

**Occupational Management of Communicable Disease Exposure
and Illness in Healthcare Workers**
March 2012 | For Healthcare Professionals

Acknowledgements

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PREAMBLE

Following the H1N1 pandemic influenza response, Occupational Health experts from across Nova Scotia identified the need for a consistent approach to managing not only influenza, but other communicable diseases in health care workers. This document was based on the initial Prevention and Control of Occupational Infections in Health Care, policies developed by district Occupational Health Nurses from South Shore Health, South West Nova District Health Authority, and Annapolis Valley Health.

This document reflects current research findings and national guidelines, but it is important to recognize that as new evidence emerges, diagnostic and management protocols may change. It has undergone a thorough review from infectious disease physicians, medical microbiologists and virologists from the Public Health Services Laboratory Network (PPHLN), Occupational Health experts, Medical Officers of Health, Public Health Services communicable disease control experts, and infection control practitioners in Nova Scotia.

The intention was to create a document that is user-friendly, clear and concise and one that will assist organizations in managing both occupationally-acquired and community-acquired communicable diseases in health care workers.

The *Occupational Management of Communicable Disease Exposure and Illness in Healthcare Workers* provides direction to health professionals working in acute care facilities and in the prehospital care setting; however the general principles can be applied to other health care settings across the continuum of care. It will be incumbent upon these other health care settings to determine applicability of the protocols to their settings.

The focus of the management protocols is to provide and ensure a safe and consistent approach to management of otherwise healthy healthcare workers. It is recognized that some health care workers are at increased risk of certain infections, or of experiencing more severe consequences should infection occur, and may require further assessment of fitness to work and/or more extensive follow-up.

Some infectious agents can cross the placenta, causing infection in the fetus and may result in adverse outcomes such as abortion, congenital anomalies or impaired mental development. As well, some medications used for treatment or post-exposure prophylaxis (PEP) are contraindicated during pregnancy. The routine exclusion of women of childbearing age from care of patients with particular infections is not necessary. However, healthcare workers who are pregnant or who are planning to become pregnant should receive education regarding the risk of transmission and prevention of infection in the healthcare setting.

In keeping with the Occupational Health & Safety (OH&S) Act, healthcare organizations across the province have a duty to ensure the safety of their employees, volunteers, patients, residents, and clients from acquiring communicable diseases/infections.

This provincial guideline has been developed to provide evidenced-based direction to Occupational Health services to deal with healthcare workers (HCW) reporting exposure to or illness of a communicable disease nature. Occupational Health (OH) within the District Health Authorities (DHA), the IWK, and Emergency Health Services (EHS) can utilize this guideline to develop organizational policies. The aim is to mitigate the risk of transmitting communicable infections between healthcare workers, patients, residents, clients, other employees and volunteers within the health care organization.

This guideline is intended to address exposure and illness within the healthcare worker population. Although not employed by the organization, volunteers and other clinicians/ service providers experiencing signs and symptoms of a communicable disease should be cognizant of the risks associated with entering a healthcare facility and take appropriate measures to prevent transmission.

An Occupational Health program, or service, oversees the provision of appropriate immunizations, serology testing, exposure follow-up, work restrictions, and referral for medical management as appropriate.

General Assumptions for Best Practices for Management of Communicable Disease Exposure and Illness In Healthcare Workers

The Best Practices (included in Appendix A) are based on the following assumptions:

1. The healthcare facility or organization has a person or persons responsible for the management of Occupational Health issues. This should be a qualified Occupational Health Nurse (OHN)/designate, although it is recognized that such resources may not be available. If this resource is not available in an organization, it is expected that there is access to Occupational Health expertise from outside the organization.
2. Healthcare organizations devote adequate resources to Occupational Health management to support prevention strategies in an effort to decrease the incidence of exposures and avoid the spread of communicable disease. Resources considerations may include adequate human resource capacity to provide and manage successful occupational health programming, information management systems, etc.
3. Employers have established policies and procedures for counseling of employees related to their communicable disease status.
4. Occupational Health liaises with a qualified Infection Control Practitioner (ICP) in the event of an outbreak to ensure prevention & control messaging and recommendations are appropriate and consistent. Public Health Services consultation may be warranted.
5. The healthcare facility or organization has a well-established process for reporting notifiable diseases to Public Health Services, as per '*It's the Law*'.
(see http://www.gov.ns.ca/hpp/publications/06026_ItsTheLawPoster_En.pdf)
6. The healthcare facility or organization has a well-established process for communicating and disseminating information regarding new policies and protocols.
7. Education regarding reporting expectations for illness related to communicable disease and the rationale is provided to managers and staff, with the Joint Occupational Health & Safety Committee involved in its ongoing delivery.
8. Staff understand, and are in compliance with the principles and practices that are part of *Routine Practices* and *Additional Precautions*.
9. The OHN/designate takes a leadership role in implementing the protocols. The Chief Executive Officer or the Executive Director shares these protocols with Occupational Health staff and provides them with the necessary resources and ongoing support for implementation.

Occupational Health considers the provision and/or administration of appropriate vaccination based on the Canadian Immunization Guide. **The product monograph must always be referred to for specific guidance.** A process for obtaining and documenting consent for immunizations exists.

10. Occupational Health ensures appropriate pre-placement immunity status is ascertained including but not limited to hepatitis B, varicella, measles, mumps, and rubella.

11. Occupational Health will assess potential occupational exposures/illness and determine whether a submission to the Workmen's Compensation Board is warranted. The burden of proving that illness is occupationally-acquired lies with the worker, in consultation with Occupational Health. In some organizations, the WCB cases may be handled by another department.
12. Appropriate administrative and engineering controls as well as the primary interventions in the hierarchy of controls, are in place to limit or prevent exposure.
13. Adequate and appropriate personal protective equipment (PPE) is readily available and policies are in place to direct usage. Usage compliance is monitored regularly.
14. Investigation of an occupational exposure includes a determination of whether there was an appropriate application of *Routine Practices* and *Additional Precautions*; a qualified ICP can assist in this determination. Staff who adhere to these preventative protocols can mitigate risk of exposure when dealing with clients, residents and patients who are infected.
15. Epidemiological information is used to prevent occupational exposures, with reductions or increases in injuries and exposures monitored over time. Trends are reported to the organization and appropriate preventative strategies are implemented to reduce incidence. Effectiveness of prevention strategies is tracked by comparing injury and exposure rates to previous rates. (APIC).
16. Although periods of communicability may dictate durations of time to remain away from the workplace, illness and lack of fitness-for-work may still prevent employees from reporting back to work.

DEFINITIONS

Department of Health & Wellness (DHW) – is a Department of the Government of Nova Scotia and sets strategic direction for the health system of Nova Scotia through various means, defined in the Health Authorities Act (2000), which include:

- the development, implementation and evaluation of provincial health policy
- the development and delivery of standards for the delivery of health services
- monitoring, measuring and evaluating the quality, accessibility and comprehensiveness of health services
- funding to district health authorities and provincial programs, including ground and air ambulance programs
- development and support of provincial programs and initiatives

District Health Authority (DHA) – health services are delivered by nine district health authorities and the IWK. These health authorities deliver health care services to residents and are responsible for all hospitals, community health services, mental health services and Public Health Services programs within their districts.

Emergency Health Services (EHS) - is a division of the Nova Scotia Department of Health responsible for the continual development, implementation, monitoring and evaluation of pre-hospital emergency health services in the province. Pre-hospital emergency care is provided through the EHS ground ambulance service and the EHS LifeFlight service.

Healthcare Worker (HCW) – Healthcare workers include all healthcare facility or organizational employees as well as members of the medical and dental staff. This definition includes regulated and unregulated professionals, employees who provide both direct and indirect patient care, and employees in the various support services (adapted from the National Advisory Committee on Immunization, 2008).

Occupational Health (OH) – the person or persons responsible for the coordination of the delivery of comprehensive, equitable, quality occupational health services for workers and worker groups. The context for practice is dynamic and influenced by health policy, cultural, social, economic, political, technological, and environmental issues (adapted from American Association of Occupational Health Nurses, 1994).

Occupational Health & Safety (OH&S) – the promotion and maintenance of the highest degree of physical, mental and social well-being of workers in all occupations; the prevention amongst workers of departures from health caused by their working conditions; the protection of workers in their employment from risks resulting from factors adverse to health; the placing and maintenance of the worker in an occupational environment adapted to his/her physiological and psychological capabilities; and, to summarize, the adaptation of work to person and of each person to his job (WHO, 1995). Occupational Health & Safety programs are supported and regulated through legislation (Occupational Health & Safety Act, 2009).

GUIDELINE OBJECTIVES

The objectives of this guideline are:

- To assist DHA/IWK/EHS in complying with their obligation, according to the Occupational Health & Safety Act of Nova Scotia to protect other HCW/ patients from communicable diseases
- To foster the development of a safe work environment for patients, residents, clients, employees and volunteers, as well as members of the public who visit healthcare facilities, ensuring that no one is put at risk of infection from a HCW either *exposed to* or *symptomatic with* a communicable disease.
- To ensure HCW within DHA/IWK/EHS are provided with consistent, evidence-based instruction on safe return-to-work practice following exposure to a communicable disease or if experiencing signs and symptoms of a communicable illness according to Appendix A.

GENERAL GUIDELINES

Organizational policies should include the following:

- A process to ensure timely reporting by a healthcare worker of their exposure to a communicable disease or if they are exhibiting signs or symptoms of a communicable illness
- A process that will ensure confidentiality of health information
- A process that will ensure that any mandatory reporting to Public Health Services, as per *It's the Law*, will occur (see http://www.gov.ns.ca/hpp/publications/06026_ItsTheLawPoster_En.pdf)

APPENDICES

Occupational Health Management Guidelines for Communicable Disease Exposure and Illness
Communicable Disease- specific Fact Sheets

APPENDIX A – MANAGEMENT

BLOODBORNE PATHOGENS

Organism/Disease	Hepatitis B / Hepatitis C / HIV
Definition of Exposure	<p>A percutaneous injury with blood or body fluids* OR Mucus membrane or non-intact skin contact with blood or body fluids*</p> <p>* Not all body fluids are considered potentially infectious. In addition to blood and body fluids containing blood, cerebrospinal fluid, synovial fluid, pleural fluid, peritoneal fluid, pericardial fluid, and amniotic fluid are also considered to have infectious potential. Feces, nasal secretions, saliva, sputum, sweat, tears, urine, and vomitus are not considered potentially infectious unless they contain blood.</p>
Criteria to Confirm	<p>Hepatitis B: Hepatitis B surface antigen (HBsAg) OR Antibody to HBcAg (anti-HBc) WITH one or more of the following: antibody to HbsAg (anti-HBs) or antibody to HbeAg (anti-HBe) or HBV DNA</p> <p>Hepatitis C: Antibody to HCV, confirmed by qualitative HCV rt-PCR or immunoblot (RIBA)</p> <p>Human Immunodeficiency Virus: Detection of HIV antibody with confirmation by Western blot OR Detection of HIV nucleic acid or p24 antigen (excluding viral load NAT) OR Isolation of HIV</p>
Education and Prevention	<p>Immunization with hepatitis B vaccine is recommended for people who are at increased risk of occupational hepatitis B infection, namely, those frequently exposed to blood, blood products and bodily fluids that may contain the virus. This group includes all HCW and others who will be or may be exposed to blood or are at risk of injury by instruments contaminated by blood. Students in these categories should complete their vaccine series before possible occupational exposure. Document HCW hepatitis B immune status at the time of the initial post-employment, pre-placement health assessment. First health assessment should be conducted close after time of hire.</p> <p>Anti-HBV antibody testing should be conducted 1-6 months after completing the 3-dose immunization series. Consider the HCW to be immune to hepatitis B with evidence of having completed the immunization series and documented adequate anti-HBs titre greater than 10 IU/mL. Consult the most recent edition for current product-specific dosing recommendations.</p> <p>Re-immunize HCWs who do not produce anti-hepatitis B antibody after the initial 3-dose vaccine series with a second 3-dose series of hepatitis B vaccine and repeat serologic testing.</p>

BLOODBORNE PATHOGENS cont'd

Education and Prevention cont'd

Consider HCWs who do not produce anti-hepatitis B antibody after 2 complete series of HBV vaccine to be susceptible to hepatitis B (non-responders). Further hepatitis B immunization is unlikely to create immunity. HBIG will be required post exposure.

Advise HCWs who have been immunized against hepatitis B in the remote past, but who have never had post-immunization serologic testing, to have this serologic testing done. If they test negative for antibody to HBsAg, a booster dose is indicated, followed by repeat testing one month later to determine amnestic response. If still non-immune, complete a full second immunization series and repeat testing. If the HCW is non-immune after completing the full second series, he/she should be considered a non-responder.

Develop strategies to achieve 100% uptake of hepatitis B immunization in eligible HCWs.

Consider all HCW to be susceptible to hepatitis C and HIV, even if there is laboratory documentation of previous infection, since infection with one genotype of either virus is not protective against infection with another genotype of that virus.

Analyze bloodborne pathogen exposure reports and provide leadership on multidisciplinary committees to prevent sharps injuries and exposures to blood or body fluids.

Advise HCW with significant dermatitis regarding increased risks of exposure to bloodborne pathogens, how to minimize risk and remove from direct patient care if necessary.

Exposure Management

Follow organizational policy and procedure for management of blood and/or body fluid exposure

No work restrictions

For Hepatitis B, refer to Figures 1 and 2 for post-exposure management

For Hepatitis C, there is no known effective chemoprophylaxis or immunoprophylaxis for exposed individuals however, post-exposure testing, information sharing and medical follow-up may be indicated.

For HIV, the chemoprophylactic regimen chosen is stratified on the basis of severity of the exposure and likelihood of a resistant virus. A risk assessment must be carried out prior to any decision-making regarding post-exposure prophylaxis (PEP). **Given the various factors that must be considered and the combinations of drug therapies, it is advised that the clinician seek consultation with an infectious disease physician.** Test for antibody to HIV.

If a person has sustained an exposure to the blood or body fluids from a patient who is HIV positive:

counsel the exposed person about the risk of becoming infected and the implications for his/her behavior in the follow-up period. "Factors associated with HIV transmission includes a deep injury, device visibly contaminated with the

BLOODBORNE PATHOGENS cont'd

**Exposure
Management cont'd**

source patient's blood, procedures involving a needle placed directly in a vein or artery, and terminal HIV illness in the source patient.”⁹ These exposures involve a larger volume of blood and/or a higher titre of HIV.

Obtain baseline testing for HIV antibody status of his/her blood drawn within 1 week of the incident.

