Guideline

Recurrent Boils (furunculosis): Guidelines for management and Staphylococcal decolonisation (MRSA and MSSA)

Document ID	CHQ-GDL-01063	Version no.	4.0	Approval date	01/02/2024
Executive sponsor	Executive Director Medical Services			Effective date	15/02/2024
Author/custodian	Director of Infection Management and Prevention service, Immunology and Rheumatology			Review date	01/02/2026
Supersedes	3.0				
Applicable to	All Children's Health Queensland (CHQ) Staff				
Authorisation	Executive Director Clinical Services				

Purpose

This guideline is to provide a standardised approach to the initial assessment and management of recurrent boils (furunculosis) in children.

Scope

This Guideline provides information for Children's Health Queensland (CHQ) staff caring for paediatric patients.

Related documents

Procedures, Guidelines, Protocols

- CHQ Procedure 63300: Multi-resistant organisms (MRO): Detection, screening and management
- CHQ-PROC-01036 Antimicrobial: Prescribing and Management
- CHQ Antimicrobial restrictions list

Queensland Government

Guideline

Management of recurrent boils (furunculosis) in children:

Recurrent boils are most often due to *Staphylococcus aureus* (*S.aureus*) infection. Approximately 20% of *S aureus* isolates may be resistant to methicillin/ flucloxacillin/ cefalexin. About 80% of patients with recurrent boils will carry *S aureus* in their nose at any one time. Skin swabbing frequently reveals heavy skin carriage of *S aureus*.

Reasons for recurrent infection

This is unknown. Particular phage types of *S. aureus* avidly colonise some individuals and not others and particular phage types may be more virulent than others.

Initial management

- It is important to swab skin lesions to obtain exact identification of the responsible organism and to confirm antibiotic sensitivities. Screening cultures prior to decolonisation in asymptomatic individuals are not recommended unless no prior knowledge of organism sensitivities is available. If screening cultures are required, increased sensitivity will be obtained by including nares, groin, axillae and throat.
- A **seven day course of appropriate oral antibiotic** (usually cefalexin or flucloxacillin/dicloxacillin) should be given first to treat any current boils.
- **Decolonisation regimens should not commence until completion of systemic antibiotic treatment.**
- Adult household members with boils will also require treatment in order for household decontamination to be effective. They should arrange to see their General practitioner for concurrent treatment, including appropriate oral antibiotic therapy.
- Decolonisation regimens are unlikely to succeed in the presence of active inflammatory skin conditions such as psoriasis or eczema. These should be addressed first.
- **All** household members (including adults) should participate in the following topical regimen to attempt to eradicate *S.aureus* colonisation. The aim of this regime is to reduce the frequency and severity of lesions over time. It is unusual for complete eradication to occur **after** first treatment. If necessary, this can be repeated. Provide patient instructions Appendix 1.
  - **Body wash with 2 % Chlorhexidine skin wash** should be used daily concentrating on perineal area and axillae. Hair should be shampooed daily with the same agent. Wash should be left on the skin/hair for at least 30 seconds before rinsing and should not be vigorously scrubbed off. Avoid contact inside the ear canals and eyes.
  - **Continue body wash daily for** at least **five days** and then revert to once or twice a week when lesions are controlled.
  - **An alternative to body wash is to use bleach baths daily.** Pour 60mL (a quarter of a cup) of household bleach (household bleach; 6% hypochlorite) into a deep bath. Soak up to the neck in bathwater for a full 15 minutes daily (Avoid contact with face and eyes- caution: concentrated bleach is corrosive)
  - **Nasal Mupirocin 2% (Bactroban®) should be applied twice a day for five days** to the anterior nares, reverting to weekly use once lesions are controlled.

