

VARICELLA

Case definition

Individual cases of varicella are not typically followed by Public Health. Only outbreaks are to be reported to Public Health.

CONFIRMED CASE

Clinical evidence of illness and laboratory confirmation of infection:

- isolation or direct antigen detection of varicella-zoster virus (VZV) from an appropriate clinical specimen
- OR**
- detection of VZV DNA
- OR**
- seroconversion or a significant rise [i.e. fourfold or greater] by any standard serologic assay in varicella-zoster IgG titre between acute and convalescent sera*
- OR**
- positive serologic test for varicella-zoster IgM antibody*
- OR**
- clinical evidence of illness in a person with an epidemiologic link to a laboratory-confirmed case of chickenpox or VZV infection

* Not done in Nova Scotia

PROBABLE CASE

Clinical evidence of illness in the absence of laboratory confirmation or epidemiologic link to a laboratory confirmed case.

Causative agent

Human [alpha] herpes virus 3, varicella-zoster virus (VZV).

The virus persists in a latent form in the body, and reactivation of the virus years later may result in herpes zoster infection (shingles).

Source

Humans.

Incubation

Usually 14-16 days; range is 10-21 days.

Transmission

- Transmission is person-to-person by direct contact, droplet or airborne spread of vesicle fluid or secretions from the respiratory tract of cases.
- Rarely, transmission can occur from direct contact with fluid in shingles lesions.
- Indirect transmission may occur through articles freshly soiled by discharges from vesicles or respiratory secretions, e.g. linens or towels.

Communicability

- Usually 1-2 days before the onset of rash, but can be up to 4 days.
- The highest quantity of VZV DNA in the throat is found on day 1 of the rash.
- Transmission risk seems to be greatest in the day before onset of the rash.
- In immunocompetent individuals, most virus replication has stopped by 72 hours.
- Immunocompromised individuals may be contagious during the period that new lesions are appearing.

Symptoms

- Rash may be maculopapular initially and then change to a generalized, pruritic, vesicular rash that leaves a granular scab. Vesicles commonly occur in successive crops, with several stages of maturity present at the same time. Lesions may appear anywhere on the body and sometimes on mucous membranes.
- There can be a prodromal period or accompanying fever, malaise and upper respiratory infection.
- In adults and immunosuppressed individuals, symptoms may be more severe.
- In some cases, symptoms may be mild and there may be few vesicles. This may also be evident in breakthrough disease.

Diagnostic testing

- All done through Queen Elizabeth II Health Sciences Laboratory, Central Zone, NSHA
- Vesicle fluid swab [viral culture or PCR]
- Vesicle scraping [unfixed] for direct fluorescent antibody [vigorous scraping of the base of the vesicle is needed]
- For more information, see PPHLN Provincial Microbiology User's Manual

- No serology is available for diagnosis of acute infection. IgG is available for immune status only.

Treatment

- Supportive care
- Antivirals can be used to treat varicella infection, but they are not routinely used in healthy people. They are recommended for individuals at high risk of complications, if initiated within 24 hours after the appearance of the rash.

PUBLIC HEALTH MANAGEMENT & CONTROL

Case management

Educating the case and family:

- Discuss treatment, if prescribed.
- If the case is a child or adolescent, ensure that parents/guardians are aware that salicylates, including ASA and aspirin, should NOT be used in the management of varicella symptoms because of the risk of Reye's syndrome, which is a severe illness that can damage the liver and brain. Advise on the use of acetaminophen or ibuprofen for fever and discomfort.
- Discuss how to limit transmission [airborne, droplet, direct and indirect contact].
- Launder clothing and linens used by infected individual, especially if soiled by respiratory secretions.

If the case attends a child care or school setting:

- Children with illness may remain in or return to day care or school, as long as they are well enough to participate normally in all activities.
- Other parents/guardians, particularly parents/guardians of immunosuppressed children, should be notified that varicella is in the class/day care and provided with information on the incubation period and signs and symptoms of varicella.

If the case resides in an institution:

Health care facilities should deal with confirmed cases of varicella based on their own guidelines.

Contact Tracing

- Identify and follow up susceptible *non-immune* contacts.
- A contact is anyone who shared the same airspace with a case during the infectious period [from 2 days before to 5 days after onset of rash.]
- Susceptible contacts should be considered potentially infectious from 8 to 21 days following exposure. Provide information on the incubation period and signs and symptoms of varicella.

