Section of Epidemiology Varicella Investigation Guidelines

Varicella-Zoster Virus (VZV) infections

In susceptible persons VZV infection causes varicella (chickenpox). After initial infection, VZV remains latent and can reactivate at a later time causing herpes zoster (shingles).*

Infectious period

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

VZV exposure

VZV exposure can occur from direct contact with or aerosolization of lesion material, or through respiratory aerosols from an infectious person. Persons with shingles can also transmit VZV; in a susceptible person, exposure to a person with shingles can result in chickenpox.

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 case definition

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).

Laboratory Specimens

- **VZV PCR is the method of choice for rapid clinical diagnosis† (Table 1).** Specimen collection for PCR testing at Alaska State Virology Laboratory (ASVL):
- Preferred specimens for diagnosis of acute infection are best collected by unroofing a vesicle, preferably a fresh fluid-filled vesicle, and then rubbing the base of a skin lesion using a Dacron® swab.
- Swabs must be placed individually into separate, empty tubes to avoid contamination. Place swabs directly into tubes. **Do not place transport medium into the tube; the specimen MUST be kept dry.**
- Scabs and or dry skin lesions are also excellent specimens for PCR.

Specimens should be placed into sterile containers and should be submitted to ASVL at ambient temperature. ASVL will send specimens to a CDC contract lab for PCR testing.

- ASVL requisition form: http://dhss.alaska.gov/dph/Labs/Documents/publications/FbxSupplyReq.pdf.
- ASVL manual available: http://dhss.alaska.gov/dph/Labs/Documents/LaboratoryTests.pdf

Table 1. Specimens for varicella zoster testing submitted to ASVL.

Test	Varicella Zoster
Testing Lab	Fairbanks
Disease(s)	Chickenpox, Herpes Zoster, Varicella, Shingles
Organism(s)	Varicella-Zoster Virus (VZV)
Test Method	**Serology** (VZV IgG Antibody) 1. This test is used to determine immune status. 2. The test is performed at ASVL by EIA. **PCR** (VZV Antigen) 1. This test is used to determine active infection. 2. Testing will be performed at a CDC contract lab.
Specimen	**Serology** 1. Serum (1 ml minimum) **PCR** 1. Scabs and/or 2. Dry skin lesion swabs in a sterile container.
Storage/ Transport	**Serology** 1. Ship serum at ambient temp **or** on cool packs (4ºC). **PCR** 1. Ship specimens to ASVL at ambient temperature. 2. ASVL will overnight the sample to the CDC Contract Lab.
Results	**Serology** 1. Negative • No significant level of detectable antibody. • Presumed to be susceptible to primary infection. 2. Equivocal = a borderline result • Result falls w/in ±10% of the positive threshold. • Resubmission may be indicated. 3. Positive • Indicates immunity by vaccination or infection. **PCR** 1. Negative • Antigen to VZV was not detected. • No sign of active VZV infection. 2. Positive • Antigen to VZV was detected. • Presence of antigen indicates an active infection.
Turnaround Time	**Serology:** 2-3 days from date of receipt at ASVL. **PCR:** 2 days from date of receipt at CDC Contract Lab.

Upon consultation with the Section of Epidemiology (SOE), varicella PCR testing may be run at the Alaska State Public Health Laboratory (ASPHL) using the ASPHL request form (Complete the Special Pathogens/Biological/Chemical Terrorism Agents area of lab slip): http://www.dhss.alaska.gov/dph/Labs/Documents/publications/AncSupplyReq.pdf

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.

CDC case definition details can be found here: http://wwwn.cdc.gov/nndss/conditions/varicella/case-definition/2010/

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.

Vaccine effectiveness

- 1 dose of single-antigen varicella vaccine is—
    - 85% effective at preventing any form of varicella
    - almost 100% effective against severe varicella
- 2 doses of vaccine are—
    - 88% to 98% effective at preventing all varicella

Further details are located here: http://www.cdc.gov/vaccines/vpd-vac/varicella/hcp-effective-duration.htm

Postexposure prophylaxis – high-risk people

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§.

