



## Public Health Investigation Quicksheet: Varicella



### **Infectious Agent**

Varicella (chickenpox) is an acute infectious disease caused by varicella-zoster virus (VZV). After initial infection, VZV remains latent and can reactivate at a later time causing herpes zoster (shingles\*).

### **Mode of Transmission**

Varicella is highly contagious. The virus can be spread from person to person by direct contact, inhalation of aerosols from vesicular fluid of skin lesions of acute varicella or zoster, and possibly through infected respiratory secretions that also may be aerosolized. Persons with shingles can transmit VZV; in a susceptible person, exposure to a person with shingles can result in chickenpox.

### **Communicability**

From 1–2 days before rash onset and continuing until all lesions are crusted (usually about 5 days).

### **Incubation Period**

10–21 days from exposure to rash onset, most commonly 14–16 days. Incubation period may be up to 28 days in varicella-zoster immune globulin (VariZIG) recipients and may be shortened in immunocompromised patients. Among neonates born to mothers with active infection, incubation period can be as short as 2 days after birth.

### **Clinical Description**

An illness with acute onset of diffuse (generalized) maculo-papulovesicular rash without other apparent cause.

Note: In vaccinated persons who develop “breakthrough” varicella more than 42 days after vaccination, the disease is almost always mild with fewer than 50 skin lesions and shorter duration of illness. The rash may also be atypical in appearance (maculo-papular with few or no vesicles).

### **Case Investigation**

1. Review clinical records (admission history & physical, progress notes) to confirm that the suspected case meets the [NNDSS case definition](#) clinical criteria for varicella/chickenpox.

2. Confirm that the laboratory tests<sup>†</sup> performed meet the criteria for diagnosis confirmation.

- a. **VZV PCR is the method of choice for confirmation of a clinical diagnosis.** Testing is available at commercial reference labs and through the [Alaska State Public Health Laboratories \(ASPHL\)](#) at the CDC VPD Reference Center in California.
- b. DFA or viral culture can be used.

Specimen collection for PCR:

- Swab basal cells from an unroofed lesion using a swab made of synthetic material (no cotton or calcium alginate tip). Place swab in a sterile, dry container separate from any scab specimen(s). *Do not place the swab into viral transport medium; it MUST be kept dry.*
- Remove several scabs and place them in a sterile, dry container.

Upon consultation with the Section of Epidemiology (SOE), varicella PCR testing may be run at the ASPHL-Anchorage.

Lab requisition form available at

<http://www.dhss.alaska.gov/dph/Labs/Documents/publication/s/AncSupplyReq.pdf>

3. Complete the [Varicella Surveillance Worksheet and Supplemental Investigation Questionnaire](#) to collect epidemiological information and identify contacts and/or other individuals at high-risk for serious disease.

4. Provide recommendations for varicella control.

- Isolate infectious cases until all lesions are crusted (usually about 5 days). Vaccinated persons with breakthrough varicella may develop lesions that do not crust (macules and papules only). Isolation guidance for these persons is to exclude until no new lesions appear within a 24-hour period.
- Unvaccinated healthcare personnel without evidence of immunity to varicella should be furloughed from work from day 8 through day 21 after exposure.
- Healthcare personnel who have received two doses of varicella vaccine can be permitted to work but should be monitored daily from days 8 through 21 after exposure for symptoms.
- Persons without evidence of immunity who have contraindications to vaccination (e.g., immunocompromised persons, pregnant women) should be excluded from an outbreak setting through 21 days after the rash onset of the last identified case because of the risk of severe disease in these persons.
- During a varicella outbreak\*\*, children without evidence of varicella immunity should be recommended to be vaccinated with the appropriate dose. If vaccination is contraindicated or refused, exclusion of the non-immune child from school may be considered for up to 21 days after the last case is identified. Detailed strategies for the control and investigation of varicella outbreaks are located here:

<http://www.cdc.gov/chickenpox/outbreaks/control-investigation.html>

5. Fax the completed surveillance worksheet and supplemental investigation questionnaire to AK-SOE at 907-563-7868.

### **Presumptive evidence of immunity**

The following provide evidence of immunity to varicella for the purposes of a contact investigation:

- Documentation of age appropriate varicella vaccination (preschool aged children: 1 dose; school-aged children, adolescents and adults: 2 doses); or
- Laboratory evidence of immunity; or
- Prior laboratory confirmation of disease; or
- U.S. birth before 1980 (should not be considered evidence of immunity for healthcare personnel, immunocompromised persons, pregnant women and persons born outside the U.S.); or
- Prior healthcare provider diagnosis or verification of a history of varicella or shingles.

### **Postexposure prophylaxis (PEP)**

Varicella vaccine may be effective in preventing illness or modifying illness severity if it is given to susceptible individuals within 3 days, and possibly up to 5 days, after first exposure.

Varicella zoster immune globulin§ (VariZIG) should be administered as soon as possible and within 10 days of exposure to persons at high risk for developing severe varicella:

- Immunocompromised persons without evidence of immunity, including persons receiving high-dose steroids (2 mg/kg/day).
- Pregnant women without evidence of immunity.
- Neonates whose mothers develop varicella within 5 days before to 2 days after delivery.

## **Reporting**

- Shingles\* cases are NOT reportable.
- School nurses and child care providers should report suspected varicella cases to the SOE. Suspected cases should be referred to their health care provider.
- Clusters or outbreaks of suspected or confirmed varicella are immediately reportable to the SOE.
- Varicella-related deaths are nationally notifiable to CDC.  
<http://www.cdc.gov/vaccines/pubs/surv-manual/appx/appendix19-2-varicella-wrsh.pdf>
- Enter case investigation information into the NBS surveillance database. Refer to disease-specific data entry guidelines. Complete FTR report when warranted by circumstances.

### **Case classification**

- **Suspect:** A case that is reported by a parent, day care provider or school nurse and has not been medically evaluated, and is not epidemiologically linked to another probable or confirmed case. For internal EPI tracking purposes only.
- **Probable:** A case that meets the clinical case definition, is not laboratory-confirmed, and is not epidemiologically linked to another probable or confirmed case.
- **Confirmed:** A case that meets the clinical case definition and is laboratory-confirmed OR is epidemiologically linked to a confirmed or probable case. Note: Two probable cases that are epidemiologically linked are considered confirmed cases.

## **Resources**

### **[AK-SOE Varicella webpage](#)**

2018-2021 AAP Red Book

\*Shingles (herpes zoster): An infection that can occur after primary infection with varicella and is caused by the reactivation of latent varicella zoster virus. Shingles is characterized by grouped vesicular lesions in the distribution of 1–3 sensory dermatomes, sometimes accompanied by pain and/or itching.

†Laboratory testing cannot differentiate between varicella and herpes zoster because they are both caused by VZV.

§VariZIG is not indicated for neonates whose mothers have shingles.

\*\*A chickenpox outbreak is defined by CDC as ≥5 cases related in place and epidemiologically linked. However, single cases in a high-risk setting, e.g., healthcare facility, prison or jail, or homeless shelter, should be investigated.  
<http://www.cdc.gov/chickenpox/outbreaks/manual.html>