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Dear Colleague:

Re: Changes to Herpes Zoster (Shingles) Protocol Infection Prevention and Control Measures

The content under the Infection Prevention and Control Measures section of the Herpes Zoster (Shingles) Protocol should be replaced with the following content:

Infection Prevention and Control Measures:

- Refer to the Manitoba Health document *Routine Practices and Additional Precautions: Preventing the Transmission of Infection in Health Care* available at: <http://www.gov.mb.ca/health/publichealth/cdc/docs/ipc/rpap.pdf> .
- Cases who are health care workers should be advised to immediately notify Occupational Health and/or Infection Prevention and Control for the facility/regional program in which they work and in consultation with them determine when it is appropriate to return to work.
- Outpatients and day-surgery patients should be advised to notify staff if they develop herpes zoster and are scheduled to come to a health care facility when their lesions are not yet all crusted and dried.
- Visitors who are active cases of herpes zoster should not enter a health care facility until all lesions have crusted and dried. If lesions are localized and can be covered, Infection Prevention and Control should be consulted to determine if a visit should occur.

The Herpes Zoster (Shingles) Communicable Disease Management Protocol is available at: <http://www.gov.mb.ca/health/publichealth/cdc/protocol/herpes.pdf>

Please share this communication with all colleagues in your department, facility or clinic.

Sincerely,

"Original signed by"

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Herpes Zoster (Shingles)



Public Health Branch

Herpes zoster (shingles) is also referred to as varicella-zoster or zoster.

1. Case Definition

Clinical evidence of illness^a with or without laboratory confirmation of infection:

- Isolation of virus in cell culture or direct antigen detection of varicella-zoster virus (VZV)^b from an appropriate clinical specimen (e.g., vesicular fluid) using direct fluorescent assay (DFA);
OR
- Detection of VZV DNA in an appropriate clinical specimen (e.g., vesicular fluid, crust from lesion) (4).

2. Reporting and Other Requirements

- Herpes zoster is not reportable to Manitoba Health.
- Adverse events following immunization should be reported by health care professional by completing and returning the form available at: http://www.gov.mb.ca/health/publichealth/cdc/docs/aeif_form.pdf.

3. Clinical Presentation/Natural History

During primary infection with varicella-zoster virus (VZV), the virus disseminates to the dorsal root and trigeminal ganglia, where it remains dormant (5). The immunologic mechanisms that control latency of VZV are not well understood (6). The virus reactivates later in life in about 15% to 30% of the population due to the waning of specific cell-mediated immunity, causing herpes zoster, a painful, vesicular rash illness involving the dermatome, which is usually unilateral (5). The rash lasts about 7-10 days and heals within two to four weeks (3). The most significant manifestations of zoster are the associated acute neuritis and later, post-herpetic neuralgia (2).

It is not known what precipitates episodes of herpes zoster (2). Zoster is more common among the elderly and those with impaired cell-mediated immunity (5). Chronic and recurrent zoster may

occur in immunocompromised persons particularly those with HIV infection (2). Herpes zoster tends to be milder in children than in adults (7). The live-attenuated vaccine virus can become latent and later reactivate to cause zoster in both healthy and immunocompromised hosts (5). The risk and severity of herpes zoster in vaccinated children are lower than in children with a history of wild-type VZV infection (8).

Complications of acute zoster can be severe and may include sight-threatening eye infections (zoster ophthalmicus), central nervous system infection, nerve palsies including the Ramsay-Hunt Syndrome, neuromuscular disease including Guillain-Barre Syndrome, and secondary bacterial infections (1). The most frequent complication is post-herpetic neuralgia (1, 9). Pain (post-herpetic neuralgia) may persist for weeks to months after rash resolution (7). It occurs in approximately 20% of adults overall with zoster but in one-third or more of octogenarians with zoster (1). Zoster in pregnancy is not associated with viremia and does not appear to cause fetal sequelae (10).

4. Etiology

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

5. Epidemiology

5.1 Reservoir and Source

Humans (3).

