01.34 Varicella-Zoster Virus Infection Control Program

Purpose
To describe a Varicella-Zoster Virus (VZV) Infection Control Program

Audience
All employees of UTMB hospitals, clinics, Victory Lakes outpatient specialty care and surgical center, contract workers, volunteers and students with patient contact

Policy
It is the intent of this program to prevent the nosocomial transmission of VZV between patients and between patients and healthcare workers

All healthcare workers (HCWs) who have patient contact or work in patient care areas must have evidence of immunity (definite history of chickenpox, positive serologic test for VZV or two doses of VZV vaccine) to VZV. It shall be the responsibility of the employee health service or respective management group to assure that all healthcare workers who have patient contact or work in patient care areas are immune to VZV or have received two doses of the VZV vaccine at least 4 weeks apart.

New Employees
- At the time of the post hire employee health evaluation, a history of VZV infection (chickenpox or herpes zoster) shall be taken. A positive history shall be recorded in the employee's health record
- A negative or equivocal history of VZV infection shall be recorded in the employee's health record, and if a serologic test for VZV antibody is negative and there are no contraindications to vaccination, the employee will be immunized with two doses of the VZV vaccine (see section on immunization)
- Healthcare workers who are susceptible to VZV, have no contraindications to vaccination, have refused vaccination, and who are later exposed to VZV in the course of their patient care duties, will be immediately offered a dose of vaccine and whether or not they receive the vaccine, will be furloughed without pay during their incubation/contagious period. After receipt of the first dose of vaccine, a second dose will be offered 4 - 8 weeks later if the HCW does not develop chickenpox.

Current Employees
- Employees may be screened for immunity to VZV by history by Employee Health
- Their immune status by history shall be recorded in their employee health record.
- Employees with a negative or equivocal history of prior VZV infection who have not been vaccinated will be given two doses of the VZV vaccine 4 - 8 weeks apart if a serologic test for VZV antibody is negative and there are no contraindications to vaccination. Employees who have received one dose of VZV vaccine at least 4 weeks prior to the time of their annual tuberculin test may be given their second dose of VZV vaccine. (See section on immunization).
• All healthcare workers who are discovered to have a negative or equivocal history for VZV infection at the time of exposure to VZV and who have not been vaccinated will be given the first of 2 doses of the VZV vaccine if a serologic test for VZV antibody is negative and there are no contraindications to vaccination (see section on immunization). They will be furloughed from 10 days after their first exposure until 21 days after their last exposure. A second dose of vaccine will be given 4 – 8 weeks after the first dose if the HCW does not develop chickenpox.

• Healthcare workers who are susceptible to VZV, have no contraindications to vaccination, have refused vaccination and who are later exposed to VZV in the course of their patient care duties will be immediately offered a dose of vaccine and whether or not they receive the vaccine, will be furloughed without pay during their incubation/contagious period. After receipt of the first dose of vaccine, a second dose will be given 4 - 8 weeks later if the HCW does not develop chickenpox.

Immunization with VZV Vaccine

• Healthcare workers who are eligible for VZV vaccine by history shall first be tested for immunity using a serologic test to detect antibodies to VZV.

• Individuals who are seronegative for VZV will be given the VZV vaccine, if they have none of the following contraindications for vaccination:
  – History of an anaphylactic reaction to neomycin
  – Presence of severe illness
  – Presence of untreated active tuberculosis
  – History of altered immunity
  – Malignant neoplasms
  – Primary (inherited) immunodeficiency including individuals with first degree relatives who have a primary immunodeficiency syndrome
  – Acquired immunodeficiencies including HIV infection, cellular immunodeficiencies, hypogammaglobulinemia, dysgammaglobulinemias, and steroid therapy with ≥2mg/kg body weight per day
  – Pregnancy
  – Receipt of blood or plasma transfusions, immune globulin, or Varicella-Zoster Immune Globulin (VariZIG) in the last 5 months

• Vaccine shall be administered subcutaneously in two doses of 0.5 ml 4 to 8 weeks apart.

• The vaccine must be stored at an average temperature of -15° C or +5° F or colder.

