

CHICKEN POX (VARICELLA)

PRACTICE GUIDELINE[®]

DOCUMENT SUMMARY/KEY POINTS

- Chickenpox is a highly contagious disease caused by the **varicella-zoster virus (VZV)**.
- **Transmission** occurs by direct contact, droplets, or aerosols from respiratory secretions or vesicular fluid of skin lesions.
- The **incubation period** (time from contact to development of symptoms) is 10 to 21 days. If zoster immunoglobulin (ZIG) is given, then incubation period is 10 to 28 days.
- A person is **infectious** from 48 hours prior to the appearance of the first skin lesion to when all skin lesions have crusted. All exposed and non-immune people should be considered potentially infectious from 8 to 21 days (8 to 28 days if ZIG given) following exposure.
- All children and adolescents admitted to hospital must have their chickenpox immunity status documented.
- All cases of active chickenpox or contact with chickenpox (patients or staff) must be reported to Infection Prevention and Control (or the After Hours Nurse Manager).
- **Patients with active chickenpox** must be cared for in a negative pressure or 100% exhaust ventilation room using [Standard & Airborne precautions](#) until all lesions have crusted.
- All **potentially infectious patients** must be cared for in a negative pressure or 100% exhaust ventilation room using [Standard & Airborne precautions](#) for the duration of the incubation period.
- Avoid other patients being admitted to the room vacated by a patient with active chickenpox for 30 minutes after the patient has vacated the area and the area has been cleaned.
- Non-urgent admissions of patients with chickenpox (or suspected chickenpox) should be postponed until after the infectious period has passed.
- All personnel must be aware of their immune status with respect to chickenpox. Exposed non-immune staff must be excluded from clinical duties during the incubation period.

This document reflects what is currently regarded as safe practice. However, as in any clinical situation, there may be factors which cannot be covered by a single set of guidelines. This document does not replace the need for the application of clinical judgement to each individual presentation.

Approved by:	SCHN Policy, Procedure and Guideline Committee	
Date Effective:	1 st July 2018	Review Period: 3 years
Team Leader:	Infectious Disease Staff Specialist	Area/Dept: Infection Prevention and Control

CHANGE SUMMARY

- Amalgamation of Sydney Children's Hospital and Children's Hospital at Westmead policies
- Changes in wording and terminology
- Updated websites
- Updated references

READ ACKNOWLEDGEMENT

- All SCHN staff working in clinical areas need to read and acknowledge understanding of this document.
- Managers are to maintain records of staff read acknowledgements.

This document reflects what is currently regarded as safe practice. However, as in any clinical situation, there may be factors which cannot be covered by a single set of guidelines. This document does not replace the need for the application of clinical judgement to each individual presentation.

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1 Introduction

1.1 Aims

This policy aims to prevent the spread of chickenpox in the healthcare setting through the identification and appropriate isolation of patients and staff who are either exposed to chickenpox or have active chickenpox.

1.2 Chickenpox

Aetiology

Chickenpox is an infectious disease caused by the varicella-zoster virus (VZV).

Clinical Manifestations

The triad of skin lesions, malaise, and fever signals the onset of chickenpox. A prodrome of nausea, myalgia, anorexia, and headache is not typically encountered in children, but can be experienced by adolescents and adults. Skin lesions appear as small erythematous macules (often present on scalp, face, trunk, and proximal limbs, but may appear on the palms and soles) that progress to papules, clear vesicles, and pustules, ending in crust formation. New crops of lesions develop over subsequent days. Lesions may appear on mucous membranes (oropharyngeal or urogenital region) as painful, shallow ulcers. Intense pruritic commonly accompanies the vesicular stage of the rash.

Mode of Transmission

Chickenpox is spread via direct contact with lesions, droplets, or aerosols from respiratory secretions or vesicular fluid of skin lesions.

Infectious Period

The typical person is infectious from two days prior to the development of skin lesions until all lesions have crusted over. Immunosuppressed persons and those with varicella pneumonitis may be infectious for much longer.

Incubation Period

The incubation period (period from contact until symptoms appear) is 10 to 21 days. An exposed and susceptible subject is considered potentially infectious from the 8th day after first contact until the 21st day following the last contact with chickenpox. If Zoster Immunoglobulin is given (ZIG), the incubation period is extended by another 7 days (i.e. to the 28th day following last possible contact).

Risk of Infection

People who have never been infected with or immunised against VZV are universally susceptible. Children and adolescents ≤ 14 years of age can be considered immune two weeks after a single dose of vaccine. For adolescents >14 years of age and adults, 2 vaccines are required before immunity can be conferred. Immunocompromised children and adolescents may be susceptible despite prior infection or vaccination.