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- a A painful, vesicular rash illness involving the dermatome, which is usually unilateral (1), that may be accompanied by acute neuritis and/or post-herpetic neuralgia (2).
 - b The varicella-zoster virus (VZV) causes two distinct diseases, varicella (chickenpox) as the primary infection, and later, when latent VZV reactivates, herpes zoster (shingles) (3).

5.2 Transmission

A person with herpes zoster (HZ) can spread the varicella-zoster virus (VZV) to individuals who are not immune to chickenpox, but transmission is uncommon (3, 9). Transmission may occur if there is direct contact with exposed zoster lesions or their fluid (9, 11). Less commonly, VZV can be spread by the airborne route if the person has disseminated HZ (9). Occasionally, transmission can occur from articles freshly soiled by discharges from vesicles or, in the case of disseminated HZ, mucous membrane secretions (9). The person who acquires VZV through these routes will develop varicella (11). A case of zoster is much less likely to result in transmission of VZV to persons susceptible to varicella than is a case of chickenpox (9). Individuals with HZ are infectious until all lesions are crusted over (9).

It is possible to get HZ after receiving the varicella vaccine but it is less likely than after natural varicella infection (9).

5.3 Occurrence

5.3.1 General

Globally, the incidence of herpes zoster ranges from 1.2 to 3.4 cases per 1,000 healthy persons per year, increasing to 3.9 to 11.8 cases per 1,000 individuals per year among those over 65 years of age (9). Herpes zoster has no seasonal variation and occurs throughout the year (6). It is estimated that 500,000 to one million episodes of zoster occur annually in the United States (6).

5.3.2 Canada

It is currently estimated that each year there are 130,000 new cases of zoster, 17,000 cases of post herpetic neuralgia and 20 deaths, which result in 252,000 physician consultations and 2,000 hospitalizations (9).

5.3.3 Manitoba

No reliable data exist as cases of herpes zoster are not reportable in Manitoba.

5.4 Incubation Period

The mechanism of VZV reactivation that results in herpes zoster is unknown (2).

5.5 Susceptibility and Resistance

Zoster can occur in individuals who have had chickenpox and in those who have been immunized with varicella vaccine. Persons who are immunocompromised have a higher incidence of zoster (2). Zoster occurrence after receiving varicella vaccine is less likely than after natural varicella infection (9).

5.6 Period of Communicability

Transmission of VZV by patients with HZ to those susceptible to varicella is uncommon (3, 9). Individuals with HZ are infectious to those who are non-immune to varicella until all lesions are crusted over (9). Immunocompromised persons infected with VZV can have a prolonged duration of communicability. Individuals susceptible to varicella should be considered potentially infectious from day 10 through day 21 following exposure to zoster (3), (from day 10 through day 28 following exposure if varicella-zoster immune globulin [VarIg] was given) (7).

6. Diagnosis

History and physical examination are important. Refer to section 1 *Case Definition* for laboratory tests.

7. Control

7.1 Management of Cases

- The medical management of zoster in the otherwise healthy host is directed toward reduction of complications (2). Hygiene is important, including bathing, astringent soaks, and closely cropped fingernails to avoid a source for secondary bacterial infection associated with scratching of the pruritic lesions (2).
- Ophthalmological consultation should be requested for any patient with suspected herpes zoster ophthalmicus.

Treatment:

Antiviral therapy is moderately effective in treating herpes zoster infections (3). The decision to use antiviral therapy and the route and duration of therapy should be determined by specific host factors, extent of infection, and initial response to therapy (7). Therapy initiated early in the course of the illness, especially within 24 hours of rash onset, maximizes efficacy (7).

- Acyclovir, valacyclovir or famciclovir oral therapy initiated by 48 to 72 hours after rash onset should be considered for all adults presenting with zoster, especially those who are elderly. This accelerates cutaneous healing and reduces acute neuritis.
- Intravenous acyclovir therapy is indicated for persons at increased risk of severe disease which includes but is not limited to those who are immune suppressed, with ocular involvement, and hospitalized patients.
- Infections caused by acyclovir-resistant VZV strains, which generally are limited to immunocompromised hosts, should be treated with parenteral foscarnet^c (7).