OH service should follow the exposed person with screening for HIV antibody at 6 weeks, 3 months and 6 months.

HIV PEP should be initiated within two to four hours of exposure for maximal efficacy. As the time period from exposure to initiation of PEP increases, the likelihood of the virus establishing infection and spreading beyond the local site of inoculation to regional lymph nodes increases, greatly reducing the effectiveness of PEP. However, since there is limited data to indicate if there is a specific time after which PEP is ineffective, consider implementing for up to 72 hours after exposure.

Illness Management

Refer to family physician/Infectious disease physician for confirmation of diagnosis and clinical management and treatment. HCWs who perform exposure-prone procedures as part of their job will require individual assessment to determine need for work modifications.

Exclude HCW infected with Hepatitis B, who have lab confirmation of illness and who perform exposure-prone procedures, until clinical assessment is complete and appropriate work modifications are determined.

No modifications to work practices or work restrictions are indicated for HCW infected with HBV, HCV or HIV, who do **not** perform exposure-prone procedures.

OHN/ designate should assess HCW who are immuno-compromised from HIV for fitness to work; i.e. assess type of patient, since the HCW should not be exposed to tuberculosis and certain other infections.

Report new cases to local Public Health Services, according to *It's the Law*.

Figure 1 – Infected (HBsAg+) or High Risk Source

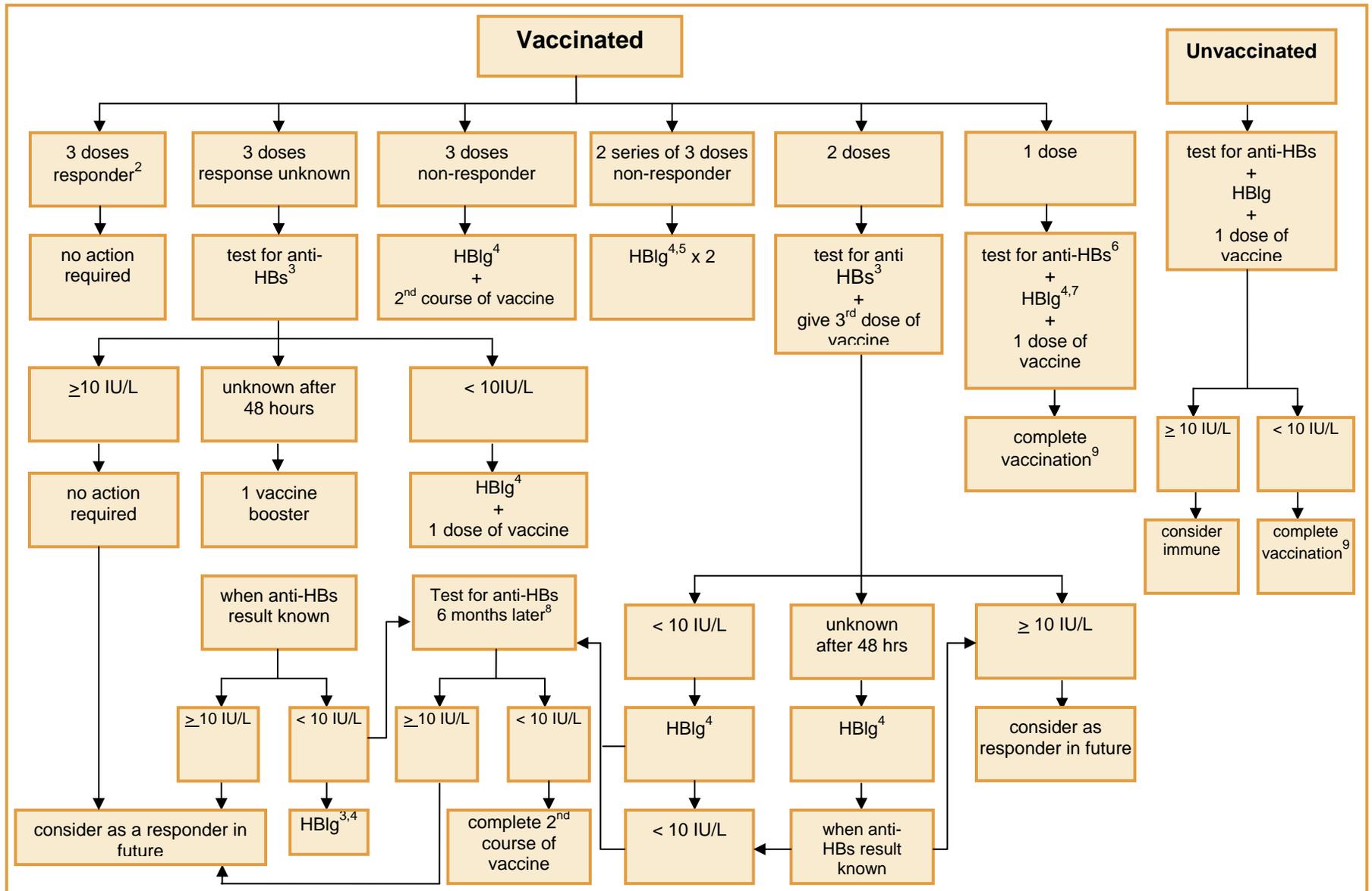
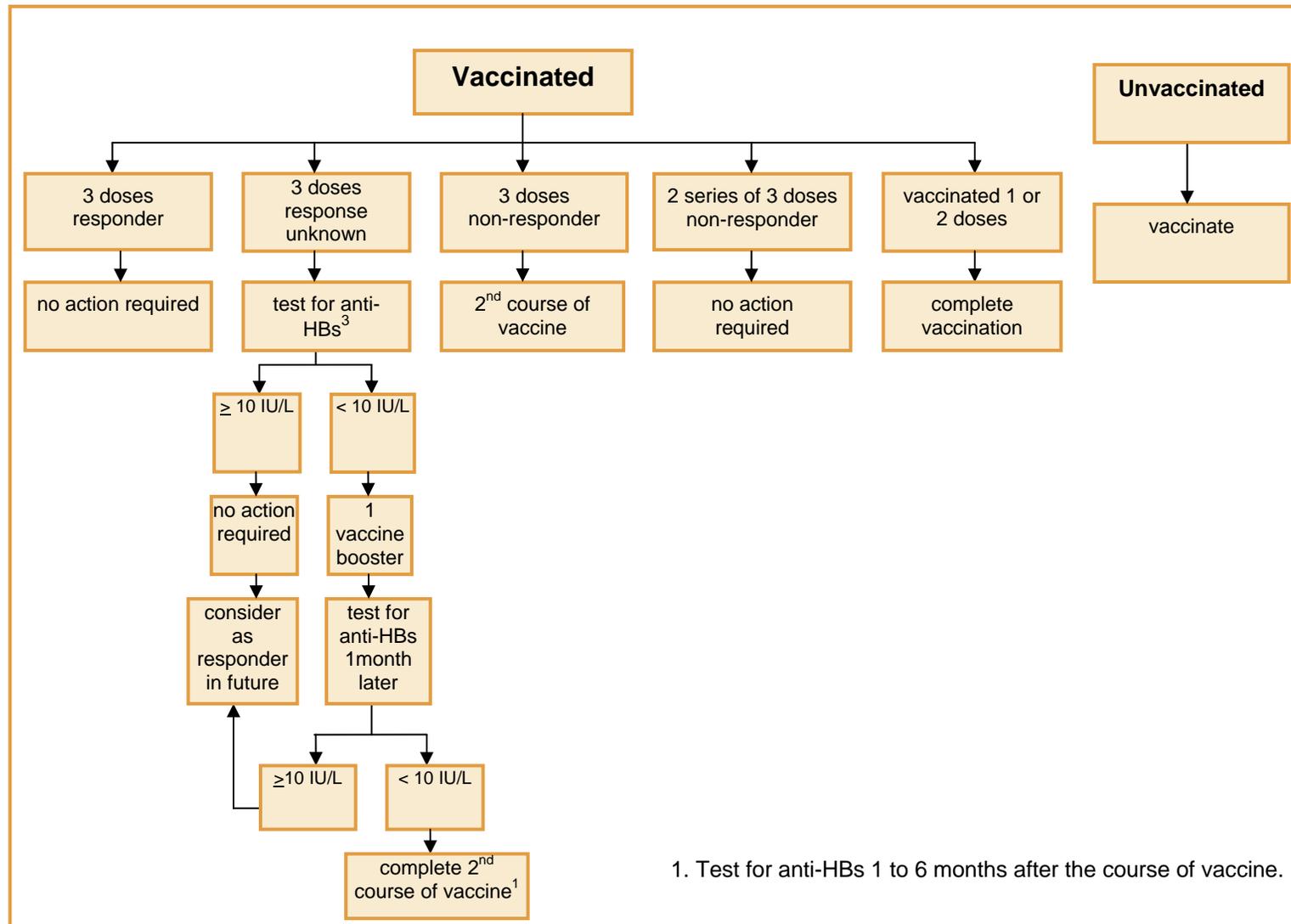


Figure 1 - Infected (HBsAg +) or High Risk Source ¹

1. A known source is high risk if the person comes from a highly endemic region for HBV, has sexual relations with multiple partners, has a partner infected with HBV or at high risk of being so, is in close family contact with an infected person, uses injection drugs, or received blood or blood products prior to 1970. Wherever possible, the source should be tested. In the case of an unknown source, background circumstances may provide some indication of the degree of risk, e.g., syringe found in the street, attendance at an STI clinic, detoxification.
2. Responder known to have 10 IU/L anti-HBs. No measures are required if the person has developed an immunity following an infection.
3. Anti-HBs titre should be determined as soon as possible to avoid needless administration of HBIG and because efficacy is unknown if given after 7 days.
4. The administration of HBIG can be omitted if the high risk source can be tested within 48 hours and the result is negative. In that case, the non-infected source algorithm is followed.
5. The second dose of HBIG should be given 1 month after the first.
6. This test does not change the continuation of vaccination, but may reassure the exposed individual about the immediate risk of becoming infected.
7. If it is possible to quickly obtain anti-HBs titre confirming 10 IU/L, administration of HBIG should be omitted.
8. Determination of anti-HBs titre should be delayed for 6 months to allow HBIG antibodies to wane.
9. Test for anti-HBs 1 to 6 months after the course of vaccine.

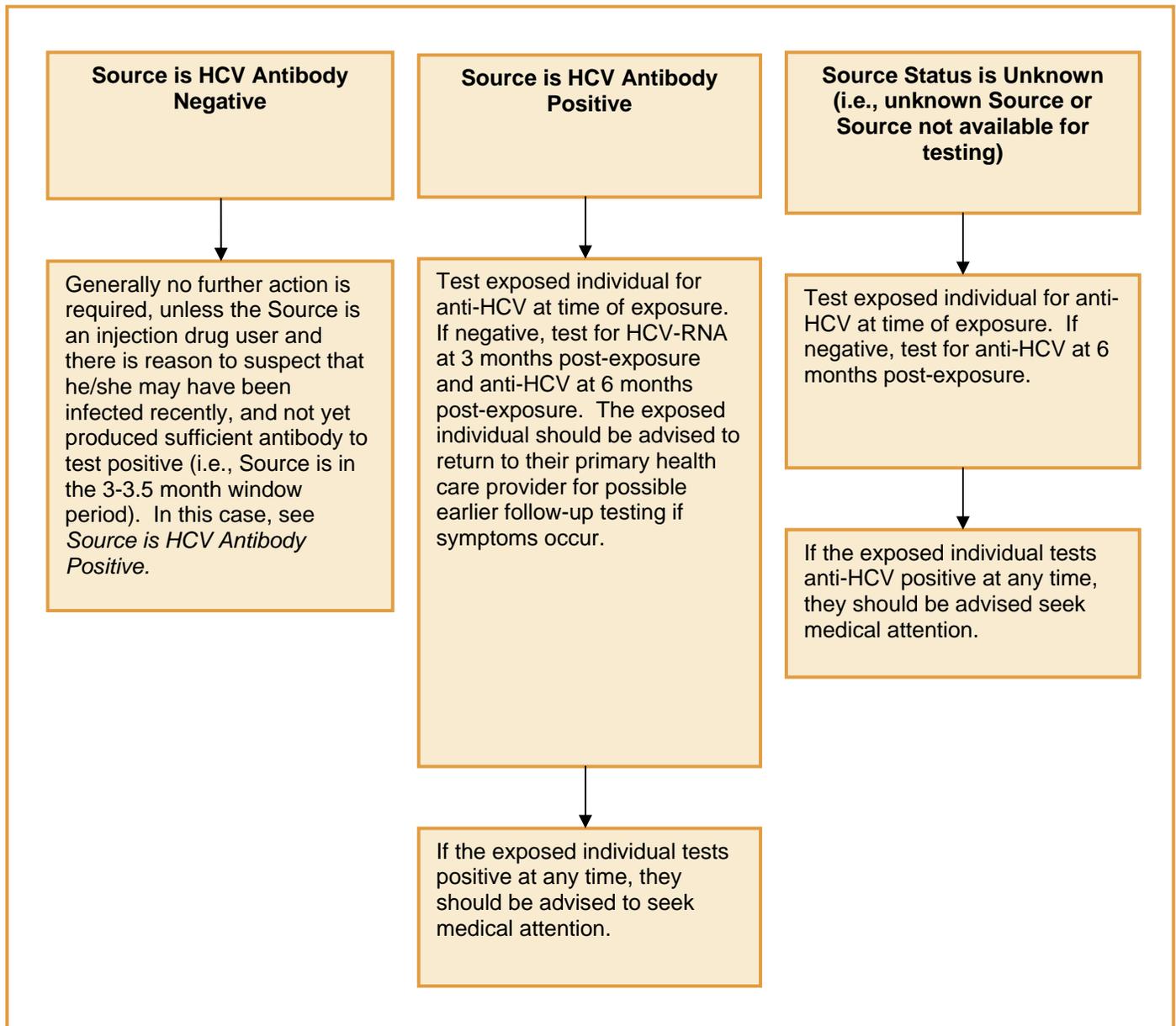
Source: Canadian Immunization Guide, 2006, Public Health Agency of Canada

Figure 2 – Uninfected Source (HBsAg–) or at Low Risk



Source: Canadian Immunization Guide, 2006, Public Health Agency of Canada

Figure 3: Recommended Hepatitis C Post-exposure Management



Source: Integrated Post-exposure Protocol for HIV, HBV and HCV: Guidelines for Managing Exposures to Blood and Body Fluids, 2009, Government of Manitoba

CONJUNCTIVITIS
(Bacterial Conjunctivitis – Pink Eye)

