Meticillin Resistant Staphylococcus Aureus (MRSA) Procedure

(IPC Manual)
<table>
<thead>
<tr>
<th>SECTION</th>
<th>CONTENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>INTRODUCTION</td>
</tr>
<tr>
<td>1.1</td>
<td>Meticillin resistant <em>Staphylococcus aureus</em> (MRSA)</td>
</tr>
<tr>
<td>1.2</td>
<td>Panton Valentine Leukocidin (PVL)</td>
</tr>
<tr>
<td>2.</td>
<td>PROCEDURE</td>
</tr>
<tr>
<td>2.1</td>
<td>MRSA Standard Precautions Management</td>
</tr>
<tr>
<td>2.2</td>
<td>Inpatient MRSA Flowchart</td>
</tr>
<tr>
<td>2.3</td>
<td>Screening Criteria</td>
</tr>
<tr>
<td>2.4</td>
<td>Inpatient Screening</td>
</tr>
<tr>
<td>2.5</td>
<td>Hospital – MRSA Treatment</td>
</tr>
<tr>
<td>2.6</td>
<td>Community – MRSA Screening and Treatment</td>
</tr>
<tr>
<td>2.7</td>
<td>Management of MRSA in Wounds and Invasive Devices Insertion Sites</td>
</tr>
<tr>
<td>2.8</td>
<td>MRSA Bloodstream Infection (BSI)</td>
</tr>
<tr>
<td>2.9</td>
<td>Antimicrobial Therapy</td>
</tr>
<tr>
<td>2.10</td>
<td>Visitors</td>
</tr>
<tr>
<td>2.11</td>
<td>Outpatient Appointments</td>
</tr>
<tr>
<td>2.12</td>
<td>Transfer/Discharge</td>
</tr>
<tr>
<td>2.13</td>
<td>Visiting Patients in their Own Home</td>
</tr>
<tr>
<td>2.14</td>
<td>Care of the Deceased</td>
</tr>
<tr>
<td>2.15</td>
<td>Staff Screening</td>
</tr>
<tr>
<td>3.</td>
<td>DEFINITIONS/EXPLANATION OF TERMS USED</td>
</tr>
<tr>
<td>4.</td>
<td>RESPONSIBILITIES, ACCOUNTABILITIES AND DUTIES</td>
</tr>
<tr>
<td></td>
<td>Refer to the home page, section 4, of the Infection Prevention and Control Policy</td>
</tr>
<tr>
<td>5.</td>
<td>LINKS TO ASSOCIATED POLICIES/DOCUMENTS</td>
</tr>
<tr>
<td>6.</td>
<td>REFERENCES/FURTHING READING</td>
</tr>
<tr>
<td>7.</td>
<td>APPENDICES</td>
</tr>
<tr>
<td></td>
<td>Appendix 10 – Terminal Discharge Cleaning Check List</td>
</tr>
<tr>
<td></td>
<td>Appendix 15 - Prontoderm Instructions</td>
</tr>
<tr>
<td></td>
<td>Appendix 16 - Wound Cleansing Flowchart</td>
</tr>
<tr>
<td></td>
<td>Appendix 17 – Best Practice Guidance for Antimicrobial Prescribing for Patients with MRSA</td>
</tr>
</tbody>
</table>
1. **INTRODUCTION**

*Staphylococcus aureus* (SA) is a common bacterium that lives harmlessly on the skin and in the nose of about a third of the population. However, it is the commonest cause of skin and soft tissue infection acquired in the community or in a hospital setting following surgery or other procedures that cause a break in the skin. If SA enters the body it may cause serious infections such as bacteraemia (blood poisoning).

1.1 **Meticillin resistant Staphylococcus aureus (MRSA)** is a form of SA that has become resistant to some common antibiotics.