VariZIG can be ordered from FFF Enterprises 24/7 by calling 800-843-7477. VariZIG is optimal, but if it cannot be obtained, Immune Globulin Intravenous (IGIV) can be used. Epi does not supply IGIV; FFF Enterprises also has IGIV.

Postexposure prophylaxis – non high-risk people

- Varicella vaccine (for those >12 months) is effective in preventing illness or modifying the severity of illness in persons given within 3 days, and possibly up to 5 days after exposure. If infection does not occur from current exposure, vaccine will protect against subsequent exposure.
- Administration of oral acyclovir beginning day 7 after exposure may prevent or attenuate disease in healthy people.

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 for up to 21 days after the last case is identified may be considered. Detailed strategies for the control and investigation of varicella outbreaks (including sample letters for school exposure) are located here: http://www.cdc.gov/chickenpox/outbreaks/control-investigation.html

Course of infection

In children, the rash is often the first sign of disease. Adults may have 1–2 days of fever and malaise prior to rash onset. Varicella rashes are pruritic, generalized and progress from macules to papules to vesicular lesions before crusting. Two to four successive crops of lesions will appear over several days and will be in several stages of development.

Lesions usually first appear on the head, then the trunk, and then the extremities; the highest concentration of lesions is on the trunk (centripetal distribution). Typical varicella cases have about 250–500 lesions. Breakthrough varicella (infection in a vaccinated person) tends to be milder with fewer lesions (usually <50) and mild or no fever.

Symptoms

- Fever
- Rash (generalized, maculo-papulovesicular)
- Itchiness
- Fatigue/malaise
- Loss of appetite
- Headache

Complications

- Bacterial superinfection of skin lesions
- Pneumonia (viral or bacterial)
- Central nervous system manifestations
- Reye syndrome††
- Hospitalization: 2–3/1,000 cases among healthy children and 8/1,000 cases among adults
- Death: 1/60,000 cases

updated 1/12/16

SOE reporting requirements

- Healthcare providers must report suspected or probable cases to the SOE within 5 working days.
- Clusters or outbreaks of suspected or confirmed varicella are immediately reportable to the SOE.
    - Conditions reportable to public health in Alaska: http://dhss.alaska.gov/dph/Epi/Pages/pubs/conditions/default.aspx
- School nurses and child care providers should report suspected varicella cases to the SOE. Suspected cases should be referred to their health care provider.
- PHN or EPI nurse complete the varicella surveillance worksheet: http://www.cdc.gov/vaccines/pubs/surv-manual/appx/appendix20-varicella-surv-wksht.pdf
- Varicella-related deaths are nationally notifiable to CDC. http://www.cdc.gov/vaccines/pubs/surv-manual/appx/appendix19-2-varicella-wrsh.pdf
- Suspect, probable and confirmed cases are entered into AK-STARS.
- Advise Immunization Program Manager of varicella activity.
- Shingles* cases are NOT reportable.

Alaska Section of Epidemiology varicella webpage
http://dhss.alaska.gov/dph/Epi/id/Pages/Varicella.aspx

Varicella fact sheet
http://dhss.alaska.gov/dph/Epi/id/Documents/Varicella%20Fact%20Sheet.pdf

*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.
¶ http://www.cdc.gov/chickenpox/outbreaks/manual.html

**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.

††Children with varicella should not receive salicylates or salicylate containing products due to risk of Reye syndrome.

SOE Varicella Investigation Guidelines *adapted from California Department of Public Health – May 2015*
http://www.cdph.ca.gov/programs/immunize/Documents/CDPHVaricellaQuicksheet.pdf

updated 1/12/16

Alaska Division of Public Health

Prevention Promotion Protection

Chickenpox (varicella zoster) Fact Sheet

What is chickenpox?
Chickenpox is a highly contagious disease caused by the varicella virus, a member of the herpes virus family.

How is chickenpox spread?
Chickenpox is transmitted to others by direct person to person contact, by droplet or airborne spread of secretions from an infected person's nose and throat or indirectly by contact with articles freshly soiled by secretions from the infected person's lesions. Transmission can also occur from touching or breathing virus particles from an infected person's blisters.

