptoms of wound infection

Around 40 AD, Celsus described the cardinal signs of inflammation:

- Calor heat
- Rubor redness
- Tumor swelling
- Dolor pain
- Functio Laesa loss of function

Example of a normal (left) and an infected wound (right)



These are the same principles that are applied to skin and soft tissue infection.

Other signs include:

- purulent discharge which can have an offensive odour
- pocketing, bridging or dehiscence of wound
- systemic symptoms including change in behaviour
- Extending Erythema (redness) beyond 2cm for the wound edges
- Friable granulation tissue (bleeding easily), increased exudate levels



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Sampling a wound for culture



• Black charcoal swab would be the appropriate sample to send for culture and sensitivity.



- Provide clinical details e.g. site of swab, onset of symptoms, exposure history, if currently on antibiotics.
- This information will help to set up the appropriate tests in the lab to look for skin and soft tissue pathogens.
- If the wound is exuding pus a sample of the pus in a sterile container will yield a better result.
- Do not swab any chronic leg wounds/ulcers if there is no clinical concerns of infection as this will not produce a useful result and may lead to inappropriate antimicrobial prescribing.



When do I swab?



- If there are any signs of infection including systemic signs of fever (previous slide)
- Elderly and immunosuppressed patients may exhibit nonspecific signs of infection like nausea, drowsiness, loss of appetite, confusion, restlessness
- If there is prolonged healing (consider repeat injury/harm)
- Self-harm wounds have the potential to become infected but don't automatically need swabs

Basic swab procedure:

•Explain the procedure/ gain consent/ best interests

- •Clean wound bed with saline/ tap water
- •Zigzag across wound bed
- •Swab from the centre to the outside
- •Swab a pocket or sinus in the wound separately



Wounds essentials, 2010

Pathogens of skin and soft tissue infection

Common skin and soft tissue pathogens include:

- Staphylococcus aureus including Methicillin sensitive (MSSA) and Methicillin resistant (MRSA
- Streptococcus including Group A, Group G, Group C
- Anaerobic organisms like *Clostridium perfringens* and *Bacteroides* can cause infections in the context of abdominal wounds.
- Gram negative organisms like *E.coli* and *Pseudomonas aeruginosa* are more likely to be colonisers given the wet nature of wounds but in the context of contaminated wounds, surgical sites, immunosuppressed patients – they can cause infections.
- Infections from wounds sustained from aquatic exposures e.g. fresh or salt water maybe prone to atypical organisms. Further discussion with Microbiology would be warranted as empirical choice of antibiotics might not cover these organisms.





Self-harm wounds



- Self-harm wounds can be contaminated or non-contaminated.
- <u>Contaminated wounds</u> are wounds that have been exposed to foreign materials, soil, faecal material.
- These wounds are prone to higher risk of infection given the exposure to large quantities of bacteria.
- Empirical antibiotics are therefore indicated in this group.
- <u>Non-contaminated wounds</u> do not routinely require antibiotics unless they demonstrate signs and symptoms of infection.
- Good wound care with flushing and antimicrobial dressings will suffice in most instances.
- Advice patients to monitor for signs and symptoms of infection as this may develop over the next few days if the wound care is not optimal.

Factors leading to infection?

- Poor aseptic technique
- Unclean environment
- Poor wound hygiene
- Underlying cause not addressed
- Contamination
- Non concordance, refusal of treatment
- Recurrent self-harm
- Immunosuppressed
- Neglectful care
- Safeguarding concerns
- Lack of wound education
- Inappropriate dressing selection
- Wound not being regularly assessed
- Treatment not evaluated
- Access to healthcare, homeless, finance, transport.....





Wound Management Challenges in preventing Infection

What are the potential costs to the patient of inappropriately prescribing antibiotics?

- Effect on patient's normal flora and gut microbiome
- Increase in antimicrobial resistance (AMR)
- Less antibiotic options in the future
- Antimicrobial dressings not effective or implemented
- Unable to manage patient in community or mental health settings
- Wound deteriorates risk of exposed bone, tendon
- Clinical deterioration which can potentially lead to
 - Hospital admission with sepsis
 - > Increase in severity of symptoms like pain
 - Progression of infection to deep infection e.g. osteomyelitis
 - Further deterioration which can lead to amputation or death in severe cases
 - Coroner's inquest





Estimated cost of wound care: £8.3bn per year and take up to 50% of community nursing time. (NHSBN, 2021)

What do I need to know about Antimicrobial dressings??

- Antimicrobial dressings alone have over fifty different manufacturers dressings listed in the British National Formulary (BNF)
- Antimicrobial agents include: Honey, iodine, Silver, Polyhexamethylene biguanide (PMHB) – they are incorporated into a variety of dressings such as alginates, foams, hydrocolloids etc
- There are short acting and long-acting antimicrobials

When should an Antimicrobial dressing be used?