Organism/Disease	Bacterial Conjunctivitis
Definition of Exposure	Direct contact of HCW's conjunctiva with discharge from the eye or upper respiratory tract of someone with a conjunctival infection, or indirect contact by contaminated hands, personal articles or equipment.
Criteria to Confirm	Clinical diagnosis of conjunctivitis Microscopic examination (stained smear) or bacterial culture of the discharge is required to differentiate bacterial from viral or allergic conjunctivitis.
Education and Prevention	Consistent use of <i>Routine Practices and Additional Precautions</i> Do not share personal articles used near or on the eyes, e.g. towels, face cloths, make-up, glasses, etc. Consider disposal of contact lenses and eye make-up See family physician for confirmation of diagnosis and/or clinical management and treatment. Appropriate handling, cleaning, disinfection and/or sterilization of equipment. Irrigate eyes as soon as possible in the event of an exposure Provide fact sheet on Bacterial Conjunctivitis (see Appendix B)
Exposure Management	No modification or restriction of work practices
Illness Management	Refer for confirmation of diagnosis and clinical management Exclude from direct patient care for duration of symptoms or until after 24 hours of effective antibiotic therapy. Lab personnel who use microscopes should be reassigned to other non-patient care duties for duration of symptoms or until after 24 hours of effective antibiotic therapy. Requires re-evaluation by OHN/designate prior to return to work

CONJUNCTIVITIS
(Adenovirus – Epidemic Keratoconjunctivitis)

Organism/Disease	Adenovirus (Epidemic Keratocnojunctivitis – EKC)
Definition of Exposure	Direct contact with discharge from the eye or ocular mucous membranes of individuals with a conjunctival infection or indirectly on contaminated hands, articles or equipment. The incubation period ranges from 5 to 12 days.
Criteria to Confirm	Clinical diagnosis of conjunctivitis Plus viral culture of eye positive for adenovirus Or clinical illness in a HCW who is epidemiologically linked to a confirmed case
Education and Prevention	Consistent use of Routine <i>Practices and Additional Precautions</i> Do not share personal articles used near or on the eyes, e.g. towels, face cloths, make-up, glasses, etc. Consider disposal of contact lenses and eye make-up See family physician for confirmation of diagnosis and/or clinical management and treatment. Appropriate handling, cleaning, disinfection and/or sterilization of equipment Irrigate eyes as soon as possible in the event of an exposure Provide fact sheet on EKC (see Appendix B)
Exposure Management	No modification of work practices No work restrictions OH should instruct HCW to flush/irrigate eye(s) with water as soon as possible as a first aid measure if eye contamination occurs
Illness Management	Refer for confirmation of diagnosis and clinical management OHN/designate should exclude HCW infected with EKC from direct patient contact until 14 days after the onset of clinical infection in the second eye (if second eye infected), as this represents the period of greatest communicability. Lab personnel who use microscopes should be reassigned to other non-patient care duties. Requires medical re-evaluation prior to return to work Some treatments may affect the infected person's visual acuity

CYTOMEGALOVIRUS (CMV)

Organism/Disease	Cytomegalovirus (CMV)
Definition of Exposure	Contact of mucous membranes with infectious saliva, genital secretions, or urine. Infected individuals may shed the virus but not exhibit symptoms.
Criteria to Confirm	Clinical illness - (mononucleosis-like syndrome, hepatosplenomegaly, pneumonia, retinitis, congenital infection). Infection with CMV is very common and often passes undiagnosed as a febrile illness without specific characteristics. Plus laboratory evidence (viral culture positive for CMV, or CMV viral DNA positive).
Education and Prevention	Consistent use of Routine <i>Practices and Additional Precautions</i> Provide fact sheet on CMV (see Appendix B)
Exposure Management	No modification or restriction of work practices No need to reassign or exclude HCW who are pregnant, or planning a pregnancy, from caring for patients infected with CMV
Illness Management	Refer for confirmation of diagnosis and clinical management No modification or restriction of work practices

EPSTEIN-BARR VIRUS (EBV)

Organism/Disease	Epstein-Barr Virus
Definition of Exposure	Direct and indirect contact of oral mucous membranes with saliva of infected individuals. Incubation period 4-6 weeks.
Criteria to Confirm	Clinical illness - fever, exudative pharyngitis, lymphadenopathy, hepatosplenomegaly. Plus laboratory evidence – heterophile antibody, e.g. Monospot positive, IgM to EBV viral capsid antigen (VCA) positive of EBV in the absence of anti-ENBA, or significant rise in EBV IgG antibody
Education and Prevention	Consistent use of <i>Routine Practices</i> and <i>Additional Precautions</i> Provide fact sheet on EBV (see Appendix B)
Exposure Management	No modification or restriction of work practices
Illness Management	No modification or restriction of work practices; however, the nature of illness will likely preclude reporting for work.

GASTROENTERIC INFECTIONS

Organism/Disease	Gastroenteric Infections
Definition of Exposure	<p>Direct or indirect oral contact with infectious feces; ingestion of contaminated food or water.</p> <p>Can be caused by a variety of pathogens including norovirus, <i>Campylobacter</i>, cryptosporidium, hepatitis A, <i>Shigella</i>, <i>E. coli</i> 0157:H7, <i>Salmonella</i>, and other viral gastroenteric pathogens. Based on the epidemiology of <i>Salmonella typhi</i> and <i>paratyphi</i>, norovirus, and <i>Shigella</i>, some exceptions to the general protocol will be outlined.</p> <p>Incubation period, depending on the causative agent can be from 24-72 hours. Incubation period may be shorter for food-borne intoxications or longer for some infections, such as <i>Campylobacter</i> or <i>Giardia</i>.</p>
Criteria to Confirm	<p>Clinical illness – diarrhea, abdominal pain, malaise, fever, anorexia, nausea and vomiting; microorganism specific manifestations e.g. hemolytic uremic syndrome (verotoxigenic <i>E. coli</i>)</p> <p>Plus laboratory evidence – positive viral or bacterial culture, antigen detection assay, or examination for parasites from an appropriate clinical specimen positive for a known gastroenteric pathogen; antigen detection assay or PCR positive for a known gastroenteric pathogen.</p> <p>Or clinical illness in HCW who is epidemiologically linked to a confirmed case within the appropriate incubation period</p>
Education and Prevention	<p>Consistent use of <i>Routine Practices and Additional Precautions</i></p> <p>Importance of environmental cleaning in outbreaks</p> <p>Safe food handling practices</p> <p>Hazards of eating and drinking on patient care units and ambulances</p> <p>Associated risks with some pets</p> <p>Promote strict adherence to <i>Routine Practices</i> and additional precautions</p> <p>Provide fact sheets on Gastroenteric Infection (see Appendix B)</p>
Exposure Management	<p>No modifications of work practices or work restrictions</p>

GASTROENTERIC INFECTIONS cont'd

Evaluate and refer HCW with clinically significant diarrhea or vomiting for confirmation of diagnosis and clinical management, which may include laboratory investigation and supportive therapy, i.e. maintaining hydration, control of nausea and diarrhea, antibiotic therapy as appropriate.

Exclude HCW with vomiting or diarrhea from contact with patients and their environment and from food handling until stools have formed. Generally advise exclusion for 48 hours after last episode of diarrhea or vomiting and stools have formed. Post viral infection, individuals can shed virus for prolonged periods of time therefore personal attention to hygiene is paramount.

OHN/designate should assess HCW fitness for work; evaluate for resolution of symptoms; type of patient/work/physical setting, hygiene practices, what risk control measures can be utilized and establish a follow up schedule.

Upon return to work, the OHN/designate should assess affected staff and instruct regarding personal/hand hygiene, and high-risk food preparation.

OHN/designate may modify work restrictions as necessary in outbreak situations.

OHN/designate may consider limiting staff movement among affected and non-affected units during an outbreak.

Ensure that case is reported to Public Health Services as per *It's the Law*. Depending on the pathogen isolated, Public Health Services may initiate an investigation to determine source and need for contact exposure follow-up.

Infection Prevention & Control can provide guidance on preventative measures.

Exceptions to the protocol:

Salmonella typhi and paratyphi: Carriers of these organisms must be excluded from food handling and patient care activities until the carrier state is eradicated.

Norovirus (Norwalk-like Disease): Persons with symptoms suggestive of Norovirus disease must remain off work until symptom-free for 48 hours. In outbreaks of Norovirus, patient-staff cohorting should be implemented; persons working in the affected unit should not work in other units or facilities until the outbreak is over.

Shigella: If *Shigella* is cultured from the stool, the person must be excluded from food handling and patient care activities until two negative stools have been obtained, 24 hours apart, beginning at least 24 hours after diarrhea ends. If treated with antibiotics, the first stool must be submitted at least 48 hours after the last dose.

HEPATITIS A

Organism/Disease	Hepatitis A
Definition of Exposure	<p>Direct or indirect oral contact with infectious feces; ingestion of contaminated food or water.</p> <p>Incubation period is 15-50 days.</p>
Criteria to Confirm	<p>Clinical illness - fever, malaise, jaundice, anorexia and nausea (duration of illness is usually several weeks, but prolonged or relapsing disease lasting as long as 6 months can occur)</p> <p>Plus laboratory evidence IgM antibody positive for HAV.</p> <p>OR clinical illness in a HCW who is epidemiologically linked to a confirmed case of HAV in the previous 6 weeks</p>
Education and Prevention	<p>Consistent use of Routine <i>Practices and Additional Precautions</i>.</p> <p>Safe food handling practices, including not sharing patient food/treats/beverages. Routine HAV immunization for HCW, including food handlers, is not currently recommended.</p> <p>Consider immunization for HCW who work in institutions for the developmentally challenged, where there is an ongoing problem with HAV transmission.</p> <p>Provide fact sheet on HAV (see Appendix B)</p>
Exposure Management	<p>HCW should be considered immune to HAV with evidence of hepatitis A immunization or documentation of HAV IgG antibody.</p> <p>Refer exposed, non-immune HCW for clinical management. Hepatitis A vaccine is the preferred agent for pre-exposure prophylaxis against hepatitis A. Hepatitis A vaccine should be given for post-exposure prophylaxis of contacts (including other food handlers if the case is a food handler) as soon as possible and preferably within 7 days of exposure to the case.</p> <p>Immune globulin is an alternative prophylactic agent and is recommended for immunocompromised contacts who may not respond fully to the vaccine.</p> <p>The recommended dose of Ig varies according to the duration of required protection. It also varies with the manufacturer, so the package insert should be consulted prior to administration.</p> <p>No modification to work practices or work restrictions for HCW exposed to HAV.</p>
Illness Management	<p>Refer to physician for confirmation of diagnosis and clinical management, including laboratory investigation.</p> <p>Exclude HCWs infected with HAV from food handling and from contact with patients and their environment until 7 days after onset of jaundice or other clinical symptoms</p> <p>Report to Public Health as per "It's the Law".</p> <p>Hepatitis A virus vaccine should be given for post-exposure prophylaxis of contacts (including other food handlers) as soon as possible and preferably within 7 days of exposure to the case. Administration of immune globulin (IG) is recommended for immunocompromised contacts who may not respond fully to the vaccine</p>

HERPES SIMPLEX VIRUS (HSV)

Organism/Disease	Herpes Simplex Virus (HSV)
Definition of Exposure	Direct or indirect contact of non-intact skin or mucous membranes with infectious oral or genital secretions, lesion drainage, or any secretions or excretions from an infected neonate.
Criteria to Confirm	<p>Clinical illness - primary or recurrent vesicular/ulcerative lesions of skin or mucous membrane; encephalitis/meningitis</p> <p>With or without laboratory evidence - viral culture of vesicle fluid, tissue, CSF, or mucous membrane positive for HSV, HSV antigen detection by enzyme immunoassay; immunofluorescence positive clinical specimen; HSV viral DNA positive via PCR.</p>
Education and Prevention	<p>Hand hygiene and appropriate use of PPE</p> <p>Appropriate handling, cleaning, disinfection and/or sterilization of equipment</p> <p>Importance of not nuzzling/kissing babies or child with dermatitis</p> <p>Importance of not sharing potentially contaminated facial/lip make-up</p> <p>Promote strict adherence to <i>Routine Practices</i> and additional precautions</p> <p>Provide fact sheet on HSV (see Appendix B)</p>
Exposure Management	No modification or restriction of work practices.
Illness Management	<p>HCW, who have direct patient contact, and who develop acute HSV infections (oral, orofacial, or herpetic whitlow) must report to OHN/designate as soon as they notice symptoms.</p> <p>Refer HCW with herpetic whitlow or weeping lesions for confirmation of diagnosis and clinical management, which may include laboratory investigation and oral antiviral therapy.</p> <p>HCW with orofacial or weeping lesions on sites other than hands must wear a protective dressing and/or mask during patient care to prevent hand contact with lesions. Maintain scrupulous hand hygiene. Staff should also wear gloves when touching patients and wash hands after removing gloves. If lesions cannot be effectively covered with dressings, HCW should be excluded from direct contact with high-risk patients, i.e. newborns, burn patients, or immunocompromised patients.</p> <p>Herpetic whitlow: Persons with HSV infection of the fingers must be restricted from all patient contact until lesions are healed. There is no evidence that wearing gloves will provide adequate protection for the patient and may aggravate the existing infection. These HCW may be reassigned to non-patient care tasks. Ensure that hand hygiene is practiced.</p> <p>No exclusions for HCW with genital HSV infections.</p>

INFLUENZA

Organism/Disease	Influenza
Definition of Exposure	Droplet or indirect contact of oral, nasal or conjunctival mucous membranes with infectious respiratory secretions.
Criteria to Confirm	<p>Clinical illness - Acute onset of respiratory illness with fever and/or cough with one or more of the following: sore throat, arthralgia (joint pain), myalgia (sore muscles) or prostration (extreme fatigue) which is likely due to influenza. In persons 65 and older, fever may not be prominent. There may just be a decline in function or a worsening of an underlying chronic condition.</p> <p>Plus laboratory evidence: positive viral culture or detection by PCR of the nasopharynx.</p> <p>Or compatible clinical illness in a HCW during an outbreak.</p>
Education and Prevention	<p>Consistent use of <i>Routine Practices and Additional Precautions</i></p> <p>Difference between influenza and the common cold; and between influenza and gastroenteritis.</p> <p>Risk of infection and complications in high-risk groups.</p> <p>Why HCW are targeted for immunization.</p> <p>Dispel myths around immunization and the immune system.</p> <p>Importance and safety of immunization for staff and patients.</p> <p>Differences in prophylaxis recommendations.</p> <p>Provide fact sheet on Influenza (see Appendix B)</p>
Exposure Management	<p>Offer vaccine to unimmunized exposed HCW as soon as possible, depending on vaccine availability.</p> <p>Careful consideration may be given to use of antiviral therapy as a supplement to vaccine if the interval since immunization is less than 2 weeks.</p> <p>No work restrictions.</p> <p>In certain instances where an outbreak exists, Public Health Services, may make recommendations for staff prophylaxis to the Medical Director of the organization or facility</p>
Illness Management	<p>Refer for confirmation of diagnosis and clinical management.</p> <p>Exclude HCW symptomatic/ infected with influenza from work: until 7 days after onset of symptoms with the first day of symptoms being counted as day 1, OR if they have been immunized at least two weeks previously and have started on antiviral therapy. If this second criterion is met, a fitness-for-work assessment shall first be conducted through the Occupational Health department.</p> <p>Advise Infection Prevention & Control of a case of suspected/confirmed influenza.</p> <p>Consider the possibility of an outbreak if more than one HCW on the same unit meets the criteria for diagnosis during the influenza season.</p> <p>Liaise with Infection Prevention and Control and Public Health Services if an outbreak is suspected.</p>

INFLUENZA

Illness Management
cont'd

When an outbreak situation exists, refer unimmunized HCW for clinical management, which may include: prescribing antiviral prophylaxis for the duration of the outbreak if vaccine is unavailable, if it was given less than 2 weeks prior to exposure, or if it is contraindicated, immunizing and prescribing a 2 week course of antiviral prophylaxis.