Prophylaxis

- Susceptible contacts of cases can be given varicella vaccine. If administered within three to five days after exposure, it is likely to prevent or reduce the severity of disease.
- Varicella zoster immune globulin (VZIG) is recommended for susceptible individuals [listed below] for whom varicella vaccine is contraindicated. VZIG is not effective once symptoms develop.

CANDIDATES FOR VZIG:

1. Susceptible Contacts

For maximal benefit, VZIG should be administered as soon as possible after exposure, ideally within 96 hours after first exposure, but can be administered up to 10 days after last exposure. When given more than 96 hours after exposure, its primary purpose may be attenuation rather than prevention of disease. VZIG is recommended for the following susceptible contacts, if significant exposure* has occurred. These individuals are at high risk of developing complications from varicella infection:

- a) Immunocompromised children, adolescents and adults.
- b) Newborns of mothers who develop varicella between 5 days before delivery and 48 hours after delivery.
- c) Susceptible *non-immune* pregnant women.

*2. Significant exposure

Persons with varicella are considered contagious from 2 days before onset of the rash to 5 days thereafter or until crusting of lesions. Skin lesions of shingles are infectious only until the eruption has crusted and dried. The following contact situations are considered significant exposures to varicella:

- having continuous household contact [living in the same dwelling]

- being indoors for more than 1 hour with a case of varicella
- sharing the same hospital room for more than one hour with a patient with varicella.
- Face-to-face contact (of more than 15 minutes) of a worker or staff member with an individual with varicella.
- touching the lesions of a person with active varicella or shingles.

3. Information about VZIG

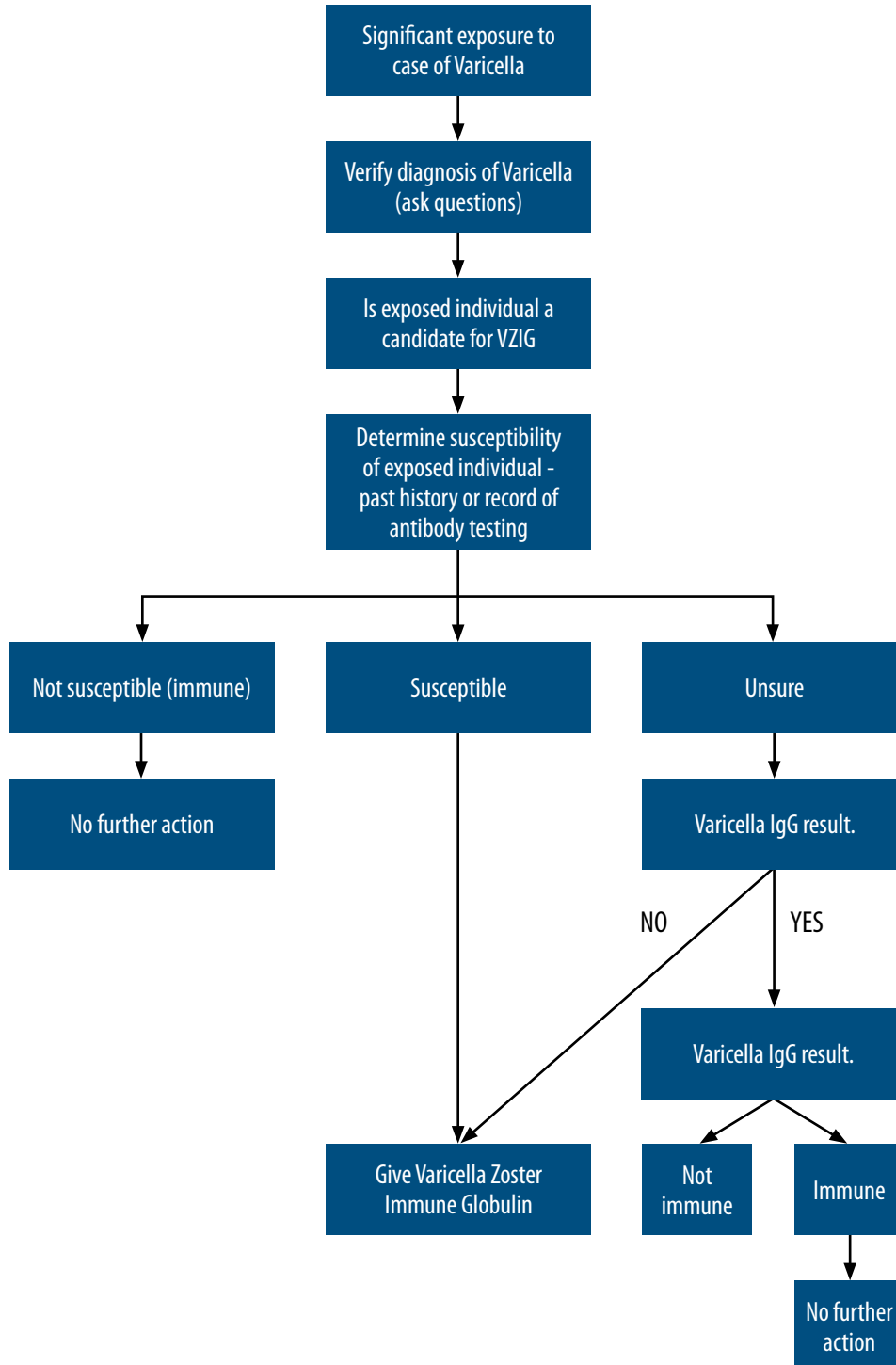
1. Obtain Medical Officer of Health approval for release of all immunoglobulin. After-hours access for the MOH on-call: phone QEII Locating at 902-473-2222.

