23 Varicella-Zoster

VARICELLA HOSPITALISATION NOTIFIABLE
OUTBREAK NOTIFIABLE

In some circumstances, advice in these guidelines may differ from that in the Summary of Product Characteristics of the vaccines. When this occurs, the recommendations in these guidelines, which are based on current expert advice from NIAC, should be followed.

Key Changes

- Active untreated tuberculosis is a contraindication to varicella vaccine.
- Updated algorithm on varicella vaccination of health care workers.
- Herpes zoster vaccine (Zostavax) should be given subcutaneously.
- Concomitant administration of Herpes zoster vaccine and pneumococcal polysaccharide vaccine (PPV23) is acceptable.
- Post exposure prophylaxis
  - Updated criteria for defining significant exposure to varicella zoster virus (VZV).
  - Updated algorithms for use of varicella zoster immunoglobulin (VZIG) in neonates, pregnant women and immunocompromised persons.
  - Updated VZIG dose.

Chapter 23 Varicella- Zoster

23.1 Introduction

Varicella- zoster virus (VZV) is one of eight herpes viruses known to cause human infection and is distributed worldwide. Two distinct clinical syndromes are associated with VZV infection - varicella (chickenpox) and herpes zoster (shingles).

Primary infection results in varicella, an acute exanthematous disease. The virus becomes latent in the cells of the dorsal root or cranial nerve ganglia and may reactivate after a period, which may be several decades. Reactivation results in herpes zoster.

23.2 Epidemiology

VZV is very infectious; one case of primary varicella potentially infects 10-12 susceptible people (R^0 10-12).

In Ireland, the incidence of varicella is seasonal, reaching a peak between January and April. Transmission is by inhalation of respiratory droplets, by direct contact with vesicular fluid, or by contact with fomites. VZV can be transmitted from individuals with zoster to non-immune contacts resulting in varicella. Such transmission is infrequent and is dependent on direct or indirect contact, including inhalation, from non-intact vesicles.

The incubation period is from 10 to 21 days, the majority develop disease between 14 and 16 days. The incubation period may be prolonged up to 28 days in immunocompromised patients and in individuals who have received specific varicella-zoster immunoglobulin (VZIG).

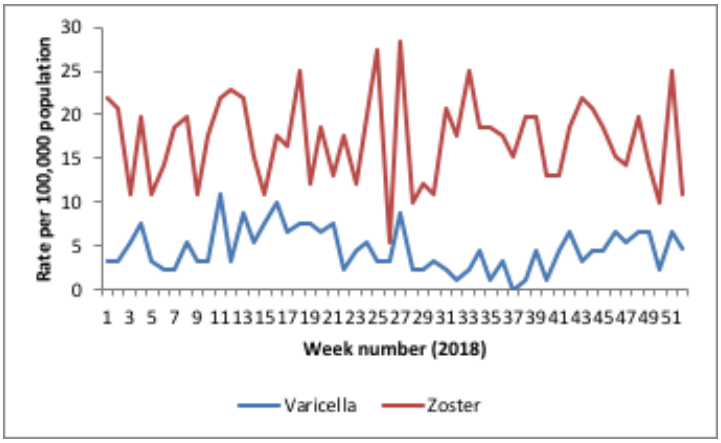
Cases of varicella are infectious from 2 days before the appearance of the rash until all of the lesions have crusted, typically a total of 7 days. This may be prolonged in immunosuppressed individuals. In the family setting, the secondary attack rate ranges from 60-90% for susceptible persons.

The period of infectivity of zoster is typically 5 days, from the appearance of the lesions until all lesions have crusted. Viral load and/or viral shedding may be increased with increased risk of transmission if the lesions are exposed or disseminated, or from immunosuppressed patients with localised zoster on any part of the body.

In Ireland, hospitalised cases of varicella became notifiable in 2011. In 2018, there were 99 varicella hospitalised cases notified and one reported death. These data likely considerably underestimate the true burden of this disease. Varicella and zoster incidence in the community is estimated from data

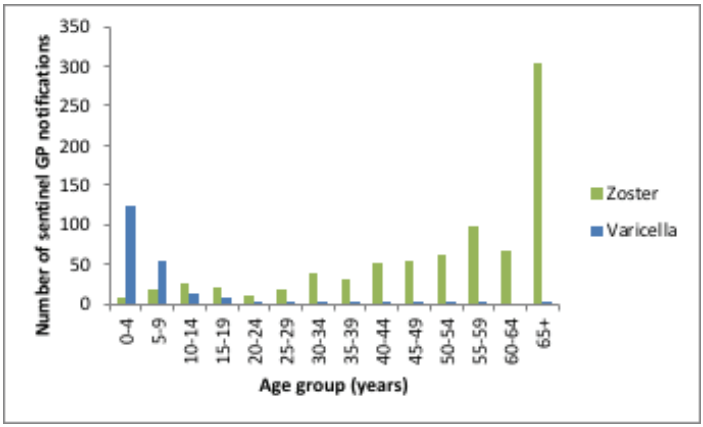
obtained from the sentinel surveillance system of the Irish College of General Practitioners (ICGP)/ Health Protection Surveillance Centre (HPSC) (Figure 23.1).

