Health Protection Agency

Royal College of Nursing

Panton-Valentine Leukocidin-positive Staphylococcus aureus (PVL-SA)

RCN guidance for health professionals

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Contents

1

Introduction

The purpose of this Royal College of Nursing (RCN) guidance is to assist nurses and health care assistants in their assessment, diagnosis, management and prevention of suspected or confirmed Panton-Valentine Leukocidin-positive *Staphylococcus aureus* (PVL-SA) infections within the household, wider community and health and social care setting (including care homes). However, this guidance may be used by other health and social care professionals, for example, GPs or nursery workers.

This guidance can be used in conjunction with the RCN's PVL-SA poster (see Appendix 1).

What is *Staphylococcus aureus*?[1]

Staphylococcus aureus (SA) is a bacterium that is commonly found on human skin and mucous membranes. SA may be carried asymptomatically, but can also cause disease, particularly if there is an opportunity for the bacterium to enter the body. SA is the most common pathogen responsible for skin and soft tissue infections (SSTIs).

What is PVL *Staphylococcus aureus*?[1]

Panton-Valentine Leukocidin (PVL) is a toxin produced by some strains of SA which are associated with an increased ability to cause disease. PVL can be produced by both methicillin-sensitive (MSSA) and methicillin-resistant (MRSA) strains of SA. Most PVL-SA identified in the UK are sensitive to many antibiotics.

SSTIs and PVL-SA[2, 3]

SSTIs due to PVL-SA can be severe and are often recurrent. The impact on the patient can be considerable due to the need for prolonged or repeated courses of treatment. Early recognition and diagnosis of a PVL-SA infection is key. PVL-SA most commonly cause pyogenic skin infections (for example, boils and abscesses) which require treatment (incision and drainage, and usually antibiotics). Analysis of data by the Health Protection Agency's Staphylococcus Reference Unit (SRU) shows that 65% of SA infections associated with SSTIs were PVL-positive and one third were associated with recurrent episodes of infection[2].

Historical context – past and present

Strains of PVL-SA associated with a new pattern of disease have emerged in the UK and worldwide. Such strains remain relatively rare at less than two percent of all clinical isolates of SA, whether methicillin-sensitive (MSSA) or methicillin-resistant (MRSA). PVL has been strongly associated with virulent, transmissible strains of SA, including community-acquired (CA) MRSA.

The leukocidal activity (destruction of leucocytes) of SA from skin abscesses was recognised in the early 1900s. In the 1950s and 1960s, a particular strain of SA (known as phage type 80/81) spread widely in the UK and elsewhere. This strain was PVL-positive (PVL-MSSA) and caused disease (most commonly boils and abscesses) in previously healthy individuals in the community and in hospitalised patients and health care workers.

The escalation in morbidity and mortality associated with PVL-MRSA (sometimes referred to as community-acquired (CA) MRSA) has caused public concern worldwide. To date, most PVL-SA strains in the UK have been MSSA, but a major problem has emerged with CA-MRSA in North America, most of which produce PVL. One strain in particular, the so-called USA300 clone, is now spreading in hospitals in the USA. From a UK perspective, occasional fatalities due to PVL-SA and outbreaks in both community and health care settings have prompted concern regarding the transmissibility and virulence associated with these organisms. Following national alerts and improved case ascertainment initiatives, the HPA has been monitoring PVL-related disease throughout England and Wales.

Table 1 shows the number of PVL-SA identified from 2005 to 2010. From 2006 onwards, the majority of PVL-SA identified has been susceptible to methicillin. Whilst the numbers show an upward trend, the most recent figures suggest the rate of increase may be slowing. This may be a reflection of under reporting to the reference laboratory as an increasing number of centres are testing PVL locally. What still remains unclear is whether the ten-fold increase in reported cases of PVL-SA since 2005 is due to improved awareness and case

recognition, allied to pro-active close contact tracing, or whether it reflects a genuine increase in PVL-SA nationally. Systematic surveillance-based studies, funded by the Department of Health (DH), will provide more robust data for monitoring trends to investigate the prevalence of PVL-SA in the community. However, most recent figures do provide some reassurance that the UK is not experiencing the same epidemic proportions of PVL infection as observed in North America, and most notably the United States.

Most PVL-SA infections in England have been associated with sporadic cases presenting with relatively mild SSTIs. Occasional clusters of disease have been observed in close household contacts. Outbreaks in health care settings have also been documented.