MRSA is not a danger to healthy individuals but people may become colonised. This is when bacteria settle at a particular site on the body without producing an immune response and there are no signs of infection. People who are colonised can act as carriers and pose a risk of cross infection, especially to other vulnerable people such as intravenous drug users, patients with wounds, pressure ulcers, and invasive devices such as intravenous cannulæ, urinary catheters, gastrostomy tubes and immunocompromised patients.

Like other *Staphylococci*, MRSA strains can pass from one person to another by direct contact. However individuals with MRSA may also shed the organism into the environment, from which other individuals may then acquire it.

1.2 **Panton Valentine Leukocidin (PVL)** is a toxin which is produced by a small percentage of SA. It can also be produced by other organisms, including MRSA. Infections are usually more severe as the PVL is a toxin which can destroy white blood cells which in turn can lead to more serious infections in wounds, joints and more rarely pneumonias. PVLSA/PVL MRSA are commonly (but not exclusively) associated with:

- Infections in previously healthy individuals in the community
- Under 40 year olds, but anyone is susceptible

Staff should suspect PVL MRSA if patients present with any of the following:

- Pus producing skin infections (boils and abscesses) which vary in severity and may be recurrent
- Cutaneous lesions ≥5cms in diameter, which may need different treatment from smaller lesions and may be recurrent
- Cellulitis (inflammation with or without blistering of the skin)
- Pain that is out of proportion to severity of cutaneous findings
- Necrosis

Patients identified as having a PVL producing strain of MRSA may need specific screening and treatment. Advice in relation to this must be discussed with the Consultant Microbiologist and IPC team. Some patients may deteriorate and become ill very quickly and need urgent medical intervention.
The infection control measures used to prevent the spread of PVL-positive MRSA are the same as for MRSA. Please refer to the ‘Guidance on the Diagnosis and Management of PVL-Associated Staphylococcus aureus Infections (PVL-SA) in England, 2nd Edition (Health Protection Agency 2008)’ for further information.

If staff members have concerns relating to their own medical conditions or non-healing wounds they must contact the Occupational Health Service (OHS) and/or General Practitioner (GP) for advice.
2. PROCEDURE

2.1 MRSA Standard Precautions Management

| Hand Hygiene | • Complete hand hygiene in accordance with WHO 5 moments.  
| | • Encourage the patient with own hand hygiene – staff may need to support them with this.  
| | • To reduce the risk of infection staff must cover non intact skin with a waterproof dressing – if this is not possible or if broken skin is on the hands then staff cannot undertake clinical work until this has healed.  
| | • Staff must seek advice from OH or from their own GP.  
| **PPE** | • Personal Protective Equipment (PPE) must be worn by staff carrying out care activities which involve direct contact with the patient, body fluids, skin scales or washing a patient. For these tasks a disposable apron and non-sterile nitrile gloves must be worn.  
| | • The level of PPE required for other tasks will depend on risk assessment.  
| **Waste** | • Waste must be treated as offensive (tiger stripe bag) unless clinical infection is present where waste must be treated as infectious (orange bag).  
| | • In the community if a patient generates their own waste (not handled by staff) this can be disposed of in household domestic waste stream.  

<table>
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<tr>
<th>Inpatient Management</th>
<th>Community Management</th>
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| **Laundry** | • All linen must be washed as contaminated in the main laundry facility.  
| | • Clothing and bedding should be washed daily.  
| | • In areas where patients launder their own personal items of clothing these must be washed on their own, at the highest temperature possible, tumble dried and ironed.  
| | • Advise patients to change and launder clothes and bedding/towels regularly.  
| | • Advise to wash items at the highest temperature possible.  
| | • Advise that drying in a tumble dryer and/or ironing will help further reduce the amount of MRSA present.  
| **Patient Equipment** | • All patient equipment must be decontaminated thoroughly with Clinell Universal wipes  
| | • Wherever possible use single use/single patient use equipment  
| | • All patient equipment must be decontaminated with Clinell Universal wipes.  
| | • Avoid taking non-essential equipment into the home.  
| **Environmental Cleaning** | • Environmental cleaning must be completed at least once daily with Chlor-Clean.  
| | • A terminal clean must be completed when isolation precautions are discontinued when the patient is discharged or transferred, or on the advice of the IPC team and appendix 10 completed, accessed via this link: [https://www.rdash.nhs.uk/46192/infection-prevention-and-control-manual/](https://www.rdash.nhs.uk/46192/infection-prevention-and-control-manual/)  
| | • Advise patients/family/carers that regular environmental cleaning using detergent and hot water is effective in reducing levels of MRSA.  