2. For requests that can be submitted within regular business hours through the provincial biodepot:

Call 902-481-5800 and ask to speak to the Biodepot Immunization Coordinator or Provincial Biological Coordinator. They will arrange pickup and shipment of the required product from Canadian Blood Services (CBS) following established procedures.

3. For urgent requests after-hours to access VZIG product held at CBS (when administration is required before the next business day):

- For delivery to a Public Health office
 - Complete the Volume expanders/Immune globulin/intravenous/subcutaneous immune globulins order form, which can be accessed at blood.ca/sites/default/files/VolumeExpandersImmuneGlobulinsIVIG-dartmouth.pdf
 - Be sure to select STAT as the priority.
 - Fax the form to 1-855-305-6904 (in Halifax area 902-480-5677), and call CBS at 1-855-352-5663 (in Halifax area 902-480-5678).
 - Identify the appropriate Public Health office from the approved list for the delivery.
 - Ensure that someone is available to receive the product when delivered.
- For delivery to hospital blood bank for administration by hospital staff
 - If the VZIG is to be administered within the hospital setting, the hospital staff [an ER physician, usually] will contact the hospital blood bank to request immunoglobulin STAT from CBS.



Exclusion

- Children with illness may remain in school or daycare, or should be allowed to return, as long as they are well enough to participate normally in all activities, regardless of the state of the rash.
- In circumstances when an immunocompromised individual is present in the facility, the immunocompromised individual (not the case) should be excluded and referred to their physician. Rationale: other individuals in the facility may be incubating varicella, creating further potential exposures. This decision is made on a case-by-case basis.
- Air travel is not recommended until lesions have crusted, due to the recirculation of cabin air. If inadvertent exposure occurs during air travel, no follow-up of contacts will take place.
- Swimming in public pools is not recommended until lesions have healed and crusts are no longer present, to avoid exposing susceptible individuals.
- Exclude non-immune health care workers from day 8 to day 21 following last exposure.

Education

- If a susceptible pregnant woman or a susceptible immunocompromised individual comes in contact with chickenpox, they should contact their health care provider for consideration of VZIG.