Exclude or reassign unimmunized HCW who refuses to co-operate with the outbreak plan.

Occupational Health, in consultation with facility management, Infection Prevention and Control, the Medical Officer of Health, Public Health Services, and Nursing Management will consider the need for flexibility and re-evaluation of work restrictions during the outbreak.

MEASLES (Rubeola)

Organism/Disease	Measles
Definition of Exposure	Sharing the same air space, either simultaneously or afterwards, as a clinical case of measles.
Criteria to Confirm	<p>Clinical illness: fever, runny nose, cough, conjunctivitis, erythematous maculopapular rash, and Koplik spots, which are small, white spots (often on a reddened background) that occur on the inside of the cheeks early in the course of measles.</p> <p>Plus laboratory evidence: IgM antibody positive for measles or a significant rise in antibody concentrations between acute and convalescent sera or virus identification from a throat swab (culture or PCR).</p>
Education and Prevention	<p>Consistent use of <i>Routine Practices and/or Additional Precautions</i></p> <p>HCW should be aware of measles immune status</p> <p>Transmission is by the airborne and , direct contact routes and measles is highly communicable (HM)</p> <p>Susceptible HCWs should not care for patients with measles</p> <p>Surgical masks do not provide complete protection for a susceptible person: a fit tested N95 Particulate Respirator is required.</p> <p>Unvaccinated HCW should report exposure immediately.</p> <p>Provide fact sheet on Measles (see Appendix B)</p>
Exposure Management	<p>If the HCW was born prior to 1970:</p> <p>No vaccine required as natural immunity is assumed</p> <p>No work restrictions</p> <p>If the HCW was born after 1970 and has documented evidence of two doses of live measles-containing vaccine or measles disease:</p> <p>No further vaccine required</p> <p>The HCW may continue to work</p> <p>HCW Who Are Considered Susceptible to Measles:</p> <p>If the HCW was born after 1970 and has documented evidence of one dose of live measles-containing vaccine:</p> <p>Draw a blood specimen for measles IgG and give a dose of MMR vaccine immediately thereafter (ideally within three days of exposure, with day of exposure counted as day 0). If MMR vaccine is contraindicated for medical reasons (e.g. immunocompromised or pregnant), immune globulin (IG) should be offered within 6 days of exposure to prevent or modify measles disease. The product monograph should be referred to for specific guidance.</p> <p>When sero-status is unknown or pending or if the HCW is found to be IgG seronegative, they must remain off work between day 5 (post first exposure) and day 21 (post last exposure), inclusive, regardless of receipt of MMR vaccine or IG post-exposure.</p>

MEASLES (Rubeola) cont'd

If the HCW is found to have protective levels of IgG, he/she may return to work.

If the HCW was born after 1970 and has no documented evidence of receiving any live measles-containing vaccine:

Draw a blood specimen for measles IgG and give a dose of MMR vaccine immediately thereafter (ideally within three days of exposure with day of exposure counted as day 0). If MMR vaccine is contraindicated for medical reasons (e.g. immunocompromised or pregnant), immune globulin should be offered within 6 days of exposure to prevent or modify measles disease. Give a second dose of MMR vaccine at least 28 days after the first.

When serostatus is unknown or pending or if the HCW is found to be IgG seronegative, the HCW must remain off work between day 5 (post first exposure) and day 21 (post last exposure), inclusive, regardless of receipt of MMR vaccine or IG post-exposure.

If the HCW is found to have protective levels of IgG he/she may return to work. Regardless of measles IgG status, HCW also need to be assessed for immunity to mumps and rubella. Vaccine for measles, mumps and rubella is only available in Canada as MMR vaccine, thus HCW who have been assessed as immune to one virus contained in the vaccine may need additional doses of MMR to ensure immunity to the other viruses. Immunity to one virus contained in the vaccine is not a contraindication to receiving additional doses of MMR vaccine, as there is no increased risk of side effects with additional doses of the vaccine. Refer pregnant HCWs to their physicians for clinical management.

**Exposure
Management cont'd**

Healthcare workers who are diagnosed with measles should be excluded from work until at least five days after the resolution of the rash. Prior to return to work the HCW should contact the OHN/designate with information from a health care provider concerning:

- clinical presentation
- date of rash onset
- date of resolution of rash and other symptoms
- lab confirmation of measles illness

Exclusion may be extended if the HCW remains symptomatic. HCW working with immunocompromised patients may be excluded beyond day 5, at the discretion of the OHN/designate and/or the Medical Health Officer. Inform Infection Prevention and Control and Public Health Services of a case of suspected measles

Illness Management

MENINGOCOCCAL DISEASE (*Neisseria meningitidis*)

Organism/Disease	Meningococcal Disease (<i>Neisseria meningitidis</i>)
Definition of Exposure	Direct contact of the HCW's oral/nasal mucous membranes with the patient's respiratory secretions. This may occur as the result of unprotected: <ul style="list-style-type: none"> mouth-to-mouth resuscitation open suctioning endotracheal intubation endotracheal tube management close examination of the oropharynx.
Criteria to Confirm	Clinical illness meningitis, meningococemia, or other invasive meningococcal disease with headache, fever, stiff neck, chills, malaise, prostration and rash. Plus laboratory evidence – cultures of blood, cerebrospinal fluid (CSF), or other sterile site positive for <i>N. meningitidis</i> Or compatible clinical illness in a HCW who is epidemiologically linked to a case confirmed in the previous 7 days.
Education and Prevention	HCW should wear a surgical/procedure mask if within two meters of a patient on droplet precautions for suspected or confirmed meningococcal infection. Healthy persons may carry <i>N. meningitidis</i> , but healthcare acquired transmission from carriers to personnel has not been reported. Personnel who are asymptomatic carriers need not be identified, treated or removed from patient care. Promote strict adherence to <i>Routine Practices</i> and additional precautions Provide a fact sheet on <i>N. meningitides</i> (see Appendix B)
Exposure Management	Refer exposed HCW for clinical management Antimicrobial prophylaxis within 10 days after the most recent exposure can eradicate carriage of <i>N. meningitidis</i> and prevent infections in personnel who have unprotected exposure. Antimicrobial prophylaxis is indicated only for persons who have had intensive direct contact with patients or individuals with invasive meningococcal disease when proper precautions have not been used. Post-exposure immunization is not recommended. No work restrictions. Microbiology medical laboratory technologists who have manipulated invasive <i>N. meningitidis</i> isolates (e.g. blood, CSF isolates) in a manner that could induce aerosolization or droplet formation (including plating, subculturing and serogrouping) on an open bench and in the absence of effective protection from droplets or aerosols should consider antimicrobial prophylaxis.

MENINGOCOCCAL DISEASE (*Neisseria meningitidis*) cont'd

Illness Management

Healthcare workers who are incidentally found to be asymptotically colonized with *N. meningitidis* should not be excluded from work, and should not be given prophylactic treatment with antibiotics. (*N. meningitidis* is part of the normal commensal flora in up to 10% of the population.)

Health care workers who develop meningococcal disease must be excluded from work until 24 hours after the start of effective therapy.

Health care workers who develop meningococcal disease must be excluded from work until 24 hours after the start of effective therapy.

Refer HCW for clinical management

Inform Infection Prevention and Control and Public Health Services of suspected or confirmed case

MUMPS (Infectious Parotitis)

Organism/Disease	Mumps
Definition of Exposure	<p>A close contact exposure in health care setting is defined as an individual with unprotected face-to-face contact within two metres of a case.</p> <p>A community contact exposure is defined as any of the following during the infectious period (i.e., approximately 7 days before to 5 days after symptom onset):</p> <ul style="list-style-type: none"> Household contacts of a case; Persons who share sleeping arrangements with the case, including shared rooms (e.g., dormitories); Direct contact with the oral/nasal secretions of a case (e.g., face-to-face contact, sharing cigarettes/drinking glasses/food/cosmetics like lip gloss, kissing on the mouth); Children and staff in child care and school facilities (as deemed necessary by the epidemiology of the outbreak).
Criteria to Confirm	<p>An individual is considered to have mumps if he/she has:</p> <ul style="list-style-type: none"> Unilateral parotitis and an epidemiological link to a laboratory-confirmed case OR Bilateral parotitis OR Laboratory confirmation of mumps through RT-PCR OR Positive serologic test for mumps IgM antibody with appropriate clinical symptoms
Education and Prevention	<p>Consistent use of <i>Routine Practices and/or Additional Precautions</i></p> <p>HCW should know immune status</p> <p>Encourage appropriate immunization, when required.</p> <p>Provide fact sheet on Mumps (see Appendix B)</p>
Exposure Management	<p>A close contact is defined as an individual with unprotected face-to-face contact within one metre of a case.</p> <p>HCW who are a close contact of a case of mumps in the community should report to Occupational Health and/or Infection Control immediately.</p> <p>HCW who are a close contact of a case of mumps within the facility should report to Occupational Health and/or Infection Control if not already identified by those programs during the course of an investigation.</p> <p>A close contact's vaccination status should be assessed (figure 1):</p> <p>If the HCW has documentation of having received two previous doses of MMR, that person does not require additional doses of MMR and can return to work immediately.</p> <p>If the HCW has documentation of having received one previous dose of MMR, that person should receive one additional dose of MMR and can return to work immediately following vaccination.</p> <p>If the HCW does not have documentation of previous doses of MMR, that person should immediately receive one additional dose of MMR. Serology for mumps IgG</p>

MUMPS (Infectious Parotitis)

as well as measles and rubella serology should be drawn prior to vaccinating. While awaiting the results of mumps serology, the HCW should be off work if the period of communicability has begun (beginning 9 days after first exposure to a case).

If the mumps IgG is positive, the HCW is considered immune to mumps and can return to work. A second dose of MMR may be necessary in order to be adequately protected against measles and rubella.

If the mumps IgG is negative, the HCW is not immune to mumps and should receive a second dose of MMR 28 days after the first. That person should be excluded from work from day 9 after the first contact with a case to day 26 after the last contact with a case (date of exposure is day 0).

All close contacts (both immune and non-immune) should be educated about self-monitoring for symptoms of mumps and to seek medical care immediately if these develop.

Illness Management

HCW who are diagnosed with mumps should be excluded from work until nine days after symptom onset.

Notify Infection Prevention and Control of a case of mumps.

Notify Public Health Services as per *It's the Law*.

**ERYTHEMA INFECTIOSUM
(Human Parvovirus B19) (fifth disease)**

Organism/Disease	Erythema Infectiosum (Human Parvovirus B19) (fifth disease)
Definition of Exposure	Contact with the respiratory secretions of infected individuals.
Criteria to Confirm	<p>Clinical illness: mild viral disease that is usually non-febrile may cause malaise, sore joints (arthralgia), and headache. Characteristic sign is striking erythema of the cheeks (slapped face appearance), frequently associated with a lace-like rash on the trunk and extremities, which fades but may recur for 1 to 3 weeks or longer on exposure to sunlight or heat (e.g. bathing)</p> <p>Plus laboratory evidence: IgM antibody positive for parvovirus B19; Or compatible clinical illness in a HCW who is epidemiologically linked to a case in the previous three weeks.</p>
Education and Prevention	<p>Consistent use of <i>Routine Practices</i> and <i>Additional Precautions</i></p> <p>Transmission through contact with respiratory secretions most likely during incubation period; once a rash develops, a person is no longer infectious.</p> <p>Hand hygiene is an effective measure to prevent transmission.</p> <p>Minimal risk of transmission to HCW.</p> <p>High rate of immunity in adult population.</p> <p>People most likely to develop complications are those with underlying anemia or immunodeficiency and parvovirus B19-susceptible pregnant women (slight risk of fetus developing anemia)</p> <p>Relatively low potential risk to the fetus if maternal parvovirus infection occurs. Wear a surgical/procedure mask, if within two meters of a patient on Droplet precautions, for suspected/confirmed aplastic or erythrocyte crisis.</p> <p>Provide fact sheet on Parvovirus B19 (see Appendix B)</p>
Exposure Management	<p>Consider excluding exposed HCWs from caring for antibody deficient, immunocompromised patients during the infection's incubation period, unless serologic tests show that the HCW is immune to parvovirus B19.</p> <p>Refer pregnant HCWs exposed to children in the incubation period of erythema infectiosum or who were in parvovirus B19-related aplastic crisis to their physicians for clinical management.</p>
Illness Management	<p>Refer pregnant HCW to their physician for confirmation of diagnosis and clinical management.</p> <p>No modifications to work practices or work restrictions. Period of communicability is over once rash develops.</p>

PEDICULOSIS (Lice)

Organism/Disease	Pediculosis (Lice)
Definition of Exposure	Intimate skin-to-skin contact with an individual infested with lice or through contact with their clothing or bedding. Incubation period is from 6 to 10 days.
Criteria to Confirm	Clinical Illness intense itching of affected body site and the presence of eggs (nits) on the hair shaft or, occasionally, visible lice.
Education and Prevention	Consistent use of <i>Routine Practices</i> and <i>Additional Precautions</i> Treatment options and appropriate actions to eradicate lice: Bathe, shampoo and change clothing, as directed, after treatment Hot water washing of clothing and drying at hot cycles or dry cleaning of infested bedding/clothing or storage in a sealed plastic bag for 10 days to destroy eggs and lice. (Temperatures exceeding 53.5 C or 128.3 F for 5 minutes are lethal to lice and small eggs.) Soak brushes and combs in pediculocide or hot water. Vacuum furniture. Wear gloves and gown when having direct contact with infested patients, until 24 hours after effective treatment. Provide fact sheet on Pediculosis (see Appendix B)
Exposure Management	Treatment only if signs of infestation No work restrictions
Illness Management	Refer for confirmation of diagnosis and appropriate treatment. Exclude from work until 24 hours after effective treatment with pediculocide. Re-evaluate before return to work, i.e. free of lice and nits. Exposed family members and intimate contacts should seek evaluation by physician re: diagnosis and treatment. Liaise with Infection Prevention and Control if an outbreak is suspected. Retreatment may be necessary after 7-10 days, if eggs survive.

