

VARICELLA QUICKSHEET



Kentucky Public Health
Prevent. Promote. Protect.

SYMPTOMS

PRIMARY INFECTION

- Rash often first sign of disease in children; adults may have 1 to 2 days of fever and malaise before rash
- Itching, non-grouped vesicles. Present mostly on trunk.
- In unvaccinated individuals, generalized and pruritic rash progresses rapidly
- Clinical course in healthy children is mild (fever up to 102°F and malaise, or headache usually resolve within 2 to 4 days after onset of the rash); adults may have more severe disease
- Recovery usually results in lifetime immunity

COMPLICATIONS

- Bacterial infection of skin lesions
- Pneumonia
- Central nervous system manifestations
- Reye syndrome (rare)

CONGENITAL VZV INFECTION

- Results from maternal infection in the first 20 weeks of gestation
- Associated with newborn limb hypoplasia, skin scarring, localized muscular atrophy, encephalitis, cortical atrophy, chorioretinitis, microcephaly, and low birth weight

ETIOLOGIC AGENT

Human (alpha) herpesvirus 3 (varicella-zoster virus, VZV) a member of the Herpesvirus group

TRANSMISSION

- *Direct contact with patient with varicella (chickenpox) or zoster (shingles)*
- *Droplet or airborne spread of vesicle fluid (chickenpox and zoster)*
- *Secretions of the respiratory tract (chickenpox)*
- *Indirectly by contaminated fomites.*

INCUBATION

14-16 days (range 10-21 days)

COMMUNICABILITY

1 to 2 days before onset of rash until all lesions have formed crusts

VARICELLA VACCINES

*VAR (Varivax)
MMRV (ProQuad)*

KENTUCKY VARICELLA OCCURRENCE

MMWR Year	2014	2015	2016	2017	2018	2019	2020	2021	2022
Confirmed Case Count	0	1	3	9	27	33	11	31	25
Probable Case Count	0	0	0	8	7	26	5	8	5

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CASE CLASSIFICATION

CLINICAL CRITERIA

In the absence of a more likely alternative diagnosis:

- An acute illness with a generalized rash with vesicles (maculopapulovesicular rash), **OR**
- An acute illness with a generalized rash without vesicles (maculopapular rash).

LABORATORY CRITERIA*

Confirmatory Laboratory Evidence:

- Positive polymerase chain reaction (PCR) for varicella-zoster virus (VZV) DNA[~]**OR**
- Positive direct fluorescent antibody (DFA) for VZV DNA, **OR**
- Isolation of VZV, **OR**
- Significant rise (i.e., at least a 4-fold rise or seroconversion[^]) in paired acute and convalescent serum VZV immunoglobulin G (IgG) antibody.^{+~}

Supportive Laboratory Evidence:

- Positive test for serum VZV immunoglobulin M (IgM) antibody.^{~**}

PROBABLE CASE

- Meets clinical evidence with a generalized rash with vesicles, **OR**
- Meets clinical evidence with a generalized rash without vesicles **AND**:
- Confirmatory or presumptive epidemiologic linkage evidence, **OR** Supportive laboratory evidence. **OR**
- Meets healthcare record criteria **AND**:
- Confirmatory or presumptive epidemiologic linkage evidence, **OR** Confirmatory or supportive laboratory evidence.

CONFIRMED CASE

- Meets clinical evidence **AND** confirmatory laboratory evidence,
- OR**
- Meets clinical evidence with a generalized rash with vesicles **AND** confirmatory epidemiologic linkage evidence.

EPIDEMIOLOGIC LINKAGE

Confirmatory Epidemiologic Linkage Evidence:

- Exposure to or contact with a laboratory-confirmed varicella case, **OR**
- Can be linked to a varicella cluster or outbreak containing ≥ 1 laboratory-confirmed case, **OR**
- Exposure to or contact with a person with herpes zoster (shingles) (regardless of laboratory confirmation).

Presumptive Epidemiologic Linkage Evidence:

- Exposure to or contact with a probable varicella case that had a generalized rash with vesicles.

*A negative laboratory result in a person with a generalized rash with vesicles does not rule out varicella as a diagnosis.

[^]PCR of scabs or vesicular fluid is the preferred method for laboratory confirmation of varicella. In the absence of vesicles or scabs, scrapings of maculopapular lesions can be collected for testing.

[~]Not explained by varicella vaccination during the previous 6-45 days.

[^]Seroconversion is defined as a negative serum VZV IgG followed by a positive serum VZV IgG.

⁺In vaccinated persons, a 4-fold rise may not occur.