Figure 23.1 Varicella and zoster rates per 100,000 population by week 2018
Source: ICGP/HPSC sentinel surveillance



Fifty-seven per cent of notified varicella cases in 2018 occurred in children <5 years of age. Sixty-seven per cent of notified zoster cases in 2018 were aged ≥45 years (Figure 23.2).

Figure 23.2. Varicella and zoster notifications from sentinel GP sites, 2018
Source: ICGP/HPSC sentinel surveillance



In the USA prior to the introduction of routine childhood varicella vaccination, adults had a 25 times greater risk and infants a 4 times greater risk of dying from varicella than did children 1-4 years old. Since the introduction of varicella vaccine in the U.S. in 1995 the number of hospitalisations and fatalities from varicella has decreased markedly.

23.3 Effects of varicella

Varicella is typically a benign infection of childhood characterised by a generalised pruritic vesicular rash. A mild prodrome of fever and malaise may occur, more commonly in adults. The rash usually starts on the head and progresses to the trunk and extremities. The rash may involve mucous membranes (mouth, respiratory tract, vagina, conjunctiva and cornea). The rash progresses from macules to papules to vesicular lesions that crust over as they dry. Successive crops appear over several days. The number of lesions ranges from a few to hundreds.

In children, the clinical course is generally mild with malaise, pruritus and fever for 2-3 days. Complications are uncommon in childhood and include superinfection (usually with Group A streptococcus), skin scarring, encephalitis, pneumonia, glomerulonephritis, myocarditis, hepatitis and coagulopathy. The risk of complications is higher in infants aged $\leq$ 1 year and in persons aged $\geq$ 15 years, particularly pregnant women, smokers, and the immunocompromised.

Diagnosis is primarily clinical. If necessary, diagnosis can be confirmed from a swab of vesicular fluid by culture or biopsy for electron microscopy. Serology is also available and can be used to demonstrate immunity.

Recovery from varicella usually results in lifelong immunity. Recurrent disease is rare but is more likely in immunocompromised individuals.

23.3.1 Varicella infection during pregnancy

Varicella infection during pregnancy carries an increased risk of severe varicella pneumonia in the mother, especially late in the second and early in the third trimester. Risks to the foetus and neonate are related to the timing of maternal infection.

23.3.2 Congenital varicella syndrome

In a large prospective study of maternal varicella, the incidence of congenital varicella syndrome was < 1% in the first 12 weeks of pregnancy,

approximately 2% between 13 and 20 weeks, with no cases after 20 weeks gestation.

Effects include limb hypoplasia, microcephaly, cataracts, growth retardation and skin scarring. Congenital varicella syndrome is associated with a mortality rate of 30% in the first few months of life.

Maternal varicella during pregnancy is also associated with the subsequent development of zoster during childhood. In a study published in 1994, ten children of 1373 women with primary varicella during pregnancy, developed childhood zoster.

Congenital varicella syndrome following maternal zoster is extremely rare.

23.3.3 Neonatal varicella

Varicella occurring in a mother within 1 week before and 1 week after delivery is associated with an increased risk of neonatal infection. The highest risk is associated with maternal infection from 5 days before to 2 days after delivery, with a mortality rate up to 30% in the infant. Postnatally acquired varicella that occurs ≥10 days after birth is typically mild. However, because of their relative immunologic immaturity, newborns are at greater risk for acquiring severe disease than are older infants or children.

23.3.4 Varicella in immunocompromised persons

Those at increased risk of severe complications include immunocompromised patients, especially those who have leukaemia or other disorders in which there is depressed cell mediated immunity and solid organ transplant recipients on ongoing immunosuppressive treatment. Patients with rheumatological diseases treated with tumour necrosis factor (TNF) antagonists are also at increased risk for more severe varicella infections compared with the general population.

23.4 Effects of herpes zoster

The individual lifetime risk of developing zoster is between 24% and 30%. Although zoster can occur at any age, incidence increases with age. Two-thirds of cases occur in individuals aged ≥50 years and the risk of developing the disease in those aged ≥85 years is 50%. Children are more likely to develop zoster if infection with varicella occurred during pregnancy or infancy.

