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Guideline Objective

This guideline aims to ensure that systems are in place to prevent and control infection and communicable disease by underpinning national polices. It outlines the criteria, responsibilities and systems required to manage specific conditions/ infections. The goal of this guideline is to protect patients, staff and the public by effective prevention and control of infection and communicable disease.


Compliance with this guideline is best practice. If you have any concerns please discuss with your line manager who will consult the local Infection Control/Health Protection Team for advice

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1. INTRODUCTION

The varicella-zoster virus (VZV) is the cause of two common clinical conditions: chickenpox (varicella) and shingles (herpes zoster). Chickenpox is an acute, infectious disease and is most commonly seen in children under 10 years old. This virus, if re-activated in a person who has had chickenpox previously, can cause shingles. Shingles tends to be more prevalent in adults.

It is not possible to develop shingles from exposure to a person with chickenpox. It is possible however, to develop chickenpox as a result of exposure to a person with shingles.

Chickenpox occurs throughout the year but it is most common in winter and spring. The majority of people are infected in childhood and remain immune for life.

2. TRANSMISSION

Chickenpox is an acute infectious disease, which is transmitted from person to person by:

- direct contact, droplet, or aerosol from vesicular fluid of skin lesions
- secretions from the respiratory tract
- indirectly via contaminated articles

The incubation period is between 10 - 21 days. The virus enters the individual through the upper respiratory tract. The infectious period is from 1 - 2 days before the onset of rash until the vesicles (blisters) are dry, which is usually 4 - 5 days after the onset of rash. This may be prolonged in immunosuppressed patients.


In healthy individuals, clinical illness after re-exposure is rare; such illness is more likely to occur among immunocompromised persons.

If susceptible individuals are exposed, they should be considered infective for 2 days before symptoms develop and for 10 - 21 days after exposure (unless symptoms of chickenpox develop).

3. SYMPTOMS OF CHICKENPOX AND SHINGLES

Chickenpox may initially begin with cold-like symptoms followed by a high temperature and an intensely itchy vesicular rash. Clusters of vesicular spots appear over 3-5 days, which start on the face and scalp, spreads to the trunk, abdomen and limbs. The severity of infection varies and it is possible to be infected but show no symptoms.

Shingles may appear following the reactivation of the chickenpox virus, which can lay dormant in the nervous tissue for several years. It is not known what causes the virus to reactivate but

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reactivation is usually associated with conditions that depress the immune system such as old age, immunosuppressive therapy and HIV infection.

The first sign of shingles is usually pain in the area of the affected nerve. A rash of fluid-filled blisters then appears in the affected area, typically only on one side of the body. This rash is usually present for about seven days but the pain may persist for longer. Persistent pain is more common in elderly people and is termed ‘post herpetic neuralgia’. On average this lasts for 3 to 6 months although it can continue for years.


4. INFECTION CONTROL PRECAUTIONS AND PREVENTION OF SPREAD

4.1. PATIENT MANAGEMENT

- 4.1.2** The diagnosis of chickenpox and shingles can generally be reliably made on clinical grounds. Therefore swabs or specimens do not need to be sent for laboratory analysis unless specifically requested.
- 4.1.3** All patients in hospital or in the care home setting with suspected or known chickenpox or shingles will require source isolation until all lesions have dried. Immunocompromised patients may require a longer period of isolation. (*Refer to Section C - Infection Control and Patient Care, Control of Infection Manual (CIM)*).
- 4.1.4** Patients may return to nursery, school or work once they are well and the vesicles are dry (usually 5 -10 (4-5 days is mentioned above in section 2)days from the onset of the rash).
- 4.1.5** Patients with chickenpox or shingles should receive their care from staff that are immune.
- 4.1.6** High-risk groups are pregnant women, neonates and immunosuppressed patients (see 9.0). The immune status of any member of staff who has had contact with VZV can be checked by Occupational Health.

4.2. STAFF MANAGEMENT

- 4.2.1.** Staff who have been in contact with chickenpox and who work with, immunocompromised, obstetric or neonatal patients, should inform Occupational Health. If susceptible and in contact with a case, the infection control team should also be informed.
- 4.2.2.** Staff diagnosed or suspected of having chickenpox should stay off work until the lesions have scabbed over; inform Occupational Health.
- 4.2.3.** Staff working in close contact with patients and diagnosed or suspected as having shingles, which present in exposed areas i.e. extremities, should be excluded from work until the lesions have scabbed over.