2.2 Inpatient MRSA Flowchart

Complete HCAI form
Does the patient meet the Admission Screening Criteria for MRSA?

**Yes**

Screen within 12 – 18 hours of admission

**Admission Screen:**
1. Both nostrils (using 1 swab)
2. Groin (both sides using 1 swab)
3. Any wounds
4. Any invasive devices
5. CSU
6. Sputum if productive
7. Stoma site if previous positive

Is the result positive?

**Yes**

Inform IPC Team
Implement enhanced precautions *
Commence decolonisation treatment for 5 days
Wait 48 hours after completion of treatment

Repeat Screen

**Yes**

Repeat decolonisation treatment and wait 48 hours after completion

Is the patient positive?

**Yes**

Repeat the Screen every 48 hours until a further 2 negative screens are obtained (3 in total)

**No**

Complete terminal clean of room once 3 negative screens obtained

**Yes**

Treat as long term colonisation. Continue with enhanced precautions. Inform IPC team

**No**

Repeat Screen

Is the patient positive?

**Yes**

No further action required

No further action required

Enhanced precautions include a higher level of standard precautions but not necessarily full isolation precautions. Please discuss with the IPC Team.
• If en-suite facilities are not available then a commode should be placed in the patient’s room for their sole use or a dedicated toilet allocated to them.

• Where a single en-suite room is not available or isolation will be detrimental to the patient’s care needs, a risk assessment should be undertaken and the IPC team contacted for further advice.

• Following thorough risk assessment patients may be admitted into a bay as long as the other patients in the bay do not have any wounds or invasive devices.

• Dependent on the patient’s risk of invasive infection or commencement of antibiotic therapy the IPC team may request further follow-up screens. Patients will be kept under review by the IPC team for the duration of their hospital stay.

2.3 Screening Criteria

• Patients with a previous history of MRSA
• Patients that have undergone surgical procedures within the last month
• Patients admitted from another hospital facility
• Patients admitted from a nursing/residential care home facility
• Intravenous drug user
• Patients who self-harm (breaking the skin within the last month)
• Patients with chronic wounds e.g. leg ulcers
• Patients with indwelling devices e.g. urinary catheters

2.4 Inpatient Screening

Aseptic Non Touch Technique must be used when obtaining the swabs and ensure that MRSA screening is requested from the following sites:

<table>
<thead>
<tr>
<th>SITE</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nose – 1 Swab</td>
<td>Using a blue swab one swab to be used for both anterior nares (fleshy part of the nose). The swab can be pre-moistened if required by using the gel provided with the swab or with sterile water.</td>
</tr>
<tr>
<td>Groin – 1 Swab</td>
<td>Use blue swab as above. One swab to be used for both sides of the groin.</td>
</tr>
<tr>
<td>SITE</td>
<td>COMMENTS</td>
</tr>
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</tr>
<tr>
<td>Skin Lesions and/or Wounds</td>
<td>Using a charcoal swab one swab to be taken from each site – the site and type of wound must be clearly identified e.g. self-injurious wound to left arm or ungradeable pressure ulcer to right heel. NB: if there are clinical signs of infection the swab needs to be labelled for microscopy, culture and sensitivity as it may be a different organism causing infection.</td>
</tr>
<tr>
<td>Insertion Sites of Invasive Devices</td>
<td>One swab from each site e.g. PEG, intravenous catheter, supra pubic catheter or tracheostomy site.</td>
</tr>
<tr>
<td>Catheter Specimen of Urine</td>
<td>CSU from patients who have urinary catheters in place at time of admission.</td>
</tr>
<tr>
<td>Sputum</td>
<td>Only if productive.</td>
</tr>
<tr>
<td>Stoma Site</td>
<td>Only if patient is previously known to have MRSA.</td>
</tr>
</tbody>
</table>

