

# Chicken pox or shingles (varicella / herpes zoster)

## Victorian statutory requirement

Notification is not required.

School exclusion differs according to case or contact status:

- cases should be excluded until full recovery or for at least five days after the first eruption appears. Some remaining scabs are not a reason for continued exclusion
- any child with an immune deficiency or receiving chemotherapy should be excluded for their own protection. Otherwise contacts are not excluded.

## Infectious agent

Human herpesvirus 3 (alpha) or varicella zoster virus (VZV) is the causative agent.

## Identification

### Clinical features

#### Varicella (chickenpox)

Chickenpox generally presents with a low-grade fever, malaise and a rash. The rash is firstly maculopapular then becomes vesicular (blistered) and progresses to crusted lesions over about five days. Lesions appear in three or four crops. They are most numerous on the trunk and less so on the face, scalp, limbs and mucous membranes of the mouth. Some cases (about 5%) are subclinical or exceedingly mild in nature.

Adults tend to suffer with more severe disease than children. Rarely, the disease may be fatal.

Complications include secondary bacterial infection of the skin lesions, primary varicella pneumonia, aseptic meningitis, encephalitis and Reye's syndrome (acute encephalopathy with fatty infiltration and dysfunction of the liver).

Newborns and immunosuppressed patients are at greatly increased risk of severe chickenpox.

#### Herpes zoster (shingles)

Herpes zoster or shingles is characterised by a predominantly unilateral vesicular eruption within a dermatome. It is often associated with severe pain that may precede lesions by 48–72 hours. The rash lasts up to several weeks depending on severity. The rash is often more widespread and persistent in immunosuppressed patients.

Patients must be carefully evaluated to ensure that there is no eye involvement when the rash involves the ophthalmic area of the face. Specialist treatment is mandatory in this case as blindness can result.

Incidence increases with age and children under 12 are rarely affected unless immunosuppressed or infected as infants.

A debilitating complication of herpes zoster in many (especially elderly) patients is prolonged pain (post-herpetic neuralgia) which may persist for months after resolution of the skin lesions.

## Method of diagnosis

Confirmation of the diagnosis is generally only required when the clinical picture is atypical. It is made by:

- isolation of the virus in cell cultures
- visualisation by electron microscopy
- serological tests for antibodies
- immunofluorescence on lesion swab or fluid
- nucleic acid testing or PCR.

**Information source - [http://www.health.vic.gov.au/ideas/bluebook/chicken\\_pox](http://www.health.vic.gov.au/ideas/bluebook/chicken_pox)**

## **Incubation period**

The incubation period is from two to three weeks and is usually 14–16 days. This may be prolonged in immunosuppressed persons or following immunoglobulin administration as passive immunisation against varicella.

## **Public health significance & occurrence**

Chickenpox is a highly contagious but generally mild disease and is endemic in the population. It becomes epidemic among susceptible individuals mainly during winter and early spring. More than 90% of cases are children under 15 years of age.

Herpes zoster (shingles) occurs in 20% of people, mostly when they are elderly due to the reactivation of latent virus from the dorsal root ganglia.

## **Reservoir**

Humans.

## **Mode of transmission**

Chickenpox transmission is mainly person to person by airborne respiratory droplets but also by direct contact with vesicle fluid of chickenpox cases, or contact with the vesicle fluid of patients with herpes zoster. Indirect contact occurs through articles freshly soiled by discharges from vesicles of infected persons. Scabs are not infective.

## **Period of communicability**

It is usually communicable for one to two days (up to five days) before the onset of the rash, continuing until all the lesions are crusted. Communicability may be prolonged in patients with altered immunity.

Those with zoster are considered infectious for a week after lesions appear when they are moist.

## **Susceptibility & resistance**

Chickenpox is highly infectious, herpes zoster much less so. Over 80% of non-immune household contacts of a case of chickenpox will become infected. Non-immune people exposed to shingles cases will develop chickenpox (not zoster) if they become infected.

Second attacks of chickenpox are rare but do occur.

Infection remains latent and can recur years later as shingles.

Patients who are at high risk of severe disease/complications if they do not have immunity include:

- infants less than one month old
- pregnant women
- immunosuppressed individuals including those with haematological malignancies, on chemotherapy, high dose steroids or with HIV infection.

## **Control measures**

### **Preventive measures**

In Australia, the varicella vaccine is recommended for non-immune, healthy individuals aged 12 months or older.

It provides protection against infection in 70–90% of individuals.

Non-immune individuals who should be specifically targeted for vaccination include:

- household contacts of immunosuppressed people
- health care workers
- those working with young children
- women contemplating pregnancy
- parents of young children.

Vaccination is contraindicated in immunosuppressed people and pregnant women. For further details see the current edition of the Australian immunisation handbook (National Health and Medical Research Council).

Immunosuppressed people and newborns should be protected from exposure. If exposure has occurred in these persons varicella zoster immune globulin (VZIG) is effective in modifying or preventing the disease if given within 96 hours of exposure. VZIG is available from the Australian Red Cross.