Table 1: Number of PVL-SA identified by the Staphylococcus Reference Unit, Health Protection Agency

Year	No. (%) PVL-MSSA	No. (%) PVL-MRSA	Total PVL-SA	Relative change year-on-year
2005	107 (48%)	117 (52%)	224	–
2006	337 (68%)	159 (32%)	496	+ 2.2-fold
2007	729 (60%)	477 (40%)	1206	+ 2.4-fold
2008	1013 (58%)	724 (42%)	1737	+ 1.4-fold
2009	1573 (61.5%)	984 (38.5%)	2557	+ 1.5-fold
2010	1178 (53%)	1049 (47%)	2227	- 0.87-fold

2

Assessment: symptoms and risk factors

Classification of PVL-SA disease

The following are the key characteristics of PVL-SA disease:

- colonisation of the skin and/or nares only
- superficial disease, for example, SSTIs (boils and abscesses)
- invasive disease, for example, necrotising pneumonia, osteomyelitis or septicaemia.

Clinical features of PVL-SA SSTIs[3]

These are often recurrent and include:

- boils (furunculosis), carbuncles, folliculitis, cellulitis, purulent eyelid infection
- cutaneous lesions of at least 5cm or more in diameter, which need different treatment from smaller lesions
- pain and erythema out of proportion to severity of cutaneous findings
- necrosis.

Clinical features of invasive PVL-SA infections[3]

These include:

- necrotising pneumonia
- necrotising fasciitis
- osteomyelitis, septic arthritis and pyomyositis
- purpura fulminans.

Necrotising pneumonia usually begins as a flu-like illness.

Primary infections caused by SA are more prevalent in previously fit and healthy individuals with no history of SSTIs. The Health Protection Agency has more information on invasive PVL disease at www.hpa.org.uk/web/HPAwebFile/HPAweb_C/1218699411960

Risk factors for PVL-SA[3]

PVL-SA infections are highly transmissible and can spread more readily in settings where individuals are in close physical contact or share personal items, for example, towels. These groups include:

- families/households
- educational settings (including nurseries)
- military personnel/barracks
- close contact sports, for example, rugby, judo, wrestling
- care homes
- gyms
- prison settings.

3

Diagnosis and clinical management of confirmed and suspected cases

Suspected PVL-SA SSTI

When to suspect a PVL-SA SSTI

Superficial PVL-SA infection should be suspected if a patient has a necrotic SSTI, recurrent boils or abscesses, or there is a clustering of SSTIs within a household or social group.

Clinical management of suspected PVL-SA SSTI

1. **Assessment.** Obtain a comprehensive clinical history, including employment and risk factors (see above). Identify the possible source – find out from the patient if there have been any confirmed PVL-SA infections among close contacts (household, family, and partner) in the last 12 months.

2. **Swab** the affected site (including pus if present), and nose and throat using a plain swab. Use one swab per site. Other sites that may be swabbed include perineum and axilla. Send all swabs to the local microbiology department and clearly label all request forms with "suspected PVL-SA infection" and include a clinical history.

3. **Wound care.** Incision and drainage (I&D) is the first line treatment for abscesses. Skin lesions should be covered with a dressing and changed regularly according to the clinical assessment. Give advice regarding which dressing should be used; how often the dressing should be changed; and that the patient should not touch or squeeze skin lesions. Used dressings should be disposed of in line with local waste policies. Disposal methods may vary depending on whether the patient is in a health care or home setting and therefore local waste policies should be adhered to. Advise the patient to return if the SSTI does not resolve, or there is further deterioration.

4. **Antibiotic treatment.** Some SSTIs require systemic treatment with antibiotics. Seek advice from a GP or medical officer (MO) in conjunction with the local microbiologist and refer to local policy.

5. **General advice.** Good personal hygiene should be emphasised, including hand washing, not sharing towels or a bath, and regular changing of clothing and linen. If the patient is a health care worker, request that the patient seeks advice from their local occupational health department. It is recommended that individuals with SSTIs refrain from communal activities until wounds have healed, for example, swimming, contact sports and massage.

6. **Patient information.** Supply local leaflets on the management of SSTIs or, alternatively, go to the NHS Clinical Knowledge Summaries website at www.cks.nhs.uk/home.

Confirmed PVL-SA SSTI

This is when a swab taken from a patient has grown SA which is PVL-positive. (However, a strong suspicion of PVL-SA may require treatment before laboratory confirmation is obtained. Discuss with a GP or MO – they should seek advice from the local microbiology department or alternatively refer to local policy.)