- Specimens must be correctly labelled with patient details as the processing laboratory will reject incompletely labelled specimens. The request must state MRSA screen and clinical details must include any current antibiotic therapy.
- Inpatient staff members are responsible for reviewing the results of the screen and acting on them.
- The IPC team may inform the ward of a positive MRSA result during their operational hours if they are notified first, or out of operational hours the on-call Consultant Microbiologist will inform the ward.
- If the patient has been in a bay with other patients staff must inform the IPC team as contact screening for patients exposed to someone found to have MRSA may be required.
- In-patient area staff must inform the patient of the result of the MRSA screen, even if negative and the result must be documented in the patient records. An information leaflet (order code WZT758) is available which answers frequently asked questions about MRSA which can be given to the patient.
- The patient needs to be informed that he/she is carrying a common bacterium, which is resistant to some antibiotics but there are others available to treat infections if necessary. Most patients carrying MRSA will not require antibiotic treatment. However, measures need to be taken to prevent the spread of MRSA to other patients. Such measures will often involve a single room or being last on the list for surgery or an outpatient appointment. It is not always possible to establish where the patient acquired MRSA.
2.5 Hospital – MRSA Treatment

Patients found to be MRSA positive must be considered for topical colonisation suppression treatment in an attempt to eradicate MRSA and reduce the subsequent risk of infection or transmission to other patients. Advice regarding treatments and sensitivities can be sought from the IPC team or Consultant Microbiologist.

The usual course of treatment is:

<table>
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<tr>
<th>Treatment</th>
<th>Product</th>
<th>Frequency</th>
<th>Duration</th>
<th>Comments</th>
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<tbody>
<tr>
<td>Skin decolonisation</td>
<td>A topical application of skin foam e.g. Prontoderm</td>
<td>Once daily</td>
<td>5 days</td>
<td>Refer to manufacturer’s instructions. If using Prontoderm this is a ready to use, leave on product which is not to be diluted or washed off.</td>
</tr>
<tr>
<td>Nasal decolonisation</td>
<td>A nasal ointment application e.g. Bactroban (Mupirocin 2%)</td>
<td>Three times daily</td>
<td>5 days</td>
<td>Apply using the little finger or a cotton bud. The tube must not be inserted into the nostril as this will contaminate it reducing the efficacy of the treatment. It is important to ensure this treatment is administered appropriately and completed to avoid Mupirocin resistance developing.</td>
</tr>
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If a patient has a nasal invasive device, such as nasal cannula or nasogastric tube then treatment with Bactroban nasal ointment may be withheld or changed to Prontoderm nasal gel until the device is removed. Manufacturer’s instructions must be followed at all times, see appendix 15, via this link:


Alternative products may be prescribed if the patient is sensitive to the initial products or if the MRSA is resistant to the products. Advice regarding this can be sought from the IPC team or Consultant Microbiologist.

2.6 Community – MRSA Screening and Treatment

Routine screening and treatment of patients who have previously been known to have MRSA is not normally necessary in the community, the exception being for those patients that have a high risk of developing MRSA infection e.g. patients with invasive devices and/or long term chronic wounds. An invasive device is a device which, in whole or in part, penetrates the body, either through a body orifice or through the surface of the body (Medicines and Healthcare Products Regulatory Agency 2013). This includes urinary catheter, venous cannula, Percutaneous Endoscopic Gastrostomy. In this case screening requests and treatment will be prescribed by the patient’s
GP/Non-Medical Prescribers or the acute Trust on an individual basis. Treatments will normally follow the same protocol as for hospital inpatients, except for the requirements to re-screen following the prescribed course.