### **Control of case**

#### **Varicella (chickenpox)**

In the non-hospitalised patient with a normal immune system and uncomplicated varicella, aciclovir is not recommended because the benefits are only marginal. In immunocompromised patients with severe disease and in normal patients with complications of varicella (such as pneumonitis or encephalitis) aciclovir may be used. Consult the current version of Therapeutic guidelines: antibiotic (Therapeutic Guidelines Limited).

General measures include:

- tepid bathing or cool compresses may help to alleviate itching
- exclude from school until fully recovered, or at least five days after eruption first appears. Some remaining scabs are not a reason for continued exclusion
- advise adults to stay away from work for the same period
- avoid contact with high risk susceptible persons.

Aspirin should never be given to children with varicella due to a strong association with the development of Reye's syndrome.

#### **Herpes zoster (shingles)**

Some antiviral medications (famciclovir, valaciclovir or aciclovir) have been shown to be effective for treatment of varicella zoster infections in patients with a rash less than 72 hours old. It gives pain relief, accelerates healing and may be of benefit in reducing the incidence of post-herpetic neuralgia. The addition of corticosteroids in selected patients may also speed resolution.

More intensive treatment is warranted in high risk patients. Consultation with an infectious diseases physician is advised. Adequate analgesia should not be forgotten.

### **Control of contacts**

Significant contact is defined as face-to face contact for at least five minutes, being in the same room for greater than one hour or household contact.

#### **Varicella vaccination**

Vaccination may be used to prevent or attenuate illness if given to susceptible contacts within five days (preferably 72 hours) of first exposure.

#### **Varicella zoster immunoglobulin (VZIG)**

High risk susceptible contacts where vaccination is not indicated such as neonates, pregnancy and immunosuppressed persons should be offered varicella-zoster immune globulin (VZIG) within 96 hours of exposure. If vaccination is not contraindicated this should follow at least 3 months later. (See the current edition of the Australian immunisation handbook, National Health and Medical Research Council, for further details and supply.)

Contacts should not be excluded from school.

Any non-immune person admitted to hospital who has a known exposure to varicella should be isolated during days 10–21 after exposure or up to 28 days if immune globulin given to reduce the risk of spread to immunosuppressed patients.

### **Special settings**

#### **School**

Children with chickenpox are excluded for at least five days after the rash appears. A few remaining scabs are not a reason for continued exclusion. Children with shingles can attend school if the lesions can be covered adequately however exclusion from swimming and contact sports should be advised for seven days after the rash appears.

Parents of children with immunosuppressive diseases should be advised of cases of chickenpox in the school as they may wish to voluntarily exclude their own child.

### **Immunosuppressed and their household contacts**

Immunosuppressed people, in particular those with haematological malignancies, are at high risk of more severe infection. VZIG should be offered to these patients if exposed. Recommend vaccination of susceptible household contacts of these patients.

### **Pregnancy**

Varicella infection during the first trimester of pregnancy confers a small risk of miscarriage. Maternal infection before 20 weeks may rarely result in the foetal varicella zoster syndrome, with the highest risk (2%) occurring at 13–20 weeks. Clinical manifestations include growth retardation, cutaneous scarring, limb hypoplasia and cortical atrophy of the brain.

Intrauterine infection can also result in herpes zoster in infancy. This occurs in less than 2% of infants. The highest risk is associated with infection in late pregnancy.

In the third trimester, maternal varicella may precipitate the onset of premature labour.

Severe maternal varicella and pneumonia at any stage of pregnancy can cause foetal death.

Susceptible pregnant women who have been exposed during pregnancy should seek specialist obstetric advice. They may be offered zoster immune globulin (VZIG) and antivirals (famciclovir, valaciclovir or aciclovir), especially where delivery is imminent.

Where chickenpox develops in pregnancy, early medical review within 24 hours of rash onset is indicated to consider treatment options.

### **Newborns**

Where newborns develop varicella before ten days of age or when maternal chickenpox develops within seven days prior to delivery and up to 48 hours postpartum, the neonatal fatality rate is up to 30% without treatment. Treatment of mothers and of babies once born is vital.

Premature babies and infants less than one month old who develop varicella may require specific treatment. Seek expert advice.

### **Health care workers**

On commencement at a new workplace all health care workers with an uncertain history of varicella infection should be serotested and offered immunisation if susceptible.

If a rash develops in the three weeks after immunisation, the worker should be removed from patient contact until varicella is excluded or lesions have crusted over.

If a health care worker is exposed to a confirmed case of varicella or herpes zoster they may continue working with patient contact if they have a history of previous infection or immunisation. They should be advised to report any febrile symptoms or rash developing within three weeks of exposure and then avoid patient contact until varicella is confidently excluded.

If the worker is susceptible and has been exposed, vaccination within five days of exposure is indicated. They should report rash occurring within six weeks of vaccination and avoid patient contact as above. If vaccination is refused, no patient contact should take place between days 10–21 after first exposure.

### **Shingles in a health care worker**

Workers should not care for high risk patients until lesions have crusted over. Other patients can be cared for as long as lesions can be adequately covered.

## **Outbreak measures**

Timely vaccination of susceptible contacts is indicated to contain an outbreak