Infection Prevention and Control Measures:

- Airborne precautions are indicated for hospitalized cases of disseminated zoster and contact precautions are indicated for hospitalized cases of localized herpes zoster until all lesions have crusted and dried. Refer to the Manitoba Health document *Routine Practices and Additional Precautions: Preventing the Transmission of Infection in Health Care* available at: <http://www.gov.mb.ca/health/publichealth/cdc/docs/ipc/rpap.pdf>.
- Cases who are health care workers should be advised to immediately notify Occupational Health and/or Infection Prevention and Control for the facility/regional program in which they work and in consultation with them determine when it is appropriate to return to work.
- Health care workers, and roommates and caregivers of hospitalized cases should be immune to varicella (chickenpox).

- Visitors who are cases should not be allowed to enter hospitals until all lesions have crusted. Even if lesions are covered, there would be concern in certain circumstances (e.g., visiting an immunocompromised patient).
- Outpatients and day-surgery patients should be advised to notify staff if they develop herpes zoster and are scheduled to come to hospital when their lesions are not yet all crusted.
- Infection Prevention and Control should be consulted about cases who are patients or visitors.

7.2 Management of Contacts

A case of herpes zoster is much less likely to result in transmission of VZV to a person susceptible to varicella than is a case of varicella (11); however, transmission is possible.

Definition of Significant Exposure:

For post-exposure prophylaxis purposes, a significant exposure in a susceptible person^d is defined as one or more of the following:

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- c Is currently only available through Health Canada's Special Access Program (SAP) (<http://www.hc-sc.gc.ca/dhp-mps/acces/drugs-drogués/index-eng.php>).
 - d Individuals who have one or more of the following are considered immune to varicella. Individuals who do not have ANY of the following are considered susceptible to varicella:
 - Self-reported history of varicella if born before 2004 (except for health care workers);
 - For those born in 2004 or later and for health care workers, a health care provider diagnosis of varicella or herpes zoster;
 - Documented evidence of immunization with two doses of a varicella-containing vaccine;
 - A history of laboratory-confirmed varicella infection;
 - Laboratory evidence of immunity (11).Recipients of hematopoietic stem cell transplant should be considered susceptible in the post-transplantation period regardless of a history of varicella disease or vaccination, or positive serologic test results (11).

- Close exposure to a person with herpes zoster including:
 - Touching the rash, exposed lesion or vesicle fluid;
 - Contact with an individual who has disseminated zoster (patients with disseminated zoster can transmit the virus by the airborne route as well);
 - Contact with articles freshly soiled by mucous membrane secretions of an infected person with disseminated zoster;
 - Exposure to an immunosuppressed person with localized zoster anywhere on the body as their viral shedding may be greater (i.e., possible airborne transmission exposure) (9, 11).

Serologic Testing:

Immunity to VZV should be assessed as soon as possible for exposed pregnant women and immunocompromised individuals (11). Those who are IgG antibody negative, should receive varicella-zoster immune globulin (VarIg) as detailed below (11). If serology results cannot be obtained within 96 hours, VarIg should be administered (11).

Post-exposure Prophylaxis:

Univalent Varicella Vaccine:

- Univalent varicella vaccine given as soon as possible, within three days but up to five days after a significant exposure, is recommended **for susceptible, healthy, non-pregnant persons who are 12 months of age or older** (11).
Varicella vaccination is not indicated for post-exposure management of infants less than 12 months of age, as the vaccine is not authorized for this age group and these infants are generally protected by maternal antibodies (11). There are no data on the use of MMRV (measles-mumps-rubella-varicella) vaccine in VZV post-exposure situations (11).

NOTE: Systemic antiviral therapy (such as acyclovir, valacyclovir, famciclovir) should be avoided in the peri-immunization period, as it may reduce the efficacy of varicella-containing vaccine (11).

