SESLHD PROCEDURE COVER SHEET

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KEY TERMS	Chicken pox, Varicella, Varicella Zoster Virus, Herpes Zoster, Disseminated zoster, Shingles, contacts
SUMMARY	Preventing patients, staff and visitors from developing chickenpox and shingles in the healthcare environment. Managing patients with chickenpox and shingles. Management of the contacts.

Chicken Pox and Shingles (Varicella Zoster) Herpes Zoster Procedure

SESLHDPR/334

1. POLICY STATEMENT

Patients with suspected or confirmed chickenpox (Varicella - primary Varicella Zoster virus infection) or shingles (Herpes Zoster- reactivation of latent Varicella Zoster virus infection) must be managed as outlined in this procedure.

2. BACKGROUND

Chickenpox is a highly contagious infection, spread person to person by direct or indirect contact, droplet or airborne spread of vesicle fluid or secretions from the respiratory tract of chickenpox cases, or from contact with the vesicle fluid from the skin lesions in shingles. It is often a mild disease but in 1% of cases, more serious complications can occur, especially affecting immunocompromised people where it can become disseminated, which may be fatal.

Congenital varicella syndrome has been reported after a chickenpox infection in first and second trimester pregnancy which may result in foetal scarring, limb defects, ocular anomalies and neurological malformation. The onset of chickenpox in a pregnant woman seven days before to two days after delivery is estimated to result in severe chickenpox in 17 – 30% of the newborn infants. Intrauterine infection can also result in herpes zoster in infancy.

Shingles is a localised, generally painful, cutaneous eruption that occurs most frequently in older adults and immunocompromised persons. It is caused by a reactivation of latent varicella zoster virus infection often years after primary infection. Complications of shingles may include post-herpetic neuralgia that can last for months, even years. Less commonly, the rash can be more widespread and affect three or more dermatomes. This condition is called disseminated zoster. This generally occurs only in people with compromised or suppressed immune systems. Disseminated zoster can be difficult to distinguish from chickenpox.

3. DEFINITIONS

Chickenpox (Varicella): Chickenpox is an acute generalised viral illness with a sudden onset of slight fever, mild constitutional symptoms and a skin eruption, maculopapular for a few hours, vesicular for three to four days which leaves a granular scab. The lesions are present at a variety of stages at any one time. Mild, atypical and inapparent infections may occur. Secondary bacterial infection of the vesicles may leave disfiguring scars or result in necrotising fasciitis or sepsis.

Breakthrough chickenpox (natural varicella infection in vaccinated individuals): Vaccine failure is known as ‘breakthrough varicella’ and is defined as a case of wild-type varicella infection >42 days post vaccination. The majority of cases of breakthrough varicella are mild and result in fewer skin lesions (usually <50), although up to 28% of breakthrough varicella cases may be severe (>500 lesions). In mild breakthrough cases, the skin lesions may not be vesicular and systemic symptoms, such as fever, occur less frequently. Because of this, breakthrough disease may not be recognised, or may be misdiagnosed. However, breakthrough varicella can still be contagious and exclusion may be required. A study of household secondary attack rates found that contagiousness is related to the number of lesions. Vaccinated cases with more than 50 lesions were as

contagious as unvaccinated cases, but when vaccinated cases presented with fewer than 50 lesions, they were only one-third as contagious.

Uncomplicated Shingles (Herpes Zoster): Shingles is a local infection, affecting less than two dermatomes. Severe pain and paraesthesia is common. Post-herpetic neuralgia can occur

Disseminated Shingles (Disseminated Zoster): More than two dermatomes, widespread vesicular rash, visceral, central nervous system and pulmonary involvement.

4. RESPONSIBILITIES

4.1 Employees will:

- All employees must comply with NSW Health Policy Directive PD2020_017 - Occupational Assessment, Screening and Vaccination Against Specified Infectious Diseases.
- Employees who develop chickenpox or shingles must inform their Manager as soon as the infection is suspected.
- Comply with policy requirements for standard and transmission based precautions.

