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 adolescents and adults: Varicella may be a more severe disease in adolescents and adults. Despite the fact that adults account for only 5% of varicella cases per year, they account for a disproportionate number of deaths of deaths (55%) and hospitalizations (33%) compared to children.

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.

ACIP Revised Criteria for Evidence of Immunity to Varicella includes any of the following:

1. Documentation of age-appropriate vaccination:
    a) Preschool-aged children ≥12 months of age: one dose
    b) School-aged children, adolescents, and adults: two doses (See 2007 Recommended Childhood and Adolescent Immunization Schedule and Adult

Schedule for detail.)

2. Laboratory evidence of immunity or laboratory confirmation of disease
3. Born in the US before 1980 (For healthcare providers and pregnant women, birth before 1980 should not be considered evidence of immunity)
4. A healthcare provider diagnosis of varicella or healthcare provider verification of history of varicella disease:
   - Verification of history or diagnosis of typical disease can be done by any healthcare provider (e.g., school or occupational clinic nurse, nurse practitioner, physician assistant, physician).
   - 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, if laboratory testing was performed at the time of acute disease. 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.
5. History of herpes zoster based on healthcare provider diagnosis.

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. Please 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 is 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

1. *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. Whether Reye's syndrome results from administration of salicylates after immunization for varicella in children, is unknown. 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 should, resources permitting, receive a 2nd dose, provided the appropriate vaccination interval has elapsed since the first dose (3 months for persons aged 12 months to 12 years and at least 4 weeks for persons aged 13 and older).

Varicella-Zoster Immune Globulin (VariZIG): See Tables 1 and 2 for details on postexposure prophylaxis for immunocompromised and the high risk individuals.

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 Zoster Newborn infant:	 In same 2- to 4-bed room or adjacent beds in a large ward, face-t-face contact with an infectious staff member or patient, or visit by a person deemed contagious Intimate contact (eg, touching or hugging) with a person deemed contagious 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).

If VariZIG is not available, intravenous immune globulin containing antivaricella antibodies (IGIV) can be used. The recommendation for use of IGIV is based on Abest judgment of experts@ and is supported by reports comparing VZV IgG antibody titers measured in both IGIV and VariZIG preparations and patients given IGIV and VariZIG. Licensed IGIV preparations contain antivaricella antibodies at varying levels.

Some experts advise use of VariZIG for any exposed susceptible newborn infant who has a mother with severe skin involvement.

Serology testing of recipients of VariZIG, 2 months or later after VariZIG administration may be helpful to ascertain the immune status in the event of subsequent exposure. Some experts, however, would advise VariZIG administration after subsequent exposures regardless of serologic results because of the unreliability of the result in immunocompromised people and the uncertainty about the duration of protection from previous VariZIG administration.

Any patient who received VariZIG to prevent varicella subsequently should receive age-appropriate varicella vaccine, 5 months after receiving VariZIG, if there is no contraindication to the vaccine and did not develop varicella after VariZIG administration.

Chemoprophylaxis: If VariZIG is not available or >96 hours have passed since exposure for a susceptible immunocompromised patient, some experts recommend prophylaxis with acyclovir (80 mg/kg per day, administered 4 times/day for 7 days is recommended, maximum dose 800 mg, 4 times/day). A 7-day course of acyclovir may be given to susceptible adults beginning 7 to 10 days after varicella exposure if vaccine is contraindicated. However, limited data support use of acyclovir as postexposure prophylaxis and, clinicians may choose this option with or without other methods. Most adults with no history or an uncertain history of chickenpox are immune. Candidates for Acyclovir or VariZIG, provided significant exposure has occurred are listed in table 2.

Hospital Exposure: If an advertent exposure in the hospital to an infected patient occurs, health care professional, or visitor should:

- Identify personnel and patients who have been exposed and are susceptible to varicella
- Administer VariZIG or IGIV if VariZIG is not available, to appropriate candidates (See definition of exposure for hospital above)
- Discharge all exposed susceptible patients as soon as possible.
- Isolate all exposed susceptible patients who cannot be discharged from day 10 to day 21 after exposure to the index patient and isolate until day 28, those who received VariZIG,

- Furlough or excuse from patient contact all susceptible exposed personnel from day 10 to day 21 after exposure to infectious patient or to day 28 for people who have received VariZIG.
- Do not test for serology to check immunity for personnel who have been immunized.
- For those immunized health care personnel who develop breakthrough infection, consider them infectious.
- Recommend varicella immunization for susceptible personnel if there are no contraindications to vaccine use.

References:

1. American Academy of Pediatrics. Varicella-Zoster Infections. In: Pickering, LK, ed. *Red Book: 2006 Report of the Committee on Infectious Diseases.* 27th ed. Elk Grove Village, IL: American Academy of Pediatrics; 2006: 711-725.
2. ACIP Provisional Recommendations for Prevention of Varicella: http://www.wvdhhr.org/idep/pdfs/idep/varicella/varicella_acip_recs_prov_june_2006.pdf