What are the symptoms of chickenpox?
Initial symptoms include sudden onset of slight fever and feeling tired and weak. This is soon followed by an itchy blister-like rash. The blisters eventually dry, crust over, and form scabs. The blisters tend to be more common on covered than on exposed parts of the body. They may appear on the scalp, armpits, trunk, and even on the eyelids and in the mouth. Mild or unapparent infections occasionally occur in children. The disease is usually more serious in adults than in children.

How soon do symptoms appear?
Symptoms commonly appear between 10-21 days (usually ~14-16 days) after exposure to someone with chickenpox or shingles (herpes zoster).

When and for how long is a person able to spread chickenpox?
A person is most able to transmit chickenpox from 1-2 days before the onset of rash until all lesions have crusted. People who are immune compromised may be contagious for a longer period of time.

Does past infection with chickenpox make a person immune?
Chickenpox generally results in lifelong immunity. However, the virus can remain hidden (known as latent infection) and recur years later as shingles in a proportion of adults and even in older children. A vaccine to prevent shingles is now routinely recommended for adults 60 years and older. See http://www.cdc.gov/shingles/vaccination.html

What are the complications associated with chickenpox?
Newborn children (less than one month old) whose mothers are not immune and patients with leukemia may suffer severe, prolonged or fatal chickenpox. Immune compromised patients, including those on immunosuppressive drugs, may have an increased risk of developing a severe form of chickenpox or shingles. Reye's Syndrome has been a potentially serious complication associated with clinical chickenpox involving those children who have been treated with aspirin. Aspirin or aspirin-containing products should never be given to a child with chickenpox.

The CDC has more information about chickenpox complications:
http://www.cdc.gov/chickenpox/about/complications.html

Is there a vaccine for chickenpox?
A vaccine to protect children against chickenpox was first licensed in March 1995. It is recommended as a two dose series, with the first dose given between 12-15 months and the second (booster) dose typically given between 4-6 years. The second dose can be given as early as 3 months after the first dose, and this is usually recommended to be done in an outbreak setting. The state of Alaska requires two doses of vaccine for entry into grades K-6. See http://www.epi.alaska.gov/bulletins/docs/b2012_06.pdf

What should I do if I suspect my child has chickenpox?
Individuals with suspected chickenpox should contact their health care provider. Varicella testing should be considered to confirm the diagnosis. Suspected or confirmed chickenpox is reportable by providers to the Alaska Section of Epidemiology. Read more about conditions reportable to public health in Alaska here: http://dhss.alaska.gov/dph/Epi/Pages/pubs/conditions/default.aspx

What can be done to prevent the spread of chickenpox?
The best method to prevent further spread of chickenpox is for people infected with the disease to remain home and avoid exposing others who are susceptible. They should remain home until one week after the skin eruption began or until the lesions become dry and crusted. Pay particular attention to avoiding unnecessary exposure of non-immune newborns and immune compromised people to chickenpox.

Is there a treatment for chickenpox?
Most cases of chickenpox in otherwise healthy children are treated with bed rest, fluids, and control of fever. Children with chickenpox should NOT receive aspirin because of possible subsequent risk of Reye's syndrome. Acetaminophen may be given for fever control. Chickenpox may be treated with an antiviral drug in serious cases, depending on the patient's age and health, the extent of the infection, and the timing of the treatment..

I have heard about "chickenpox parties" to give everyone the disease so they have natural immunity. Is this a good idea?
"Chickenpox parties" were a common practice in previous generations. Public health experts strongly recommend against this practice now that there is effective vaccine available and much better knowledge about potential serious complications of chickenpox. For more information about risks, we recommend this site: http://www.cdc.gov/chickenpox/about/transmission.html

Where can I go for more information?
Visit the Alaska Division of Public Health's Varicella website at http://dhss.alaska.gov/dph/Epi/id/Pages/Varicella.aspx. You can also visit http://www.cdc.gov/vaccines/pubs/pinkbook/downloads/varicella.pdf ("The Pink Book") for more detailed scientific information for public health personnel.