2 Command and Control

Responsibility for implementation of this policy is the direct responsibility of appropriate clinical line managers caring for affected patients.

- The clinical line Managers will consult with the Infection Prevention and Control (IPC) team regarding appropriate patient placement and IPC procedures.
- If there is no policy on a particular issue or the policy needs updating then there needs to be further discussion between clinical line Managers, IPC, Infectious Diseases and/or Microbiology, and the Director of Clinical Operations to develop a consensus agreement based on best evidence. If a dispute arises about policy it is to be referred to the Chief Executive (CE) for resolution.
- Chickenpox infections are not mandated as a reportable infection to Public Health Units.
- A Reportable Incident Brief (RIB) will be sent to NSW Department of Health on any potential media interests or problems. This is currently the responsibility of the Executive Assistant to the CE.
- The Microbiologist or IPC Practitioner will notify the Director of Clinical Operations of identification of any known chicken pox clusters. The Director of Clinical Operations will in turn notify the Chief Executive.

3 Infection Control Measures

Standard & Airborne precautions apply.

Refer to [Infection Prevention & Control: Isolation and Transmission Based Precautions Practice Guideline](#)

4 Infection Control Management

4.1 Patients

All patients admitted to hospital must have their chickenpox immunity status assessed upon admission and ward nursing admission and documented in their clinical record.

For outpatients requiring admission, patients' chickenpox immunity status should be recorded in the Recommendation for Admission (RFA). Assessment involves taking a history of previous chickenpox episodes, varicella-zoster vaccination(s), and contact with someone with chickenpox. Those who have been appropriately vaccinated ≥ 2 weeks prior to admission are considered VZV immune.

If a patient develops chickenpox, or a non-immune patient is found to have been exposed to chickenpox, the IPC Team or the After Hours Nurse Manager (AHNM) must be notified. Management of such patients is as follows.

Presentation with active chickenpox to the Emergency Department (ED)

A presentation to ED with suspected chickenpox must be reviewed by the most senior medical officer in the department. The patient **MUST** be isolated in a single room (with negative pressure or 100% exhaust ventilation) with standard and airborne precautions. Patients should be discharged promptly if found to be well enough. If admission is required the patient must be transferred to a negative pressure or 100% exhaust ventilation room in the hospital, the specific location will depend on the patient's acuity. The patient must be managed with standard and airborne precautions in place until all lesions have crusted.

If a patient with active chickenpox requires an investigation (e.g. radiology) or a surgical procedure, then these should be performed at the end of the day as the last case if possible. The following precautions should also be followed:

- Minimise time outside of the isolation room by ensuring the receiving department is ready for the patient (i.e. patient not to wait in radiology or theatre waiting rooms).
- Patient to wear a surgical mask while outside their isolation room or in public areas of the hospital. A N95/P2 mask is not to be worn by a patient and all skin lesions should be covered as much as possible.
- Any areas in which the patient has been should be thoroughly cleaned with a neutral detergent once the child has left. Following the current NSW Health Environmental Cleaning Policy: http://www1.health.nsw.gov.au/pds/Pages/doc.aspx?dn=PD2012_061
- Avoid other patients entering these areas for 30 minutes after the patient has vacated the area and the area has been cleaned.
- Following a surgical procedure the patient should remain in the same operating theatre to recover and then transported immediately back to their isolation room.

Inpatient with active chickenpox

A patient who is already an inpatient and found to have active chickenpox **MUST** be transferred as a matter of priority to a single room with negative pressure or 100% exhaust ventilation in the hospital, the specific location will depend on the patient's acuity. This patient must be managed with standard and airborne precautions in place until all lesions have crusted.

The IPC Team (and after hours the AHNM) must be informed immediately in order to commence contact tracing of patients and staff.

Person with recent exposure to chickenpox

Significant contact is defined as:

- Direct face to face interaction for at least 5 minutes, or
- Being in the same room for at least one hour, or
- Living in the same household as a person with chickenpox during the infectious period (48 hours prior to the appearance of skin lesions until all lesions are crusted).

A hospital contact is defined as:

- For active chicken pox

- In the same room; adjacent beds in a larger hospital room or ward; or face to face contact with an infectious person (staff, patient, or visitor).

If a patient has been identified as being exposed to chickenpox it is the responsibility of the Treating Team to risk assess their patient and document in the clinical notes the appropriate actions taken using the guideline below. Contact Infectious Diseases for information.