4.2 Line Managers will:

- Ensure staff compliance with NSW Health Policy Directive PD2020_017 - Occupational Assessment, Screening and Vaccination Against Specified Infectious Diseases prior to commencement of employment.
- Inform Infection Prevention and Control staff or designate (IP&C) of any patients admitted with suspected/confirmed chicken pox or disseminated shingles.
- Commence a chickenpox contact list (see Appendix 1) of exposed susceptible staff, patients and visitors, particularly unvaccinated children when an exposure has occurred in a ward or department, in conjunction with IP&C.
- Inform IP&C of any employees who report chicken pox, shingles or disseminated shingles or exposure.

5. PROCEDURE

5.1 Chickenpox and Disseminated Shingles

Communicable disease/ causative organism	Chickenpox (Varicella)/ Varicella zoster virus (VZV)
Clinical manifestation / diagnosis	• May initially begin with cold-like symptoms • Raised temperature • Intensely itchy vesicular rash. Clusters of vesicular (blisters) spots appear over three to five days, which start on the face and scalp, spread to the trunk, abdomen and limbs • It is possible to be infected but show no symptoms

	• Consider breakthrough varicella if post vaccination illness
Incubation period	10-21 days. This may increase to 28 days if immunoglobulin was given
Period of infectivity	One to two days before the onset of the rash until the vesicles (blisters) are dry/crusted which is usually four to five days after the onset of rash. This may be prolonged in immunosuppressed patients
Mode of transmission	• Direct contact with an infected person • Airborne or droplets from the respiratory tract • Indirectly via contaminated articles e.g. clothing / bedding
Groups susceptible to chickenpox	• Since vaccination disease declined 90%, now most commonly seen adolescence and adults • Adolescents and adults are at increased risk of severe disease
Definition of a significant exposure to chickenpox	Non immune individuals who have had: • Contact in the same room as a person with chickenpox (e.g. in a house or classroom or a two to four bed hospital bay) for a significant period of time (15 minutes or more) • Face to face contact, for at least five minutes or being in the same room for at least one hour with a person with chickenpox. For example while having a conversation (remember that they may be infectious up to 48 hours before the rash appears) • In large open wards, airborne transmission at a distance has occasionally been reported
Management of patients exposed to chickenpox	• Patients who have had significant contact with a person who has chickenpox should be assessed by a clinician to determine the risk they may have of contracting chickenpox • Varicella vaccine may be appropriate. Information on prophylaxis can be found in the Australian Immunisation Handbook 2020 • Advice may be sought from an Infectious Disease Consultant if required • If patients or healthcare workers are exposed, IP&C should be informed as soon as possible
Groups at increased risk of severe disease	• Adolescents and adults • Smokers • Children receiving high dose corticosteroids (>2 mg/kg per day) • Non immune pregnant women and their baby • Neonates whose mothers develop chickenpox in the period five days before to two days after the birth • Neonates born to non-immune mothers who have been exposed to chickenpox or shingles in the first month of the baby's life

	• Immunocompromised patients (see section 8 for definitions and management)
Complications of Chickenpox	May include: • secondary bacterial infections of skin lesions • pneumonia • cerebellar ataxia • encephalitis • haemorrhagic conditions
Vaccine preventable	Yes
Treatment	• Antiviral treatment started within 24 hours of the onset of rash may reduce the duration and severity of symptoms in otherwise healthy adults and adolescents • Immunocompromised individuals will also certainly benefit from treatment with IV aciclovir • See section 8 for guidance regarding prophylaxis with Varicella Zoster immunoglobulin (VZIG) in asymptomatic individuals at higher risk of developing severe disease • Other contacts who are not vaccinated or have unknown immunity, within three days of significant exposure or up to five days to prevent secondary cases
Notifiable disease	No. Outbreaks are **not** notifiable under the Public Health Act 2010 but the Public Health Unit can give general advice regarding outbreak investigation and control, and about vaccination.

