5/Disease specific assessment guidelines

5.1 CHICKENPOX/VARICELLA-ZOSTER VIRUS (VZV)

NOTIFIABLE (hospitalised cases only)

RECOMMENDATIONS

Offer test to:

- All healthcare workers (HCWs), unless known to be immune
- Migrant women of childbearing age
- Immunocompromised individuals and their household contacts

Vaccinate non-immune:

- HCWs
- Non-pregnant women of childbearing age
- Healthy close household contacts of immunocompromised individuals
- Some immunocompromised people may be vaccinated, e.g. those with lymphocytic leukaemia in remission, transplant recipients and some children and adults with HIV infection.

Non-immune individuals in specific groups should seek urgent medical advice (as soon as possible after exposure and ideally within 96 hours) if exposed to varicella or zoster as varicella-zoster immunoglobulin (VZIG) may be indicated:

- Non-immune women who have been exposed to varicella or zoster during pregnancy.
- Infants born to non-immune mothers who have been exposed to maternal varicella from 7 days before to 7 days after delivery.
- Non-immune infants exposed to varicella or zoster (other than in the mother) during the first 7 days of life.
- Non-immune infants of any age in Special Care Baby Unit (SCBU) exposed to varicella or zoster.
- Non-immune immunocompromised individuals who have been exposed to varicella or zoster.

Chickenpox is caused by the varicella-zoster virus (VZV). A primary infection results in chickenpox which is an acute exanthematous disease of childhood. The virus may reactivate in later years resulting in the clinical syndrome of herpes zoster (shingles). In September 2011, chickenpox (hospitalised cases only) became notifiable in Ireland. Outbreaks are notifiable since January 2004.

Epidemiology

The mean age at which people are infected with varicella in tropical countries tends to be older (10-15 years) than in colder countries (4-5 years). In certain tropical regions (such as Sri Lanka and the Caribbean) adults over 35 years of age may still be susceptible to varicella.

In Ireland sentinel data from 2012 showed that 54% of chickenpox cases occurred in children under five years of age.[1]

Rationale for assessment

The rationale for assessment of VZV status in migrants is as follows:

- Rates of immunity to VZV are lower in some migrant countries of origin, leaving migrants from these countries vulnerable to infection. This is particularly the case in tropical countries like Sri Lanka, the Caribbean and Singapore.[2]
- Close living conditions, especially for asylum seekers in direct provision, facilitate transmission.
- There are risks of serious consequences in pregnant women and immunocompromised people.[3]
- Chickenpox is preventable by vaccination.[4]
- VZV immunoglobulin is available for post-exposure prophylaxis.[1]

Assessment

The following indications for VZV assessment and vaccination are based on NIAC guidelines.[1]
Antibody testing for VZV should be offered to:

- Healthcare workers (HCW) including laboratory staff unless known to be immune i.e. immunise those without a definite history of chickenpox, proof of immunity or vaccination status. HCWs from outside Ireland and Western Europe are less likely to be immune.
- All migrant women of childbearing age.
- Other at-risk groups e.g. those who are immunocompromised (including HIV infected children and adults) and their household contacts.

All pregnant women who are antibody negative for VZV should be given their result in writing with appropriate advice on exposure to chickenpox during pregnancy such as:

- They should avoid contact with people with a febrile rash illness during their pregnancy.
- If contact has occurred with a person with chickenpox they should immediately notify their GP or obstetrician of the contact.
- They should not attend routine antenatal clinics between days 10 and 28 following exposure to prevent further exposure of other non-immune pregnant women. If the visit is essential they should be seen in a single room.
- If contact of the new-born with a person with chickenpox occurs within the first seven days of life, or more than seven days for premature or low birth-weight infants in SCBU, the woman should notify their GP or paediatrician immediately.

Accommodation centres with cases of chickenpox should not admit non-immune pregnant women **until 28 days after the onset of the last case.**

Immunocompromised persons may be at risk of serious varicella infection (e.g. those who have primary and acquired immune-deficiency disorders, neoplastic diseases, and those receiving immunosuppressive treatment) and therefore specific accommodation requirements should be informed by a risk assessment. The Reception and Integration Agency (RIA) retains the services of an Independent Medical Referee to adjudicate on requests for particular arrangements for a resident in direct provision (based on medical need).