Follow up management

- If the above measures alone are ineffective, combination or suppressive antibiotic therapy may be effective. Combination therapy can be given for 10 days initially. If unsuccessful, repeat course and seek Infection specialist advice. **Combination oral antibiotic options (depending on sensitivities) include:**
  - **Rifampicin orally** 10 mg/kg once daily (Maximum 300 mg/day) **and Flucloxacillin orally** 12.5 mg/kg/dose FOUR times a day (maximum 750 mg/dose)
  - **Rifampicin orally** 10 mg/kg once daily (Maximum 300 mg/day) **and Clindamycin orally** 10 mg/kg/dose THREE times a day (Maximum 300 mg/dose)
  - **Rifampicin orally** 10 mg/kg once daily (Maximum 300 mg/day) **and Trimethoprim/Sulfamethoxazole (Bactrim ®) orally** 4 mg/kg/dose Trimethoprim component twice daily (Maximum 160mg trimethoprim component per dose)
  - **Rifampicin orally** 10 mg/kg once daily (Maximum 300 mg/day**) and Sodium Fusidate (tablets) orally** 12 mg/kg/dose orally THREE times a day (Maximum 500 mg/dose; tablets can be crushed/dispersed in water before administration)

ALERT

Rifampicin can interact with numerous medications. Pharmacy review required prior to commencement.

Consultation

Key stakeholders who reviewed this version:

- Director of Infection Management and Prevention service, Immunology and Rheumatology
- Infection Specialist team, Infection Management and Prevention Service, QCH
- Pharmacist Advanced - Antimicrobial Stewardship, QCH
- CHQ Medicines Advisory Committee – endorsed by Chair January 2024

Definition of terms

Term	Definition	Source
Colonisation	Colonisation by MRSA means that the micro-organisms are present on the patient but do not invade or cause an associated host response (e.g. fever, purulent drainage).	

Infection	MRSA infection arises from invasion and multiplication of micro-organisms in a host, with an associated host response (e.g. fever, purulent drainage). Infections may require antibiotics treatment aimed at inhibiting or ceasing further growth of the infectious agent. Infection is preceded by colonisation. **Infections caused by MRSA** MRSA can be minor infection showing up as: Pimples, Boils or skin infections including impetigo, abscesses, folliculitis and carbuncles. Alternatively MRSA can be serious infection to systemic infections including: bacteraemia, pneumonia, osteomyelitis, sepsis, endocarditis, and meningitis. It is estimated that between 30 and 60% of hospitalised patients who acquire MRSA will develop a MRSA infection, mainly in wounds, skin and the blood stream.	Queensland Health, Centre for Healthcare related infection surveillance and prevention, Signal Infection Surveillance. (2008). *Multi-resistant Organism Signal*. Commonwealth of Australia: Brisbane.
MRSA	Methicillin resistant *Staphylococcus aureus* is defined as *Staphylococcus aureus* isolates which are resistant to penicillin and methicillin **plus three or more** of gentamicin, tetracycline, erythromycin, ciprofloxacin, fusidic acid, rifampicin or clindamycin.	

References and suggested reading

1. Australian Therapeutic Guidelines: Recurrent Staphylococcal skin infection. Published April 2019.
2. Falagas ME, Bliziotis IA, Fragoulis KN. Oral rifampin for eradication of Staphylococcus aureus carriage from healthy and sick populations: a systematic review of the evidence from comparative trials. Am J Infect Control. 2007 Mar;35(2):106-14.
3. Fritz SA, Camins BC, Eisenstein KA, et al. Effectiveness of measures to eradicate Staphylococcus aureus carriage in patients with community-associated skin and soft-tissue infections: a randomized trial. Infect Control Hosp Epidemiol. 2011 Sep;32(9):872-80.
4. Fritz SA, Hogan PG, Hayek G, et al. Household versus individual approaches to eradication of community-associated Staphylococcus aureus in children: a randomized trial. Clin Infect Dis. 2012 Mar;54(6):743-51.
5. Liu C, Bayer A, Cosgrove SE, et al; Infectious Diseases Society of America. Clinical practice guidelines by the infectious diseases society of america for the treatment of methicillin-resistant Staphylococcus aureus infections in adults and children. Clin Infect Dis. 2011 Feb 1;52(3):e18-55.
6. Creech CB, Al-Zubeidi DN, Fritz SA. Prevention of recurrent staphylococcal skin infections. Infect Dis Clin North Am 2015;29(3):429–464
7. Kaplan SL et al. Randomized Trial of "Bleach Baths" Plus Routine Hygienic Measures vs Routine Hygienic Measures Alone for Prevention of Recurrent Infections. CID 2014:58 (1 March): 679-682