Section of Epi Varicella Investigation Role Guidelines

	Epi Actions	PHN Actions	School Nurse Actions
Report of a positive lab test • Patient went to hcp[1] and was tested	• Count as "confirmed"[2] • Refer to PHN for investigation	• Investigate contacts • Notify school RN, daycare, or hc facility as appropriate	• Depending on circumstances[3], consider alerting affected wider school community • Heightened surveillance for additional cases
Report of a clinical dx • Patient saw hcp[1] (or hcp did phone consult) to receive dx	• Count as "probable" (but see case definition for when two cases become confirmed)[2] • Refer to PHN for investigation	• Investigate contacts • Notify school RN, daycare, or hc facility as appropriate	• Depending on circumstances[3], consider alerting wider school community • Heightened surveillance for additional cases
Parent report or Suspected by school nurse	• Count as "suspect"[4] • Send a heads-up email to PHN	• Local situational awareness • to school or daycare	• Rec eval by hcp for testing/dx • Depending on circumstances[3], consider alerting wider school community • Heightened surveillance for additional cases

1. Defined as a prescribing provider (DO, NP, PA, MD, and a CHAP who has consulted with their village provider).
2. http://wwwn.cdc.gov/nndss/conditions/varicella/case-definition/2010/
3. Depending on school size, baseline immunization rates, timing of the cases, presence of pregnant or other vulnerable staff, among other factors, school may consider sending out a letter to parents. SOE is available to consult on case-by-case decisions as needed. School administration can always recommend additional communication about suspected cases and the need for immunizations. Generally, SOE has not restricted susceptibles from school, although administration could consider this measure in the face of an outbreak or community concern.
4. Suspect cases are reported by a parent, school nurse or day care provider and have not been medically evaluated. *For internal EPI tracking purposes only.*

Updated 1/7/2016

For Local Use Only

VARICELLA SURVEILLANCE WORKSHEET

Name _____ State Case I.D. Number _____
LAST / FIRST / MIDDLE

Current Address _____
NUMBER / STREET / APT. NUMBER

_____
CITY / COUNTY / STATE ZIP CODE

Telephone: Home _____ Work _____
AREA CODE + 7 DIGITS AREA CODE + 7 DIGITS

Reporting Physician/ Nurse/Hospital/ Clinic/Lab _____
ADDRESS

Telephone Number _____
AREA CODE + 7 DIGITS

Detach here — Transmit only lower portion if sent to CDC

VARICELLA SURVEILLANCE WORKSHEET

Form Approved
OMB No. 0920-0728
Exp. Date 2/28/2011

Reported by: State _____ **County** _____

1. **Date of Birth** ☐☐ MONTH ☐☐ DAY ☐☐☐☐ YEAR
2. **Current Age** ☐☐☐
3. **Age Type** ☐ Years ☐ Days ☐ Hours ☐ Months ☐ Weeks ☐ Unknown
4. **Current Sex** ☐ Male ☐ Female ☐ Unknown
5. **Ethnicity** ☐ Hispanic ☐ Not Hispanic ☐ Unknown
6. **Race** ☐ American Indian or Alaska Native ☐ Asian ☐ Black or African-American ☐ Native Hawaiian or Other Pacific Islander ☐ White ☐ Unknown

REPORTING SOURCE

7. **Date of Report** ☐☐ MONTH ☐☐ DAY ☐☐☐☐ YEAR
8. **Earliest Date Reported to County** ☐☐ MONTH ☐☐ DAY ☐☐☐☐ YEAR
9. **Earliest Date Reported to State** ☐☐ MONTH ☐☐ DAY ☐☐☐☐ YEAR

Department of Health and Human Services
Centers for Disease Control and Prevention

CLINICAL

Y=Yes N No U Unknown

CONDITION

10. **Diagnosis Date** ☐☐ MONTH ☐☐ DAY ☐☐☐☐ YEAR
11. **Illness Onset Date** ☐☐ MONTH ☐☐ DAY ☐☐☐☐ YEAR

SIGNS/SYMPTOMS

12. **Rash Onset Date** ☐☐ MONTH ☐☐ DAY ☐☐☐☐ YEAR
13. **Rash Location** ☐ Generalized ☐ Focal ☐ Unknown