COMPARISON TABLE

	Varicella, wild-type (chickenpox)	Breakthrough disease (vaccine-modified)	Post-varicella vaccine rash	Shingles (Herpes Zoster, HZV)
Distinguishing characteristics	<p>Vesicular (fluid-filled) rash.</p> <p>Maculopapules (reddened areas with small, solid bumps), vesicles and scabs in varying stages of evolution.</p>	<p>Maculopapular rash occurring more than 42 days after varicella vaccine.</p> <p>Usually mild with less than 50 lesions.</p>	<p>Varicella-like rash occurring 0 to 42 days after varicella vaccine.</p>	<p>Grouped vesicular eruptions in the distribution of a sensory nerve (dermatome). Thoracic dermatome affected in 50% of cases. Occasionally can become disseminated and lesions can occur outside the primary dermatomes.</p>
Signs and symptoms	<p>May be mild or severe.</p> <p>Mild prodrome (fever, malaise and upper respiratory tract infection) may precede rash by 1–2 days. Prodrome does not usually occur in children.</p> <p>Generalized, pruritic (itchy), vesicular (fluid-filled) rash typically consisting of 200–500 lesions, mild fever and general malaise.</p> <p>Lesions tend to develop on the trunk and face, progress to extremities.</p> <p>Ulcerated lesions may be present on mucous membranes.</p> <p>Much more severe in adolescents and adults.</p>	<p>A mild illness with usually <50 lesions (usually maculopapular rather than vesicular).</p> <p>Systemic symptoms such as fever occur less frequently.</p> <p>Shorter duration.</p>	<p>Localized varicella-like rash at the injection site or some individuals will develop a small number of generalized varicella-like papules or vesicles.</p> <p>Generalized rash is more likely to be vaccine-associated if there is also a local reaction at the injection site.</p>	<p>75% have prodromal neuropathic pain within dermatome which may precede lesions by days to weeks.</p> <p>Grouped vesicular lesions appear in 1 to 3 sensory dermatomes [often unilateral but can be bilateral].</p> <p>Symptoms and lesions tend to resolve in 7–10 days.</p> <p>Usually benign and not associated with pain in children but tingling may be present.</p> <p>Approximately 30% of elderly will have postherpetic neuralgia.</p>
Mode of transmission	<p>Person-to-person by direct contact, droplet or airborne spread of vesicle fluid or secretions of the respiratory tract of cases.</p> <p>Direct contact with vesicle fluid of persons with shingles.</p> <p>Indirectly by touching articles soiled by discharges from vesicles and mucous membranes of cases.</p> <p>Up to 90% of susceptible children exposed to VZV will develop disease.</p>	<p>Person-to-person by direct contact, droplet or airborne spread of vesicle fluid or secretions of the respiratory tract of cases.</p> <p>Contact can be months or years post-immunization.</p>	<p>Can occur from 0–42 days after vaccine but usually within 5–26 days.</p>	<p>Direct contact with fluid in vesicle or respiratory droplets can cause varicella (not shingles) in susceptible persons.</p> <p>Respiratory droplet transmission can occur in patients with disseminated shingles and/or who are immunocompromised.</p> <p>The lifetime risk of having at least one episode of herpes zoster is 15–28% occurring predominantly in older adults and rarely in children.</p>

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COMPARISON TABLE (CONTINUED)

	Varicella, wild-type (chickenpox)	Breakthrough disease (vaccine-modified)	Post-varicella vaccine rash	Shingles (Herpes Zoster, HZV)
Incubation Period	10–21 days (commonly 14-16 days).	10–21 days (commonly 14-16 days).	N/A	VZV remains latent for a few to many years and then reactivates.
Period of Communicability	Usually 1-2 days and up to 4 days before the onset of the rash until all lesions are crusted over (3–5 days). May be longer in immunocompromised persons.	Same as varicella.	N/A	For 7 days after rash appears.
Risk of Transmission	Transmission rates can be high.	Rare but likely increases with number of lesions that develop.	Rarely transmissible.	The fluid in shingles vesicles contains VZV but is much less contagious than varicella.
Occurrence of disease after immunization	See vaccine-modified disease.	Vaccine is 70–90% effective in preventing all varicella disease. Up to 4% per year will develop vaccine-modified disease if exposed to VZV outside a household setting, and up to 20% will develop disease if exposed to VZV in a household setting.	Localized or generalized varicella-like rash occurs in 6-10% of people after 1st dose and 1–2% after 2nd dose.	Shingles vaccine efficacy study results range from 51–70% for disease and postherpetic neuralgia, depending on age. In studies done so far, duration of protection is 4–7 years. A varicella-like rash can occur at the injection site (0.11 %). Neither wild type nor vaccine strain varicella virus has been identified from any lesions and no cases of disseminated vesicular disease caused by the vaccine virus have been observed.
Recurrence after natural varicella infection	Recovery from primary varicella infection usually results in lifetime immunity. Clinical re-infections have been reported usually in children who were less than one year of age at first infection and/or had a milder first infection.			The lifetime risk of herpes zoster is 15–28%. Approximately 6% of people will experience one or more recurrent episodes.

Outbreak Response

- For outbreaks in child care settings, also refer to the [Guidelines for Communicable Disease Prevention and Control for Child Care Settings](#).

Surveillance Forms

No surveillance guidelines (not reportable).

[VZIG Information Sheet](#)

[General Information Sheet](#)

[Sample Letter](#)

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