Clinical management of suspected PVL-SA SSTI

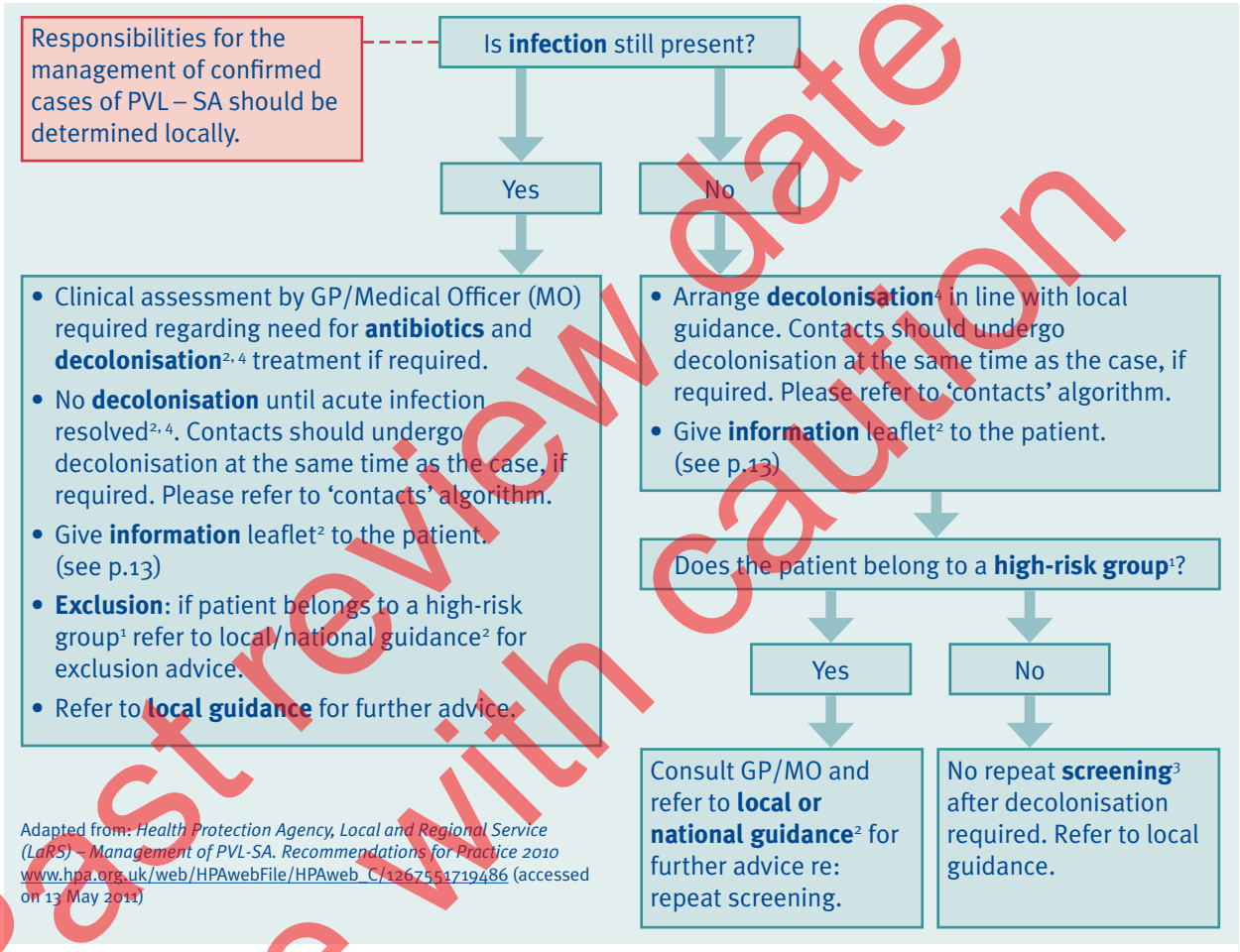
See figure 1 (below): Principles of risk assessment and management of confirmed cases of PVL-SA infection.

Invasive disease

It is likely that at this stage of the patient's illness they will already be in hospital. However, if on assessment, respiratory symptoms and/or sepsis are present in a previously fit young patient or child (particularly following a 'flu-like' illness), seek medical advice immediately.

Close contacts (for example, family members and those sharing military barracks) of a patient with invasive PVL-SA disease require immediate decolonisation treatment without prior screening. You may be requested to assist in organising decolonisation treatment for contacts in such instances.

Figure 1: Principles of risk assessment and management of confirmed cases of PVL-SA infection[4]



Adapted from: *Health Protection Agency, Local and Regional Service (LaRS) – Management of PVL-SA. Recommendations for Practice 2010* www.hpa.org.uk/web/HPAwebFile/HPAweb_C/1267551719486 (accessed on 13 May 2011)

1. **High risk groups**
   - Health care workers in health and social care settings (includes care home staff)
   - Participants of close contact sports, e.g. rugby or wrestling
   - Regular user of gyms
   - People in closed communities, e.g. military camps and prisons
2. **National guidance** (including leaflets) available at: www.hpa.org.uk/web/HPAwebFile/HPAweb_C/1218699411960 (accessed 13 May 2011)
3. **Screening** should include a swab of the nose, throat and any suspicious lesions, including damaged skin. Other sites that may be swabbed include perineum and axilla. Please mark on specimen(s) 'suspected PVL-SA infection' and provide a clinical history. If consent to screen cannot be obtained discuss with GP/MO.
4. **Decolonisation** is ineffective if skin lesions are still leaking/active. Only start after infection has resolved. When indicated, decolonise case with other close contacts at the same time.