If a person's history reveals recent close contact with someone who has active chickenpox the following must be considered:

- If the person has a clear history of having varicella-zoster vaccination they are considered immune and no action is required.
- For full-term infants less than 6 months of age, prior maternal chickenpox or vaccination may be protective. Such patients are usually considered immune and no further action is required. Cases can be discussed with Infectious Diseases (or Microbiology at CHW) for clarification.
- Neonates born to mothers with active chickenpox around the time of delivery are at high risk of severe chickenpox and should be offered ZIG. Isolate these neonates for the first 21 days of life or 28 days if ZIG has been given.
- If there is no history of chickenpox or varicella-zoster vaccination then the child is considered potentially infectious.
 - Elective admissions should be rearranged.
 - Emergency admissions **MUST** be isolated in a room with negative pressure ventilation or 100% exhaust ventilation during the incubation period, which is 8-21 days following exposure or 8-28 days following exposure if ZIG has been given (refer to [Appendix 1 - Chickenpox Contact Flowchart](#)). When demands for negative pressure rooms outnumber availability, decisions to isolate in single rooms without negative pressure capability need to be discussed with the IPC Team and Infectious Diseases. Patients should have their VZV serology (VZV IgG) tested. If they are found to be VZV IgG positive, then the isolation precautions may cease. VZV non-immune patients shall have an Infection Alert entered into the Patient Management System (IPM (SCH), PMS (CHW)) that will remain active for the duration of the incubation period.
 - Post-exposure prophylaxis can be offered (see 5.0).

High-risk contacts

High-risk contacts are neonates, premature infants, and patients who are immunocompromised (particularly those with cellular immune deficiency, e.g. HIV, SCID or BMT recipients). These people may be offered ZIG after consultation with Infectious Diseases (see 5.0). These patients should not be offered vaccination as secondary prophylaxis.

Oncology patients with recent exposure to chickenpox requiring ambulatory care (SCH only)

Guides are provided for SCH Oncology patients who have recently been exposed to chickenpox and require ambulatory care e.g. for chemotherapy or a procedure. For the

purpose of this guide, a chickenpox contact is an immunocompromised patient who has been exposed to chickenpox and is within the infectious period, AND does not have active chickenpox. If possible, it is preferable to re-schedule the treatment/procedure to outside the infectious period. If it is not possible to re-schedule the treatment/procedure then refer to [Chickenpox – SCH Oncology Flow Charts](#). These guides are not intended for chickenpox contacts that are going to be inpatients.

4.2 Healthcare Workers

All staff **MUST** have their VZV immune status established before commencing work at SCHN. Staff with a complete varicella-zoster vaccination course are considered immune and not at risk of spreading or acquiring infection. Staff with no evidence of varicella-zoster vaccination should be offered serological testing to determine their immunity by their local unit responsible for occupational health (NSW Health policy PD2018_009).

Staff with known immunity to VZV shall care for patients with active chickenpox, herpes zoster, or chickenpox contacts who are in the incubation period.

Staff who are non-immune to VZV should have a complete varicella-zoster vaccination course (unless contra-indicated) preferably prior to commencement of employment. They should not care for patients with active chickenpox or chickenpox contacts who are in the incubation period until they are considered immune to VZV. If non-immune staff are exposed to chickenpox, they are potentially infectious from 8-21 days after exposure. During this period staff should only work with children known to have had chickenpox or varicella-zoster vaccination. Daily monitoring for symptoms must be undertaken and exclusion from work mandated if symptoms develop. If a staff member develops chickenpox, IPC (and Staff Health for CHW staff) **MUST** be informed promptly to enable contact tracing of susceptible persons. Varicella-zoster vaccination can be offered to exposed non-immune staff in whom no other contra-indications exist. The vaccine should be administered ideally within the first 3 days, but up to 5 days following exposure to prevent or attenuate infection.

Pregnant staff with unknown immunity or non-immune to VZV exposed to chickenpox should have their immunity checked urgently and if found to be non-immune, be referred to their obstetrician. ZIG may be offered. Varicella-zoster vaccination should not be given during pregnancy.

Staff with active chickenpox should be excluded from work until all lesions are crusted, dry and healing. Staff need to visit their GP to confirm diagnosis. If chickenpox is confirmed then staff need to alert their Manager or AHNM. The Manager/AHNM **MUST** then inform IPC (and Staff Health for CHW Staff) to enable contact tracing of susceptible persons.

4.3 Students

It is the responsibility of educational institutions to inform medical, nursing, and allied health students of the implications of their VZV immune status and to advise that those who are not known to be VZV immune will be excluded from clinical areas should there be a risk of VZV exposure. If a student is exposed to chickenpox, then exclusion from clinical contact with patients will apply for 8 to 21 days after exposure unless given ZIG when they should be excluded for 8-28 days post exposure.