Ordering and Administration of Varicella Vaccine:

- During regular business hours, contact the Provincial Vaccine Warehouse at 204-948-1333 or 1-855-683-3306. A current Biologics/Vaccine Order Form is available by calling the warehouse. After regular office hours the on-call warehouse staff may be contacted at 204-805-4096.
- Univalent varicella vaccine should be administered subcutaneously (SC) (11). Refer to product monograph for dosing and other information.

Varicella-Zoster Immune Globulin (VarIg):

Varicella-zoster immune globulin should be considered within 96 hours of the most recent significant exposure in the following susceptible individuals (11). If more than 96 hours have elapsed since the last exposure, the benefit of administering VarIg is uncertain (5). If VarIg is being considered, consultation with an infectious diseases or infection control specialist is recommended (11).

- Pregnant women.
- Children exposed to herpes zoster in neonatal or pediatric intensive care settings.

e Individuals who have one or more of the following are considered immune to varicella. Individuals who do not have ANY of the following are considered susceptible to varicella:

- Self-reported history of varicella if born before 2004 (except for health care workers);
- For those born in 2004 or later and for health care workers, a health care provider diagnosis of varicella or herpes zoster;
- Documented evidence of immunization with two doses of a varicella-containing vaccine;
- A history of laboratory-confirmed varicella infection;
- Laboratory evidence of immunity (11).

Recipients of hematopoietic stem cell transplant should be considered susceptible in the post-transplantation period regardless of a history of varicella disease or vaccination, or positive serologic test results (11).

- Immunocompromised persons, except those receiving regular monthly infusions of 400 mg/kg or more of intravenous immune globulin and whose most recent dose was within three weeks before exposure to varicella (11). For immunocompromised persons who are outside the 96-hour window for VarIg administration, antiviral prophylaxis from days seven to 14 post-exposure could be considered (11). **Manitoba Health does not cover the cost of antiviral prophylaxis.**
- HIV-infected persons who are severely immune suppressed (CD4 cell count < 200 x 10⁶ /L or CD4 percentage < 15%). For HIV-infected persons who are not severely immune suppressed, post-exposure vaccination is recommended as detailed above. Post-exposure VarIg is not necessary for HIV-infected persons without severe immune suppression who have completed an appropriate two-dose vaccination series or who have had natural varicella infection (11).
- Recipients of hematopoietic stem cell transplantation (HSCT) regardless of a history of varicella disease or vaccination or positive serologic test results (11).

Ordering and Administration of VarIg:

- VarIg is obtained through Canadian Blood Services. Call 204-789-1034.
- The recommended dose of VarIg is 125 IU/10 kg of body weight up to a maximum of 625 IU (11). The minimum dose is 125 IU (11). In immunocompromised persons, more than this amount may be required; consultation with an expert is recommended.
- VarIg should be given by the intramuscular (IM) route (11). Refer to product monograph for more information.
- As protection conferred by VarIg lasts approximately three weeks, subsequent exposures occurring more than three weeks after a dose of VarIg require additional doses of VarIg (11).

Immunization Follow-up of Contacts:

- A second dose of varicella vaccine may be indicated for those who received no doses of vaccine prior to the exposure to complete the vaccination series. Refer to the Manitoba Health website <http://www.gov.mb.ca/health/publichealth/cdc/div/schedules.html> for more information on the recommended schedule.
- Susceptible pregnant women should be given univalent varicella vaccine after delivery, assuming the recommended minimum interval (5 months) (12) has passed since VarIg was administered (11).

7.3 Preventive Measures

- Immunization with herpes zoster (shingles) vaccine as recommended by the current *Canadian Immunization Guide* <http://www.phac-aspc.gc.ca/publicat/cig-gci/p04-herp-zona-eng.php> . Refer to Manitoba Health's *Eligibility Criteria for Publicly-Funded Vaccines* for more information on varicella immunization in Manitoba available at: <http://www.gov.mb.ca/health/publichealth/cdc/vaccineeligibility.html> . **Herpes Zoster vaccine is not currently funded by Manitoba Health.**

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