Inform local health protection units (HPUs) of confirmed case(s) of PVL-SA if:

1. infection is in a care home/residential facility
2. there is suspicion of spread in nurseries, schools, universities or sports facilities
3. clusters/outbreaks are suspected
4. invasive disease is suspected.

4

Infection prevention and control – decolonisation, screening and exclusion of patients with confirmed PVL-SA infection and their contacts

Purpose of decolonisation treatment

The purpose of decolonisation is to try and rid the body of the bacterium (PVL-SA) that has caused infection and interrupt transmission from person to person. Local decontamination treatment with identified antimicrobial agents is recommended, and further consultation with dermatologists is recommended if the patient or the patient's close contacts have fragile skin or pre-existing skin conditions (Please note: the same protocol will apply to PVL-SA whether it is caused by MSSA or MRSA). Advice from the microbiologist/paediatrician or other specialist may need to be sought for an infant less than 12 months old[6].

Decolonisation is usually recommended for patients with confirmed PVL-SA infection and their close contacts.

Patients with confirmed superficial PVL-SA infection

Decolonisation treatment[3, 6]

Decolonisation treatment can be offered without prior screening to primary cases.

The current national guidance refers to a five-day treatment of: mupirocin ointment (bactroban nasal) three times a day and four per cent chlorhexidine body wash (or two per cent triclosan) in place of body wash and shampoo. Advice should be sought from a local medical microbiologist for pregnant and breast feeding women; neonates; infants younger than 12 months; patients with dermatological conditions or fragile skin, and patients with invasive devices (for example, renal dialysis shunts, medication/feeding lines). The use of chlorhexidine in premature neonates may cause damage to the skin, therefore specialist advice should be sought. When it is appropriate to use antiseptic, this must always be an aqueous preparation and should never be alcohol based.

Decolonisation treatment should be restricted to a single five-day course and should only be started after the acute infection has resolved. Patients should be risk assessed prior to commencing decolonisation treatment to ensure optimum benefit, and should only be initiated after reinforcing standard prevention measures. There is no known benefit to prescribing multiple courses of decolonisation treatment.

Screening

For follow-up screening refer to local policy and see also Figure 1: Principles of risk assessment and management of confirmed cases of PVL-SA infection.

Exclusion

1. **Nurses, health care assistants, health and social care workers (H&SCWs) in all acute and community settings** should be managed collaboratively with the relevant infection prevention and control (IPC) and occupational health (OH) teams/provider. H&SCWs should not work until the acute infection has resolved. A local risk assessment should be applied and decision reached with occupational health and infection prevention teams regarding return to work. Concurrently, close contacts should be investigated and, if required, treated and/or decolonised at the same time. Screening post-decolonisation treatment should be

carried out as per local OH policy. H&SCWs should be aware that they may be at risk of relapse and, should they develop another infected lesion, stop working immediately and inform their OH provider.

2. **Carers in nurseries** should remain off work until lesions have healed and an agreement to return to work has been obtained from their GP, MO or OH provider.

3. **Food handlers** – (for example, waiters, chefs) should remain off work if the infected skin lesion cannot be completely covered (using a distinctly coloured, waterproof dressing[4]). Agreement to return to work should be obtained from GP, MO or OH provider.

4. **People with eczema or more generalised skin conditions and who have regular skin-to-skin contact with people as part of their employment**. An individual risk assessment should be carried out and advice given in consultation with a GP, MO or OH provider.

5. **Nursery/school children**. An individual risk assessment should be carried out and advice given in consultation with a GP on attending the nursery or school and using communal school sports facilities (for example, swimming pools, gyms or taking part in contact sports).

6. **All cases**. An individual risk assessment should be carried out and advice provided on using communal facilities, for example, swimming pools, gyms or taking part in contact sports.

Close contacts

It is important that transmission between confirmed cases and contacts is reduced to prevent further spread of infection or colonisation. Normal daily living activities should continue but additional infection prevention and control measures should be advised. See below for further information on this.

Definition of close contacts

Guidance issued by the Health Protection Agency[3] defines a close contact as 'someone who has had prolonged close contact with the case in a household type setting during the seven days before onset of illness'. This would include boyfriend/girlfriend/those living and/or sharing a bathroom in a hall of residence.

A detailed risk assessment following identification of a confirmed case of PVL-SA infection should be carried out in order to identify contacts. A history should be taken to determine whether the close contacts include anyone from high-risk groups such as H&SCWs, sports teams and military barracks (see Figure 2 on page 13 for risk assessment of close contacts).

In the absence of guidance for screening, local MRSA protocols should be followed.

When should you screen and decolonise close contacts?

In the first instance refer to Figure 2: Principles of risk assessment and management of close contacts of confirmed PVL-SA infection, which provides guidance on screening and decolonisation of close contacts (p.13).