Guideline revision and approval history

Version No.	Modified by	Amendments authorised by	Approved by
1.0	Director, Infection Management and Prevention Services CNC, Infection Management and Prevention Services SMOs , Infection Management and Prevention Services Antimicrobial Stewardship Pharmacist (LCCH)	Medicines Advisory Committee	Executive Director Medical Services
2.0 11/06/2019	Infection Specialist, Infection Management and Prevention Services (QCH) Pharmacist Advanced- Antimicrobial Stewardship (QCH)	CHQ Medicines Advisory Committee	Executive Director Clinical Services (QCH)
3.0 14/06/2022	Infection Specialist, Infection Management and Prevention Services (QCH) Clinical Pharmacist Lead- Antimicrobial Stewardship (QCH)	Director, IMPS Immunology and Rheumatology	Divisional Director Medicine
4.0 01/02/2024	Infection Specialist, Infection Management and Prevention Services (QCH) Pharmacist Advanced - Antimicrobial Stewardship (QCH)	Divisional Director, Medicine	Executive Director Medical Services

Keywords	MRSA, methicillin resistant staphylococcus aureus, boils, furunculosis, staphylococcus aureus, chlorhexidine, mupirocin , infection, decolonisation, patient information, 00163
Accreditation references	National Safety and Quality Health Service Standards – 3 Preventing and Controlling Healthcare-Associated Infection, 4 Medication Safety

Appendix 1: Patient and Family "Staph" Decolonisation Information Leaflet

Background information

What is *Staphylococcus aureus* and methicillin-resistant Staphylococcus aureus (MRSA)?

People normally carry all sorts of germs inside their body and on their skin. This is called "colonisation". About 1 in 3 people have a germ on their skin called "staph." In these people, staph usually causes no problems. But if they get a cut or a scrape, the germ can cause an infection.

A staph infection can be mild, like a pimple, and affect only the skin. More serious infections tend to happen in young children, older adults, and people who cannot fight infection well. Staphs can cause recurrent boils or skin infections in people who have them on their skin.

Methicillin-resistant Staphylococcus aureus (or MRSA for short) is a staph that has become more resistant to antibiotics.

How do you get Staphylococcus aureus?

Most people carry *S.aureus* on their skin without knowing it. You can pick up the germ by:

- Touching a person who has *S.aureus* on his or her skin
- Touching a table, handle or other surface that has the germ on it
- Sharing sports equipment in gymnasiums or sport clubs.
- Sharing razors, towels, washcloths, bed sheets and clothes.

General Prevention Measures:

- Keep hands clean by washing thoroughly with soap and water.
- Alcohol-based hand sanitizers are a good alternative for disinfecting hands if a sink is not available. Hand sanitizers are available as a liquid or wipe in small, portable sizes that are easy to carry in a pocket or handbag. When a sink is available, visibly soiled hands should be washed with soap and water.
- Keep cuts and scrapes clean, dry, and covered with a bandage until healed.
- Avoid touching other people's wounds or bandages.
- Avoid sharing personal items such as towels, washcloths, razors, clothing, or uniforms. Other items that should not be shared include brushes, combs, and makeup.
- Students who participate in team sports should shower after every athletic activity using soap and clean towels. Athletes with skin infections should receive prompt treatment and should not compete when they have draining or active skin infections.
- People who use exercise machines at sports clubs or schools should be sure to wipe down the equipment, including the hand grips, with an alcohol-based solution after using it.

What about my partner/ family or household members?

When a troublesome *S.aureus* moves into a family or household, only certain members of that group get infections (boils), but those without boils may also be carrying it. To help prevent the chance of re-infection, it is usual for all to undergo the same decolonisation.

What is decolonisation?

"Decolonisation" is a combination of measures to help get rid of *S.aureus* staph that is causing recurrent infections in a household.

It is unusual for one decolonisation attempt to be completely successful, but it can reduce the number of infections occurring, and how often they occur.

Sometimes repeating the process may be necessary.

Decolonisation Instructions

Getting started:

Choose a period when you will be uninterrupted by going away or other distractions. Do not start while you have any active boils. These should be treated with a course of antibiotics first. Do not start if anyone in the family has active eczema or broken inflamed skin, as this will significantly decrease any chance of success.