    If "Focal," specify dermatome: _____

    If "Generalized," first noted: *(check all that apply)*
    ☐ Face/Head ☐ Legs ☐ Trunk
    ☐ Arms ☐ Inside Mouth
    ☐ Other *(specify)* _____
14. **How many lesions were there in total?**
    ☐ <50 ☐ 50–249 ☐ 250–499 ☐ >500
15. **Character of Lesions (with <50)** Number of lesions: _____
    Macules (flat) present: ☐ Y ☐ N ☐ U Number: _____
    Papules (raised) present: ☐ Y ☐ N ☐ U Number: _____
    Vesicles (fluid) present: ☐ Y ☐ N ☐ U Number: _____
16. **Character of Lesions (all categories—1 to >500)**
    Mostly macular/papular ☐ Y ☐ N ☐ U
    Mostly vesicular ☐ Y ☐ N ☐ U
    Hemorrhagic ☐ Y ☐ N ☐ U
    Itchy ☐ Y ☐ N ☐ U
    Scabs ☐ Y ☐ N ☐ U
    Crops/waves ☐ Y ☐ N ☐ U
17. **Did the rash crust?** ☐ Y ☐ N ☐ U

    If "yes," how many days until all the lesions crusted over? _____ Days

    If "no," how many days did the rash last? _____ Days
18. **Did the patient have a fever?** ☐ Y ☐ N ☐ U
19. **Date of Fever Onset** ☐☐ MONTH ☐☐ DAY ☐☐☐☐ YEAR
20. **Highest measured temperature:** _____ °F / °C CIRCLE ONE
21. **Total number of days with fever:** _____ Days
22. **Is patient immunocompromised due to medical condition or treatment?** ☐ Y ☐ N ☐ U

    (If yes, specify) _____

COMPLICATIONS

23. **Did the patient visit a healthcare provider during this illness?** ☐ Y ☐ N ☐ U
24. **Did the patient develop any complications that were diagnosed by a healthcare provider? If "yes":** ☐ Y ☐ N ☐ U
    Skin/Soft Tissue Infection ☐ Y ☐ N ☐ U
    Cerebellitis/Ataxia ☐ Y ☐ N ☐ U
    Encephalitis ☐ Y ☐ N ☐ U
    Dehydration ☐ Y ☐ N ☐ U
    Hemorrhagic Condition ☐ Y ☐ N ☐ U
    Pneumonia ☐ Y ☐ N ☐ U
    How diagnosed: ☐ X-ray ☐ MD ☐ U
    Other Complications ☐ Y ☐ N ☐ U

    (Specify) _____
25. **Was the patient treated with acyclovir, famvir, or any licensed antiviral for this illness? If "yes,"** ☐ Y ☐ N ☐ U

    Name of medication: _____

    Start Date ☐☐ MONTH ☐☐ DAY ☐☐☐☐ YEAR

    Stop Date ☐☐ MONTH ☐☐ DAY ☐☐☐☐ YEAR

CS118977

Public reporting burden of this collection of information is estimated to average 30 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. An agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a currently valid OMB control number. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to CDC/ATSDR Reports Clearance Officer; 1600 Clifton Road NE, MS D-74 Atlanta, Georgia 30333; ATTN: PRA (0920-0007)

26. **Was the patient hospitalized for this illness? If "yes":** ☐ Y ☐ N ☐ U

Admission Date ☐☐ MONTH ☐☐ DAY ☐☐☐☐ YEAR

Discharge Date ☐☐ MONTH ☐☐ DAY ☐☐☐☐ YEAR

Total duration of stay in the hospital: _____ Days

Hospital Information _____
NAME
_____

27. **Did the patient die from varicella or complications (including secondary infection) associated with varicella? If "yes":** ☐ Y ☐ N ☐ U

Date of Death ☐☐ MONTH ☐☐ DAY ☐☐☐☐ YEAR

Autopsy performed? ☐ Y ☐ N ☐ U

Cause of death _____

NOTE: Fill out varicella death worksheet.