5.2 Shingles

Communicable disease/ Causative organism	Shingles (Herpes Zoster) / Varicella Zoster virus (VZV)
Clinical manifestation / Diagnosis	• Previous infection with chickenpox is necessary before a person can develop shingles. It appears following reactivation of chickenpox virus which lies dormant in dorsal root ganglia (spinal nerve tissue) – often for decades • Pain in the area of the affected nerve is often the first symptom followed by a dermatomal (one sided) rash of fluid filled vesicles (blisters) • Diagnosis can usually be reliably made on physical examination; swabs/specimens are not usually required
Period of infectivity	Until all the lesions have dried/crusted.
Mode of transmission	Direct contact with the fluid from the vesicles which is then transferred to the mucous membranes of a non-immune individual, usually via the hands. Airborne or droplet

	transmission is possible, however, virus is less likely via respiratory secretions than chicken pox
Groups susceptible to shingles	Individuals who have had chickenpox previously may develop shingles at any time in their lives although it does seem to be associated with older age and conditions which suppress the immune system.
Definition of a significant exposure to shingles	Direct contact with fluid from the rash blisters is required to infect a person who is not immune to chickenpox (see mode of transmission).
Management of patients exposed to shingles	• Patients who have had significant contact with a person who has shingles should be assessed by a clinician to determine the risk they may have of contracting chickenpox • Varicella vaccine or zoster immunoglobulin may be appropriate. Information on prophylaxis can be found in the Australian Immunisation Handbook 2020 • Advice may be sought from an Infectious Disease Consultant if required If patients or healthcare workers are exposed, the Infection Control team should be informed as soon as possible.
Groups at increased risk of severe disease	• Pregnant women and their baby, when the woman has no immunity to chickenpox (a pregnant woman who has shingles presents no risk to her unborn baby) • Neonates born to non-immune mothers who come into direct contact with a person with shingles may develop chickenpox (see section 8) • Immunocompromised individuals may suffer more severe and prolonged symptoms (see section 8 for definitions and management)
Vaccine preventable	Yes
Treatment	• Shingles can be effectively treated with oral antiviral drugs; systemic antiviral treatment can reduce the severity and duration of pain, reduce complications, and reduce viral shedding • Treatment should be started within 72 hours of the onset of rash and is usually continued for 7 to 10 days depending on the agent • Immunocompromised patients at high risk of disseminated or severe infection should be assessed for treatment with either oral or parenteral antiviral drug. See section 4.5.1 for guidance regarding prophylaxis with Varicella Zoster immunoglobulin (VZIG) and antivirals in asymptomatic individuals at higher risk of developing severe disease • Other contacts who are not vaccinated or have unknown immunity, within three days of significant exposure or up to five days to prevent secondary cases.

Notifiable disease	No

5.3 STANDARD INFECTION CONTROL PRECAUTIONS AND TRANSMISSION BASED PRECAUTIONS

Patient placement	• The patient should be nursed in a single side room with ensuite or dedicated bathroom (for chickenpox a negative pressure room should be used if available) until all the vesicles have dried/crusted (and no new crops are appearing if it is chickenpox) • Immunocompromised patients may require a longer period of isolation • Patients with chickenpox in their own homes should avoid contact with non-immune people until their lesions are dried and crusted • Patients with shingles in their own homes may not necessarily require to be off of work e.g. if the rash is not on the extremities, can be covered, the patient will comply with hand hygiene advice and is not working with people at high risk of contracting chickenpox and complications from same
Patient care	Patients should only be cared for by staff who are immune to chickenpox.
Decontamination	Routine cleaning
Patient transfers between hospitals/wards	Transfer of infectious patients should be prevented where possible. If it is essential then the receiving area must be informed prior to moving the patient in order that the appropriate facilities can be prepared for them. Patients will need to wear a surgical mask when leaving their single room.