Zoster is characterised by a vesicular rash localised in the sensory region of the affected ganglia, and is often preceded or accompanied by acute pain or itching. Headache, photophobia, myalgia and malaise may occur in the prodromal phase, which lasts 1-10 days (average 2 days).

The rash most commonly appears on the trunk, in one or two thoracic dermatomes (*localised zoster*), not typically crossing the midline. Less commonly, the rash can affect three or more dermatomes (*disseminated zoster*). This generally occurs in individuals with compromised immune systems. Disseminated zoster can be difficult to distinguish from varicella.

Zoster of the trigeminal nerve should be considered in a patient with a prior history of varicella presenting with blurred vision and a painless red eye. Urgent ophthalmological opinion should be sought.

New vesicles continue to form over three to five days and progressively dry and crust. The rash usually resolves in two to four weeks; permanent pigmentation changes and scarring may occur in the skin over affected dermatomes.

*Post herpetic neuralgia (*PHN) is a persistent pain lasting ≥30 days after the acute infection or after all lesions have crusted (9-45% of all cases) in the area of the rash. The pain can be severe and incapacitating and can persist for months and occasionally for years. Older adults are most likely to have PHN and to have longer lasting and more severe pain (13% or more people aged ≥60 years with zoster will develop PHN).

Diagnosis is primarily clinical. If necessary, diagnosis can be confirmed from a swab of vesicular fluid by culture or biopsy for electron microscopy. Serology is also available and can be used to demonstrate immunity.

23.5 Varicella vaccine

Varicella vaccine is a live attenuated viral vaccine derived from the Oka strain of VZV as a lyophilised preparation for reconstitution with a diluent. Varivax® (Oka/Merck) is the only licensed varicella vaccine currently available in Ireland.

Overall, two dose vaccine efficacy in younger children is between 86-98% and approximately 75% in adolescents and adults. Immunity appears to be long lasting in most individuals. Mild breakthrough infections may occur in a minority of recipients. The risk of breakthrough varicella is 2.5 times higher if

varicella vaccine is administered <4 weeks following MMR vaccine. There is no increased risk if varicella vaccine is given ≥4 weeks after MMR vaccine.

As the vaccine is less stable than other live virus vaccines, storage temperature requirements are critical to ensure optimum vaccine effectiveness. The unreconstituted vaccine and its diluent should be stored in the original packaging in a refrigerator at +2° to +8°C and protected from light. Following reconstitution, the vaccine should be used immediately. Discard any unused reconstituted vaccine after 30 minutes.

Dose and route of administration
The dose is 0.5 ml given IM or SC into the anterolateral thigh or deltoid region.

23.6 Recommendations

Varicella vaccination is not included as part of the routine childhood immunisation schedule. Vaccination may be considered for any non immune persons aged ≥12 months. Those who choose to have themselves or their child immunised should consult with their GP.

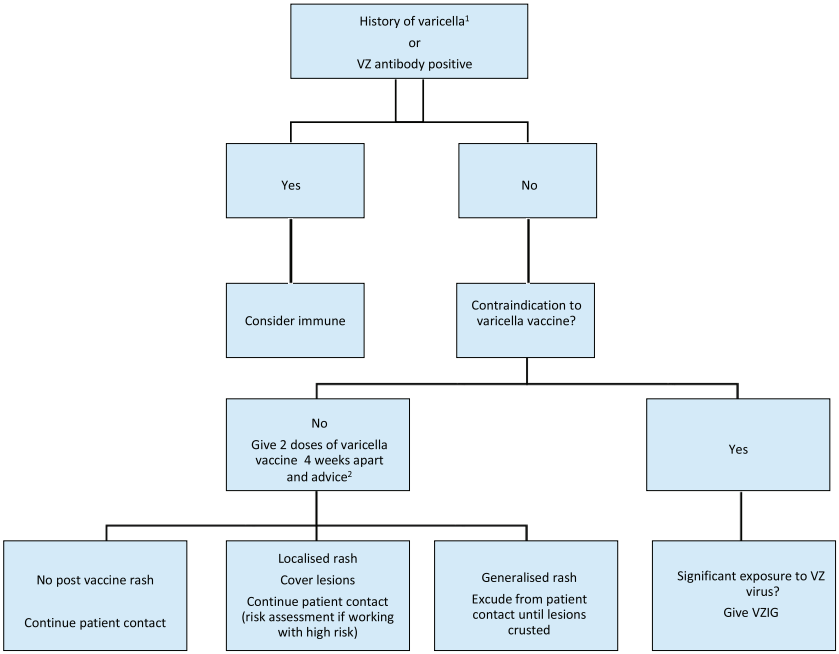
Two doses of varicella vaccine, at least 4 weeks apart, are recommended for **non-immune individuals** without a definite history of varicella, proof of immunity, or vaccination from 12 months of age in the following risk groups:

- Health care workers (HCWs) particularly those working with haematology, oncology, obstetric, paediatric or neonatal patients (see Figure 23.3)

  A history of varicella is a less reliable predictor of immunity in individuals born and raised overseas, and therefore routine testing should be considered in this group of HCWs. In addition, HCWs from outside Ireland and Western Europe are less likely to be immune so may also require serological testing to check immunity.
- Laboratory staff exposed to varicella virus in the course of their work.
- Some immunocompromised patients, e.g. those with lymphocytic leukaemia in remission, and transplant recipients following immune reconstitution (Chapter 3).
- Close household contacts of immunocompromised patients.
- Some HIV infected children (Chapter 3).
- Children in residential units with physical and intellectual disability. Those without a history of varicella should have their immunity checked.

- Non pregnant women of childbearing age. Those with negative serology should be vaccinated prior to or after pregnancy. Pregnancy should be avoided for 1 month following varicella vaccination.

Figure 23.3 Guidance on varicella vaccination of HCWs



[1] If born in Ireland or Western Europe
[2] Avoid salicylates for 6 weeks
Avoid pregnancy for 1 month
Consult occupational health if post vaccine rash appears

Contraindications

- Anaphylaxis to any of the vaccine constituents.
- Immunocompromise from disease or treatment (Chapter 3).
- Active untreated tuberculosis.
- Pregnancy.

Precautions

- Acute severe febrile illness, defer until recovery.
- Recent (3-11 months) receipt of an antibody-containing product (Chapter 2, Table 2.5).
- Aspirin-containing medicines should be avoided for 6 weeks after vaccination in children aged <16 years (potential risk of Reye syndrome).
- Receipt of some antivirals (e.g. acyclovir, famciclovir, or valacyclovir) 24 hours before vaccination.
- Pregnancy should be avoided for 1 month following vaccination.
- If not given at the same time as MMR vaccine, the vaccines should be separated by 4 weeks.

The following are NOT contraindications

- Pregnancy of recipient's mother or other close or household contact.*
- Immunodeficient family member or household contact.*
- Treatment with low dose (less than 2 mg/kg/day) alternate-day, topical, replacement, or aerosolised steroid preparations. (Chapter 3).
- Asymptomatic or mildly symptomatic HIV infection (CD4 count ≥15%). (Chapter 3).
- Humoral immunodeficiency (e.g. agammaglobulinaemia).
- Breast-feeding.

*If a vaccinee has a presumed vaccine-related rash 7-25 days after vaccination, they should avoid direct contact with immunocompromised persons, non-immune pregnant women and their newborn in the first week of life, and non-immune infants in neonatal units, for the duration of the rash.

Adverse reactions

Local: common: pain, redness, tenderness, varicella-like rash (injection site median 2 lesions)

General: very common: fever ≥ 38°C

common: fever ≥39°C, irritability, upper respiratory infection, measles/rubella-like rash, varicella-like rash (generalised median 5 lesions).

Transmission of vaccine virus can occur but the risk is very low and primarily occurs in the presence of a post-vaccination rash (see * above).

23.7 Herpes zoster vaccines

Herpes zoster vaccines are licensed for individuals aged ≥50 years to reduce the risk of developing zoster and postherpetic neuralgia. It is not necessary to determine whether patients have a history of varicella or zoster prior to vaccination because waning antibodies in previously exposed patients (particularly older adults) may lead to negative results despite past infection.

There are two licensed zoster vaccines:

- **Zostavax**®, live attenuated vaccine (designated zoster vaccine live [ZVL]. It is indicated for prevention of herpes zoster and herpes zoster-related post-herpetic neuralgia (PHN) in individuals aged ≥50 years.

- **Shingrix**®, non-live recombinant glycoprotein E vaccine (designated recombinant zoster vaccine [RZV]. It is indicated for prevention of herpes zoster (HZ) and post-herpetic neuralgia (PHN) in adults aged ≥50 years. It is currently not available in Ireland.

An up to date list of licensed and marketed vaccines can be accessed on the HPRA website www.hpra.ie

The vaccines should be stored at +2° to +8°C and protected from light. After reconstitution the vaccine should be used immediately. Discard any vaccine unused after 30 minutes.

Dose and route of administration
Zostavax: the dose is 0.65ml IM or SC, preferably in the upper arm.