LABORATORY

Y=Yes N No U Unknown

28. **Was laboratory testing done for varicella? If "yes":** ☐ Y ☐ N ☐ U

29. **Direct fluorescent antibody (DFA) technique?** ☐ Y ☐ N ☐ U

Date of DFA ☐☐ MONTH ☐☐ DAY ☐☐☐☐ YEAR

DFA Result
☐ Positive ☐ Pending
☐ Negative ☐ Not Done
☐ Indeterminate ☐ Unknown

30. **PCR specimen?** ☐ Y ☐ N ☐ U

Date of PCR Specimen ☐☐ MONTH ☐☐ DAY ☐☐☐☐ YEAR

Source of PCR specimen: *(check all that apply)*
☐ Vesicular Swab ☐ Saliva
☐ Scab ☐ Blood
☐ Tissue Culture ☐ Urine
☐ Buccal Swab ☐ Macular Scraping
☐ Other _____

PCR Result
☐ Positive ☐ Not Done
☐ Negative ☐ Pending
☐ Indeterminate ☐ Unknown
☐ Other _____

31. **Culture performed?** ☐ Y ☐ N ☐ U

Date of Culture Specimen ☐☐ MONTH ☐☐ DAY ☐☐☐☐ YEAR

Culture Result
☐ Positive ☐ Pending
☐ Negative ☐ Not Done
☐ Indeterminate ☐ Unknown

32. **Was other laboratory testing done? If "yes":** ☐ Y ☐ N ☐ U

Specify Other Test
☐ Tzanck smear
☐ Electron microscopy

Date of Other Test ☐☐ MONTH ☐☐ DAY ☐☐☐☐ YEAR

Other Lab Test Result
☐ Positive **(results consistent with varicella infection)**
☐ Negative
☐ Indeterminate ☐ Not Done
☐ Pending ☐ Unknown

Test Result Value _____

33. **Serology performed?** ☐ Y ☐ N ☐ U

34. **IgM performed? If "yes":** ☐ Y ☐ N ☐ U

Type of IgMTest
☐ Capture ELISA ☐ Unknown
☐ Indirect ELISA ☐ Other _____

Date IgM Specimen Taken ☐☐ MONTH ☐☐ DAY ☐☐☐☐ YEAR

IgM Test Result
☐ Positive ☐ Pending
☐ Negative ☐ Not Done
☐ Indeterminate ☐ Unknown

Test Result Value _____

35. **IgG performed? If "yes":** ☐ Y ☐ N ☐ U

Type of IgG Test:
☐ Whole Cell ELISA (specify manufacturer):
_____
☐ gp ELISA (specify manufacturer):
_____
☐ FAMA ☐ Latex Bead Agglutination
☐ Other _____

Date of IgG-Acute ☐☐ MONTH ☐☐ DAY ☐☐☐☐ YEAR

IgG-Acute Result
☐ Positive ☐ Pending
☐ Negative ☐ Not Done
☐ Indeterminate ☐ Unknown

Test Result Value _____

Date of IgG-Convalescent ☐☐ MONTH ☐☐ DAY ☐☐☐☐ YEAR

IgG-Conv. Result
☐ Positive ☐ Pending
☐ Negative ☐ Not Done
☐ Indeterminate ☐ Unknown

Test Result Value _____

36. **Were the clinical specimens sent to CDC for genotyping (molecular typing)? If "yes":** ☐ Y ☐ N ☐ U

Date sent for genotyping ☐☐ MONTH ☐☐ DAY ☐☐☐☐ YEAR

37. **Was specimen sent for strain (wild- or vaccine-type) identification?** ☐ Y ☐ N ☐ U

Strain Type
☐ Wild Type Strain
☐ Vaccine Type Strain
☐ Unknown

VACCINE INFORMATION

Y=Yes N No U Unknown

38. **Did the patient receive varicella-containing vaccine?** ☐ Y ☐ N ☐ U
If "no," reason:
- ☐ Born outside the United States
- ☐ Lab evidence of previous disease
- ☐ MD diagnosis of previous disease
- ☐ Medical contraindication
- ☐ Never offered vaccine
- ☐ Parent/patient forgot to vaccinate
- ☐ Parent/patient refusal
- ☐ Parent/patient report of previous disease
- ☐ Philosophical objection
- ☐ Religious exemption
- ☐ Under age for vaccination
- ☐ Other _____
- ☐ Unknown