• Vaccine must be used within 30 minutes of reconstitution. Vaccine remaining after this time shall be discarded.
- Post-vaccination rash in employees.
  - Employees will be instructed that they may develop a rash 2-6 weeks after vaccination and that this rash may be either a localized rash at the site of vaccination or a diffuse varicella-like rash. Either rash may be atypical with macules or papules rather than vesicles. Employees will be instructed to report immediately to the Employee Health Service if a rash develops.
  - Employees with either an injection site rash or a generalized rash will be furloughed until the rash resolves (usually in 2-3 days).
  - The Employee Health Service will verify that the rash has resolved and that the employee is not potentially infectious to others before allowing the employee to resume patient care duties.

- A contact investigation shall not be done as the result of exposure to a healthcare worker with a post-vaccination skin rash.

- Patients with suspected or documented primary VZV infection (chickenpox) and immunocompromised patients with localized or disseminated herpes zoster shall be placed on Contact and Airborne Precautions.

- Immunocompetent patients with localized herpes zoster shall be placed on Contact Precautions.

- Isolation shall continue until all skin lesions are crusted.

- Susceptible patients exposed to VZV shall be discharged from the hospital as soon as possible after notification of their attending physician.

- Susceptible patients exposed to VZV infection who must remain hospitalized shall be placed on Contact and Airborne Precautions from 10 days after the first contact to 21 days after the last contact.

**Exposure of Patients**

- Definition of exposure for patients (excluding perinatal exposure)
  - Sharing contiguous air space with an infected patient or healthcare worker i.e., in the same room.
  - Exposure must take place from 2 days before onset of rash to the time that all skin lesions are crusted in the index patient.

- Perinatal exposure is defined as onset of primary VZV infection (chickenpox) in the mother from 5 days before birth until 2 days after birth.

- Investigation and prevention for patients exposed to the Varicella-Zoster Virus
  - A history of primary VZV infection (chickenpox) or reactivation of latent VZV infection (herpes zoster or shingles) shall be taken from each exposed patient or their parent or guardian.
  - Patients with the following conditions that place them at increased risk for severe VZV disease shall be identified and recorded.
    - Patients with immunocompromising diseases and treatments
    - Patients with underlying skin diseases and burns
    - Pregnancy
• Serologic tests shall be performed for detection of VZV antibody in the afore mentioned patients. If the patient is identified 24-72 hours after the exposure, a decision to administer VariZIG will be based on the patient’s serologic test results. If serologic test results cannot be obtained within 72 hours after exposure, a decision to administer VariZIG to a patient will be based on clinical history. (see VariZIG section below)

• Patients who are unable to receive prophylaxis with VariZIG may be prophylaxed with acyclovir (see acyclovir section below)

  – Serologic tests shall be performed for detection of VZV antibody in all other patients with negative or equivocal histories for VZV infection.

  – Patients without immunity to VZV shall be placed on Contact and Airborne Precautions from 10 days after the first exposure until 21 days after the last exposure (28 days for patients who received VariZIG, see below).

Exposure of Healthcare Workers

  • Definition of exposure for healthcare workers

    – Sharing contiguous air space with an infected patient or healthcare worker in the same room.

    – Exposure must take place from 2 days before onset of rash to the time that all skin lesions are crusted in the index patient.

  • Investigation and prevention for HCWs exposed to the Varicella-Zoster Virus

    – A history of primary VZV infection (chickenpox) or reactivation of latent VZV infection (herpes zoster or shingles) shall be taken from each exposed healthcare worker. Employee Health records shall be checked by Employee Health Clinic staff for evidence of a positive serologic test and previous vaccinations(s) with VZV vaccine.

    – Serologic tests shall be performed for detection of VZV antibody for healthcare workers with a negative or equivocal history for VZV infection who have not been vaccinated.

    – Healthcare workers who have no detectable VZV antibody and who have never been vaccinated will be given the first dose of VZV vaccine as soon as possible after the exposure and then furloughed from 10 days after the first exposure until 21 days after the last exposure. If the healthcare worker does not develop Varicella-Zoster infection, then the second dose of vaccine will be given 4-8 weeks after the first dose.

    – Healthcare workers who have a definite history of VZV infection, detectable antibody to VZV or who have received two doses of VZV vaccine may continue to work with patients.

    – Healthcare workers who have underlying immunocompromising diseases, are on immunocompromising therapy, or are pregnant and who have no detectable antibody to VZV may be offered VariZIG (see VariZIG section below).