23.8 Recommendations

Herpes zoster vaccination may be considered in those aged ≥50 years, due to the greater burden and severity of disease in this age group.

The vaccine may be given to those who have had zoster. It is prudent to defer vaccination for 12 months after the zoster has resolved so that the vaccine can produce a more effective immune response.

As the vaccine is not part of the national immunisation programme, individuals aged ≥50 years wishing to receive it should consult with their GP or pharmacist.

Immunocompromised hosts
There are insufficient data to make definitive recommendations regarding zoster vaccination in immunocompromised persons aged ≥50 years.
The approach to vaccination in immunocompromised patients depends upon when immunosuppression is planned, underlying condition, and the choice of vaccine.

Planned immunosuppression – Patients should ideally be vaccinated ≥4 weeks before the initiation of immunosuppressive therapy.

Patients receiving low-dose immunosuppressive therapy – Patients receiving low-dose immunosuppressive therapy are likely to respond to vaccination but disseminated zoster with vaccine type virus may rarely occur.

Contraindications
- Anaphylaxis to any of the vaccine constituents.
- Immunocompromise from disease or treatment (Chapter 3).
- Active untreated tuberculosis.
- Pregnancy.

Precautions
- Acute severe febrile illness– defer until recovery.
- Pregnancy should be avoided for 1 month following vaccination.
- Administration to individuals who are immunocompromised may result in disseminated VZV disease, including fatal outcomes. Patients who previously received immunosuppressive therapy should be carefully evaluated for reconstitution of their immune system prior to receiving ZVL.
- The safety and efficacy of ZVL has not been established in adults infected with HIV with or without evidence of immunosuppression.
- This vaccine should be given subcutaneously to individuals with severe thrombocytopoenia or any significant coagulation disorder, because they may bleed following IM injections.

ZVL can be administered concomitantly with inactivated influenza vaccine, at a different site.

Concomitant administration of ZVL and pneumococcal polysaccharide vaccine (PPV23) has not been shown to reduce effectiveness of either vaccine.

No data are currently available regarding concomitant use with other vaccines or with anti-viral medications known to be effective against VZV.

Adverse reactions
Local: very common: pain, erythema, induration
General: common: headache, arthralgia, myalgia, rash, fever.

Transmission of vaccine virus may occur rarely between vaccinees and susceptible contacts (for example, VZV-susceptible infant grandchildren). If a vaccinee has a presumed and uncovered vaccine-related rash 7-25 days after vaccination, they should avoid direct contact with immunocompromised persons, non-immune pregnant women and their newborn in the first week of life and non-immune infants in neonatal units, until the rash is dry and crusted.

23.9 Post exposure prophylaxis

The aim of post exposure prophylaxis is to protect individuals at high risk of developing severe varicella disease and also those who may transmit infection to those at high risk (such as health care workers or household contacts).

Whether active (varicella vaccine) or passive immunisation (varicella zoster immunoglobulin VZIG), is offered to a susceptible person with a history of varicella or zoster exposure depend on the host, the exposure and the time since exposure.

23.9.1 Protection of contacts with vaccine

Immunisation of susceptible contacts with varicella vaccine may prevent infection or modify disease course if given ≤3 days of exposure or modify disease course if given ≤5 days of exposure.

23.9.2 Protection of contacts with varicella zoster immunoglobulin

VZIG prophylaxis is recommended for individuals who fulfill **all** the following criteria:

- Had significant exposure to varicella or zoster. The risk of acquiring infection from an immunocompetent individual with non-exposed zoster lesion, e.g. thoracolumbar, is remote (Table 23.1)

and

- Have an increased risk of severe varicella (e.g. immunocompromised, pregnant, neonates in the first week of life born to non-immune women, infants in neonatal units)

and

- Are non-immune (no VZV antibodies)

Significant exposure is defined based on:

- type of VZV infection in the index case (Table 23.1)
- timing of exposure in relation to the onset of rash in the index case.
- proximity and duration of contact.

Table 23.1. Criteria for defining significant exposure to VZV

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 (any patient) or disseminated zoster	From 48 hours before onset of rash until crusting of lesions	Contact in same room (e.g. in a house, classroom or a 2-4 bed hospital bay) for ≥1 hour. Face to face contact, within 1 metre e.g. while having a conversation (usually >5 minutes). Susceptible high risk contacts in large open wards, particularly in paediatric wards where degree of contact may be difficult to define.
Localised zoster in an immunosuppressed patient (as viral shedding may be greater)	Day of onset of rash until crusting.	

