Diagnosis and management of PVL-Staphylococcus aureus (PVL-SA) infections
A guide for Primary Care in North Yorkshire

Panton-Valentine Leukocidin (PVL) is a toxin that destroys white blood cells and is a virulence factor in some strains of Staphylococcus aureus. In the UK, the genes encoding for PVL are carried by <2% of clinical isolates of Staphylococcus aureus, including MRSA.

PVL-SA causes recurrent skin and soft tissue infections, but can also cause invasive infections, including necrotising haemorrhagic pneumonia in otherwise healthy young people in the community.

### Risk factors for PVL-SA infection

- Closed communities with close contact.
- Close contact sports, e.g. wrestling, rugby, judo.
- Military training camps, close overcrowded facilities with poor hygiene, e.g. military exercises.
- Those who share gym equipment with direct skin contact.
- Prisons, close isolation, sharing personal items, limited time to attend to personal hygiene.
- Health and social care workers, potentially more exposure by skin to skin contact with individuals they are caring for.
- IV drug users, people with diabetes or those who are immunosuppressed are more vulnerable to acquiring PVL infection.
- Those with chronic skin conditions, e.g. eczema, psoriasis.
- Contacts of a confirmed case.

### When to suspect a PVL-SA infection

#### Skin infections

- Recurrent boils (furunculosis), carbuncles, folliculitis, cellulitis.
- Cutaneous lesions >5cm.
- Pain/erythema out of proportion to severity and signs of infection.
- Necrotic skin and soft tissue infections.
- History of symptoms in any household or close contact.

#### Invasive infections

- Necrotising pneumonia often after a ‘flu-like’ illness.
- Necrotising fasciitis.
- Osteomyelitis, septic arthritis and pyomyositis.
- Purpura fulminans.

### When should a swab be taken for a PVL-SA infection and from where?

To avoid a false negative PVL-SA result, swabs should NOT be taken until 48 hours after completion of antibiotic treatment.

- Any history of evidence of skin infections or invasive infections.
- Swab skin lesion, damaged skin.

A swab should be taken using a normal charcoal medium swab.

On the microbiology form, state risk factors and clinical history and request PVL testing if SA grown.

For further advice contact the local Consultant Microbiologist.

### What action is taken following a PVL-SA diagnosis

A Community Infection Prevention and Control (IPC) Nurse will liaise with the patient’s GP to discuss the diagnosis and possible Community IPC Nurse home visit.

**Community IPC Nurse home visit to:**

- provide the patient with PVL-SA information
- discuss the transmission of infection and infection control precautions
- identify ‘at risk’ household/close contacts and those requiring decolonisation and screening
- advise on use and application of decolonisation treatment and screening procedure
- identify individuals who may have to be excluded, e.g. from work, school, university or college.

**Following the home visit, the Community IPC Nurse will:**

- liaise with the Practice Nurse regarding any screening if indicated
- consult with the GP for prescription(s) for decolonisation
- liaise with other agencies as required
- produce a letter to the GP with copy to patient(s).
Treatment required for PVL-SA cases

**Guidance on treating acute infection should be obtained from a Consultant Microbiologist.**

<table>
<thead>
<tr>
<th>Infection</th>
<th>Antibiotic</th>
<th>Adult dosage</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minor furunculosis, folliculitis and small abscesses without cellulitis</td>
<td>NO antibiotics; perform incision and drainage if necessary</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Other non-suppurative minor skin and soft tissue infections</td>
<td>Flucloxacillin or Clindamycin – stop if diarrhoea develops</td>
<td>Oral 500 mg qds, Topically tds</td>
<td>5-7 days</td>
</tr>
<tr>
<td>Moderate SSTIs e.g. cellulitis or abscesses &gt;5cm with meticillin-sensitive PVL</td>
<td>Rifampicin PLUS Doxycycline (not children) or Sodium fusidate or Trimethoprim OR Clindamycin alone Third line Linezolid</td>
<td>300 mg bd, 100 mg bd, 500 mg tds, 200 mg bd, 450 mg qds, 600 mg bd</td>
<td>5-7 days</td>
</tr>
<tr>
<td>If PVL is likely to be MRSA On advice of microbiologist/hospital</td>
<td>Flucloxacillin or Mupirocin (Second line)</td>
<td>500 mg qds, 450 mg qds</td>
<td>5-7 days</td>
</tr>
<tr>
<td>Severe SSTIs with systemic symptoms or pneumonia</td>
<td>Refer immediately</td>
<td></td>
<td></td>
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</tbody>
</table>

NB: After antibiotic treatment, all cases of PVL-SA should receive decolonisation treatment when the infection has resolved and wounds have healed.

**How can patients prevent the spread of the infection to others?**

- Keep any boils or abscesses covered with a clean dressing.
- Change the dressing regularly or when there is visible discharge.
- Do not touch, poke or squeeze boils or abscesses as this will contaminate hands and can cause a deeper infection.
- Wash hands regularly with liquid soap and warm water, e.g. after changing dressings, before and after preparing food.
- Encourage others at home to wash their hands regularly with liquid soap and warm water.
- Use a clean designated towel which should be kept separate, to avoid use by other people. The towel should be washed frequently on a hot wash.
- Regularly vacuum and dust with a damp cloth all rooms ensuring all personal items and shared items, such as keyboards, are cleaned. A household detergent is adequate for cleaning.
- Clean the wash basin, taps and bath after use with household detergent and a cloth. Dispose of the cloth after use.
- Cover nose and mouth with a tissue when coughing or sneezing, because PVL-SA can live in the nose. Immediately dispose of the tissue and then wash hands with liquid soap and warm water.

**Further management**

- Advise patient to return if infection persists or recurs.
- Repeat screening and decolonisation are not recommended unless the patient is particularly vulnerable to infection, poses a special risk to others e.g. healthcare worker, or spread of infection is continuing in close contacts.
- Patients with recurrent infections or persistent colonisation should maintain sensible precautions to prevent transmission of infection.