Staff must inform the IPC team by telephone on 01302 796237 of any such high risk patients in the community that they may need advice on managing.

If a community patient presents with clinical signs of infection, e.g. a wound that is deteriorating/non healing, then swabs should be taken for ‘microscopy, culture and sensitivity’ testing. This will not only identify if MRSA is present but also if there are other organisms causing the infection.

Staff must refer to the Trust’s Aseptic Non Touch Technique Policy for the correct method of obtaining a swab and ensure that specimens are correctly labelled and sites are correctly identified on all documentation. The results will be sent to the patient’s General Practitioner (GP) who should review the patient and decide on treatment options.

2.7 Management of MRSA in Wounds and Invasive Devices Insertion Sites

Successful colonisation suppression is unlikely in patients with chronic wounds and long term indwelling devices and the patient should be managed on an individual basis. Advice relating to specific wound management regimes should be sought from the Tissue Viability and Lymphoedema (TVAL) Service/Doncaster District Dressings Formulary where appropriate.


If a wound is displaying signs of infection, obtain a swab of the area and send for “Culture and Sensitivity” to the Microbiology department. It is the responsibility of the staff obtaining the swab to review the results and act on them or inform the patient’s clinician to review the patient.

If the wound is colonised with MRSA please refer to the flowchart for wound management (appendix 16) for treatment guidance via this link:


If systemic treatment is required seek advice from the Consultant Microbiologist.

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<tr>
<th>Chronic Wounds e.g. leg ulcers</th>
<th>PEG Sites, Suprapubic Catheter Sites</th>
<th>Infected IV Insertion Sites</th>
</tr>
</thead>
<tbody>
<tr>
<td>In general there should be no need to select a specific dressing to tackle MRSA in wounds healing by primary intention. Monitor the wound</td>
<td>Insertion sites for these devices can provide a focus for infection and provide a route for MRSA to track and potentially cause infection.</td>
<td>Peripheral venous devices - remove line and re-site if access is still required. Swab the site for culture and sensitivity.</td>
</tr>
<tr>
<td>Chronic Wounds e.g. leg ulcers</td>
<td>PEG Sites, Suprapubic Catheter Sites</td>
<td>Infected IV Insertion Sites</td>
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<td>regularly – if there is evidence of cellulitis, wound breakdown or delayed healing then seek medical advice as antibiotics may be required.</td>
<td>Where sites are well healed they can be treated as ‘normal’ skin during topical decolonisation suppression treatment and cleansed using decolonisation solutions. If the insertion site is infected with MRSA seek medical advice as antibiotics may be required.</td>
<td>For central lines advice must be obtained from the secondary care clinician responsible for the patient’s care and treatment.</td>
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Liaise with TVAL for expert advice on suitability of dressing products and also refer to the Doncaster District Dressings Formulary.

### 2.8 MRSA Bloodstream Infection (BSI)

MRSA BSI (sometimes called MRSA bacteraemia) occurs when bacteria invades the bloodstream through a variety of different routes such as:

- breaks in the skin e.g. cuts or surgical incisions,
- indwelling devices e.g. urinary catheters, intravenous cannulae
- localised sites of infection e.g. infection in the urinary tract or the lung that spills over into the bloodstream.

BSI can be short-lived and patients can remain asymptomatic. These short-lived BSI normally go unnoticed and are cleared rapidly by the body’s immune system and are called ‘transient’ or ‘silent’ bacteraemia. BSI can however persist for days/weeks and lead to patients being severely ill with clinical signs of sepsis (fever, rigors etc.). In these instances successful treatment relies on eradicating or treating the underlying source of infection, for instance, draining an abscess.

If the patient is clinically ill they will require treatment, following discussions with the Consultant Microbiologist with appropriate antibiotics. If severely ill then admission to an acute hospital may be necessary.

A post infection review (PIR) will be undertaken, as per current national reporting and monitoring arrangements, for all MRSA BSI. This process will be led by the IPC team and staff involved in the care of the patient will be required to contribute to the investigation process. The Manager/Matron will need to complete an incident form (IR1).