PERTUSSIS (Whooping Cough)

Organism/Disease	Pertussis (Whooping Cough)
Definition of Exposure	<p>Droplet contact of oral or nasal mucous membranes with infectious respiratory secretions, face-to-face contact greater than 5 minutes with an infected individual or sharing the same confined air space; i.e. being within two metres of infected individuals for greater than one hour.</p> <p>Incubation period 6-20 days. (Confirmed via CDC and Heymann)</p>
Criteria to Confirm	<p>Clinical Illness - Respiratory tract symptoms progressing to severe paroxysms of cough, often with the characteristic respiratory whoop followed by vomiting. Plus bacterial culture of nasopharynx positive for <i>Bordetella pertussis</i>; polymerase chain reaction (PCR) assay of nasopharyngeal specimen positive for <i>Bordetella pertussis</i>.</p> <p>Or a person who is epidemiologically linked to a laboratory-confirmed case and who has one or more of the following for which there is no other cause:</p> <ul style="list-style-type: none"> paroxysmal cough of any duration cough ending in vomiting, or associated with apnea cough with inspiratory whoop
Education and Prevention	<p>Consistent use of <i>Routine Practices</i> and <i>Additional Precautions</i></p> <p>Waning immunity in adults, therefore susceptible.</p> <p>Currently no recommendations for booster doses of vaccine.</p> <p>Provide fact sheet on Pertussis (see Appendix B)</p>
Exposure Management	<p>All HCW should be considered susceptible.</p> <p>Refer for clinical management (regardless of stage of illness) including laboratory investigation and chemoprophylaxis with antibiotics.</p> <p>No work restrictions for exposed HCWs who are taking prophylactic antibiotics.</p> <p>Exclude from work exposed HCWs who refuse or are unable to take prophylaxis for 20 days from the last contact</p>
Illness Management	<p>Refer for confirmation of diagnosis and clinical management.</p> <p>Exclude HCW symptomatic/infected with pertussis until after 5 days of effective treatment or from the beginning of symptoms through the 3rd week after the onset of paroxysms, if untreated.</p> <p>Advise Infection Prevention and Control and Public Health Services of suspected/confirmed case of pertussis</p>

RESPIRATORY INFECTIONS

Organism/Disease	Respiratory Infections
Definition of Exposure	<p>Direct contact of oral/nasal/conjunctival mucous membranes with the secretions from the respiratory tract of an infected individual or indirect contact with items contaminated with respiratory secretions.</p> <p>Incubation period and period of communicability varies with the identified microorganism.</p>
Criteria to Confirm	<p>Clinical Illness - with fever, malaise, conjunctivitis, pharyngitis, headache, cough, bronchiolitis, pneumonia, croup, sinusitis and otis media.</p> <p>Plus laboratory evidence: viral culture of an appropriate clinical specimen positive for a known respiratory tract pathogen; antigen detection assay positive</p> <p>Or compatible clinical illness in a HCW who is epidemiologically linked to a case within the appropriate incubation time.</p>
Education and Prevention	<p>Consistent use of <i>Routine Practices</i> and <i>Additional Precautions</i></p> <p>Provide fact sheet on Respiratory Infections (see Appendix B)</p>
Exposure Management	<p>No modifications of work practices or work restrictions</p>
Illness Management	<p>Recommend minimal contact with high risk patients i.e. pediatric patients with hemodynamically significant congenital heart disease, or chronic lung disease, neonates and immunocompromised patients. Wearing of a surgical mask will serve to contain respiratory secretions.</p> <p>Investigate the possibility of an outbreak if there is more than one HCW on the same unit who meets the criteria for diagnosis and appears linked epidemiologically to transmission.</p> <p>Liaise with Infection Prevention and Control and Public Health Services if an outbreak is suspected.</p>

RUBELLA (German Measles)

Organism/Disease	Rubella
Definition of Exposure	<p>Mucous membrane contact of a susceptible individual with the nasopharyngeal secretions of an infected person during the period 7 days before onset of symptoms, to 7 days after symptoms appear: via droplet or direct contact.</p> <p>Exposure can also occur by direct and indirect contact of the oral or nasal mucous membranes with urine from an infant with congenital rubella syndrome</p>
Criteria to Confirm	<p>Clinical illness generalized erythematous, maculopapular rash, lymphadenopathy, slight fever, transient polyarthralgia, polyarthrits</p> <p>Plus laboratory evidence IgM antibody positive for rubella; four-fold rise in rubella IgG antibody; viral culture of an appropriate clinical specimen positive for rubella</p>
Education and Prevention	<p>Consistent use of <i>Routine Practices</i> and <i>Additional Precautions</i></p> <p>Importance of immunization.</p> <p>Vaccine should not be administered during pregnancy; pregnancy should be avoided until 1 month after immunization.</p> <p>Provide fact sheet on rubella (see Appendix B)</p>
Exposure Management	<p>Report exposure to OHN/designate</p> <p>If the immune status is not known, test immediately for the presence of rubella antibodies.</p> <p>Immune persons may continue to work.</p> <p>Susceptible exposed person must be excluded from any work in the healthcare facility or prehospital care setting from 7 days after the first exposure until 21 days after the last exposure.</p> <p>Immunization required if exposure does not result in infection (live virus vaccine given after exposure does not prevent illness.)</p> <p>Referral to physician to evaluate re: administering immune globulin to exposed HCW within 48 hours of exposure and/or immunization</p> <p>Refer non-immune exposed HCW who are pregnant to their physician for clinical management.</p>
Illness Management	<p>If rubella develops, exclude from work until 7 days after the appearance of rash.</p> <p>Refer for confirmation of diagnosis and clinical management.</p> <p>Inform Infection Prevention and Control and Public Health Services of a suspected or confirmed case of rubella.</p>

SCABIES

Organism/Disease	Scabies
Definition of Exposure	<p>Direct skin-to-skin contact with an infested person. Minimal skin-to-skin contact with persons who have crusted (Norwegian) scabies may be sufficient for transmission, due to large number of mites on the source. Occasionally it may be transmitted through contact with the clothing or bedding of an infested person but not usually with items such as furniture, although that is possible with Norwegian scabies.</p> <p>Incubation period is usually 2 to 6 weeks</p>
Criteria to Confirm	<p>Clinical Illness erythematous, maculopapular skin eruption, intensely itchy, particularly at night; thread-like burrow lines may be seen, but are often obliterated by scratching, leaving the skin raw; crusted hyperkeratotic lesions characterize Norwegian scabies. (Skin scrapings may be considered, but are often negative despite strong clinical suspicion.</p>
Education and Prevention	<p>Consistent use of <i>Routine Practices</i> and <i>Additional Precautions</i></p> <p>For typical scabies with low mite load, a single application of a scabicide is usually adequate and immediately decreases the risk of transmission.</p> <p>If symptoms persist after the initial treatment, another application of scabicide may be needed.</p> <p>Importance of following instructions for scabicide. The individual should check with a physician if they are pregnant or if a child under the age of 2 years is infested.</p> <p>Persistent symptoms likely represent newly hatched mites and not new infestations.</p> <p>Pruritis after scabies infestation and treatment may persist for as long as 2 weeks.</p> <p>Recommend hot water washing/dry cleaning or storing in a sealed plastic bag for 7 days any clothes or bedding used up to 4 days prior to treatment.</p> <p>No need for environmental disinfection in case of typical scabies.</p> <p>Recommend vacuum environmental surfaces in a room used by person with Norwegian scabies.</p> <p>Personnel exposed to scabies but lacking signs of infestation do not usually require prophylactic treatment.</p> <p>Provide fact sheet on Scabies (see Appendix B)</p>
Exposure Management	<p>Routine prophylaxis for HCW exposed to typical scabies is not recommended.</p> <p>No exclusions for HCW exposed to typical scabies.</p> <p>Refer HCW exposed to Norwegian scabies for clinical management that may include one or more applications of scabicide.</p> <p>Exclude HCW exposed to Norwegian scabies until the HCW completes one application of effective treatment.</p>

SCABIES Cont'd

Illness Management

Refer for confirmation of diagnosis and clinical management, including provision of scabicide.

Exclude HCW infested with typical scabies until 24 hrs after the HCW completes one application of effective treatment, and they are clinically assessed prior to return to work.

Exclude HCW infested with Norwegian scabies until 24 hrs after HCW completes last application of effective treatment and they are re-evaluated prior to return-to-work.

Advise HCW that exposed household members and intimate contacts should seek medical evaluation.

Advise Infection Prevention and Control as required when suspected or confirmed case of scabies.

Consider possibility of an outbreak when *more than* one HCW or patient on the same unit meets the criteria for diagnosis; If Norwegian scabies is identified, consider it an outbreak when *one* case of Norwegian scabies is identified.

OHN/designate may modify work restrictions as necessary in outbreak situations.

Liaise with Infection Prevention and Control if an outbreak of scabies is suspected.

In outbreak situations, where transmission continues to occur, prophylaxis may be warranted for both patients and HCW.

STAPHYLOCOCCUS AUREUS (*S. aureus*)
Methicillin Sensitive *S. Aureus*

Organism/Disease	Methicillin Sensitive <i>S. aureus</i>
Definition of Exposure	Direct or indirect contact with MSSA infected or colonized body sites, wound drainage, or respiratory secretions.
Criteria to Confirm	Clinical illness purulent lesion, abscesses, septic phlebitis, osteomyelitis, pneumonia, endocarditis or sepsis. Plus bacterial culture of appropriate clinical specimen positive for <i>S. aureus</i> Or clinical illness in a HCW epidemiologically linked to a case or related to own colonization status
Education and Prevention	Difference between MSSA and MRSA Meaning of colonization/infection Possibility of intermittent/prolonged shedding Promote strict adherence to <i>Routine Practices</i> and additional precautions Provide a fact sheet on MSSA.
Exposure Management	No modifications to work practices or work restrictions Routine cultures of HCW exposed to MSSA are not indicated
Illness Management	No modification to work practices or work restrictions for HCW asymptotically colonized with MSSA. Evaluate HCW with signs/symptoms of infection and refer for clinical management as necessary, which may include laboratory investigation and antibiotic therapy. Exclude HCW with skin lesions on their hands, (e.g. carbuncle or furuncle) that are suspected or known to be caused by MSSA until lesions are resolved and HCW assessed for fitness for work. Exclude HCW with lesions on sites other than their hands, suspected or confirmed to be caused by MSSA, from contact with patients and their environment until their lesions can effectively be completely covered by dressings and clothing, and hygiene or hand hygiene is not compromised or until the lesions are healed.

STAPHYLOCOCCUS AUREUS (S. aureus)
Methicillin Resistant *S. aureus*

Organism/Disease	Methicillin Resistant <i>S. aureus</i>
Definition of Exposure	Direct or indirect contact with MRSA colonized or infected body sites, wound drainage or respiratory secretions. Health care workers are generally identified as asymptomatic carriers of MRSA, which they may have acquired during the course of their activities in the healthcare facility or prehospital care setting, particularly if <i>Routine Practices</i> have not been adhered to.
Criteria to Confirm	If acute illness develops, the person should be managed according to current medical management recommendations: Clinical illness purulent lesion, abscesses, septic phlebitis, osteomyelitis, pneumonia, endocarditis, or sepsis. Plus bacterial culture of appropriate clinical specimen positive for MRSA Or clinical illness in a HCW epidemiologically linked to a case
Education and Prevention	Factors that increase transmission, i.e. respiratory tract infections/lesions. Need to report to OHN/designate if HCW has draining lesions, dermatitis; or if symptoms recur. Use of Contact and/or Droplet Precautions. The fact that cultures are recommended only when linked to patient transmission. Promote strict adherence to <i>Routine Practices</i> and additional precautions Provide fact sheet on MRSA (see Appendix B)
Exposure Management	Routine culture of HCW exposed to MRSA not recommended . If investigations indicate an epidemiological association of the HCW with healthcare- acquired transmission, in an outbreak situation the HCW may be screened. No routine screening for MRSA of persons carrying on activities in the healthcare facility or prehospital care setting is required. No modifications to work practices or work restrictions.
Illness Management	Refer for confirmation of diagnosis and for clinical management that should include laboratory investigation with molecular typing and may include antibiotic therapy for decolonization and/or treatment. Decolonization of staff colonized with MRSA should be done when they are epidemiologically linked to an outbreak with the same strain and adherence to additional precautions has failed to contain the outbreak. If staff are colonized with a strain of MRSA that is different from the outbreak strain or is detected during access to healthcare and if reported to OH, decolonization may be considered (PIDAC). Exclude a HCW with symptoms/infection that are suspected or known to be caused by MRSA (e.g. carbuncle, furuncle) until antibiotic therapy for treatment and decolonization is complete, lesions are resolved, medical assessment is complete and appropriate control measures and/or work restrictions are determined.

STAPHYLOCOCCUS AUREUS (*S. aureus*) Methicillin Resistant *S. aureus*

Illness Management
cont'd

The need for work restrictions or removal from patient care duties while on treatment for decolonization should be decided according to organizational policy and on a case-by-case basis dependent on:

- the strain isolated from the HCW is the same genotype as the outbreak strain type of patient/physical setting/work, hygiene practices, what risk control measures can be utilized and follow up procedures, potential consequences of MRSA in high risk populations (e.g., ICU, burn unit, surgical services, implantable devices);

- effectiveness of decolonization therapy if completed;

- compliance with treatment and infection prevention and control precautions;

- evidence for ongoing transmission of the MRSA , presence of respiratory tract infection or poorly controlled allergic rhinitis that would facilitate dissemination through coughing and sneezing;

- evidence that the person is linked to ongoing transmission; and severity of any infections caused by the MRSA.