23.9.4 Recommendations for VZIG

i. Neonates and infants (Figure 23.4)

- Neonates who are exposed to varicella in mother from 7 days before to 7 days after delivery.

- VZ antibody-negative infants
  - exposed to varicella or zoster (other than in the mother) in the first 7 days of life.
  - of any age, exposed to varicella or zoster while requiring intensive or prolonged special care.

The risk of severe varicella is greatest for neonates whose mothers develop varicella 5 days before delivery to 2 days after delivery, but VZIG may be beneficial if a mother developed varicella from 7 days before to 7 days after delivery. Approximately half of these infants may develop varicella despite immunoprophylaxis, but the disease is usually modified. IV acyclovir treatment may occasionally be required.

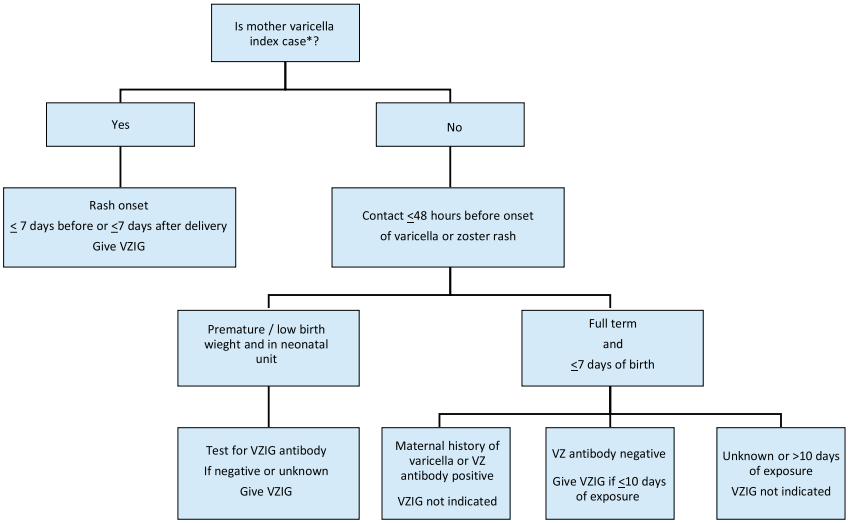
The following infants may not have maternal antibodies despite a positive maternal history of varicella and should be tested to determine their VZ antibody status in the event of a contact:

- born <28 weeks gestation
- weigh <1000g at birth
- infants aged >60 days still requiring intensive or prolonged special care nursing
- had repeated packed red cell infusions

Other infants whose mothers have a positive history of varicella and/or VZV antibodies will usually have maternal antibodies and do not require VZIG.

VZIG is **not** indicated for full-term infants exposed to VZV (either varicella or zoster) more than 7 days after delivery or if exposure was >48 hours before onset of rash (varicella) or onset of vesicles (zoster) in the index case.

Figure 23.4 Use of VZIG in neonates exposed to VZV

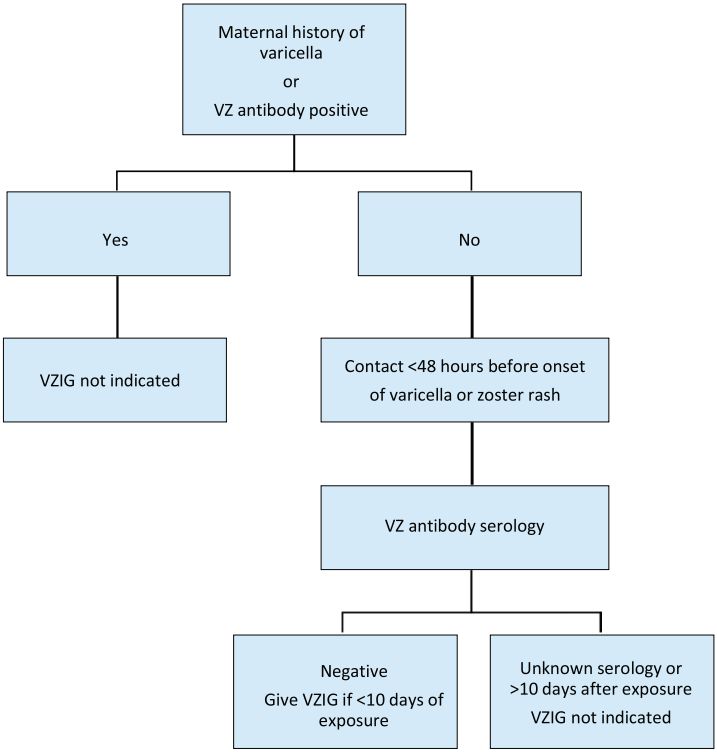


ii. Pregnancy (Figure 23.5)

Non-immune women significantly exposed to varicella **at any stage of pregnancy** should be offered VZIG as soon as possible and ideally within 96 hours of contact. Either product can be administered up to 10 days post exposure.