Screening

If a decision has been made to screen close contacts, swab nose, throat and any lesion (including pus if present). Other sites that may be swabbed include axilla and perineum. Send all swabs to the local microbiology department and clearly label all request forms with 'contact of confirmed case of PVL -SA infection'.

Decolonisation treatment for close contacts[2, 5]

Close contacts should commence decolonisation treatment at the same time as the patient – and the whole household should be treated at the same time.

The current national guidance refers to a five-day treatment of: mupirocin ointment (bactroban nasal) three times a day and four percent chlorhexidine body wash (or two percent triclosan) in place of body wash and shampoo. Advice should be sought from a local medical microbiologist for locally recommended protocols.

Additional infection prevention and control measures[2]

In addition to decolonisation treatment, there are additional measures which could be implemented where practical which will help reduce the risk of re-infection or cross-

infection within households. Decisions to advise the implementation of these actions should be made following an assessment of individual patient/household circumstances. If possible:

- individual towels and face cloths should be changed regularly (ideally daily) and should be laundered on a hot wash at 60°C. Avoid using items that cannot be laundered such as sponges/squeegees
- sheets should be changed daily and laundered on a hot wash, ideally at 60°C
- regular vacuuming and dusting
- avoid bar soap and use pump action liquid soap
- clean sink and bath using disposable cloth and detergent after each use.
- if colonisation persists the need for additional measures should be re-assessed on an individual patient basis, taking into account the impact on the patient/household.

Standard precautions for infection prevention and control

Standard infection prevention and control precautions (SICPs) should be adhered to at all times to reduce the risk of cross-infection within the work environment and the risk of transmission of infection from person to person, group settings and recurrences for individuals. These include:

- washing hands using the six step Ayliffe technique. Use liquid soap and warm water and dry with own personal towel or paper hand towels. See the Ayliffe technique at www.hpa.org.uk/web/HPAwebFile/HPAweb_C/1194947384669
- the use of personal protective equipment (PPE), such as disposable gloves and aprons
- cleaning the environment, including hard surfaces and soft furnishings according to local policy
- the use of aseptic technique in the management of wound care and indwelling devices
- the management of waste and excreta in accordance with local policy
- covering cuts and abrasions with clear occlusive dressings.

5 Wound care[3]

The first line treatment for the optimum management of abscesses is incision and drainage (I&D). Some SSTIs require systemic treatment with antibiotics. Seek advice from a GP or medical officer (MO) in conjunction with the local microbiologist and refer to local policy.

Wounds should be covered with a dressing and changed regularly according to the clinical assessment. Give advice regarding which dressing should be used; how often the dressing should be changed; and inform the patient not to touch or squeeze skin lesions. Dressings can be disposed of in normal household waste, if changed by the patient themselves. If dressings are changed by a HCW please refer to local clinical waste policies for advice on waste management. If required, advice should be sought from a tissue viability specialist nurse to assist with management of wound care. Advise the patient to return if the SSTI does not resolve or if there is further deterioration and provide patient information on the management of SSTIs (see section 6 over the page).

6

Patient information[3]

Patients and close contacts should be provided with verbal and/or written information. Language and understanding should be considered. The HPA's national guidance includes a disease-specific PVL-SA and decolonisation treatment fact sheet (see Appendix 1 and 2) (www.hpa.org.uk). This fact sheet describes how to use the decolonisation treatment and how to minimise cross-infection. Patients should also be advised about the possibility of relapsing following decolonisation treatment.