All household members should participate in the following regimen for the same period of time.

There are three aspects to decolonisation:

(1) Daily anti-bacterial nose ointment for 5 days

(2) Regular cleaning of the skin and hair for at least 5 days, as directed.

(a) Daily washing with 2% Chlorhexidine skin wash

OR

(b) Daily washing with dilute bleach baths

(3) Cleaning the house and linen on Days 2 and 5

What do I need to buy?

Your General Practitioner (GP) can prescribe the decolonisation medicines for your family members and supply can be dispensed by your local Community pharmacy.

- Get your prescription filled for the nasal ointment (mupirocin 2%)
- 2% Chlorhexidine skin wash (Microshield®)
- Cotton buds
- Container of alcohol hand hygiene solution (gel or rub).
- Alcohol-based cleanser (large alcohol-soaked wipes are suitable)
- Household bleach (Sodium hypochlorite 6%) (if using bleach baths)

What next?

- Remove nose, ear and other body piercing items prior to the treatment and keep them out during the treatment period.
- Discard old toothbrushes and razors when the treatment starts.
- Remove nail varnish and artificial nails. Keep fingernails short and clean.
- If dentures are used, remove them every evening during the decolonisation program - clean them carefully and then place them to soak overnight in denture disinfecting agent (eg Sterident).

Daily routine

1. Nasal mupirocin 2% (Bactroban®) nasal ointment 5 days

- Place small amount (size of match head) of ointment onto a clean cotton bud and massage gently around just inside each nostril (no more than 2 to 3 cm inside).
- Apply the ointment twice daily for 5 days
- Disinfect hands with alcohol rub/gel before and after applying the ointment.

2. House and clothes/ linen: On Days 2 and 5

- Clean the house well (especially the bedrooms and bathrooms). Vacuum clean floor surfaces AND soft furnishings if possible (eg. lounge chairs).
- Wipe over all frequently touched surfaces in the home
- Wash your used clothes, underwear, pajamas and bed linen (eg. towels, sheets, face washers and bathmats) using a hot wash where possible.
- If available, for items that will not be damaged, dry using a clothes dryer on a hot setting

3. Regular washes

Option 1: Body washes daily for at least 5 days

- Apply the antiseptic body wash (chlorhexidine 2%) in the shower daily.
- Take care to wash hair, under the arms and into the groin and into any folds of skin but avoid the eyes and ear canals.
- Allow the antiseptic to remain on the skin for 30 seconds then rinse.
- Note: Do not use other soap at the same time, as this may inactivate the antiseptic wash.
- You can use conditioner on your hair after washing if you wish.

Option 2: Dilute bleach baths daily for at least a week

Pour 60 mL (quarter of a cup) of household bleach (6% sodium hypochlorite) in a full bathtub. Soak up to the neck in bathwater for a full 15 minutes daily. Do not immerse your head or face in the bath.
(Caution: Avoid contact with face and eyes- caution: concentrated bleach is corrosive)

- If using this option, wash your hair with Chlorhexidine 2% skin wash at least 2 to 3 times during the week as well.
- You can use conditioner on your hair after washing if you wish.

Follow-up after decolonisation treatment

The aim of the regimen is to reduce the frequency and severity of lesions over time. It is unusual for complete eradication to occur after one decolonisation attempt.

Following decolonisation, you can choose to:

- Wait and see- if no further boils occur within 6 months then it is probable that the process has been successful

  OR

- Continue intermittent body washes 1 to 2 times per week with 2 % Chlorhexidine skin wash with once weekly Mupirocin 2% nasal ointment to nose.

  OR

- Continue dilute bleach baths once or twice a week and Mupirocin 2% nasal ointment to nose once weekly

What else can I do?

Other measures that may be helpful either during or after attempting decolonisation, but which are not thought to be essential: Vitamin C supplements: 250mg to 500mg orally once daily for 4 to 6 weeks

Where can you find out more information?

Please speak to the infection control team or the health care worker looking after you or your family.
The infection control team can be contacted:
Phone: 3068 4145 (nurses), 3068 1558 (administration officer)
Email: CHQ_IMPS@health.qld.gov.au