^{**}IgM serology has limited value as a diagnostic method for VZV infection and is not recommended for laboratory confirmation of varicella. However, an IgM positive result in the presence of varicella-like symptoms can indicate a likely acute VZV infection. A positive IgM result in the absence of clinical disease is not considered indicative of active varicella.

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CASE INVESTIGATION

1. Confirm that laboratory results meet the case definition. The following lab results do not require any follow-up as they are almost always indicative of immunity or shingles:
 - a. Any VZV lab result for people over 50 years of age
 - b. VZV IgG results for patients over 20 years of age
 2. Confirm clinical case definition
 3. Review medical records or speak to an infection preventionist or physician to verify case definition and vaccination status
 4. Determine the vaccination status of the case
 5. Identify close contacts and ensure appropriate control measures are implemented
 - a. Did the patient have contact with another person with chickenpox or shingles rash illness 28 days prior to symptom onset
 - b. Did the patient attend day care or school while infectious (e.g., 2 days before rash onset until all the lesions crusted over
 - c. Does the patient reside in a residential institution
 - d. Does the patient have contact with persons who may be at high risk for complications from varicella disease because of their age or an underlying condition (e.g., immunocompromised persons, cancer patients, pregnant women, neonates whose mothers are not immune) while infectious
 6. Ensure all suspected, probable, and confirmed cases follow airborne and contact precautions until all lesions are crusted over
- The [Varicella Surveillance Worksheet](#) can serve as a guide for data collection during investigation of reported cases.

OUTBREAK

- In general, the threshold for an outbreak investigation should be 3 or more cases related to a location (e.g., school, church, household etc.) within a 3 week period.
 - In the presence of nosocomial varicella of known or suspected concurrent streptococcal infections, or among populations at high risk for complications (e.g., immunocompromised or susceptible adolescents or adults), the threshold for response should be 2 cases
- *Enter the outbreak in the [REDCap project: 2024 DEHP Outbreak Management](#)

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CONTROL MEASURES

- Identification of a single case of varicella should trigger appropriate intervention measures as such cases can be sources for potential outbreaks
- Isolate or exclude the case from the setting immediately
- Identify close contacts and verify immunity
 - Evidence of immunity to varicella includes:
 - Documentation of age-appropriate vaccination
 - Laboratory evidence of immunity
 - Birth before 1980
 - For healthcare personnel, pregnant people, and immunocompromised persons, birth before 1980 should not be considered evidence of immunity; in such cases, the other criteria of evidence of immunity should be sought
 - Diagnosis or verification of a history of varicella disease by a healthcare provider
 - Diagnosis or verification of a history of herpes zoster by a healthcare provider
- Identify cases in sensitive settings:
 - Immunocompromised persons (including people with HIV or AIDS)
 - Cancer patients
 - Pregnant women
 - Neonates whose mothers are not immune
- Provide postexposure vaccination as appropriate.

SCHOOL MANAGEMENT

- Cases in children in school and childcare settings shall be excluded until vesicles become dry OR, if lesions are not vesicular, until 24 hours have passed without new lesions.
- Because of the high likelihood of infection, school exclusion of nonimmune siblings of cases from day 8 after sibling's rash onset through day 21 after the last day the sibling was infectious is reasonable.
- Contacts who are unvaccinated and without other evidence of immunity should be excluded from the outbreak settings from day 8 to 21 after exposure. Once these contacts are vaccinated, they can return to the school
- In Kentucky, 2 doses of a varicella vaccine are required for K-12th grades; therefore, for those with only one dose on record, the health department can choose to recommend excluding those individuals as well and recommend they receive the second dose from their healthcare provider
- There are no specific public health recommendations for exclusion in non-outbreak settings, however, as a control measure, exclusion of under-vaccinated children or adults from high-risk settings can be considered.
 - If school exclusion is being considered, please contact KDPH for consultation
 - Local health departments should assist with communications to the school community.

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SPECIMEN COLLECTION FOR LABORATORY TESTING

Test Name	Specimens to take	Timing for specimen collection	Transport requirements
VZV PCR <i>*Preferred specimen</i>	Fluid from vesicles, nasal or throat swabs, serum, spinal fluid, urine, bronchial tree washing or inflamed joints	Acute illness 2–3 days after rash onset and fresh vesicles	Viral transport media; ship frozen or on ice
Serology <i>*Single IgG assay is useful to assess immune status. Paired serum distinguishes between recent primary infection and past infection</i>	Serum	Immune status: collect anytime except during acute illness Paired serologic diagnosis: acute within 7–10 days of onset	Sera should be shipped frozen on dry ice or refrigerated in cold packs
Vaccine wild-type discrimination	Material from vesicles, scabs, saliva	From day of rash onset until crusted lesions resolve	Vesicular swabs and scabs can be shipped dry at ambient temperature

[CDC | Collecting Specimens for Varicella-Zoster Virus \(VZV\) Testing](#)

STANDARD PRECAUTIONS FOR ALL PATIENT CARE

- Standard Precautions are used for all patient care. They're based on a risk assessment and make use of common sense practices and personal protective equipment use that protect healthcare providers from infection and prevent the spread of infection from patient to patient.

