Public Health England

Harrogate and District NHS
NHS Foundation Trust

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 (if possible, send pus samples which produce more accurate results).

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 home visit from a Community IPC Nurse.

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 suppression treatment and screening
- Advise on use and application of suppression 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 suppression
- Liaise with other agencies as required
- Write 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.			
Infection	**Antibiotic**	**Adult dosage**	**Duration**
Minor furunculosis, folliculitis and small abscesses without cellulitis	NO antibiotics; perform incision and drainage if necessary	-	-
Other non-suppurative minor skin and soft tissue infections As resistance is increasing, reserve topical antibiotics for very localised lesions. Only use mupirocin for MRSA	Flucloxacillin *Fusidic acid* *Mupirocin* } *(Second line)*	Oral 500 mg qds *Topically tds*	5-7days *5 days*
Moderate SSTIs e.g. cellulitis or abscesses >5cm with meticillin-**sensitive** PVL	Flucloxacillin or Clindamycin – *stop if diarrhoea develops*	500 mg qds 450 mg qds	5-7days
If PVL is likely to be MRSA Treat empirically with 2 agents and then be guided by antibiotic susceptibility results. On advice of microbiologist/hospital	Rifampicin PLUS Doxycycline (not children) or Sodium fusidate or Trimethoprim OR Clindamycin alone *Third line* Linezolid	300 mg bd 100 mg bd 500 mg tds 200 mg bd 450 mg qds 600 mg bd	5-7days
Severe SSTIs with systemic symptoms or pneumonia	Refer immediately		
NB: After antibiotic treatment, all cases of PVL-SA should receive suppression 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 suppression treatment 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.

North Yorkshire and Humber Health Protection Team PHE
Block 2
The Food and Environment Research Agency (FERA)
Sand Hutton
York. YO41 1LZ
Tel: 01904 687100 Fax: 01904 468051

Community Infection Prevention and Control Team
Harrogate and District NHS Foundation Trust
Gibraltar House, Thurston Road
Northallerton. DL6 2NA
Tel: 01423 557340
Fax: 01423 557349

Adapted from the Health Protection Agency 'Guidance on the diagnosis and management of PVL-associated *Staphylococcus aureus* infections (PVL-SA) in England: Appendix 6'. Second Edition: 7 November 2008