Hunter New England Local Health District

# MRSA/MSSA Eradication

## Clinician Information

### Background

*Staphylococcus aureus* is a leading pathogen across hospital and community care.

In 2022, there were 83 healthcare-associated *Staphylococcus aureus* bloodstream infection (SAB) cases with 8% due to MRSA. Over the same period, 264 community acquired SAB events were documented with 12% due to MRSA[1].

Patients who develop colonisation with MRSA or MSSA may develop recurrent infections of the skin (boils) or deep tissue sites. Approximately 25% of adults remain colonised with MSSA (less often MRSA) for many years. Patients who acquire MRSA in hospital may either experience transient (< 6 months) or prolonged carriage of the "staph.", especially in the presence of chronic wounds or prosthetic materials[2].

### Rationale

Eradication of MRSA or MSSA can be achieved through use of topical disinfection of the nose and body and may reduce the risk of recurrent *Staphylococcal* infection.

Typically, a topical 5 day protocol is used (nasal and body disinfection). The addition of a rifampicin-containing antibiotic regimen increases the effectiveness of the eradication, especially in the setting of chronic skin ulcers

### When to consider eradication

- Significant history of recurrent *Staphylococcal* skin infection (boils) due to MRSA or MSSA AND home/personal situation conducive to compliance
- Healthcare worker identified to be infected or colonised with MRSA
- Selected admitted patients with an MRSA bloodstream infection or other – either during admission or after discharge
- Renal haemodialysis patients (see separate protocol)
- Cystic fibrosis patient with newly detected MRSA colonisation (prolonged protocol)
- Nasal carriage of MSSA/MRSA identified prior to major surgery (see separate pre-procedure *Staphylococcal* load reduction protocols on the Infection Prevention Service intranet fact sheet site)

*The presence of active skin dermatitis, cellulitis, chronic skin ulcers, vaginal colonisation, wound drains or urinary catheters are contraindications to topical eradication.*

### Process

The detailed process is specified in the patient information sheet and involves 5 days of nasal antiseptic twice daily, daily body disinfection and other personal environmental measures (household or patient hospital room). Education for patient about the importance of hand hygiene is very important.

When used in the outpatient setting, all household members and close contacts should go through a synchronous topical treatment (after checking for active infections). Separate tubes of nasal ointment are required.

As nearly all local *Staphylococcal* isolates are susceptible to mupirocin, the ointment is appropriate. For mupirocin resistant isolates, octenidine nasal gel is recommended twice daily.

For inpatient eradication, non-rinse 2% chlorhexidine wipes are preferred for body disinfection – see this separate procedure. For outpatients, either use Microshield 2 chlorhexidine body wash or triclosan 1% body wash (Phisohex)[3] is recommended. This should remain on the skin for 5 minutes before showering. Diluted bleach baths are another alternative treatment for community patients.

Important environmental controls include washing linen frequently and ensuring clean linen on beds after first antimicrobial body treatment. Ensuring surfaces such as counters desks and toys are cleaned daily, or whenever visibly soiled, with detergent. Pets and their bedding should also be washed as pets can be colonised as well.

### Follow-up

Healthcare staff should re-test at 1, 3 & 6 month intervals.

After community eradication, further screening is not indicated unless clinical relapse occurs OR there is a reason to document 'clearance'.

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MRSA carriage can be assumed 'cleared' if more than 6 months have elapsed from the last positive culture and two sets of nose, throat, and perianal swabs do not isolate MRSA.

**Relapse**

If *Staphylococcal* infection or colonisation recurs after treatment, check for mupirocin resistance. Check for compliance, especially with environmental measures. Optimise dermatitis management. Ensure all household members were/are treated.

## Options include:

- Accept failure (not for healthcare worker) and advise continuing thrice weekly bleach baths or topical antiseptic use during showering for 3 months then review
- Refer patient for Infectious Diseases review and management
- Repeat topical eradication for 10 days across index and other householders
- Repeat 5 day topical eradication and add oral rifampicin plus either fusidic acid (avoid co-administration with statins), trimethoprim/sulfamethoxazole, or doxycycline (prescribe antibiotics via a public hospital). **Note**: warn patient about side effects and screen for interactions with existing drug treatment including the oral contraceptive.

## References


1. Intranet Infection Control Indicators webpage Staphylococcal epidemiological report.
2. Ferguson JK. Recurrent staphylococcal infection – advice for clinicians and patients.
3. Hughes C, Ferguson JK. Phenotypic chlorhexidine and triclosan susceptibility in clinical *Staphylococcus aureus* isolates in Australia. Pathology 2017 Oct;49(6):633-637


**Up To Date Excerpts (accessed 22/3/23)**

The efficacy of decolonization (also referred to as load reduction) in outpatient settings is limited. Based on available data, the above approach may temporarily eradicate MRSA colonization, but there is no definitive evidence that it reduces the likelihood of subsequent infection. Given the observed reduction in MRSA infection rate associated with a longer (six-month) decolonization regimen at the time of hospital discharge, further study of longer decolonization regimens among patients in community settings is warranted.

In one randomized trial including 300 adults and children with community-onset skin and soft tissue infection (SSTI) and *S. aureus* colonization randomized to no therapeutic intervention (control group) or one of three five-day decolonization regimens (regimen 1: 2% mupirocin ointment applied to the nares twice daily, regimen 2: intranasal mupirocin plus daily 4% chlorhexidine body washes, or regimen 3: intranasal mupirocin plus daily dilute bleach water baths), eradication rates were 48, 56, 54, and 71 percent, respectively. In a retrospective study including more than 900 patients with MRSA colonization who underwent decolonization and follow-up for subsequent MRSA infection (five-day course of nasal mupirocin ointment [2%] plus chlorhexidine gluconate [4%] every second day), decolonization did not affect the risk of infection but there was a trend toward delayed infection (median time to infection 50.0 versus 15.5 days; p = .06).

Decolonization of the patient and household (rather than the decolonization of the patient only) is supported by a randomized trial including more than 180 patients with MRSA SSTI randomized to decolonization of all household members (household group) or decolonization of the patient alone (index group); during the 12-month follow-up, recurrent SSTI was observed less frequently in the household group than the index group (52 versus 72 percent).

Emergence of *S. aureus* strains tolerant or resistant to topical antimicrobial agents used for decolonization is well described; however, the clinical impact of reduced susceptibility is not clear.

Data for use of concomitant oral antibiotic therapy for decolonization are limited. In one prospective study including 31 patients with recurrent MRSA SSTI who underwent decolonization with nasal and topical body decolonization as well as oral antibiotic therapy; during the six-month follow-up period, the mean number of MRSA infections per month was reduced from baseline (0.84 to 0.03 infections/month)

***Refer to Up-to-date "Methicillin-resistant Staphylococcus aureus (MRSA) in adults" for complete review and references.***
UP-TO-DATE