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.
Employee Screening and Vaccination	At the time of the new-hire employee health evaluation, proof of positive immunity to VZV will be established by a written documentation of VZV infection (chickenpox or herpes zoster) or VZV vaccination from a health care provider. Current employees may be screened for immunity to VZV as well. The proof of positive immunity to VZV shall be recorded in the employee's health record by Employee Health. A negative or equivocal history of VZV infection or vaccination shall be recorded in the employee's health record, and these employees shall be tested for VZV immunity by antibody test. 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).
Immunization with VZV Vaccine	Individuals who are seronegative for VZV will be given the VZV vaccine, if they have none of the following contraindications for vaccination: • has a history of anaphylactic/anaphylactoid reaction to gelatin, neomycin, or any other component of the vaccine • has blood dyscrasias, leukemia, lymphomas, or malignant neoplasms affecting bone marrow or the lymphatic system • has a primary or acquired immunodeficiency, including persons with immunosuppression associated with cellular immunodeficiencies and AIDS or severe immunosuppression associated with HIV infection

- is receiving prolonged, high-dose systemic immunosuppressive therapy (≥2 weeks), including large doses of oral steroids (≥2mg/kg of body weight or a total of 20mg/day of prednisone or its equivalent for people who weigh >10kg) or other immunosuppressive therapy
- has a moderate or severe concurrent illness (see Precautions for Varicella Vaccination)
- has a family history (first degree relatives) of congenital hereditary immunodeficiency, unless the person has been determined to be immunocompetent
- is or may be pregnant.
- people with impaired humoral immunity (hypogammaglobulinemia, dysgammaglobulinemia) and HIV infection.

Vaccine shall be administered subcutaneously in two doses of 0.5 ml 4 to 8 weeks apart or, if previously received 1 dose, the second dose at least 4 weeks after the first dose.

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.

Isolation for VZV Infection

Patients with suspected or documented primary VZV infection (chickenpox) and immunocompromised patients with localized or disseminated (appearance of lesions outside the primary or adjacent dermatomes) herpes zoster shall be placed on Contact and Airborne Precautions.

Immunocompetent patients with localized herpes zoster shall follow standard precautions. The skin lesions shall be covered until they are dry and scabbed. If disseminated herpes zoster occurs, airborne and contact precautions must be followed until lesions are dry and scabbed.

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 regardless of prior VZV immunity history.
- 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 prior VZV immunity shall be taken from each exposed healthcare worker. Employee's records shall be checked by Employee Health Clinic staff for evidence of a positive serologic test and previous vaccinations with VZV vaccine.
- Serologic tests shall be performed for detection of VZV antibody for healthcare workers with a negative or equivocal history for VZV immunity who have not been vaccinated
- Healthcare workers who have no positive immunity to VZV documented in Employee Health records, shall also be given prophylaxis (see Prophylaxis section).
- Healthcare workers who have underlying severe immunocompromising diseases or are on immunocompromising therapy VZV may also be offered prophylaxis.
- Healthcare workers who have positive proof of prior VZV immunity as recorded in Employee Health records may continue to work with patients and do not require prophylaxis.

Acyclovir/ Valacyclovir Prophylaxis

Acyclovir and valacyclovir are class B antiviral drugs and are the preferred agents for prophylaxis in exposed persons.

Prophylaxis should be started 9 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 healthcare 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.

Administration of VariZIG

VariZIg is very expensive and may have a lower efficacy than acyclovir/valacyclovir and is therefore to be used ONLY for those exposed persons who have renal failure or proven previous allergy to acyclovir/valacyclovir. Approval for VariZIg should be obtained from the staff of Healthcare Epidemiology (24/7 pager 409-643-3133).

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

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

References

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