OHN/designate may modify work practices during an outbreak, e.g. assigning HCW known to have the strain to patients with the same strain.

OHN/designate should liaise with Infection Prevention and Control and report to Public Health Services, according to *It's the Law* when a case of MRSA is identified or in an outbreak situation.

If the HCW remains at work, consistent use of Routine *Practices* and *Additional Precautions* is imperative.

GROUP A STREPTOCOCCUS (GAS) Disease

Organism/Disease	Group A Streptococcus (GAS) Disease
Definition of Exposure	<p>Exposure is defined as direct, indirect or droplet contact of oral or nasal mucous membranes with respiratory secretions or direct contact of non-intact skin with wound secretions from patients with invasive GAS disease (necrotizing fasciitis, toxic shock syndrome, meningitis, pneumonia) from 7 days before the onset until 24 hours after the start of effective therapy.</p> <p>If personal protective equipment (i.e. surgical mask and eye protection or face shield) has been worn, there is no exposure</p> <p>The incubation period is short, usually from 1 to 3 days, rarely longer. The period of communicability is from 7 days before the onset of GAS disease, until 24 hours after the start of effective antibiotic treatment.</p>
Criteria to Confirm	<p>Clinical illness pharyngitis, scarlet fever, skin/soft tissue infection, myositis, endometritis, bacteremia, meningitis, necrotizing fasciitis, or toxic shock syndrome</p> <p>Plus laboratory evidence antigen detection assay positive for group A streptococcus; bacterial culture of appropriate clinical specimen positive for group A streptococcus</p> <p>Or colonization in an individual who is epidemiologically linked to a confirmed case within the appropriate incubation time</p>
Education and Prevention	<p>Cultures only obtained if HCW epidemiologically linked to a case or outbreak</p> <p>Promote strict adherence to <i>Routine Practices</i> and additional precautions</p> <p>Provide fact sheet on Streptococcus Group A (see Appendix B)</p>
Exposure Management	<p>OH should not routinely obtain specimens for culture from HCWs exposed to GAS. OH should refer for clinical management HCW exposed to GAS necrotizing fasciitis, toxic shock syndrome, meningitis, or an invasive GAS case that resulted in death. Clinical management may include laboratory investigation and prophylaxis as recommended by Public Health provincial guidelines.</p> <p>There are no modifications to work practices or work restrictions for HCWs exposed to GAS.</p>
Illness Management	<p>Only refer colonized HCW for clinical management if epidemiologically linked to transmission. No work restrictions for HCW colonized with GAS if not linked to transmission</p> <p>Notify Infection Prevention and Control and Public Health Services, if a case of invasive GAS disease (necrotizing fasciitis, toxic shock syndrome, meningitis or an invasive GAS case that results in death), is suspected or confirmed.</p> <p>OH should evaluate HCWs with signs or symptoms of GAS infection, e.g. rash or sore throat, and refer them for clinical management as necessary.</p> <p>OH should refer HCWs with clinically significant GAS infection for confirmation of diagnosis and for clinical management, which should include laboratory investigation and antibiotic therapy.</p>

GROUP A STREPTOCOCCUS (GAS) Disease cont'd

Illness Management cont'd

OH should exclude HCWs with clinically significant GAS infection from work until completion of 24 hours of effective antibiotic therapy

In an outbreak situation, ensure that specimens for culture (throat, rectal, vaginal, and skin lesions) are obtained from staff who are epidemiologically linked to clinically significant healthcare associated GAS case(s).

TINEA (Ringworm)

Organism/Disease	Tinea
Definition of Exposure	Direct or indirect contact with scalp or skin lesions of an infected individual, animal or contaminated environmental surface. (i.e. back of seat, barber clippers etc.)
Criteria to Confirm	Clinical Illness Skin lesions of feet, body or scalp; frequently well demarcated, itchy, pustular, scaly and may involve hair loss. With or without laboratory evidence microscopic examination of skin scrapings or hair positive for tinea; culture of skin scrapings or hair.
Education and Prevention	Reporting to OHN/designate. Disinfect contaminated environmental surfaces with an approved hospital disinfectant. Promote strict adherence to <i>Routine Practices</i> and additional precautions, including personal hygiene Provide fact sheet on Tinea (see Appendix B)
Exposure Management	No modifications to work practices or work exclusions
Illness Management	Refer for confirmation of diagnosis and clinical management. Instruct HCW with Tinea to cover lesions with occlusive dressings while at work. Reassign HCW with Tinea to non-patient care duty when lesions cannot be covered or are present on hands or forearms and hand hygiene is compromised. Investigate the possibility of an outbreak if more than one HCW or patient on the same unit meets the criteria for diagnosis. Liaise with Infection Prevention and Control in a suspected/confirmed outbreak. Consider examination of all staff during institutional outbreaks, even in the absence of clinical disease and perform appropriate mycological testing

TUBERCULOSIS (TB)

Organism/Disease	Tuberculosis
<p>Definition of Exposure</p> <p>Criteria to Confirm</p>	<p>Tuberculosis is an airborne disease, with face-to-face contact considered significant in its transmission. When deciding whether a person has had a significant exposure to a potential transmitter, consideration should be given to the following:</p> <ul style="list-style-type: none"> the frequency of patient contact; the proximity to patients involved; the duration of face-to-face contact; the use of personal respiratory protective devices (i.e., fit-tested, seal checked N95 respirator); the number of air changes per hour in the area of exposure, and infectiousness of the contact patient: <ul style="list-style-type: none"> pulmonary or laryngeal tuberculosis cavitary or extensive pulmonary disease presence of Acid Fast Bacilli on direct sputum examination presence of coughing cough inducing procedures (e.g., sputum induction, bronchoscopy) open suctioning of intubated patients wound irrigation. <p>Some considerations would also apply to a community exposure of TB and would be followed by Public Health Services.</p> <p>Clinical illness in the absence of bacteriological proof , it may include chest radiographic changes, compatible with active TB including etiopathic pleurisy with effusion, active extra-pulmonary TB (meningeal, bone, kidney, peripheral lymph nodes, etc) and pathological evidence of active TB. Symptoms have usually been chronic and include fatigue, fever, night sweats and weight loss followed by cough, chest pain, and hemoptysis.</p> <p>Laboratory evidence culture positive for <i>Mycobacterium tuberculosis</i> complex (i.e. <i>M. tuberculosis</i> or <i>M. bovis</i>, excluding BCG strain, or <i>M. africanum</i>)</p>
Education and Prevention	<p>At hiring, all employees should have a two-step TST (Mantoux) to determine infection status, unless they have a documented prior positive tuberculin test.</p> <p>A history of BCG vaccination is not a contraindication to TST.</p> <p>HCW with a reaction of 10 mm induration or greater on the first or second test should be considered tuberculin reactors and no further tuberculin testing performed. Refer for chest radiography, medical evaluation and consideration of LTBI therapy. HCW with reactions of less than 10 mm induration to both tests should be considered non-reactors.</p> <p>Recommendations for Personal Protective Equipment, i.e. High Efficiency Particulate Respirator (N95), for which they have received fit testing.</p> <p>Requirements for Airborne infection isolation precautions.</p> <p>Guidelines for HCW re: Precautions in Caring for Patients Infected with TB.</p> <p>Rationale for 2-step Mantoux testing at hiring, contact TST screening.</p> <p>Promote strict adherence to <i>Routine Practices</i> and additional precautions</p> <p>Provide fact sheet on TB (see Appendix B)</p>

TUBERCULOSIS (TB) cont'd

Exposure Management

For workers who were previously known to be tuberculin negative:
A TST should be done immediately and, if negative, repeated after 12 weeks. If the tuberculin test is now positive, (induration of 10mm or greater) the HCW should be considered a converter, referred for chest radiography, and medical evaluation, with recommendation for treatment of latent tuberculous infection (LTBI).

No modification to work practices or work restrictions

For workers who were previously tuberculin skin test positive:
A TST should **NOT** be done.
Chest radiography should be performed three months after the contact or earlier, if symptoms develop.

NOTE: The records of HCW should document whether preventative therapy was offered, accepted and completed. HCW who have documented skin test conversions, whose chest x-rays do not indicate active TB, and refuse or are unable to tolerate preventative therapy, should be monitored routinely for symptom development. These individuals **do not need** to be excluded from work.

Illness Management

Report to Infection Prevention and Control and Public Health Services as per *It's the Law*.

HCW who have active TB must be referred for medical evaluation, further investigation and appropriate treatment. **They must be excluded from work until they are no longer infectious.** Exclusion from duty is indicated until they are noninfectious; the facility should have documentation from their health care providers that personnel are noninfectious before they are allowed to return to duty. The documentation needs to include evidence that:
adequate therapy is being received,
the cough has resolved, and
results of three consecutive sputum acid-fast bacilli (AFB) smears collected on different days are negative.

After personnel resume duty and while they remain on anti-TB therapy, periodic documentation from their health care providers is needed to show that effective drug therapy is being maintained for the recommended period and that their sputum AFB smear results continue to be negative. If personnel discontinue their treatment on their own, they need to be evaluated for active TB; directly observed therapy may be considered.

Work restrictions are not necessary for personnel receiving preventive treatment for latent TB (positive PPD-test result without active disease) or for personnel with latent TB who do not accept preventive therapy. However, these personnel should be instructed to seek evaluation promptly if symptoms suggestive of TB develop.

TYPHOID FEVER (*Salmonella typhi*/Enteric fever)

Organism/Disease	Typhoid Fever (<i>Salmonella typhi</i>/Enteric fever)
Definition of Exposure	<p>Direct or indirect oral contact with infectious feces; exposure may also occur with ingestion of contaminated food or water.</p> <p>Incubation period is 3-60 days (CDC says 3-30days and Heymann states 3-60days) with a range of 8-14 days)</p>
Criteria to Confirm	<p>Clinical Illness gradual onset of fever, headache, malaise, anorexia, lethargy, abdominal pain, tenderness, hepatomegaly, splenomegaly, rose spots and/or changes in mental status. Constipation may occur early with diarrhea developing later or not at all.</p> <p>Plus laboratory evidence bacterial culture of appropriate clinical specimen positive for <i>Salmonella typhi</i>.</p>
Education and Prevention	<p>Consistent use of <i>Routine Practices and Additional Precautions</i></p> <p><i>S. typhi</i> incidence i.e. cases found are usually chronic carriers, become infected from chronic carriers or are cases as a result of travel.</p> <p>Safe food handling practices.</p> <p>Difference between <i>S. typhi</i> and other salmonella strains.</p> <p>Provide fact sheet on <i>S. typhi</i> (see Appendix B)</p>
Exposure Management	<p>Refer for clinical management; laboratory investigation.</p> <p>No work restrictions</p>
Illness Management	<p>Refer for confirmation of diagnosis and clinical management, which may include laboratory investigation and antibiotic therapy</p> <p>Exclude HCW with acute <i>S. typhi</i> infection from contact with patients and their environment and from food handling until two stool samples are negative (at least 24 hours apart) and at least 48 hrs after discontinuance of antibiotics (CDC).</p> <p>Exclude HCW determined to be carriers of <i>S. typhi</i> until assessed for fitness to work.</p> <p>Report case and suspected/confirmed outbreak to IC and Public Health Services</p>

VANCOMYCIN-RESISTANT ENTEROCOCCUS (VRE)

Organism/Disease	Vancomycin-resistant Enterococcus (VRE)
Definition of Exposure	<p>Direct or indirect contact with feces, urine, wound drainage or areas of colonized skin of an infected or colonized individual/patient.</p> <p>The incubation period varies according to clinical presentation.</p>
Criteria to Confirm	Laboratory evidence bacterial culture of appropriate specimen positive for VRE
Education and Prevention	<p>Difference between sensitive and resistant Enterococcus.</p> <p>Difference between infection and colonization.</p> <p>Why risk is primarily to patients not HCW.</p> <p>Intermittent/prolonged fecal shedding.</p> <p>What increases transmission, i.e. diarrhea, contaminated environment.</p> <p>What prevents transmission i.e. <i>Routine Practices</i>, Contact Precautions.</p> <p>Role of contaminated hands of HCW and equipment in transmission.</p> <p>Promote strict adherence to <i>Routine Practices</i> and additional precautions</p> <p>Provide fact sheet on VRE (see Appendix B)</p>
Exposure Management	<p>Routine culture of HCW not recommended.</p> <p>No modifications to work practices or work restrictions.</p>
Illness Management	<p>Refer for confirmation of diagnosis and clinical management that might include laboratory investigation with molecular typing.</p> <p>Exclude HCW who are colonized with VRE and have diarrhea, until symptoms resolve, medical assessment is complete and appropriate control measures and/or work restrictions are determined.</p> <p>In an outbreak, exclude HCW colonized with VRE if they are found to be epidemiologically linked to patient transmission, until medical assessment is complete and appropriate control measures and/or work restrictions have been assigned.</p> <p>OHN/designate should assess the HCW for fitness to work; assess type of patient/work/physical setting, hygiene practices, what risk control measures can be utilized and establish a follow-up schedule.</p> <p>Liaise with Infection Prevention and Control and report to Public Health Services according to <i>It's the Law</i>.</p>

VARICELLA – ZOSTER VIRUS(VZV)

Organism/Disease	Varicella (Chicken Pox)
Definition of Exposure	<p>Face-to-face contact with an infectious patient, spending 1 hour in the room with an infectious patient, or having direct or indirect contact through the oral or nasal mucous membranes with vesicle fluid or respiratory secretions from an infectious patient 2 days before onset of symptoms and until all lesions have crusted over.</p> <p>Incubation period is 10 to 21 days; however this may be extended to 28 days if Varicella Immune Globulin (VZlg) is given</p>
Criteria to Confirm	<p>Clinical Illness generalized pruritic vesicular rash with fever and systemic symptoms; pneumonia, hepatitis or encephalitis may be complications.</p> <p>With or without laboratory evidence viral detection by PCR or culture of an appropriate clinical specimen positive for varicella-zoster.</p>
Education and Prevention	<p>Transmission routes</p> <p>Immunization and prophylaxis recommendations.</p> <p>Surgical/procedure masks do not provide complete protection for a susceptible individual, use High Efficiency Particulate Respirator (N95), for which you have been fit tested; Airborne Infection Isolation Precautions required for patients with varicella.</p> <p>Need to inform OHN/designate of exposure, post immunization varicella-like rash, or adverse reactions.</p> <p>Avoidance of exposure to high-risk individuals while infectious, e.g. immunocompromised or susceptible pregnant individuals in the community.</p> <p>Promote strict adherence to <i>Routine Practices</i> and additional precautions</p> <p>Provide fact sheet on Varicella (see Appendix B)</p>
Exposure Management	<p>Determine immune status. Consider immune if history of varicella or herpes zoster, documentation of VZV IgG, or two doses of live varicella vaccine given at least 1 month apart (for adults). It is not recommended to test for measuring immunity post-vaccination. If the HCW does not recall a history of VZV and IgG is negative, complete the vaccine series.</p> <p>Varicella-susceptible employees who are exposed to varicella should be restricted from work from day 8 after the first exposure until day 21 after the last exposure. Extend the exclusion until day 28 if VZIG is given.</p> <p>Varicella vaccination, within 3 days of exposure, should be considered for those who are not immune and not pregnant.</p> <p>Refer exposed, susceptible HCW who are not candidates for post exposure immunization with varicella vaccine for clinical management, which may include prophylaxis with an antiviral.</p> <p>Refer exposed, susceptible HCW who are immunocompromised or pregnant for clinical management, which should include VZIG given within 96 hours of exposure.</p>

VARICELLA – ZOSTER VIRUS(VZV) cont'd

Illness Management

Refer for confirmation of diagnosis and for clinical management, which should include early therapy with an antiviral.