39. **Number of doses received *on* or *after* first birthday:** _____ Doses

40. **If patient is >=6 years old *and* received one dose *on* or *after* 6th birthday but never received second dose, what is the reason?**
- ☐ Born outside the United States
- ☐ Lab evidence of previous disease
- ☐ MD diagnosis of previous disease
- ☐ Medical contraindication
- ☐ Never offered vaccine
- ☐ Parent/patient forgot to vaccinate
- ☐ Parent/patient refusal
- ☐ Parent/patient report of previous disease
- ☐ Philosophical objection
- ☐ Religious exemption
- ☐ Other _____
- ☐ Unknown

VACCINATION RECORD

Vaccination Date(s)	Vaccine Type	Manufacturer	Lot Number
__ __/__ __/__ __ __ __			
__ __/__ __/__ __ __ __			
__ __/__ __/__ __ __ __			
__ __/__ __/__ __ __ __			
__ __/__ __/__ __ __ __			

EPIDEMIOLOGIC

41. **Case Investigation Start Date** ☐☐ MONTH ☐☐ DAY ☐☐☐☐ YEAR

42. **Has this patient ever been diagnosed with varicella before?** ☐ Y ☐ N ☐ U
If "yes":
Age at Diagnosis ☐☐☐
Age Type
- ☐ Years ☐ Days
- ☐ Months ☐ Hours
- ☐ Weeks ☐ Unknown

43. **Previous case diagnosed by:**
- ☐ Physician/Health Care Provider
- ☐ Parent/Friend
- ☐ Other _____

44. **Where was the patient born (country)?** _____

45. **Is this case epi-linked to another confirmed or probable case?** ☐ Y ☐ N ☐ U
If "yes," epi-linked to:
- ☐ Confirmed Varicella Case
- ☐ Probable Varicella Case
- ☐ Herpes Zoster Case

46. **Transmission Setting (Setting of Exposure)**
- ☐ Athletics
- ☐ College
- ☐ Community
- ☐ Correctional Facility
- ☐ Daycare
- ☐ Doctor's Office
- ☐ Home
- ☐ Hospital ER
- ☐ Other _____
- ☐ Hospital Outpatient Clinic
- ☐ Hospital Ward
- ☐ International Travel
- ☐ Military
- ☐ Place of Worship
- ☐ School
- ☐ Work
- ☐ Unknown

47. **Is this case a healthcare worker?** ☐ Y ☐ N ☐ U

48. **Is this case part of an outbreak of 5 or more cases?** ☐ Y ☐ N ☐ U
If "yes":
Outbreak Name: _____

49. **Case Status:**
- ☐ Confirmed
- ☐ Probable
- ☐ Suspect
- ☐ Not a Case
- ☐ Unknown

50. ***MMWR* Week:** _____

51. ***MMWR* Year:** _____

PREGNANT WOMEN

52. **If the case is female, is/was she pregnant during this varicella illness?** ☐ Y ☐ N ☐ U
If "yes":
Number of weeks gestation at onset of illness (1-45 weeks): _____ Weeks
Trimester at Onset of Illness
- ☐ 1st Trimester
- ☐ 2nd Trimester
- ☐ 3rd Trimester

53. **General Comments:** _____

Alaska Division of Public Health
Prevention Promotion Protection

Information for Healthcare Providers about Suspected Cases of Varicella (Chickenpox) with Laboratory Testing Recommendations

Varicella virus natural history

- An illness with acute onset of diffuse (generalized) maculopapulovesicular rash without other apparent cause. In vaccinated persons who develop varicella more than 42 days after vaccination (breakthrough disease), the disease is usually mild with fewer than 50 skin lesions and shorter duration of illness. The rash may also be atypical in appearance (maculopapular with few or no vesicles).
- The incubation period for varicella is 14 to 16 days after exposure to a varicella or a herpes zoster rash, with a range of 10 to 21 days.
- Varicella is highly contagious. The period of communicability is estimated to begin 1-2 days before the rash onset. The virus spreads in the air when an infected person coughs or sneezes. It can also be spread by touching or breathing in aerosolized virus from varicella lesions. Suspected or confirmed persons with chickenpox should be advised to stay home until all of the lesions have crusted.