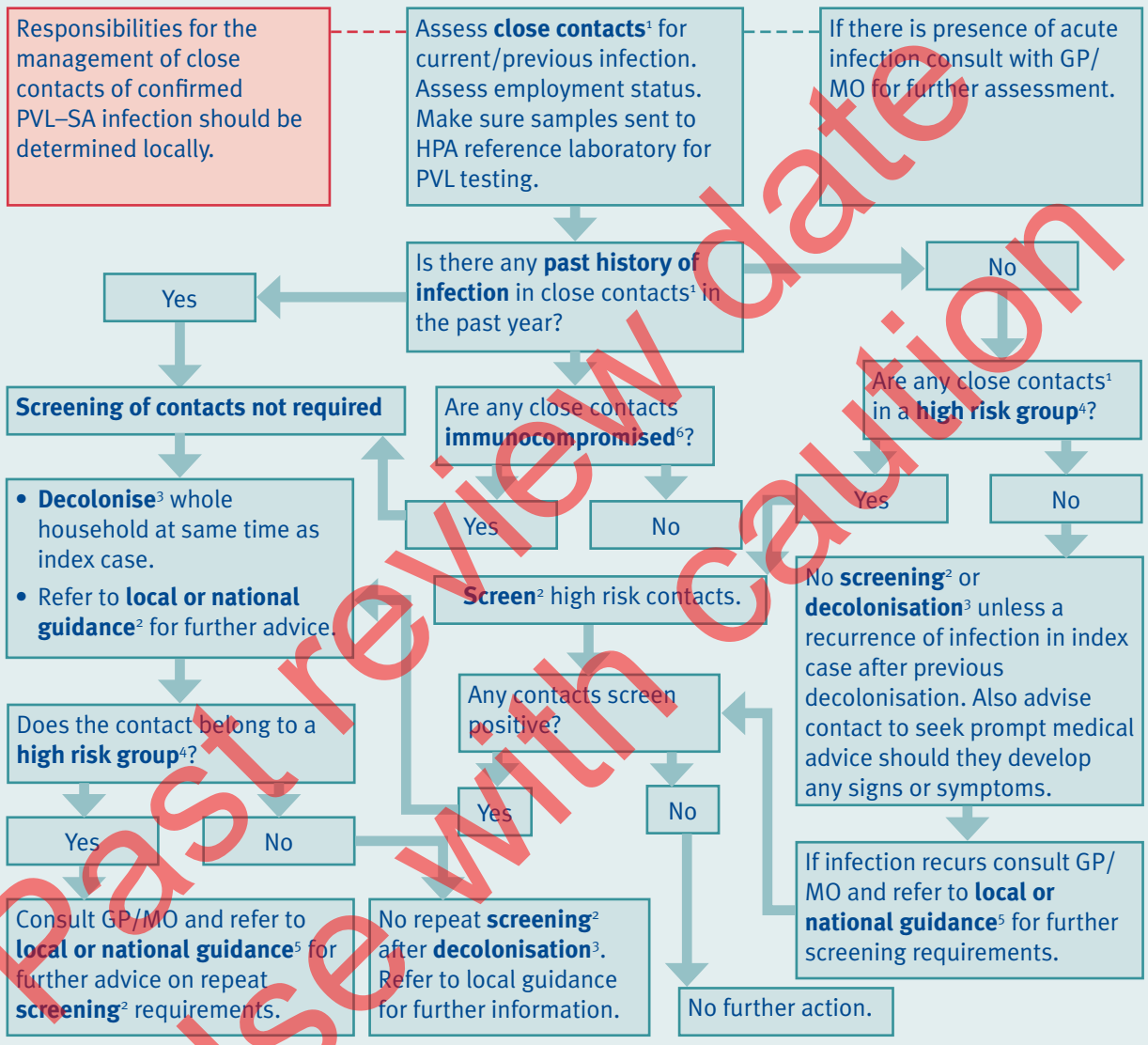
Other useful resources:

For management of SSTIs see the NHS CSK website:
www.cks.nhs.uk/home

Boils and skin infections. Information for the public.
www.hpa.org.uk

Skin infection leaflet for athletes and coaches *Keep your tackle clean*. English Institute for Sport:
www.eis2win.org.uk/App_Upload//Infection_Control_-_Keep_Your_Tackle_Clean_%20Dec07%20.pdf

Figure 2: Principles of risk assessment and the management of close contacts of confirmed PVL-SA infection[4]



Adapted from: *Health Protection Agency, Local and Regional Service (LaRS) – Management of PVL-SA. Recommendations for Practice 2010*

1. **Close contact** is defined as someone who has had prolonged close contact with the case in a house-hold type setting during the seven days before onset of illness. Examples of such contacts would be boyfriend/girlfriend/those living and/or sharing a bathroom in a hall of residence.
2. **Screening** should include a swab of the nose, throat, and any suspicious lesions, including damaged skin. Other sites that may be swabbed include perineum and axilla. Please mark on specimen contact of confirmed case of PVL SA infection. If consent to screen cannot be obtained discuss with GP/MO.
3. **Decolonisation** is ineffective if skin lesions are still leaking. Only start after infection has resolved. When indicated, decolonise case with other close contacts at the same time.
4. **High risk groups:**
   - Health care workers in health and social care settings(includes care home staff)
   - Participants of close contact sports e.g. rugby or wrestling
   - Regular user of gyms
   - People in closed communities e.g. military camps and prisons
5. **National guidance** (including leaflets) available at: www.hpa.org.uk/web/HPAwebFile/HPAweb_C/1218699411960
6. **Immunocompromised** – patients receiving immunosuppressive chemotherapy/radiotherapy, receiving immunosuppressive treatment for bone marrow or solid organ transplant, high dose steroids, diagnosed with immunodeficiency syndrome or disease e.g. HIV. See Immunisation against infectious Disease – The Green Book (2006), DH p 42 for further information www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_079917

Inform local Health Protection Units (HPUs) of confirmed case(s) of PVL-SA if:

1. **Infection is in a care home/residential facility**
2. **There is suspicion of spread in nurseries, schools, universities and sports facilities**
3. **Clusters/outbreaks are suspected**
4. **Invasive disease if suspected**

7

Roles and responsibilities: the role of the nurse and health and social care worker

The NMC Code of Conduct requires a nurse to provide a high standard of care and practice at all times and to be accountable and able to justify their decisions.