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5. INFECTION PREVENTION AND CONTROL

All interventions carried out by healthcare workers must follow Standard Infection Control Precautions (SICP's) and, in addition, Transmission Base Precautions (TBP's) – Contact Precautions (both are identified in *Section C - Infection Control and Patient Care, CIM*).

5.1. HAND HYGIENE

- 5.1.1** Aerosol, droplet and contaminated hands are the most common routes of transmission of infection.
- 5.1.2** Hands must be decontaminated after contact with a patient, after completing any task, following the use of any equipment or removing Personal Protective Equipment (PPE). This must be done using liquid soap and water following the six-step hand washing technique-ensuring hands are thoroughly rinsed and then dried using disposable paper towels. (Refer to *Section H - Guideline For Hand Hygiene, CIM*).

5.2. PERSONAL PROTECTIVE EQUIPMENT (PPE)


- 5.2.1** Disposable non-powdered latex gloves and a disposable plastic apron must be worn whenever there is contact with a patient known or suspected of having chickenpox or shingles. (Refer to *Section C - Infection Control and Patient Care, CIM*)

5.3. CLEANING AND DECONTAMINATION

- 5.3.1** All equipment that has come into contact with the patient or their environment must be cleaned and disinfected. (Refer to *Section I - Decontamination of Equipment and the Environment (including the use of single-use and single-patient use items)*).
- 5.3.2** In any healthcare setting, thorough and rigorous cleaning and decontamination of the environment is essential to prevent transmission of organisms that can cause infection (Refer to *Section I - Decontamination of Equipment and the Environment (including the use of single-use and single-patient use items)*).
- 5.3.3** Additional cleaning (terminal) of the environment should be undertaken when a patient with a known or suspected case of chickenpox or shingles has been discharged. (Refer to *Section I - Decontamination of Equipment and the Environment (including the use of single-use and single-patient use items)*).

6. TREATMENT

There is no specific treatment for chickenpox. It is a viral infection so will not respond to antibiotics. Chickenpox in otherwise healthy children is unlikely to result in complications and

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active treatment is not usually required. Treatment should be based on reducing symptoms such as fever and itchiness.

Shingles can be treated with oral antiviral drugs such as acyclovir. Data is inconclusive about the benefits of giving antiviral drugs such as acyclovir to adolescents and adults with chickenpox.

People at higher risk of developing serious complications from chickenpox or shingles may be given antiviral drugs such as acyclovir and/or immunoglobulin, which may prevent severe illness developing. In these circumstances seek advice either from an Infectious Diseases Specialist (Monklands Hospital ☎ 01236 748748).

7. MANAGEMENT OF AT-RISK INDIVIDUALS FOLLOWING SIGNIFICANT EXPOSURE TO CHICKENPOX OR HEPRSES ZOSTER

The aim of post-exposure management is to protect individuals at high risk of suffering from severe varicella (see below) and those who might transmit infection to those at high risk. No benefit once chickenpox is present, therefore give within 10 days of exposure.

VZIG prophylaxis is recommended for individuals who fulfil all of the following three criteria:

- Significant exposure to chickenpox or herpes zoster
- A clinical condition that increases the risk of severe varicella (see below – high risk groups)
- No antibodies to VZV

7.1. POTENTIAL HIGH RISK PATIENTS

Certain groups of people such as neonates (infants within the first four weeks of life), pregnant women and those who are immunocompromised due to illness or treatments such chemotherapy or high dose steroids, may experience more serious complications. These include viral pneumonia, secondary bacterial infections and encephalitis.


7.2. PREGNANCY

Although most women of childbearing age are immune to VZV, chickenpox in pregnant women is associated with a risk of transmission to the foetus or the newborn. The risk of infection to the foetus and the neonate is related to the time of infection in the mother.

7.2.1. GESTATIONAL AGE: LESS THAN 20 WEEKS

Transmission of infection can result in congenital varicella syndrome (around 1%), which includes limb hypoplasia, microcephaly, cataract, growth retardation, cutaneous scarring and other congenital anomalies. Mortality associated with this syndrome has been reported.