4.4 Visitors and Siblings

Patients with active chickenpox may have visitors but these visitors should be restricted to those who are immune to VZV. Family members and close friends of immunocompromised patients should be encouraged to have their VZV immune status established. Varicella-zoster vaccination should be recommended to susceptible siblings and caregivers, unless pregnant or have other contra-indications to vaccination, to minimise the risk of VZV infection and therefore exposure to the immunocompromised patient and other immunocompromised patients in hospital. Visitors must adhere to thorough hand washing practices on entering and leaving the room.

4.5 Chickenpox Exposure

When an exposure has occurred in the hospital, an exposure report identifying exposed susceptible staff and patients shall be compiled by the Department Manager or designated person, in conjunction with IPC (and Staff Health at CHW). A vesicle swab for VZV PCR +/- VZV immunofluorescence from the index case and clinical follow-up is necessary to confirm the diagnosis of chickenpox.

4.6 Equipment and Environment

- The room must be thoroughly cleaned with a neutral detergent after the patient has vacated the room (e.g. discharge or transfer).
- If the patient is relocated, all equipment if possible should be moved with the patient to the new location. Equipment should not be shared with other patients.
- If equipment must be used for other patients it must be adequately cleaned by wiping over with appropriate disinfectant wipes.
- No special handling of linen is required.
- Avoid other patients being admitted to the room vacated by a patient with active chickenpox for 30 minutes after the patient has vacated the area and the area has been cleaned.
- Please refer to http://www1.health.nsw.gov.au/pds/Pages/doc.aspx?dn=PD2012_061

5 Post Exposure Prophylaxis

If a patient is considered non-immune to chickenpox the following measures can be taken to prevent or attenuate the infection. The need for post exposure prophylaxis should be discussed with Infectious Diseases.

5.1 Varicella-zoster Vaccination

Varicella-zoster vaccination can be offered to patients over 12 months of age in whom no contra-indications exist (e.g. anaphylaxis to vaccine component or immunodeficiency). The vaccine should ideally be administered within the first 3 days post exposure but can be effective up to 5 days following exposure. See 4.1 for management of patients who are contacts of Varicella zoster.

5.2 Zoster Immunoglobulin (ZIG)

ZIG is available on a restricted basis from the Red Cross Blood Service for high-risk contacts who have been exposed to chicken pox or herpes zoster. These include:

- Pregnant women who are presumed to be susceptible to varicella-zoster infection. If practicable, they should have VZV antibody testing and ZIG administered only if VZV IgG negative with no history of VZV vaccination prior to giving ZIG.
- Neonates whose mothers develop VZV infection up to 7 days prior and to 2 days after delivery. Administration of ZIG should be as early as possible.
- Neonates in the first month of life whose mothers have no personal history of VZV infection or vaccination and are seronegative.
- Premature infants, born <28 weeks gestation or <1000 grams birthweight, exposed to VZV whilst hospitalised, irrespective of maternal VZV immune status.

Patients with primary or acquired conditions associated with cellular immune deficiency, and those receiving immunosuppressive therapy.

ZIG should be administered within 96 hours of exposure but can be effective if administered up to 10 days following exposure.

See 4.1 for management of patients who are contacts of Varicella zoster.

6 Further Information

For further information please contact the IPC Team.

Fact sheet for parents and carers: <https://www.schn.health.nsw.gov.au/fact-sheets/chickenpox>

7 References

1. American Academy of Pediatrics. Varicella Zoster Infections. In: Peter G, ed. 2015 Red Book: Report of the Committee on Infectious Diseases. 30th ed. Elk Grove Village, IL: American Academy of Pediatrics; 2015: 846-859.
2. Australian Commission on Safety and Quality in Healthcare "Australian Guidelines for the Prevention and Control of Infection in Healthcare. Australian Government National Health and Medical Research Council 2010, Heymann, D (ed). Chickenpox/Herpes Zoster. Control of Communicable Diseases Manual. 19th ed. American Public Health Association, Washington DC; 2008:109-116.
3. Australian Government Department of Health. 4.22 Varicella. The Australian Immunisation Handbook (10th ed.). Available at <http://immunise.health.gov.au/internet/immunise/publishing.nsf/Content/Handbook10-home-handbook10part4~handbook10-4-22>. Accessed 16 February 2018.
4. NSW Health Policy Directive "Occupational Assessment, Screening and Vaccination Against Specified Infectious Diseases". PD2018_009 (2018). http://www1.health.nsw.gov.au/pds/ActivePDSDocuments/PD2011_005.pdf. Accessed 21 February 2018.
5. Australian Government Department of Health. Varicella Zoster Virus Laboratory Case Definition (LCD). Available at: <http://www.health.gov.au/internet/main/publishing.nsf/Content/cda-phlnccd-Varicella>. Accessed 21 February 2018.

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Appendix 1: Chickenpox Contact Flowchart