The primary aim of VZIG immunoprophylaxis is to modify the illness in the mother, but severe maternal varicella may still occur despite prophylaxis. There is little evidence that VZIG will prevent congenital varicella syndrome following significant exposure of a non-immune mother in the first 20 weeks of pregnancy. Management of varicella in pregnancy should be discussed urgently with an obstetrician/microbiologist/ID consultant and consideration given to the use of e.g. acyclovir.

Figure 23.5 Use of VZIG for pregnant women exposed to VZV



*No action needed if mother has zoster

iii. Immunosuppressed contacts (Figure 23.6)

Immunosuppressed contacts who are VZV non immune and who have significant exposure to varicella or zoster may require VZIG; this includes adults and children with no history of varicella and/or a negative immune status, receiving immunosuppressive therapy including steroids, cytostatic agents, radiotherapy, recent stem cell transplantation, or who have congenital or acquired immunodeficiency disorders and are not receiving replacement therapy with immunoglobulin (Chapter 3).

Immunosuppressed contacts should be tested for VZV antibody *regardless of history of varicella*. If seronegative, VZIG is indicated. Testing will rarely be required outside normal working hours. VZIG administration should ideally not be delayed >7 days after initial contact. If an immunosuppressed contact

is antibody-positive, VZIG is not indicated. Patients with immunoglobulin deficiencies who are receiving replacement therapy with immunoglobulin do not require VZIG.

VZV IgG seronegative HIV positive contacts with CD4 cell count <15% should be considered for both VZIG and antiviral prophylaxis with aciclovir (800 mg four times daily) or valaciclovir (1 g three times daily) starting from day 7 after exposure and continuing for 7 days.

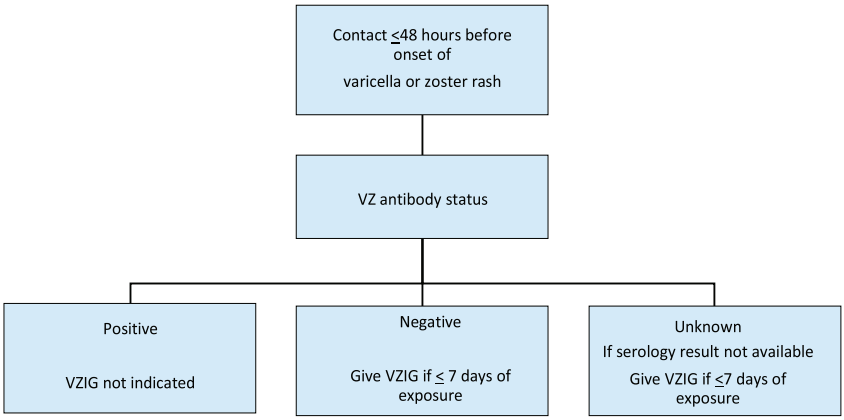
Varicella vaccine should be considered for VZV IgG seronegative HIV-positive contacts with CD4 cell count ≥15% post-exposure within 3 and up to 5 days after exposure. A second dose should be given 3 months later.

Individuals from outside Ireland and Western Europe are less likely to be immune so may also require serological testing to check immunity.

Immunocompetent contacts with a definite history of varicella are immune so neither serology nor immunoprophylaxis are necessary. The majority of adults and a substantial proportion of children without a definite history of varicella are VZV antibody positive. Those without a definite history, who are being considered for VZIG, should be tested for VZV antibody.

VZV antibody detected in patients who have received blood or blood products in the previous 3 months may have been passively acquired. Re-testing in the event of subsequent exposure is required, as the patient may have become antibody negative.

Figure 23.6 Guidance for use of VZIG in immunocompromised persons exposed to VZV



23.10 VZIG preparations, dose and administration

VZIG should be given as soon as possible after exposure, ideally within 72 hours; It may be given up to 10 days

Two VZIG products are licensed, Human Varicella-Zoster Immunoglobulin and Varitect.

23.10.1. Human Varicella-Zoster Immunoglobulin

100IU/ml solution for IM injection. Vial size is 5mls.

Licensed indications: Prophylaxis against varicella zoster virus (VZV) in at-risk patients exposed to varicella or herpes zoster.

Dose and administration

Give 15-25 IU/kg IM as soon as possible, ideally ≤3 days but up to 10 days. If doses over 0.5ml in neonates or infants, or over 0.5-3mls in children or adults are required, divided doses at different sites should be given.