GESTATIONAL AGE: 20 - 37 WEEKS

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Transmission of infection during this stage can result in shingles in an otherwise healthy infant. Shingles can occur in an infant up to 1 year of age.

A WEEK BEFORE TO A WEEK AFTER DELIVERY


Transmission of infection during this stage can result in severe and even fatal disease in the neonate. These infants are exposed to VZV without sufficient maternal antibody to lessen the severity of disease. The highest period of risk appears to be 5 days before to 2 days after delivery.

Management of a pregnant woman exposed to chickenpox or shingles should be discussed with an obstetrician and/ or midwife, who will contact the microbiologist and, if appropriate, arrange for the booking blood to be tested. In the case of a neonate a paediatrician, in conjunction with a Consultant in Infectious Diseases and microbiologist:

- Shingles infection in a pregnant woman does not pose a risk to the mother or unborn baby.
- Neonatal varicella is a serious illness associated with a mortality rate up to 25 percent

7.2.2. VZIG SHOULD BE GIVEN TO:

- Newborn babies of mothers developing a chickenpox (but not shingles) rash 5 days or less before delivery and up to 7 days after delivery, with the greatest risk being up to 2 days after delivery. The newborn lacks the benefit of maternal antibody and is at risk of developing chickenpox, usually between 5 - 10 days of age with a mortality rate of 20 - 30%.
- Neonates born to seronegative mothers who have been exposed to chickenpox or shingles in the first month of the baby's life, have an increased risk of severe chickenpox infection. The maximum benefit of VZIG occurs if given within the first 7 days of life with rapidly decreasing effect thereafter. The decision to give VZIG is dependent on most current advice and should (as for all other cases) be discussed with the Infections Diseases Consultant, Monklands Hospital 01236 748748.
- Babies, born to seropositive mothers, being discharged home where there is a household member with chickenpox or shingles should also be considered for VZIG.
- Babies less than 28 weeks gestation or less than 1 kg in weight at the time of exposure to chickenpox should receive VZIG regardless of maternal VZV antibody status. Mother and baby can remain together in isolation on the ward. If the infant develops infection, acyclovir should be commenced 10 mg/kg dose given 8 hourly.
- Neonatal chickenpox can still develop in infants who have received VZIG. In up to two thirds of these infants infection is mild, but rare fatal cases have occurred.

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7.2.3. VZIG IS NOT REQUIRED (SINCE MATERNAL ANTIBODY WILL BE PRESENT) FOR:

- Infants aged less than 1 month with a positive maternal history of varicella and/or positive maternal antibody result. Infants whose mothers develop zoster before or after delivery.

Maternal antibody in the baby starts to wane after 2 months of age.

7.3. IMMUNOCOMPROMISED PATIENTS

Patients receiving systemic high-dose steroids (see below)

Whenever possible, immunosuppressed contacts should be tested irrespective of their history of chickenpox. Antibody levels should be checked, if VZ antibodies are present, giving more VZIG will not affect their immune response. Therefore, no special precautions are required.

7.3.1. VZIG should be given to non-immune exposed patients as follows:


- Children who within the previous 3 months have received prednisolone, orally or rectally, at a daily dose of 2 mg/kg/day for at least one week or 1 mg/kg/day for one month.
- Adults who have received a dose of around 40 mg prednisolone per day for more than one week in the previous 3 months. There is no evidence that topical or inhaled corticosteroid preparations are associated with an increased risk of severe chickenpox.
- VZIG should be given to patients exposed to chickenpox or shingles who have had a bone marrow transplant within the previous 6 months.

7.3.2. VZIG should also be given to the following on exposure to chickenpox or shingles:


- Symptomatic HIV positive patients
- Patients on cytotoxic drugs
- Patients who have received an organ transplant and are on immunosuppressive treatment.
- Other immunocompromised patients

8. PRACTICALITIES OF ISSUING VZIG

- VZIG will be issued on confirmation of a lack of immunity in a contact of varicella infection. Stocks of VZIG are held by Microbiology Department (only Wishaw) or the Blood Transfusion Service.

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- VZIG will be detectable in the blood for 3 months. But if a second exposure occurs after 3 weeks, a further dose will be required.
- Patients who receive VZIG are potentially incubating the illness and therefore may become infective. Giving VZIG extends 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.
- VZIG is a Prescription only medicine (POM) and needs to be prescribed in the casenotes / cardex

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