Employees infected with varicella should be excluded from work until all lesions are dried and crusted and no new lesions are forming.

Do not exclude HCW with localized, post immunization varicella-like rash if it can be covered with an occlusive dressing.

Exclude HCW with a post immunization varicella-like rash, if the rash cannot be covered and if the HCW is involved in the care of high-risk patients, i.e. immunocompromised, newborn patients, or non immunized pregnant women for the duration of the rash.

Inform Infection Prevention and Control of a possible or confirmed case

VARICELLA-ZOSTER VIRUS (VZV)

Organism/Disease	Herpes zoster (Shingles)
Definition of Exposure	Direct or indirect contact of oral or nasal mucous membranes of a susceptible HCW with the vesicle fluid of an infectious patient and in the same room as a patient with disseminated zoster.
Criteria to Confirm	<p>Clinical illness vesicular skin lesions either localized to a single dermatome or disseminated and often accompanied by pain in the area of eruption.</p> <p>With or without laboratory evidence viral detection by fluorescent antibody (DFA) PCR, or culture of vesicle fluid.</p>
Education and Prevention	<p>Need to inform OHN/designate promptly if herpes zoster occurs.</p> <p>Herpes zoster not as infectious as varicella.</p> <p>Need to cover lesions with occlusive dressings and clothing.</p> <p>Reactivation of latent varicella virus.</p> <p>Risk of serious consequences if transmitted to immunocompromised or susceptible, pregnant individuals.</p> <p>Promote strict adherence to <i>Routine Practices</i> and additional precautions</p> <p>Provide fact sheet on zoster (see Appendix B)</p>
Exposure Management	<p>Determine immune status. Consider immune if history of varicella or herpes zoster, documentation of VZV IgG, or two doses of live varicella vaccine given at least 1 month apart (for adults). It is not recommended to test for measuring immunity post-vaccination. If the HCW does not recall a history of VZV and IgG is negative, complete the vaccine series. Varicella-susceptible employees who are exposed to varicella should be restricted from work from day 8 after the first exposure until day 21 after the last exposure. Extend the exclusion until day 28 if VZIG is given.</p> <p>Varicella vaccination, within 3 days of exposure, should be considered for those who are not immune and not pregnant.</p> <p>Refer exposed, susceptible HCW who are not candidates for post exposure immunization with varicella vaccine for clinical management, which may include prophylaxis with an antiviral.</p> <p>Refer exposed, susceptible HCW who are immunocompromised or pregnant for clinical management, which should include VZIG given within 96 hours of exposure.</p>

VARICELLA-ZOSTER VIRUS (VZV) cont'd

Illness Management

Within 48 hours, refer HCW with localized or disseminated herpes zoster for diagnosis and clinical management, which should include early therapy with an antiviral.

HCW should cover localized lesions with an occlusive dressing and where possible, cover with clothing while at work.

Exclude HCW with disseminated zoster from work until all lesions have dried and crusted.

Exclude HCW with localized lesions from work if lesions cannot be covered with an occlusive dressing/clothing, when hand hygiene is compromised, until all lesions are dried and crusted.

Exclude HCW with localized lesions from work with high-risk patients, e.g. neonates, susceptible pregnant women, and the immunocompromised until lesions have dried and crusted.

Exclude immunocompromised HCW with localized herpes zoster from direct patient care until all lesions have dried and crusted.

APPENDIX B – FACT SHEETS

Blood Borne Pathogen - Hepatitis B

What is Hepatitis B?

Hepatitis B is considered a bloodborne pathogen. Bloodborne pathogens are present in the blood and body fluids of some individuals receiving health care and may be transmitted to others with certain types of exposures. Handling blood and body fluids or sharp equipment contaminated by them is common in health care. Therefore, there is risk of occupational acquisition, and although becoming infected with a blood borne pathogen is not thought to happen frequently, the risk is real.

Hepatitis B is a viral infection of the liver caused by the hepatitis B virus (HBV). HBV is about 100 times more infectious than Human Immunodeficiency Virus (HIV). The incubation period (the time between initial contact with the virus and onset of the disease) for hepatitis B ranges from 45 to 180 days with an average of 60 to 90 days.

How is it transmitted?

HBV is found in the blood and body fluids (semen, vaginal fluid and saliva) of an infected person. Spread is by sexual contact with an infected person; sharing contaminated needles and other drug-using paraphernalia (e.g., straws, pipes, spoons and cookers); by sharing personal care articles such as razors, scissors, nail clippers or a toothbrush with an infected person; or from an infected mother to newborn infant at the time of birth.

In health care, bloodborne pathogens are transmitted primarily by percutaneous injury with equipment contaminated with blood or body fluids, but also by mucous membrane or non-intact skin contact with blood or body fluids.

What are the symptoms?

Symptoms include:

- jaundice (yellowing of the skin and eyes)
- fatigue
- loss of appetite
- nausea
- dark urine
- pale stools
- joint pain and pain in the stomach area.

About half of the people infected with HBV don't have any symptoms.

What is the treatment?

Within 6 months of becoming infected, about 90% of adults will clear the virus on their own (acute hepatitis B) and develop lifelong protection against it. The remaining 10% of people who are infected are unable to clear the virus and will become chronic carriers (meaning they are chronically infected and infectious); however chronic hepatitis B infection is treatable. Certain medications can be used to suppress the virus and minimize the symptoms.

How can Hepatitis B be prevented?

There is a safe and effective vaccine available to prevent an individual from acquiring a HBV infection. Those individuals with high risk behaviours or occupational risks should consider the immunization. Immunization consists of a series of three immunizations and blood testing over a six month period.

In addition to hepatitis B immunization, these are precautions that may also help you to avoid infection with HBV and other sexually transmitted and blood-borne infections:

- Never share needles/syringes, spoons, drug solutions, water, filters, cookers, pipes, straws used for snorting drugs, and other drug related equipment
- Don't share personal items like nail clippers, razors, or toothbrushes
- If you are getting a tattoo, body piercing or acupuncture done, do your homework to ensure the operators use proper infection control practices. NEVER allow anyone to use homemade equipment on you or re-use equipment, including needles, ink or jewellery. Make sure only fresh, single-use, disposable needles are used and that all other equipment is disinfected and sterile
- If you are likely to be in contact with blood or other bodily fluids in your work, take appropriate precautions (*Routine Practices*) to prevent transmission
- Practice safer sex. Use condoms and/or dental dams to reduce the risk

If you are newly infected, your health care provider will need to perform further blood tests over time to see if you clear the virus. If you clear the virus, this means you had an acute infection. Once the virus has cleared, you will no longer be infected and will not be able to transmit the virus to others. Until your health care provider tells you that you have cleared the virus, you are still infectious and are still able to transmit the virus to others. If you don't clear the virus over time, various medications are available to treat chronic hepatitis B and to help protect against liver damage.

People with hepatitis B (acute or chronic) should avoid or limit alcohol consumption because it can further impair your liver and cause more rapid progression of liver disease.

If you have either an acute or chronic infection, you should advise anyone who may have been exposed to your bodily fluids (e.g., sexual partners, people you live with). These people should consult a health care provider right away as there are ways to prevent them from getting the infection.

Blood Borne Pathogen - Hepatitis C

What is Hepatitis C?

Hepatitis C is considered a bloodborne pathogen. Bloodborne pathogens are present in the blood and body fluids of some individuals receiving health care and may be transmitted to others with certain types of exposures. Handling blood and body fluids or sharp equipment contaminated by them is common in health care. Therefore, there is risk of occupational acquisition, and, although becoming infected with a blood borne pathogen is not thought to happen frequently, the risk is real.

Hepatitis C is an infectious liver disease caused by the hepatitis C virus (HCV). Infections of hepatitis C occur only if the virus is able to enter the blood stream and reach the liver. For reasons that are not completely understood, about half of all people who develop hepatitis C never fully recover and can carry the virus for the rest of their lives. These people have chronic hepatitis C, and some may eventually develop cirrhosis of the liver and liver failure.

The incubation period (the time between initial contact with the virus and the onset of the disease) for hepatitis C ranges from 2 weeks to 6 months, most commonly 6 to 9 weeks.

How is it transmitted?

The hepatitis C virus is spread primarily by exposure to blood. People may get hepatitis C by sharing needles to inject drugs, through exposure to blood in the workplace, from unsterile equipment used for body piercing, tattoos or acupuncture, exposure to dental or medical practices with poor infection control practices or by sharing personal care items including nail clippers, razors, scissors with infected people. The risk of getting this virus from a blood transfusion is minimal but still exists. All donated blood is now screened for the hepatitis C virus.

Occupational exposure may be through percutaneous injury from a contaminated needle or other sharp object, a splash onto a mucous membrane or non-intact skin, or a human bite that breaks the skin. Such an injury together with blood or a body fluid capable of transmitting HCV must be present for a HCW to be exposed. Hepatitis C has been transmitted between sex partners and among household members.

What are the symptoms?

Onset of the disease is subtle with symptoms including:

- anorexia
- vague abdominal discomfort
- nausea and vomiting
- progression to jaundice (although less frequent than in Hepatitis B Virus cases)
- many people never develop symptoms

Chronically infected persons may go on to develop cirrhosis or cancer of the liver in approximately half of the cases.

What is the Treatment?

Effective antiviral therapies are available for HCV to reduce viral load to low or undetectable levels, improving patient safety and the medical status of the worker.

There is no prophylactic treatment currently available for a person exposed to the blood of a patient with hepatitis C virus infection. Available data does **NOT** support the use of immune globulin (IG) or antiviral agents in these situations, and they should not be given.

Treatment of chronic HCV infection may involve combination therapy of Ribivirin and slow-release interferon or pegylated interferon. The type or strain of HCV that one has will determine treatment decisions and duration of therapy that is required.

How can Hepatitis C be prevented?

Most persons carrying HCV (or HBV or HIV) can work safely with patients without risk of transmission of the virus, as long as reasonable precautions are taken. However, HBV has been transmitted from physicians or employees to patients when reasonable precautions were not taken or when sharps injuries occurred during invasive procedures. Transmission of HCV and HIV from health care workers to patients has also been documented.

This emphasizes the need for compliance with Routine Practices for ALL patients and primary prevention. Due to a variety of HCV strains, one can become infected with various strains so it is important that precautions are adhered to even when diagnosed with HCV.

Blood Borne Pathogen Human Immunodeficiency Virus (HIV)

What is HIV?

HIV is considered a bloodborne pathogen. Bloodborne pathogens are present in the blood and body fluids of some individuals receiving health care and may be transmitted to others with certain types of exposures. Handling blood and body fluids or sharp equipment contaminated by them is common in health care. Therefore, there is risk of occupational acquisition, and, although becoming infected with a blood borne pathogen is not thought to happen frequently, the risk is real.

Human Immunodeficiency Virus (HIV) is a virus that attacks the immune system, resulting in a chronic, progressive illness that leaves people vulnerable to opportunistic infections and cancers. When the body can no longer fight infection, the disease is known as AIDS, which stands for Acquired Immunodeficiency Syndrome. On average, it takes more than 10 years to progress from initial HIV infection to AIDS.

How is it transmitted?

In order to be infected, the virus must enter a person's bloodstream (HIV cannot survive outside the body). HIV is transmitted from one person to another through:

- unprotected sexual intercourse (vaginal, anal or oral)
- shared needles or equipment for injecting drugs or unsterilized needles for tattooing, skin piercing or acupuncture
- pregnancy, delivery and breast feeding (i.e., from an HIV-infected mother to her infant)
- occupational exposure in health care settings
- In health care, bloodborne pathogens are transmitted primarily by percutaneous injury with equipment contaminated with blood or body fluids, but also by mucous membrane or non-intact skin contact with blood or body fluids. After direct exposure of health care workers to HIV through needle stick injury or other sharps injury, the rate of infection is < 0.5% (much lower than hepatitis B). The risk after exposure to mucous membranes is ~ 0.09% and risk after exposure through non-intact skin has not been quantified but expected to be lower than mucous membrane exposure.

What are the symptoms?

Some people have flu-like symptoms when they first get infected:

- fever
- fatigue
- unexplained weight loss
- sore throat or swollen glands
- opportunistic infections (infections that are caused by pathogens that don't usually cause disease in healthy individuals)
- Initial period of unwellness

This illness usually lasts less than two weeks, although it can last as long as 10 weeks. However some people have no symptoms at all. You can have HIV and not know it as symptoms may not be evident.

The only way to really know if you have HIV is to get tested. The HIV test is a simple blood test. After HIV enters the body, it may take time before the test can detect the virus (this is known as the window period). Different HIV tests have different window periods.

A positive test result means that you have been infected with HIV. You can transmit the virus to people if you have unsafe sex or share needles with them. A positive test does not mean that you have AIDS or that you will get it. It does not give you any additional information about the state of your health.

What is the Treatment?

Treatment options are complex and depend on the stage of disease. If HIV is not diagnosed or is not treated with anti-HIV drugs, it moves or progresses through several distinct phases. Some people progress very quickly, while others live with HIV for years without developing a life-threatening infection. Prompt medical attention and infectious disease consultation is required following a positive test.

How can HIV be prevented?