- Antimicrobial dressings should not be used routinely on wounds that are healing
- Should be used when there are clinical signs and symptoms of infection
- Should be implemented for 2 weeks then reassessed and stopped if no longer required
- As part of biofilm pathway
- In exceptional situations where patients are identified as high risk of wound infection e.g. immune-compromised patients, wounds with exposed bone, diabetic foot ulcer, self-harm wounds (small number of cases)
- Following a positive wound swab











Silver dressings-recommended use 2 weeks

- Silver dressing role: treat local infection, prevent systemic spread and reduce wound bioburden
- Resistance to silver is extremely rare, however as silver dressings release silver into the wound, it is absorbed systemically. Due to this there is a risk of toxicity and resistance.
- Silver has multiple actions against microbial cells reducing chance of resistance unlike antibiotics that generally have a single target site hence AMR
- Higher levels of silver do not automatically indicate a more effective dressing
- Silvers have been found to kill bacteria in biofilm after 48hrs (Percival et al, 2008)
- It is recommended that silver dressings are used for 2 weeks in the first instance to assess effectiveness for the patient and the wound. After 2 weeks, reassess. Under specialist advice silver can be recommended for longer periods.



Honey dressings

 Nontoxic reduce/ stop bacteria – will not eliminate spread of infection – can be painful – caution in diabetics – reduced clinical evidence





Inadine – also absorbed –recommended use 2 weeks

- Known iodine hypersensitivity
- If the patient is being treated for kidney/renal problems
- Pregnant or breastfeeding
- Duhring's herpetiform dermatitis (a rare skin disease)
- Patients on lithium

Must be used under medical supervision:

- In patients with any thyroid diseases
- In newborn babies and infants up to the age of 6 months as povidone-iodine may be absorbed through unbroken skin
- When treating deep ulcerative wounds, burns or large injuries.

Dialkylcarbamoyl Chloride (DACC) dressings

• Bacteria binding wound dressings work by removing microorganisms rather than actively killing bacteria, providing a physical mechanism for the control of bioburden.

Tests show that Cutimed Sorbact DACC[™]-coated bacteria-binding wound dressing was able to inhibit the growth of all the World Health Organization (WHO) priority pathogens tested³:

•Acinetobacter baumannii

Pseudomonas aeruginosa

•Enterobacteriaceae (ESBL)

•Enterococcus faecium (VRE) and Staphylococcus aureus (MRSA)







Antimicrobial Gel (Flaminal forte and Flaminal Hydro)

- Action: Debridement agent
- Absorbent alginate
- Antimicrobial enzymes system
- The enzymes system kills the bacteria that are absorbent in the gel matrix
- Long-acting antimicrobial
- Great for wound packing small cavities
- Huge cost £8-9 per 15g tube compared to £ for the ActiveHeal gel 15g (not an antimicrobial) £1-2 (example of the cost of antimicrobials)

For infected wounds - Short-term use 7-14 days usually advised until infection resolves. For chronically colonised wounds - longer term use may be required.

All require a secondary dressing

Short acting – 2 weeks and review: Aquacel AG + Extra, Acticoat flex 3, medihoney, lodoflex, Inadine, Atrauman Ag.





Long Acting: Flaminal Hydro/Forte, Cutimed Sorbact (Binds bacteria away from the wound)





These dressing pose a huge cost to the NHS and must be appropriately used when clinically indicated

Wound Cleansing

Effective wound cleansing involves removing wound debris, and bacteria from a wound to promote healing and prevent infection.

- Octenilin has cleansing and moistening properties, it is generally preferred over saline when dealing with chronic wounds, burns, or situations where saline might not be effective.
- Octenilin demonstrates a better cleansing power and pathogen reduction compared to saline.
- Saline is a good option for general wound cleansing
- Octenilin shows a better reduction of pathogens compared to saline solutions, particularly in removing biofilms and bacterial load
- Octenilin should be used as per antimicrobial wound care dressings pathway guidance for self-harm wounds.











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 The United Nations and other international agencies estimate that if no action is taken, antimicrobial drug-resistant diseases could cause 10 million deaths each year by 2050, costing £66 trillion.

If wound infections are not identified and treated promptly, infection can have severe consequences
such as Risk of systemic infection or sepsis and potential death.

Skin and Soft Tissue Infections Wound Infection

Updated Guidance

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Step 1 – Antimicrobial wound care pathway

Complete holistic wound assessment to establish wound characteristics, underlying aetiology and factors which could delay healing.



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Step 2 - Management of wounds with two or more signs of infection or any self-harm wound





NOTE - Prophylactic use of antimicrobial dressings is dependent on the cause of the wound, or the risk of infection i.e. burns, bites, dirty traumatic wounds, patients who have reduced immunity, diabetes or poor arterial circulation, unsterile foreign bodies causing trauma. If any of these become clinically infected, despite local treatment then follow the pathway. Diabetic foot wounds should be referred to a specialist centre and closely monitored. Advice on severe burns should be sought from the Burns Unit (NUH).

The Tissue Viability Team should be contacted for advice or referral at any stage during this process. This is essential if prolonged antimicrobial treatments are being applied.