TRANSMISSION-BASED PRECAUTIONS

- Transmission-Based Precautions are the second tier of basic infection control and are to be used in addition to Standard Precautions for patients who may be infected or colonized with certain infectious agents for which additional precautions are needed to prevent infection transmission.

Contact Precautions

Droplet Precautions

Airborne Precautions

VARICELLA VACCINE FOR HEALTHY PERSONS IN CONTEXT OF EXPOSURE

- Varicella vaccine is recommended for postexposure administration for unvaccinated persons, 12 months of age or older, without other evidence of immunity
 - The varicella vaccine should be administered within three days after exposure in order to be most effective
- Persons who have not received 2 doses should be brought up to date
- VariZIG (Varicella-Zoster Immune Globulin) is not recommended for healthy, full-term infants who are exposed post-natally, even if their mothers have no history of varicella
- Child-care facility setting:
 - Varicella vaccine (or history of prior disease) is required for all children (> 12 months of age) to enroll in any licensed child-care facility in Kentucky, and vaccine is recommended for all susceptible children (> 12 months of age)

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VARIZIG FOR PERSONS WHO HAVE CONTRAINDICATIONS TO VACCINATION IN CONTEXT OF EXPOSURE

- **Pregnant people**
 - Women known to be pregnant or attempting to become pregnant should not receive a varicella containing vaccine.
 - Evidence of varicella immunity should be obtained as soon as possible. If no varicella antibody is detectable, VariZIG should be strongly considered for pregnant women who have been exposed
 - VariZIG should be given as soon as possible and within 10 days of exposure
- **Immunocompromised patients**
 - This category is comprised of persons who have primary and acquired immunodeficiency disorders, neoplastic diseases and those who are receiving immunosuppressive treatment. Most immunocompromised persons should not receive varicella vaccine.
 - Patients receiving monthly high-dose (> 400 mg/kg) Immune Globulin Intravenous (IGIV) are likely to be protected and probably do not require VariZIG if the most recent dose of IGIV was administered < 3 weeks before exposure
 - CDC recommends VariZIG to immunocompromised patients without evidence of immunity as soon as possible and within 96 hours of exposure
- **Newborn infants**
 - CDC recommends VariZIG to newborns infants whose mothers develop chickenpox with in 5 days before delivery up to 48 hours after delivery
- **Premature neonates exposed postnatally**
 - CDC recommends VariZIG to hospitalized premature infants born at greater or equal to 28 weeks of gestation, whose mothers do not have evidence of immunity to varicella
 - VariZIG is also recommended for hospitalized premature infants born less than 28 weeks of gestation or who weigh < 1,000g at birth, regardless of their mother's evidence of immunity to varicella
- **Healthcare Personnel (HCP)**
 - Nosocomial transmission of varicella is well recognized. To prevent disease and nosocomial spread, vaccination is recommended routinely for all health care personnel without evidence of immunity and is the preferred method for preventing varicella in healthcare settings. Preferably, HCP should be vaccinated when they begin employment. Routine testing for varicella immunity after 2 doses of vaccine is not recommended for the management of those fully vaccinated
 - HCP who have received 2 doses of vaccine and who are exposed should be monitored daily during days 10-21 after exposure through the employee health program or by an infection control nurse to determine clinical status
 - HCP who have received 1 dose of vaccine and who are exposed should receive the second dose with single-antigen varicella vaccine within 3-5 days after exposure
 - Unvaccinated HCP who have no other evidence of immunity who are exposed to VZV are potentially infective from days 10-21 after exposure and should not have patient contact during this period. They should receive postexposure vaccination as soon as possible.
- **Persons Who Should Not be Vaccinated**
 - Persons Allergic to the Vaccine
 - Persons with a severe allergic reaction to a vaccine component or following a prior dose of vaccine should not receive varicella vaccine.
 - Persons with Acute Illness
 - Vaccinations of persons with moderate or severe acute illness should be postponed until the condition has improved.