The role of the nurse/H&SCW in relation to PVL-SA includes:

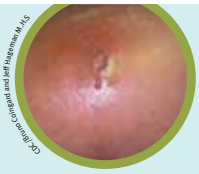
1. early recognition of the signs and symptoms of PVL-SA infection
2. prompt patient assessment and presumptive diagnosis
3. management of patients and their contacts to reduce the risk of re-infection and onward transmission within the household and the wider community
4. adherence to SICPs at all times
5. provision of verbal or written information
6. provision of a safe and clean environment
7. maintenance of accurate documentation
8. communication throughout all stages from diagnosis to treatment.

Local agreement should identify what actions the primary care, community infection prevention and control team's (CIPCT) and health protection units (HPUs) undertake. HPUs and other stakeholders will be involved in the follow-up of outbreaks and clusters associated with high-risk groups and invasive disease. The role of primary care should be to manage individual cases and their close contacts, and flag up any potential public health concerns to CICPTs or HPUs or as advised in local guidance.

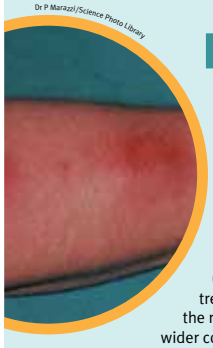
In complex cases of clusters and outbreaks the clinician should refer to national guidance and seek specialist advice from the HPU/CICPT. Further advice should be sought from a microbiologist and other clinicians as appropriate (or refer to local guidance).

Appendix 1:RCN's PVL-SA poster

Royal College of Nursing



wipe it out
One chance to get it right



Panton-Valentine Leukocidin positive Staphylococcus aureus (PVL-SA)

Guidance for health professionals

The purpose of this poster is to ensure that clinical indications of Panton-Valentine Leukocidin positive Staphylococcus aureus (PVL-SA) are recognised promptly so advice and treatment are sought as soon as possible to reduce the risk of transmission to others within the household, wider community or health care setting.

Skin and soft tissue infections (SSTIs) and PVL-SA[1]

Staphylococcus aureus (SA) is the most common pathogen responsible for skin and soft tissue infections (SSTIs). PVL-SA caused SSTIs are usually more severe and the impact on the patient can be considerable due to the need for prolonged treatment. Early recognition of PVL-SA infections is key.

What is PVL-SA?

Staphylococcus aureus is a common bacterium found on the skin and mucous membranes. It is predominantly associated with skin and wound infections.

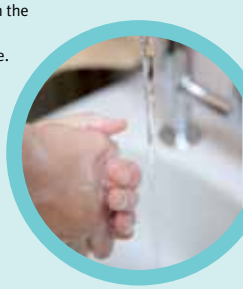
PVL is a toxin produced by a small percentage of Staphylococcus aureus (PVL-SA) that can destroy white blood cells and cause more serious infections in wounds, joints and also (but rarely) pneumonias (invasive disease).

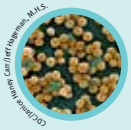
Epidemiology of PVL[2,3]

Strains of PVL-SA have been known to cause disease for over a century. Over the last decade or so, PVL-related disease has increased world-wide. Currently, around 2,000 cases occur per annum in England and Wales; two thirds of these are caused by meticillin sensitive strains of S. aureus (PVL-MSSA), one third are due to meticillin resistant strains (PVL-MRSA).

PVL-SA is commonly (but not exclusively) associated with:

- infections in previously healthy individuals in the community
- under 40 year olds, but anyone is susceptible.





High risk groups for transmission of PVL-SA[4,5]

PVL-SA infections are highly transmissible and can spread in settings where individuals are in close physical contact or may share personal items, for example towels. These groups include:

- families/households
- educational settings (including nurseries)
- military personnel/barracks
- close contact sports, e.g. rugby, judo, wrestling
- care homes
- gyms
- prison settings.

Signs and symptoms [4,5]

You should suspect PVL-SA if a patient presents with the following:

- pus-producing skin infections (boils and abscesses) which vary in severity and may be recurrent
- cutaneous lesions ≥5cms in diameter, which need different treatment from smaller lesions and may be recurrent
- cellulitis (inflammation ± blistering of the skin)
- pain that is out of proportion to severity of cutaneous findings
- necrosis.

Risk assessment guide if PVL-SA is suspected

Diagnosis

Is PVL-SA suspected?

1. Are there signs and symptoms of PVL-SA?
2. Is there a previous clinical history of PVL-SA?
3. Is there a history or suspicion of PVL-SA within close contacts (household, family or partner) within the last 12 months?