If further exposure occurs >3 weeks after the first dose, a second dose should be given.

If intramuscular administration is contra-indicated (significant bleeding disorders) Varitect is preferred.

Adverse reactions: Headache, nausea, vomiting, arthralgia, fever and allergic reactions are uncommon or rare.

The efficacy of live virus vaccines may be impaired for up to 3 months.

For special warnings and precautions, and a full list of undesirable effects see the SmPC.

Human Varicella-Zoster Immunoglobulin is available from Allphar Services Ltd.; Tel: 01 4688451 or email: info@promedicare.ie

23.10.2. Varitect
25IU/ml solution for intravenous infusion. Vial sizes are 5, 20 and 50mls.

Licensed indications:
Prophylaxis of varicella after exposure for:

- Children with negative history of varicella who are receiving immunosuppressive, cytostatic or radiotherapy or suffer from hereditary immunodeficiencies;
- Immunocompromised adults who, after careful evaluation are believed susceptible and have had significant exposure;
- Newborns of mothers who develop chicken pox within 5 days before and 2 days after delivery;
- Premature infants whose mothers have negative histories of varicella, as long as they require hospital care;
- Premature infants of less than 28 weeks of gestation or with a birth weight of 1000 g or less, regardless of maternal varicella history;
- Adjuvant therapy of severe or complicated varicella-zoster in immunocompromised patients or newborns at risk of dissemination.

Dose and administration
Prevention of varicella: 1ml (25IU)/kg

Treatment of zoster: 1-2ml (25-50IU)/kg
Varitect should be infused intravenously at an initial rate of 0.1ml/kg/hour for

10 minutes. If well tolerated, the rate of infusion may be increased gradually to a maximum of 1ml/kg/hour for the remainder of the infusion.

Adverse reactions: Headache, nausea, vomiting, arthralgia, fever and allergic reactions are uncommon or rare.

The efficacy of live virus vaccines may be impaired for up to 3 months.

For special warnings and precautions, and a full list of undesirable effects see the SmPC.

Varitect is supplied by Aquilant Pharmaceuticals, contactable at 01 452 0388 or contactus@aquilantpharmaceuticals.ie

Patients with immunoglobulin deficiencies who are receiving replacement therapy with immunoglobulin do not require VZIG if exposed to VZV.

23.11 Management of HCWs exposure to varicella or zoster

Non-immune HCWs who have had significant exposure to VZV (see Table 23.1) should be excluded from contact with high-risk patients from 8-21 days after exposure.

HCWs with localised zoster on a part of the body that can be covered with a bandage and/or clothing may be allowed to continue working, except with high-risk patients; in that case an individual risk assessment should be carried out.

Bibliography

British HIV Association (2015). BHIVA guidelines on the use of vaccines in HIV-positive adults.
https://www.bhiva.org/file/NriBJHDVKGwzZ/2015-Vaccination-Guidelines.pdf

CDC. Immunology and Vaccine-Preventable Diseases-Varicella.
https://www.cdc.gov/vaccines/pubs/pinkbook/downloads/varicella.pdf
Accessed 09/01/2020

Enders G et al. (1994). Consequences of varicella and herpes zoster in pregnancy: prospective study of 1739 cases. Lancet, 343(8912):1548-51
https://www.ncbi.nlm.nih.gov/pubmed/7802767

Meyer PA et al (2000). Varicella mortality: trends before vaccine licensure in the United States, 1970-1994. J Infect Dis, 182:383-390.

Plotkin's Vaccines (2017).
https://www.elsevier.com/books/plotkins-vaccines/9780323357616

Public Health England) Immunisation against Infectious Diseases (Green Book). Chapter 28a Shingles (Herpes zoster)
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/503773/2905109_Green_Book_Chapter_28a_v3_0W.PDF
Accessed 16/12/2019

Public Health England Immunisation against Infectious Diseases (Green Book). Chapter 34 Varicella
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/456562/Green_Book_Chapter_34_v3_0.pdf
Accessed 16/12/2019

Shapiro ED et al. (2011). Effectiveness of 2 doses of varicella vaccine in children. J Infect Dis203:312–315. https://www.ncbi.nlm.nih.gov/pubmed/21208922

UpToDate (2020). Post-exposure prophylaxis against varicella-zoster virus infection.
https://www.uptodate.com/contents/post-exposure-prophylaxis-against-varicella-zoster-virus-infection#H628906822
Accessed 22/01/2020

WHO Weekly epidemiological record (2014). Varicella and herpes zoster vaccines.
https://www.who.int/wer/2014/wer8925.pdf?ua=1