5.4 Pregnancy, Neonates and Infants

5.4.1 Varicella–zoster immunoglobulin (VZIG) is recommended for individuals who have been exposed

Those at increased risk during pregnancy, or the neonatal period include:

Patients at increased risk	**Management with VZIG**
Neonates whose mothers develop chickenpox rash in the period seven days before to two days after delivery	Prophylactic treatment with VZIG recommended
Susceptible neonates exposed in the first seven days of life	Prophylactic treatment with VZIG recommended

Neonates born to non-immune mothers, exposed within the first month of life	The maximum benefit of VZIG occurs if given within the first seven days of life with rapidly decreasing effect thereafter
Neonates / infants exposed during intensive/prolonged special care	Prophylactic treatment with VZIG recommended
Babies born to immune mothers but who are being discharged home where a household member has chickenpox or shingles	Consider Prophylactic treatment with VZIG
Babies born at <28 weeks gestation or <1kg in weight when exposed to chickenpox/ shingles	VZIG recommended regardless of maternal immunity / VZV antibody status. If the infant then develops chickenpox infection, consult Infectious Diseases.

5.4.2 Dose recommendations for VZIG administration

Weight of patient (Kg)	Dose (IU)
0-10	200
11-30	400
>30	600

5.4.3 VZIG is not required (since maternal antibody will be present) for:

- Infants aged less than one month with a positive maternal history of varicella **and/or** positive maternal antibody result
- Infants whose mothers develop shingles before or after delivery
- Maternal antibody in the baby starts to wane after two months of age.

5.5 Immunocompromised patients

May include:

- All patients receiving systemic high-dose steroids until at least three months after treatment has stopped. This would include children who, in the previous three months, have received prednisolone, orally or rectally, at a daily dose (or its equivalent) of 2 mg / kg / day for at least one week, or 1 mg / kg / day for one month. For adults, an equivalent dose is harder to define but immunosuppression should be considered in those who, in the previous three months, have received 40 mg of prednisolone per day for more than one week. Occasionally, there may be individuals on lower doses of steroids who may be immunosuppressed, and are at increased risk from infections. Therefore, live vaccines should be considered with caution in discussion with a relevant specialist physician.
- All patients currently being treated for malignant disease with immunosuppressive chemotherapy or radiotherapy, and for at least six months after terminating such treatment.
- All patients who have received a solid organ transplant and are currently on immunosuppressive treatment.

- Patients who have had a bone marrow transplant within the previous six months, and until at least 12 months after finishing all immunosuppressive treatment, or longer where the patient has developed graft-versus-host disease.
- Patients receiving other types of immunosuppressive drugs. The advice of the physician or immunologist in charge should be sought for at least six months after treatment.
- Patients with evidence of severe primary immunodeficiency, e.g. severe combined immunodeficiency (SCID), Wiskott-Aldrich syndrome and other combined immunodeficiency syndromes.
- Patients with immunosuppression due to HIV infection.

5.5.1 VZIG Management in Immunocompromised Patients

- Whenever possible, immunosuppressed patients exposed to chickenpox / shingles should be tested irrespective of their history of chickenpox.
- However, VZIG administration should not be delayed past seven days after initial contact while an antibody test is done. Under these circumstances, VZIG should be given on the basis of a negative history of chickenpox. If the patient has a positive history of chickenpox, wait for the antibody results. Those with a positive history in whom VZ antibody is not detected by a sensitive assay should be given VZIG.
- VZIG is not indicated in immunosuppressed contacts with detectable antibody as the amount of antibody provided by VZIG will not significantly increase VZ antibody titres in those who are already positive.
- Second attacks of chickenpox can occasionally occur in immunosuppressed VZ antibody positive patients, but these are likely to be related to defects in cell-mediated immunity.
- VZ antibody detected in patients who have been transfused or who have received intravenous immunoglobulin in the previous three months may have been passively acquired. Although VZIG is not indicated if antibody from other blood products is detectable, re-testing in the event of a subsequent exposure will be required, as the patient may have become antibody negative.

5.6 Acquiring VZIG in NSW

- Medical Officer to contact Australian Red Cross Blood Service (Ph 1300 478 348) for approval.
- Then contact hospital Blood Bank (Randwick Campus ext 23232; St George Hospital ext 33434 and Sutherland Hospital ext 37423) with name of patient and discuss urgency.
- VZIG will be detectable in the blood for three months. But if a second exposure occurs after three weeks of administration of VZIG, a further dose is indicated but does not require additional laboratory testing.
- Patients who receive VZIG are potentially incubating the illness and therefore may still develop chickenpox. Administration of VZIG may extend the incubation period up to 28 days. Therefore such patients should avoid contact with susceptible others from day 10 to day 28 following their own exposure.

