

West Virginia Department of Health and Human Resources Information for Healthcare Providers on Varicella Exposure Management

Disease Information

Causative agent: Varicella-zoster virus (VZV), a member of the herpes family, results in a characteristic primary infection followed by a latent infection in the dorsal root ganglia. Reactivation results in herpes zoster or shingles.

Incubation Period: 10-21 days, most commonly 14-16 days.

Infectious Period: 1-2 days before rash onset until all of the vesicles have formed scabs, which is usually 4-5 days after onset of rash.

Transmission: Airborne spread from respiratory secretions of infectious persons with primary varicella or by direct contact with either varicella or zoster lesions.

Varicella in children: Varicella in children is usually a self-limited disease that lasts 4-5 days and is characterized by fever, malaise, and a generalized vesicular rash typically consisting of 250-500 lesions. Varicella in vaccine recipients is milder, usually with ≤ 50 skin lesions, lower risk of fever, and more rapid recovery.

Varicella in adolescents and adults: Varicella may be a more severe disease in adolescents and adults. The age of peak varicella incidence is shifting from children younger than 10 years old to children 10 to 14 years old; although, the incidence is lower than in the prevaccine era. Immunity is generally lifelong. As vaccine coverage increases and the incidence of varicella decreases, a number of cases are occurring in immunized people as breakthrough disease. Adults account for 5% of reported cases of varicella but approximately 35% of mortality. Since 1996, the number of hospitalizations and deaths from varicella has declined more than 90% among children and adults.

Varicella in immunocompromised persons: Progressive varicella may result in encephalitis, hepatitis, or pneumonia in persons with organ transplants, those on cancer chemotherapy, or those with other forms of cellular immune dysfunction. Persons with advanced HIV infection or those on even intermittent corticosteroid therapy are at increased risk for complications.

Varicella in pregnancy: Pregnant women are at increased risk for complications. Fetal infection during the first or second trimester of pregnancy occasionally results in fetal death, or varicella embryopathy (limb atrophy and scarring of the extremity), or central nervous system or eye abnormalities. Children exposed to VZV in utero during the second 20 weeks of gestation can develop inapparent primary VZV infection, but may develop zoster later in life. If a mother develops primary varicella infection from 5 days before to 2 days after delivery, the infection can be fatal for the infant.

The Advisory Committee on Immunization Practices Revised Criteria for Evidence of Immunity to

Varicella includes any of the following:

1. Documentation of two doses of varicella vaccine: (See current recommendations)
 - a) *Preschool-aged children ≥ 12 months of age: one dose*
 - b) *School-aged children, adolescents, and adults: two doses*

2. Laboratory evidence of immunity or laboratory confirmation of prior disease
 3. Born in the US before 1980, excluding health-care workers, pregnant women, and immunocompromised individuals. These individuals need to meet one of the other criteria for evidence of immunity.
 4. Receipt from a healthcare provider of a diagnosis of chickenpox or history of chickenpox.
 5. Receipt from a healthcare provider of a diagnosis of herpes zoster or verification of a history of herpes zoster (shingles).
- For people reporting a history of or presenting with atypical and/or mild cases, assessment by a physician or their designee is recommended and one of the following should be sought:
 - a) *An epidemiologic link to a typical varicella case or*
 - b) *Evidence of laboratory confirmation.*

When such documentation is lacking, people should not be considered as having a valid history of disease because other diseases may mimic mild atypical varicella.

Varicella in vaccinated persons is usually mild or atypical and can pose challenges for clinical diagnosis. Laboratory confirmation is important as fewer cases are seen among highly vaccinated populations. This link demonstrates how to collect rash specimens.

<http://www.cdc.gov/vaccines/vpd-vac/varicella/surv-collect-virus-spec.htm#form>

Reporting Varicella in West Virginia:

Varicella cases are reportable by phone or fax as an aggregate total to your local health department weekly in West Virginia along with influenza-like-illness. Contact your local health department for details. An outbreak of varicella in any setting is reportable immediately by phone to your local health department or West Virginia Infectious Disease Epidemiology Program (IDEP) at 800-423-1271 in WV or 304-558-5358.

Deaths due to varicella are reportable to your local health department or IDEP by using West Virginia Electronic Disease Surveillance System form for Chickenpox (Varicella) Death at

<http://www.wvdhhr.org/idep/pdfs/wvedss/chickenpoxDeath.pdf> or using WV Reportable Disease Card (yellow card) along with clinical and laboratory information to your local health department within 1 week.

Management of Varicella Exposure:

Vaccination: Vaccination is effective in preventing or reducing severity of disease if administered within 72 hours of exposure and may be effective if administered within 5 days of exposure. Post-exposure vaccination may be offered to susceptible persons following exposure. It is unknown if Reye's syndrome results from administration of salicylates after immunization for varicella in children. No cases have been reported. However; because of the association between Reye's syndrome, natural varicella infection, and salicylates, the vaccine manufacturer recommends that salicylates be avoided for 6 weeks after administration of varicella vaccine. Healthcare providers should weigh the theoretic risks associated with varicella vaccine against the known risks of wild-type virus in children receiving long-term salicylates therapy.