Vaccination

- Non-immune HCWs including laboratory staff.
- All women of childbearing age without a history of varicella infection should have their immunity checked. Women with negative serology should be vaccinated prior to or after pregnancy. Pregnancy should be avoided for three months following either dose.
- Non-immune household contacts of immunocompromised persons at risk of serious varicella infection should be vaccinated against VZV.
- Some immunocompromised patients may be vaccinated, e.g. those with lymphatic leukaemia in remission and transplant recipients – see Chapter 3 Immunisation Guidelines for Ireland 2013. NIAC.[1]
- Non-immune HIV infected children aged >12 months with asymptomatic or mildly symptomatic HIV infection and CD4 count ≥15% -see Chapter 3 Immunisation Guidelines for Ireland 2013. NIAC.[1]
- Non-immune HIV infected adults if CD4 count ≥400 cells x 10^6/L give 2 doses (1 month interval). If CD4 count is ≥200 but <400x 10^6/L patients can receive varicella vaccine if stable on antiretroviral therapy. If CD4 count is <200x $10^{6/L}$ varicella is contraindicated -see Chapter 3 Immunisation Guidelines for Ireland 2013 NIAC.[1]

Note: Women of childbearing age should be advised to avoid pregnancy for three months after vaccination.

If a post-vaccination rash occurs they should avoid contact with persons who are at risk for severe complications. At-risk are:

- immunocompromised individuals
- non-immune pregnant women
- infants of non-immune mothers in the first week of life
- non-immune infants in a Special Care Baby Unit (SCBU).

Post exposure prophylaxis with varicella zoster immunoglobulin (VZIG)

The aim of post exposure prophylaxis is to protect individuals at high risk of developing severe varicella disease and those who may transmit infection to those at high risk (such as healthcare workers or household contacts). VZIG provides short-term protection. Antiviral agents may be indicated in those at high risk of complications, e.g. immunocompromised. Expert opinion e.g. Obstetric, Infectious Diseases, Public Health Medicine, should be sought in these cases.

VZIG prophylaxis is recommended for individuals who fulfil all of the following three criteria:
1. Have had significant exposure to varicella or zoster (see Table 5.1.1)
and
2. Have a clinical condition that increases the risk of severe varicella (e.g. immunocompromised, pregnant women, neonates in the first week of life born to non-immune women, babies in Special Care Baby Units)
and
3. Are non-immune (no antibodies to VZ virus).

Significant exposure is defined based on the following:
1. Type of VZV infection in the index case.
2. Timing of exposure in relation to the onset of rash in the index case.
3. Proximity and duration of contact.

Table 5.1.1 Defining significant exposure[1]

Criteria for defining significant exposure		
Type of VZV infection in index case	**Timing of exposure in relation to onset of rash in index case**	**Proximity and duration of contact (any of the following)**
Varicella	From 48 hours before onset of rash until crusting of lesions	Household contact Contact in same room* for significant period (usually 1 hour or more) Face to face contact such as when having conversation (usually >5 minutes)
Disseminated zoster or extensive exposed lesions in an immunocompetent individual	From 48 hours before onset of rash until crusting of lesions. For zoster, from appearance of vesicles until crusting	
Localised exposed zoster Localised or disseminated zoster in an immunosuppressed person	Day of onset of rash until crusting of lesions	

**An example of 'same room' is a classroom or 2-4 bedded hospital bay. However, because airborne transmission at a distance has been reported in large open wards, the need of giving VZIG to all susceptible high-risk contacts should be considered, particularly in paediatric wards where the degree of contact may be difficult to define.*

Source: Immunisation Guidelines for Ireland 2013

Non-immune individuals in specific groups should seek urgent medical advice (as soon as possible after exposure and ideally within 96 hours) if exposed to varicella or zoster as varicella-zoster immunoglobulin (VZIG) may be indicated:

- Non-immune women who have been exposed to varicella or zoster during pregnancy.
- Infants born to non-immune mothers who have been exposed to maternal varicella from 7 days before to 7 days after delivery.
- Non-immune infants exposed to varicella or zoster (other than in the mother) during the first 7 days of life.
- Non-immune infants of any age in Special Care Baby Unit (SCBU) exposed to varicella or zoster.
- Non-immune immunocompromised individuals who have been exposed to varicella or zoster.

For detailed algorithms on the use of VZIG see the Varicella-Zoster Chapter 23 in the Immunisation Guidelines for Ireland 2013 edition available from:
http://www.hse.ie/eng/health/immunisation/hcpinfo/guidelines/immunisationguidelines.html

References

(1) National Immunisation Advisory Committee. Immunisation Guidelines for Ireland 2013 [Internet]. Available from: http://www.hse.ie/eng/health/immunisation/hcpinfo/guidelines/immunisationguidelines.html

(2) Christiansen D, Barnett ED. Comparison of varicella history with presence of varicella antibody in refugees. Vaccine. 2004;22:4233-7.

(3) Pastuszak AL, Levy M, Schick B, et al. Outcome after maternal varicella infection in the first 20 weeks of pregnancy. N Engl J Med. 1994;330:901-5.

(4) Seward JF, Marin M. Varicella vaccine effectiveness in the US vaccination program: a review. J Infect Dis. 2008;197 Suppl 2:S82-9.