### 2.9 Antimicrobial Therapy

As antimicrobial use is a recognised risk factor for MRSA acquisition, all patients with MRSA should have their antibiotic therapy reviewed and any
unnecessary antimicrobial agents should be stopped.

Broad spectrum antibiotics should be avoided in patients with a previous history of MRSA. Refer to Best Practice Guidance (appendix 17), via this link:


Prescribing staff must follow the Doncaster and Bassetlaw Antibiotic Guidelines for Primary Care


Most patients with MRSA will be colonised rather than infected and do not require systemic antibiotics. If patients appear to be clinically symptomatic, staff must liaise with the Consultant Microbiologist to discuss the most appropriate therapy.

2.10 Visitors

There are no visitor restrictions. An information leaflet (order code WZT758) is available which answers frequently asked questions about MRSA which can be given to visitors. Visitors are not required to wear disposable gloves and aprons unless they are delivering direct patient care such as assisting with hygiene needs. However, they must be requested to clean their hands on entering and leaving the patient’s environment.

2.11 Outpatient Appointments

MRSA should not compromise other aspects of care such as rehabilitation, investigations or treatments. Patients who normally attend a clinic, health centre etc. should continue to do so and can be seen/attend clinics at any time as long as the room and equipment is cleaned/decontaminated appropriately after the consultation with Trust approved products. Staff must ensure the receiving department is aware of the patients MRSA status so that IPC precautions can be maintained and adequate time allowed for cleaning of the environment and equipment in-between patients.

2.12 Transfer/Discharge

It is not necessary for patients to have three negative screens before they can be discharged or transferred to another care facility/team. Staff must complete part B of the HCAI Risk Assessment form (if paper document in use) and/or inform the receiving area/team (and receiving IPC team, if applicable) of the patient’s current MRSA status so that appropriate arrangements can be made for their continuing or future care. All relevant information must also be
documented on the patient’s transfer or discharge letter and care records updated accordingly.

If patients are transferred or discharged before they have completed the course of colonisation suppression treatment they should be advised to complete the course to reduce the risk of resistance occurring in the future.

2.13 Visiting Patients in their Own Home

MRSA should not compromise other aspects of care such as staff visiting patients at home. Staff must consider the other patients that they will be in contact with during their shift and if possible visit any high-risk susceptible patients before visiting the patient with MRSA. Standard precautions must be followed at all times.

2.14 Care of the Deceased

Staff must refer to the last offices Royal Marsden procedure. The IPC precautions for handling deceased patients are the same as those used whilst the patient is alive. Any lesions should be covered with impermeable dressings. The use of a robust zippered body bag is not necessary unless there is body fluid leakage from the patient.

2.15 Staff Screening

Routine screening of staff for MRSA carriage is not recommended practice, although the IPC team may advise screening when there are particular epidemiological features to indicate that staff may be the source of linked cases of MRSA infection.

Staff who consider they may be colonised with MRSA, e.g. because they may have non healing lesions, should contact the Occupational Health Service (OHS) for advice.

Staff must not undertake self-screening unless instructed by the OHD or their GP.

3. DEFINITIONS/EXPLANATION OF TERMS USED

These have been covered within the procedure.

4. RESPONSIBILITIES, ACCOUNTABILITIES AND DUTIES

Refer to the home page, section 4, of the Infection Prevention and Control Policy

5. LINKS TO ASSOCIATED POLICIES/DOCUMENTS

Refer to the home page, section 9, of the Infection Prevention and Control Policy.
6. REFERENCES/FURTHING READING


7. **APPENDICES**

(Please see [IPC Policy Manual webpage](#) for Appendices not attached to this procedure)

Appendix 10 - Terminal Discharge Cleaning Checklist
Appendix 15 – Prontoderm Instructions
Appendix 16 – Wound Cleansing Flowchart
Appendix 17 - Best Practice Guidance for Antimicrobial Prescribing for Patients with MRSA