Outbreaks: During a varicella outbreak, persons who have received 1 dose of varicella vaccine should receive a 2nd dose. For children younger than 13 years, the interval between doses is at least 3 months. For children and adults 13 years and older, the interval between doses is 4 to 8 weeks apart.

Varicella-Zoster Immune Globulin (VariZIG): See Tables 1 and 2 for details on postexposure prophylaxis for immunocompromised and the high risk individuals. Persons who are pregnant or immunocompromised are at increased risk of varicella complications; however, varicella vaccination is contraindicated in these individuals. Such individuals would be offered Varicella Zoster immune globulin if a true exposure to varicella is documented. VariZig is indicated if an exposure has occurred (Table 1) and the exposed person meets one of the criteria in Table 2.

Table 1 - Types of Exposure to Varicella or Zoster for Which VariZIG is Indicated for Susceptible Peopleⁿ (n= patient should meet criteria of both significant exposure and candidacy for receiving VariZIG, as given in Table 2).

Type of Facility	Description
Household	Residing in the same household
Playmate	Face-to-face* indoor play (* the contact should be nontransient, some experts suggest a contact of 5 or more minutes as constituting significant exposure; others define close contact as more than 1 hour)
Hospital: Varicella	In same 2- to 4-bed room or adjacent beds in a large ward, face-to-face contact with an infectious staff member or patient, or visit by a person deemed contagious
Zoster	Intimate contact (e.g., touching or hugging) with a person deemed contagious
Newborn infant:	Onset of varicella in the mother 5 days or less before delivery or within 48 hours after delivery; VariZIG or IGIV is not indicated if the mother has zoster.

Table 2 – Candidates for Acyclovir or VariZIG, Provided Significant Exposure Has Occurred.

Immunocompromised children, including children who are infected with human immunodeficiency virus, adolescents and adults without history of varicella infection or varicella vaccination
Susceptible pregnant women: If VariZIG is not available, clinicians may choose to administer IGIV or closely monitor the pregnant woman for signs and symptoms of varicella and institute treatment with acyclovir if disease develops.
Newborn infant whose mother had onset of chickenpox within 5 days before delivery or within 48 hours after delivery
Hospitalized premature infant (≥ 28 wk of gestation) whose mother lacks a reliable history of chickenpox or serologic evidence of protection against varicella
Hospitalized premature infants (<28 wk of gestation or ≤ 1000 g birth weight), regardless of maternal history of varicella infection or varicella-zoster virus serostatus

For maximum effectiveness, VariZIG should be given as soon as possible, but within 96 hours. VariZIG is available under an investigational new drug (IND) protocol and can be requested by calling the 24-hour number at FFF Enterprises (800-843-7477).

Refer to Redbook 2009 Report of the Committee on Infectious Diseases for additional treatment and dosing information.

Chemoprophylaxis: Some experts recommend prophylaxis with acyclovir if VariZIG is not available or >96 hours have passed since exposure for a susceptible immunocompromised patient. Recommended dosing is (80 mg/kg per day, administered 4 times/day for 7 days with maximum dose 800 mg, 4 times/day). A 7day course of acyclovir may be given to susceptible adults beginning 7 to 10 days after varicella exposure if vaccine is contraindicated. Candidates for Acyclovir or VariZIG, provided significant exposure has occurred are listed in table 2.

Hospital Exposure: If an inadvertent exposure in the hospital to an infected patient, health care professional, or visitor occurs, the following measures for control are recommended:

- Identify personnel and patients who have been exposed and are susceptible to varicella
- Varicella immunization is recommended for people without evidence of immunity, provided there are no contraindications to use of the vaccine.
- Administer VariZIG to appropriate candidates. Administer IGIV if VariZig is not available.
- Discharge all exposed susceptible patients as soon as possible.
- All exposed susceptible patients who cannot be discharged should be placed in isolation from day 8 to 21 after exposure. For patients who received VariZig or IGIV, isolation should continue until day 28.
- Furlough or excuse all susceptible exposed personnel from patient contact from day 10 to day 21 after exposure to infectious patient or to day 28 for people who have received VariZIG.
- There is no need to do serological testing for immunity for personnel who have been immunized.
- Immunized health care personnel that develop breakthrough infection are considered infectious.

References:

1. American Academy of Pediatrics. Varicella-Zoster Infections. In: Pickering, LK, ed. *Red Book: 2006 Report of the Committee on Infectious*

- Diseases*. 28th ed. Elk Grove Village, IL: American Academy of Pediatrics; 2009: 714-721.
2. ACIP Provisional Recommendations for Prevention of Varicella:
http://www.wvdhhr.org/idep/pdfs/idep/varicella/varicella_acip_recs_prov_june_2006.pdf
 3. Centers for Disease Control and Prevention, "Varicella (Chickenpox) Vaccine Q&A" Accessed at:
<http://www.cdc.gov/vaccines/vpd-vac/varicella/vac-faqs-gen.htm> on 12/23/2009.