Meticillin Resistant *Staphylococcus Aureus* (MRSA)

Organisms

- MRSA are strains of *S. aureus* that are resistant to the isoxazoyl penicillins such as meticillin and flucloxacillin. MRSA are currently cross-resistant to all currently licensed beta-lactam antibiotics e.g., amoxicillin, cephalosporins and co-amoxiclav. In addition, they can be resistant to other classes of antibiotics, but this is less predictable. Presently in Nottingham, we have both erythromycin-resistant and sensitive strains in the community and nearly all isolates are resistant to the quinolone antibiotics e.g., ciprofloxacin, levofloxacin.
- **Some strains of MRSA also produce PVL toxin.**

Assessment

- Patients most at risk are those who have frequent contact with healthcare, have wounds or medical devices, are elderly or chronically ill, diabetic, have had previous broad spectrum antibiotics, or live with someone with a previous MRSA diagnosis.
- Screening programmes are in place for admissions to secondary care.
- MRSA, like sensitive *S. aureus* isolates, can colonise wounds, therefore antibiotics are not indicated unless there are signs suggestive of infection e.g., purulent discharge, cellulitis. If there is a severe infection or an infection that is not responding to appropriate oral antibiotics, the patient may need hospital admission for intravenous treatment (for example IV vancomycin).
- If the patient is admitted to the hospital, **inform the admitting team** that the patient has had MRSA isolated, so that appropriate antibiotics are given, the patient is offered decolonisation and is admitted to a side room.
- During **out of hours, medical practitioners** should be made aware of patients with an MRSA positive culture by using a **Special Patient Note** to ensure that appropriate prescribing occurs.
- MRSA infected/colonised numbers of patients has been reducing, as more are being actively treated and screened in an effort to reduce the community reservoir. The Infection Prevention and Control Teams (IPC) within primary care will discuss individual cases with practitioners to ensure the most appropriate screening and treatment regimen occurs.
    - CityCare Infection Prevention & Control Team (0115 8834902) or
    - ICB County Infection Prevention & Control Team (01623 673081) or e-mail nnicb-nn.ipc@nhs.net or
    - ICB Bassetlaw area Infection Prevention & Control Team (01777 590027)

Patient Information link here

Treatment

Skin and soft tissue infections (SSTIs):

- If the patient is febrile, appears unwell or is toxic with a SSTI consider assessment in the hospital.
- Swab the lesion if purulent exudates or pus are present.
- If MRSA or MRSA/PVL is suspected because of previous results or surgical or healthcare-related, it is very important to collect a microbiology sample.
- **Do not give** antibiotics to patients with minor SSTIs or small abscesses (<5cm). Incise and drain small abscesses without cellulitis.
- For larger abscesses after incision and drainage start empirical or culture-guided systemic antibiotic therapy for larger abscesses or if there are infections in other family members.
- Serious and deep-seated MRSA infections refer for urgent assessment and treatment in hospital.
- If infection fails to respond to treatment discuss with a Medical Microbiologist.
- Linezolid may be advised by Microbiology for MRSA skin/soft tissue infection. It is classified as an Amber 2 agent. It has important drug interactions and requires monitoring.

Other infections: guided by sensitivity report or if not available and empirical treatment needed, please send sample(s) for culture and discuss with the duty microbiologist

Antimicrobial and decolonisation treatment for skin and soft tissue infections:

Antibiotic[1]	Dosage	Duration
Choice guided by results of sensitivity testing:		
Doxycycline[4] (not in pregnancy or children) **Or** Clarithromycin[3] **Or** Clindamycin	**Adult:** 200mg first day then 100mg once a day **Adult:** 500mg twice a day **Adult:** 300mg four times a day	5-7 days 5-7 days 5-7 days
In children consider Erythromycin[2,3]	**Neonate:** 12.5 mg/kg every 6 hours. **Child 1–23 months:** 125 mg four times a day. (On advice dose may be doubled in severe infections). **Child 2–7 years:** 250 mg four times a day (On advice dose may be doubled in severe infections). **Child 8–17 years:** 250–500 mg four times a day	5-7 days

[1]See BNF and BNFC for appropriate use and dosing in specific populations, e.g., hepatic, or renal impairment, pregnancy, and breastfeeding.
[2]Erythromycin is preferred in women who are pregnant.
[3]Withhold statins whilst on clarithromycin/erythromycin course.
[4]·Doxycycline is not suitable for pregnant women

Skin Decolonisation Treatment:

This requires a combination of more than one medication.

Medication[1]	Dosage	Duration
Either: Octenisan® body wash* ***Or*** (in accordance with local IPC guidelines) Chlorhexidine gluconate 4% cleansing solution (advised by Sherwood Forest Hospitals Trust and the County IPC Team)	Use once daily as body wash and also as a shampoo on days 1 & 3 Use once daily as body wash and also as a shampoo on days 1 & 3	5 days 5 days
Plus Mupirocin 2% nasal ointment**	Apply three times a day to both nostrils	5 days

*On the advice of infection control – Octenisan® wash mitts and shower caps may be used in community patients unable to use the standard wash.
**Naseptin® cream applied four times a day to both nostrils has been used as an alternative in the event of a supply problem with mupirocin nasal ointment. Recommended course lengths have varied from 5 to 10 days depending on the indication. Octenisan® nasal gel is available for patients' requiring decolonisation, but unable to use Naseptin® (twice a day for 5 days).

[1] See BNF for appropriate use and dosing in specific populations, e.g., hepatic, or renal impairment, pregnancy, and breastfeeding.

Patient Information leaflet - Octenisan®

Version Control- **Meticillin resistant Staphylococcus aureus (MRSA)**

Version	Author(s)	Date	Changes
V2.1	Nichola Butcher, Medicine Optimisation Pharmacist	19.07.21	Updated the children's doses, in line with British National Formulary for children, Sept 20-21
V3.1	N Butcher, MO and interface pharmacist	18/05/23	Guideline moved from skin and soft tissue section to information section of APC website. Link to PVL guideline added. Infection Prevention and Control details updated to include Bassetlaw. Statement about wound infections/boils guidelines removed to reduce risk of empirical flucloxacillin use. Statement added about infections other than skin or soft tissue infection. Treatment table changed to one for soft tissue treatment and one for decolonisation treatment. Wording from PVL guideline adopted. Statement about Naseptin peanut allergy removed as reformulated. General MRSA PIL added and specific Octenisan® wash leaflet added.