Notification and reporting

Health care providers should report suspected and confirmed cases of chickenpox to the Section of Epidemiology (SOE) via fax at 907-561-4239 or telephone at 907-269-8000.

Providers should consider testing any patient with suspected chickenpox, as the results can provide assurance in the clinical setting and impact public health decisions.

Laboratory Specimens

- **Varicella Zoster Virus VZV PCR is the method of choice for rapid clinical diagnosis (Table 1).**
  - Preferred specimens for diagnosis of acute infection are best collected by unroofing a vesicle, preferably a fresh fluid-filled vesicle, and then rubbing the base of the skin lesion using a Dacron® swab*. Crusts from lesions are also excellent specimens for PCR.

  - The specimens should be placed in a sterile container and should be submitted (on cool packs) to the Alaska State Virology Laboratory (ASVL). Swabs must be placed individually into separate, empty tubes to avoid contamination. **Do not place transport medium into the tube; the specimen MUST be kept dry.** ASVL will send specimens to an out-of-state CDC contract lab for PCR testing. When urgent varicella PCR results are needed due to clinical or public health concerns, health care providers should contact the SOE for possible varicella PCR testing at the Alaska State Public Health Laboratory (ASPHL).

*Swabs: use synthetic material swabs only – cotton or calcium-alginate tips and wooden or metal shafts are not acceptable.

Laboratory Request Forms

1. ASVL laboratory request form: http://dhss.alaska.gov/dph/Labs/Documents/publications/FbxSupplyReq.pdf
2. Complete the patient and submitter information. In the Miscellaneous Viral Serology area, select Varicella Zoster, check patient is symptomatic. In the remarks box, write PCR testing.

Table 1. Specimens for varicella zoster virus testing submitted to ASVL

Test	Varicella Zoster
Testing Lab	Alaska State Virology Laboratory - Fairbanks
Disease(s)	Chickenpox, Herpes Zoster, Varicella, Shingles
Organism(s)	Varicella-Zoster Virus (VZV)
Test Method	**Serology** (VZV IgG Antibody) 1. This test is used to determine immune status. 2. The test is performed at ASVL by EIA. **PCR** (VZV Nucleic Acid) 1. This test is used to determine active infection. 2. Testing will be performed at a CDC contract lab.
Specimen	**Serology** • Centrifuged serum in SST (serum separator tubes - tiger top, marble top or yellow top with no additives) **PCR** 1. Scabs and/or 2. Vesicular lesion swabs in a dry, sterile container. **PLEASE NOTE**: *Do not place scabs or swabs for VZV into UTM. They should be kept dry, in a clean container. Skin lesion swab should be placed in a separate container from the scab.* *(Swabs: use synthetic material swabs only – cotton or calcium-alginate tips and wooden or metal shafts are not acceptable)*
Storage/ Transport	**Serology** • Store refrigerated or frozen; indicate date frozen (if applicable) on requisition • Ship on frozen packs (preferred) or cold packs • *Ambient temperature shipping is not optimal for testing.* **PCR** 1. Ship specimens to ASVL at ambient temperature. 2. ASVL will overnight the sample to the CDC Contract Lab.
Results	**Serology** 1. *Negative:* No significant level of detectable antibody. Presumed to be susceptible to primary infection. 2. *Equivocal:* A borderline result. Result falls w/in ±10% of the positive threshold. Resubmission may be indicated. 3. *Positive:* Indicates immunity by vaccination or infection. **PCR** 1. Not Detected • VZV nucleic acid was not detected. 2. Detected • VZV nucleic acid was detected.
Turnaround Time	**Serology:** 7-10 days **PCR:** 2 days from date of receipt at CDC Contract Lab.

- Detailed Alaska Public Health Laboratory information is available here: http://www.dhss.alaska.gov/dph/Labs/Pages/publications/default.aspx

- State of Alaska Varicella webpage: http://dhss.alaska.gov/dph/Epi/id/Pages/Varicella.aspx