If **Yes** to one or more of these questions please follow risk assessment guide

No

Consider alternative diagnosis

Screening

1. **Swab** affected site (including pus if present) and refer to local guidance on the management of SSTIs for further information/advice
2. Label all swab(s) as suspected PVL-SA infection and include relevant clinical patient information
3. Refer to GP/Medical Officer (MO) if incision and drainage (I&D) required

Wound Care

- Advise patient to cover infected skin lesion with a dressing and change regularly according to the clinical assessment. Give advice regarding which dressing should be used and how often dressing should be changed
- Advise patient to dispose of dressing in normal household waste
- Advise patient not to touch or squeeze skin lesions
- Advise patient to regularly wash hands using liquid soap, water and not share towels.
- Advise patient to return if SSTI does not resolve or there is further deterioration
- Seek further advice/refer to GP/MO if required

Patient information

1. **Personal hygiene** should be emphasised including hand washing, care to avoid sharing towels, bath water etc
2. **Patient information** – supply local leaflets on the management of SSTIs if available or alternatively go to the NHS CSK website www.cks.nhs.uk/home [6]
3. **Exclusion** – if patient works in a high risk area, for example health care worker, request that patient seeks advice from their local occupational health department. It is recommended that individuals with SSTIs refrain from communal activities until wounds have healed, for example swimming, contact sports and massage

Management of swab result

PVL-SA negative – consult with GP/MO

PVL-SA positive – consult with GP/MO and refer to local/ national PVL-SA guidelines

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References

(1) Crossley K, Archer G, Jefferson K and Fowler V (editors) (2009) *Staphylococci in human disease*, Oxford: Wiley-Blackwell.

(2) Ellington MJ, Ganner M, Smith IM, Perry C, Cookson BD and Kearns AM (2010) Panton-Valentine leucocidin-related disease in England and Wales, *Clinical Microbiology & Infection*, 16 (1), pp.86-88.

(3) Health Protection Agency (2009) PVL-SA infections in England and Wales: 2005-2008 data and revised algorithm for referral of suspected cases, *Health Protection Report*, 3(35). Available at: www.hpa.org.uk/hpr/archives/2009/news3509.htm#pvlsa

(4) Health Protection Agency (2008) *Guidance on the diagnosis and management of PVL-associated Staphylococcus aureus infections (PVL-SA) in England* (2nd edition), London: HPA. Available at www.hpa.org.uk/web/HPAwebFile/HPAweb_C/1218699411960

(5) Health Protection Agency (2010) *Topics A-Z: PVL-associated Staphylococcus aureus*, London: HPA. Available at: www.hpa.org.uk/Topics/InfectiousDiseases/InfectionsAZ/PantonValentineLeukocidinPVL/

(6) NHS Choices (2010) *Clinical knowledge summaries: information for patients: Staphylococcal infections*, London: National Institute for Health and Clinical Excellence. Available at: www.cks.nhs.uk/patient_information_leaflet/staphylococcal_infections

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References

1 Panton-Valentine Leukocidin, HPA website
www.hpa.org.uk/Topics/InfectiousDiseases

2 PVL *Staphylococcus aureus* infections: an update. Volume 5 No 7; 18 February 2011. Health Protection Report
www.hpa.org.uk

3 *Guidance on the diagnosis and management of PVL-associated Staphylococcus aureus infections (PVL-SA) in England*. Health Protection Agency. 7 November 2008
www.hpa.org.uk

4 *Management of PVL-Staphylococcus aureus: Recommendations for practice*. Health Protection Agency – Local and Regional Services. January 2010
www.hpa.org.uk

5 *Food handlers: fitness to work. Regulatory guidance and best practice advice for food business operators*. FSA, 2009
www.food.gov.uk

6 British National Formulary for Children – Mupirocin
http://bnfc.org

Further resources

CDC Public Health Image library (PHIL)
http://phil.cdc.gov/phil

Six step Ayliffe hand washing technique
www.hpa.org.uk

Immunisation against infectious disease – The Green Book (2006), DH p2
www.dh.gov.uk/en/Publicationsandstatistics

Glossary

CA MRSA – Community-associated or -acquired methicillin-resistant Staphylococcus aureus

CIPCT – Community infection prevention and control team

DH – Department of Health

GP – General practitioner

HCW - Health care worker

H&SCW – Health and social care worker

HPA – Health Protection Agency

HPU – Health protection unit

I&D – Incision and drainage

LaRS – Local and regional services

MO – Medical officer

MRSA – Methicillin-resistant *Staphylococcus aureus*

MSSA – Methicillin-sensitive *Staphylococcus aureus*

OH – Occupational health

PVL-SA – Panton-Valentine Leukocidin-positive *Staphylococcus aureus*

PPE – Personal protective equipment

Pyogenic infection – characterised by severe local inflammation, usually with pus formation

SICPs – Standard infection control procedures

SSTI – Skin and soft tissue infection

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