INFECTED WOUNDS SHOULD BE RE-ASSESSED CONTINUOUSLY TO DETERMINE THE EFFECTIVENESS OF THE MANAGEMENT PLAN

- Self-harm wounds that are not contaminated with soil or faeces do not usually require oral antibiotics.
- If there are clinical signs of infection, a wound swab is required to identify any skin and soft tissue pathogens e.g. Staphylococcus aureus or Streptococci.
- Ensure all patients are in date with tetanus vaccination.

Part of the Antimicrobial Prescribing Guidelines for Primary Care. Version 3.0. Updated: November 2024. Next review: November 2027. Accessibility check completed.

Table 1: Antibiotic options

Antibiotic ¹	Dose	Duration
Flucloxacillin (not if <u>MRSA</u>)	Child 1 month-23 months: 62.5-125 mg four times a day	5-7 days
	Child 2–9 years: 125–250 mg four times a day	
	Child 10–17 years: 250–500 mg four times a day	
	Adult: 500 mg four times a day	
In penicillin allergy:		
Clarithromycin ²	Adult: 500mg twice a day	5 days
Or		
Doxycycline ³	Adult: 200mg first day then 100mg once a day	5 days
If anaerobes are isolated or	Child 1 month: 7.5 mg/kg twice a day	7 days
likely due to site of infection	Child 2 months-11 years: 7.5 mg/kg three times a day	
(abdominal/perineal) <u>add in</u>	(max. 400mg per dose)	
Metronidazole	Child 12–17 years: 400 mg three times a day	
	Adult: 400 mg three times a day	
Alternatives if metronidazole		
contraindicated:		
In non-penicillin allergy	Child 1-11 months: 0.25 mL/kg of 125mg/31 suspension	5-7 days
Co-amoxiclav	three times a day.	
	Child 1–5 years: 5 mL of 125/31 suspension three times a	
	day.	
	Child 6–11 years: 5 mL of 250/62 suspension three times a	
	day.	
	Child 12–17 years: 625mg three times a day	
	Adult: 625 mg three times a day	
In penicillin allergy:	Neonate up to 14 days: 3–6 mg/kg three times a day	
Clindamycin	Neonate 14 days to 28 days: 3–6 mg/kg four times a day	7 days
	Child: 3–6 mg/kg four times a day (max. per dose 450 mg)	
	Adult:150–300 mg four times a day; increase as necessary	
	to 450 mg four times a day	
¹ See <u>BNF</u> and <u>BNFC</u> for appropriate use and dosing in specific populations, e.g., hepatic, or renal impairment, pregnancy, breastfeeding.		
³ Doxycycline is not suitable for pregnant women or children		



Surgical wounds:

- Culture all infected surgical wounds and give dates of the operation on the laboratory request form and review empirical treatment with culture results.
- Local drainage and toilet may be sufficient in many cases.
- If post-operative treat with antibiotics according to swab results.
- If ongoing concerns about a surgical wound, patient will likely need a formal review by the clinical team who performed the surgery to ensure no deep source or collection is present.

Prescribing questions we should be asking to reduce AMR and NHS spend and ensure appropriate care:

- If the patient is not on antibiotics and no positive swab result we MUST question, why antimicrobial dressing and antibiotics are being requested or re-requested?
- Why is an antimicrobial dressing being used past 14 days?
- If recurrent courses of antibiotics are being requested why?
- If antibiotics have been prescribed has an antimicrobial dressing?
- Bilateral cellulitis is very rare professionally challenge is it could be another diagnosis?
- Self-harm, wounds that have not been contaminated with faeces or soil don't automatically require antibiotics – signpost to Best practice and antimicrobial guidance

Close stewardship is required with antimicrobials dressings and antibiotics to ensure the patient gets the best possible care. This will also prevent current and future antimicrobial resistance developing.



What can YOU do?





To increase efforts towards effective infection control methods and hand hygiene practices. Aseptic non touch technique is paramount – protect your patients at every dressing change! Healthcare professionals....KEEP YOUR FIELD STERILE! Stop putting dressings still in their packets in your sterile field, be aware single use products.



To create a consistent knowledge base and educational opportunities for clinicians on the effective use of antimicrobials and to reduce variation in practice – thus reducing diagnostic uncertainty, clinical ignorance, ritualistic behaviour, clinical fear and patient demands. Know your signs and symptoms – consider inflammatory response and rationale for prescribing.



To prescribe the appropriate antimicrobial treatment when therapy is indicated, minimising the unnecessary use of antimicrobials, overly broad-spectrum treatment regimens and the use of antibiotics for non-infected wounds.



To prescribe the appropriate antimicrobial duration, at an optimal dose, administered through the most appropriate route for the indicated condition and patient status To use an agent that has the lowest risk of adverse effects.



STOP THINK..... Consider the 'just in case' harm – question dressing choice and duration at every patient contact Educate your colleagues – follow the antimicrobial dressing pathway and local antibiotic guidance Inadine is not always the answer! Safety net antimicrobials now and slow down the resistance.

Implement the pathway in your clinical area now!



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If you have any questions. Please reach out to us!

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