  • HCWs who are unable to receive prophylaxis with VariZIG may be prophylaxed with acyclovir (see acyclovir section below).
VariZIG prophylaxis

- Administration of VariZIG to patients and healthcare workers at high risk of disease from primary VZV infection (chickenpox).
  
  - Patients who have been exposed to primary VZV infection as described above, who have a negative serologic test for VZV antibody and who have one of the conditions listed above that place them at high risk of severe disease should they develop primary VZV infection, may be offered VariZIG.
  
  - VariZIG shall be administered as soon as possible after exposure but no later than 96 hours after the first exposure to VZV infection.
  
  - If the results of a serologic test for VZV antibody cannot be made available within 72 hours of exposure, VariZIG may be offered to the patient with a negative or equivocal history of VZV infection without serologic confirmation of susceptibility to infection.
  
  - VariZIG shall be offered to a patient only after consultation with the patient’s primary care physician

- Perinatal exposure
  
  - Newborns whose mothers develop primary VZV infection (chickenpox) from 5 days before delivery to 2 days after delivery may be offered VariZIG after consultation with the primary care physician.
  
  - Exposure of neonates after birth
  
  - Premature infants <28 weeks’ gestation or with birth weight <1000 grams may receive VariZIG whether or not the mother has a positive history for VZV infection.
  
  - Premature infants >28 weeks’ gestation may receive VariZIG only if the mother has a negative or equivocal history of VZV infection.
  
  - Healthy term infants shall not be offered VariZIG whether or not the mother has a positive history for VZV infection

- Healthcare workers who have been exposed to VZV infection as described above, who have a negative serologic test for VZV antibody and who have one of the conditions listed above that place them at high risk of severe disease should they develop primary VZV infection, shall not be offered VZV vaccine but may be offered VariZIG.

- VariZIG shall be administered as soon as possible after exposure but no later than 96 hours after the first exposure to VZV infection.

- If the results of a serologic test for VZV antibody cannot be made available within 72 hours of exposure, VariZIG may be offered to the healthcare worker with a negative or equivocal history of VZV infection without serologic confirmation of susceptibility to infection.
VariZIG shall be offered to healthcare workers only after consultation between the Department of Healthcare Epidemiology and the Employee Health Service.

VariZIG may be ordered for a patient only after approval by the Department of Healthcare Epidemiology (24/7 pager (409) 643-3133).

VariZIG is administered intramuscularly in a dose of 125 units/10 kg (22lbs) of body weight up to a maximum of 625 units (i.e., 5 vials). The minimum dose is 125 units. Children who weigh less than 10 kgs should receive 125 units.

VariZIG SHALL NOT BE ADMINISTERED INTRAVENOUSLY.

After receiving VariZIG, isolated patients must be kept in isolation for 28 days after the last exposure and furloughed healthcare workers must remain on furlough for 28 days after their last exposure.

Acyclovir prophylaxis is an alternative to prophylaxis with the Varicella-Zoster Vaccine or VariZIG.

Acyclovir is a B drug and may be used for prophylaxis in pregnant patients and healthcare workers.

Acyclovir prophylaxis may be used with or without VariZIG.

Prophylaxis with acyclovir should be started 7 days after the first exposure and be given for seven days.

Prophylaxis for healthcare workers and adult patients
- For adults weighing greater than 40 kgs, 1 gram of valacyclovir given orally 3 times per day.
- For adults weighing less than 40 kgs, 500 mg of valacyclovir given orally 3 times per day.

Prophylaxis for children
- Acyclovir 80 mg/kg/day divided into 4 doses po.
- The maximum dose of acyclovir is 800 mg, 4 times per day.

Patients who receive acyclovir/valacyclovir prophylaxis and remain in the hospital will be placed on Airborne and Contact Precautions from 10 days after the first exposure until 21 days after the last exposure.

Healthcare workers who receive acyclovir/valacyclovir prophylaxis will be furloughed from 10 days after the first exposure until 21 days after the last exposure.

70% of susceptible persons who receive acyclovir (valacyclovir) prophylaxis and develop no clinical signs of chickenpox, will have antibodies to Varicella-Zoster three weeks after completion of prophylaxis.

- All patients and personnel who receive acyclovir (valacyclovir) prophylaxis and do not develop chickenpox will have a serologic test for varicella done 3 weeks after completion of the course of
prophylaxis.

- Healthcare workers who are seronegative will be given two doses of varicella-zoster vaccine 4 to 8 weeks apart.

References