5.7 MANAGEMENT OF HEALTHCARE WORKERS WITH OR EXPOSED TO CHICKENPOX OR SHINGLES INFECTION

Healthcare workers with chickenpox or vaccination related breakthrough Varicella	Should inform IC&P and be excluded from work until no new crops are appearing and all lesions have dried and crusted.
Healthcare workers with shingles	• Should inform IP&C who will complete a risk assessment • May be able to continue to work if the lesions can be covered with a dressing/clothing, do not impede hand hygiene and do not work with high risk patients (eg. patients in oncology/ haematology, transplant neonatal and maternity units)
Immune Healthcare workers exposed to Chickenpox or shingles	• Healthcare workers with VZ positive serology or a definite history of chickenpox/shingles or who have been vaccinated against varicella, should be considered protected and be allowed to continue working • If however they develop any symptoms consistent with chickenpox they should report to IP&C for assessment before having further patient contact
Non immune Healthcare workers exposed to chickenpox or shingles	• Healthcare workers without a definite history of chickenpox and who have not been vaccinated against it should report to IP&C before having further patient contact • May require to be excluded from contact with high-risk patients (patients in oncology/ haematology, transplant and maternity units for e.g.) until their immune status is known • IP&C can provide advice and take blood for serological testing where immunity is uncertain
Pregnant Healthcare workers	• Pregnant staff who have previously had chickenpox / were previously vaccinated against it are likely to be immune and at less risk; regardless they should discuss this with IP&C and their own Obstetrician/ Midwife without delay • Pregnant staff that have not had chickenpox / were not previously vaccinated against it may be at increased risk and should discuss this with IP&C and their own Obstetrician / Midwife without delay • IP&C can provide advice and take blood for serological testing where immunity is uncertain
Treatment of non-immune Healthcare workers exposed to chickenpox or shingles	• Should be discussed with the IP&C • HCW who have a negative / uncertain history and do not have age appropriate documentation of varicella vaccine should be vaccinated with two doses of vaccine or serological evidence of immunity

	• Irrespective of the interval since exposure, vaccine should be offered to reduce the risk of the healthcare workers being exposed / exposing patients to chickenpox virus in the future • **Exceptions: Varicella vaccine is not suitable for pregnant or immunocompromised people** • In pregnancy, treatment with immunoglobulin may be indicated • Immunocompromised staff should seek medical advice

6. DOCUMENTATION

Chicken Pox/Shingles Exposure Record
Patient's records

7. AUDIT

Monitor outbreaks

8. REFERENCES

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- MMWR 2008. Prevention of Herpes Zoster; Recommendations of the advisory Committee on Immunisation Practices.
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9. VERSION AND APPROVAL HISTORY

Date	Version	Version and approval notes
May 03	0	Infection Control Co-ordinators and Area Infection Control Committee
November 2004	1	Infection Control Co-ordinators. Approved for release by the Area Policy and Procedure Committee 25 November 2004
April 2011	3	Updated to reflect change to Local Health Network
November 2011	4	Policy number corrected and correct logo placed on exposure record form
August 2014	5	Reviewed and updated to NHMRC Australian Immunisation Handbook 10th ed. 2013.m Reformatted
December 2014	5	Endorsed by Executive Sponsor
June 2018	6	Infection Prevention & Control Working Party - Reviewed and updated.
July 2018	6	Minor review to update references and guidelines – approved by Executive Sponsor.
July 2018	6	Processed by Executive Services prior to publication.
April 2022	7	Minor review by Infection Prevention & Control Working Party. Approved by Executive Sponsor. To be tabled at Quality Use of Medicines Committee.
2 August 2023	7.1	Section 5.6 - Randwick campus Blood Bank phone number updated.