There are numerous ways to prevent HIV infection:

- If you work in an environment where you may come into contact with someone else's blood or body fluids or with contaminated needles (i.e., a health care setting), always use *Routine Practices* with **all** patients/residents/clients to prevent exposure to HIV. In Nova Scotia, use of safety-engineered devices (i.e. intracaths for intravenous infusions) is a legislated requirement in health care settings.
- Use a latex or polyurethane condom when engaging in vaginal, anal or oral sex. Although no form of protection is 100 per cent effective, when used properly a condom can significantly reduce the risk of HIV and other sexually transmitted infections. Use a water-based lubricant to reduce the risk of condom breakage (Vaseline® or oil-based products weaken the effectiveness of latex condoms).
- Never share needles or other drug use equipment.
- If you are getting a tattoo, body piercing or acupuncture, ensure that the equipment being used is sterile. The safest way to get a tattoo or piercing is to go to a professional.
- If you are pregnant and concerned about HIV, talk with your doctor about being tested. Early treatment with medication can prevent the transmission of HIV from mother to baby before birth. Pre- and post-test counseling is also important, so be sure to talk with your doctor about this when discussing.

Conjunctivitis (bacterial/adenovirus)

What is Conjunctivitis?

Bacterial Conjunctivitis, or Pinkeye, is an infection of the lining of the eyelid often caused by *Haemophilus influenzae* or *Streptococcus pneumoniae*.

Adenovirus can cause respiratory, ocular, genitourinary, and gastrointestinal infections and are a major cause for epidemic keratoconjunctivitis in health care settings. Healthcare-associated outbreaks have primarily occurred in eye clinics or offices but have also been reported in neonatal units and long-term care facilities. Patients and health care personnel have acquired and transmitted epidemic keratoconjunctivitis during outbreaks.

How is it transmitted?

Spread by contact with discharges from the eye or upper respiratory tracts of those infected or indirectly through contact with contaminated hands, articles or equipment.

Period of communicability is for as long as the symptoms are present. For adenovirus, communicability is generally considered from late in the incubation period to 14 days after onset of symptoms. It is considered highly contagious. Children under five are most often affected. The very young, the debilitated and the elderly are particularly susceptible to *Staphylococcal* infections.

Incubation period is usually 24 to 72 hours for bacterial conjunctivitis and 5-12 days for adenovirus. Adenovirus can survive for long periods on environmental surfaces such as ophthalmologic instruments and equipment. Contaminated hands are a major source of person-to-person transmission of virus

What are the symptoms?

Symptoms include:

- Irritation, redness, and edema
- lacrimation
- mucopurulent discharge.

For adenovirus, onset is sudden and includes:

- pain
- photophobia
- blurred vision
- can also include low grade fever, headache, and malaise

Infection is often in association with acute viral respiratory disease during cold seasons.

What is the treatment?

For the bacterial conjunctivitis, antibiotic drops or ointment is usually prescribed that contain a sulfonamide. Treatment should begin with symptoms to prevent transmission.

How can Conjunctivitis be prevented?

Good hand hygiene practices should be adhered to, particularly in the presence of active respiratory disease. Hand to eye contact should be avoided with infected individuals.

Sharing of any items used on or near the eyes should be avoided i.e. eye make-up brushes, eye medications

Cytomegalovirus (CMV)

What is Cytomegalovirus?

Cytomegalovirus (CMV) is a member of the herpes virus family that infects people of all ages. CMV is found in body fluids, including urine, saliva (spit), breast milk, blood, tears, semen, and vaginal fluids. Once CMV is in a person's body, it stays there for life.

If infection is first acquired as an adult, the individual may exhibit transient "flu-like" symptoms. As with other herpes viruses, once a person is infected (primary infection), the virus remains latent in the body and may spontaneously reactivate at random intervals. During reactivation, the person will usually be asymptomatic, but will shed the virus in various body fluids: blood, urine, saliva, cervical secretions, semen, breast milk, respiratory secretions.

How is it transmitted?

Spread through person to person contact (such as, kissing, sexual contact, and getting saliva or urine on your hands and then touching your eyes, or the inside of your nose or mouth) and through the breast milk of an infected woman who is breast feeding.

Infected pregnant women can pass the virus, through the placenta, to their unborn babies and it can be transmitted through blood transfusions and organ transplantations. Transmission of CMV to HCW occurs rarely, if at all, and can be prevented by adhering to appropriate infection prevention and control practices.

The virus can be shed in urine and saliva for prolonged periods of time following primary infection.

What are the symptoms?

The manifestations of acquired CMV infection vary with the age and the strength of the immune system of the host. Most healthy children and adults infected with CMV have no symptoms and may not even know that they have been infected. Others may develop a mild illness. Symptoms may include:

- fever
- sore throat
- fatigue
- swollen glands.

These symptoms are similar to those of other illnesses, so most people are not aware that they are infected with CMV.

What is the treatment?

Currently, no treatment is recommended for CMV infection in the healthy individual, including pregnant women.

How can Cytomegalovirus be prevented?

There is no vaccine to prevent CMV infection; however, there are certain steps pregnant women can take that may reduce their risk of acquiring CMV or other infections that may pose a risk to their unborn children. Good infection prevention and control practices, particularly if you are pregnant include:

- Using *Routine Practices* with **all** patients because patients who are excreting CMV are usually asymptomatic and cannot be readily identified, health care workers must employ .
- Washing your hands often with soap and water for 15-20 seconds, especially after changing diapers or touching saliva or nasal secretions from a young child.
- Reducing environmental exposure to saliva and nasal secretions from young children by:
 - Using soap and water or a disinfectant to clean hard surfaces that have been contaminated by secretions
 - Not sharing food, drinks, or eating utensils with young children, and
 - Limiting kissing of young children on the lips.

Note: It is not necessary to reassign or exclude HCW who are pregnant, or planning a pregnancy, from working with CMV infected patients. Health care workers, regardless of the type of patient they work with, are at no more risk of acquiring CMV infection than are people in the general population. Women who have young children in day care centres are far more likely to be exposed to CMV from their own children than from their occupation.

Epstein Barr Virus (EBV) (infectious mononucleosis)

What is EBV?

EBV is a herpes virus that is the most common cause of infectious mononucleosis, an acute viral syndrome characterized clinically by fever, sore throat, lymphadenopathy and splenomegaly.

Incubation period 4-6 weeks.

How is it transmitted?

Transmission is by direct and indirect contact with saliva through the oropharyngeal (mouth and throat) route. Sharing food or beverages from the same container or sharing utensils can also transfer the virus from one person to another. Occupational transmission is rare. Period of communicability is prolonged and once infected, that individual becomes a long term carrier that sheds periodically.

What are the symptoms?

Symptoms appear anywhere from 4-6 weeks following exposure and include:

- fever
- sore throat
- enlarged lymph nodes
- enlarged spleen (in ~ 50% of cases)
- fatigue

What is the Treatment?

There is no specific treatment other than using non-steroidal anti-inflammatory agents or steroids to treat symptoms, particularly if there is airway encroachment or severe oropharyngeal involvement. Practical measures include getting ample rest, not sharing food or beverages or eating utensils, good hand hygiene, avoiding contact sports to prevent trauma to the enlarged spleen, increasing activities as energy level allows, and avoiding donation of blood.

How can EBV be prevented?

Good hygiene and avoiding contact with saliva of infected individuals are general preventative measures.

Gastroenteritis

What is Gastroenteritis?

Gastroenteritis is an umbrella term that characterizes illness of the gastrointestinal tract that can be caused by a variety of pathogens (bacteria, viruses, or parasites) including adenovirus, calicivirus (Norwalk/norovirus), *Campylobacter*, *Cryptosporidium*, *Entamoeba histolytica*, *Escherichia coli*-verotoxigenic, *Giardia*, rotavirus, *Salmonella*, *Shigella*, and other small round enteric viruses. Often, the causative agent is not identified by laboratory testing and diagnosis is made primarily based on symptoms. Some of these pathogens such as verotoxigenic *E. coli*, secrete toxins that will exacerbate or be the cause of symptoms.

Sometimes people refer to it as “stomach flu” although it is not typically caused by the influenza virus (which results in an acute respiratory infection). May also be referred to in brief as “gastro”.

How is it transmitted?

Primarily, these pathogens are transmitted via the fecal-oral route. This contact can be person to person, through ingestion of fecally contaminated food and/or water, and fomite transmission (handling of contaminated items such as bedpans). There is the possibility of respiratory spread (for some of the pathogens) when in close proximity of someone forcefully vomiting, as some viruses can be aerosolized. Water can be contaminated by animal or human sewage, especially sources of drinking water such as private wells or water drawn from lake sources that do not have a treatment system.

Many of these illnesses are highly contagious and do not require exposure to a large volume of infectious material for people to become ill. Outbreaks in facilities among staff and patients/residents are common, particularly when dealing with norovirus.

What are the symptoms?

The primary symptom is diarrhea, but it may be accompanied by nausea, vomiting, fever, muscle aches, malaise, and abdominal pain. Symptoms may come on slowly or occur quite quickly depending on the incubation period of the infecting pathogen. Often, the illness lasts for only a few days and will resolve without treatment.

What is the treatment?

Depending on the pathogen, treatment may range from antimicrobials to using over-the-counter medication to alleviate symptoms. Remaining hydrated is important as water loss from diarrhea and vomiting can be significant. Elderly and the very young are most prone to secondary dehydration.

Danger signs that signal a need to seek medical attention include high fever, severe abdominal pain, blood in your stool or severe weakness.

How can Gastroenteritis be prevented?

Good hand hygiene is the single most important preventative measure, particularly after toileting, handling soiled linen/articles and dealing with food. The preferred method for hand hygiene when

dealing with gastroenteritis is to use liquid soap and water.

Care must be taken when dealing with food to ensure proper handling:

- Good hand hygiene
- Adequate cooking and cooling temperatures are achieved.
- Washing all produce thoroughly before eating or cooking.
- Ensuring food prep work surfaces are thoroughly cleaned. This can be done using a solution of 1 tsp bleach mixed with 1 litre of water.

If you work in a job that involves food handling or close contact with others you should not go to work while you are sick!

Hepatitis A

What is Hepatitis A?

Hepatitis A (HAV) is an acute self-limited illness and is one of the most common vaccine-preventable infections acquired during travel. It is a contagious liver disease that is easily spread from person to person or through eating food or drinking water contaminated with feces. The duration of illness is usually several weeks, but prolonged or relapsing disease lasting as long as 6 months can occur.

Incubation period for HAV is 15-50 days.

How is it transmitted?

Hepatitis A is transmitted via the fecal-oral route. Common sources of outbreak have been related to water and food becoming contaminated by infected food handlers, including foods not cooked or handled after cooking. Transmission has also occurred as a result of raw or undercooked mollusks harvested from contaminated waters and contaminated produce i.e. lettuce, strawberries.

What are the symptoms?

With hepatitis A, the disease varies in severity, from mild illness lasting 1-2 weeks to severe disease lasting several months. HAV is characterized by:

- fever
- malaise
- jaundice
- anorexia and nausea
- abdominal discomfort
- dark urine

What is the treatment?

There is no known cure or specific treatment for hepatitis A infection. Treatment is aimed at alleviating symptoms.

How can Hepatitis A be prevented?

For HAV, practice safe food and water precautions in high-risk areas: *Boil it, cook it, peel it or leave it!*

- Always wash your hands before eating and drinking.
- Eat only food that has been well cooked and is still hot when served. Avoid uncooked foods, especially shellfish and salads.
- Eat hot food hot and cold foods cold
- Drink and use ice only from purified water that has been boiled or disinfected with chlorine or iodine, or commercially bottled water in sealed containers. Carbonated drinks, including beer, are usually safe.
- Avoid unpasteurized dairy products, food from street vendors, and swimming in potentially polluted or contaminated water.
- Brush your teeth with purified or bottled water.

HAV is a vaccine-preventable disease so if you are traveling to countries where Hepatitis A occurs and/or visiting areas where drinking water may be unsafe and poor sanitation and hygiene conditions exist, then getting immunized is prudent.

Herpes Simplex Virus (HSV)

What is Herpes Simplex Virus (HSV)?

HSV is in the virus family of Herpesviridae. It causes an infection characterized by local and systemic symptoms, latency, and a tendency to localized recurrence.

There are two types: HSV-1 and HSV-2. HSV-1 primary infection may be mild or unapparent and can occur as early as childhood. Reactivation of a latent infection is usually recognized by the presence of cold sores around the mouth (herpes labialis) or face. Traditionally, HSV-2 has been the causative agent for the genital form of herpes infection but HSV-1 is increasingly common in new cases of genital herpes.

How is it transmitted?

HSV-1 primary method of spread is through contact with the saliva of a carrier. Infection can also occur on the hands of health care workers i.e. dentists from patients shedding the virus with the resultant condition known as herpetic whitlow. HSV may be shed intermittently from mucosal sites for years, possible life long. Whereas people may not be aware of this intermittent shedding, contact during these periods is the most common way the virus is transmitted.

What are the symptoms?

If the primary (initial) oral infection causes symptoms, they can be very painful. Symptoms include:

- Blisters forming on the lips but may also erupt on the tongue. The blisters eventually rupture as painful open sores, develop a yellowish membrane before healing, and disappear within 3 - 14 days.
- Increased salivation and foul breath may be present.
- Rarely, the infection may be accompanied by difficulty in swallowing, chills, muscle pain, or hearing loss.

Most people have only a couple of outbreaks a year, although a small percentage of patients experience more frequent recurrences. Recurrences are usually much milder than primary infections and are known commonly as cold sores or fever blisters (because they may arise during a bout of cold or flu). They usually show up on the outer edge of the lips and rarely affect the gums or throat.

The outbreak of infection is often preceded by a prodrome, an early group of symptoms that may include itching skin, pain, or an abnormal tingling sensation at the site of infection. The individual may also have a headache, enlarged lymph glands, and flu-like symptoms. The prodrome, which may be as few as 2 hours or as many as 2 days, stops when the blisters develop. About 25% of the time, recurrence does not go beyond the prodrome stage.

What is the treatment?

Acyclovir prescribed and used orally, topically, or intravenously has been associated in reduced shedding of the virus, diminished pain, and accelerated healing time. Other antiviral medications are also available by prescription.

How can HSV recurrences be prevented?

Reactivation can be precipitated by various forms of trauma, fever, sunlight exposure, emotional stress, or physiological/immunological changes.

Prevention methods include:

- Wearing sun block helps prevent sun-triggered recurrence of herpes simplex virus 1 (HSV-1)
- Avoiding unprotected contact, orally or genitally, with lesions of an infected person is crucial to minimizing the risk of acquiring the virus although it is difficult to avoid due to the prolonged shedding and the lack of obvious symptoms in many people.

Influenza

What is Influenza?

Influenza, often called the flu, is an acute, viral disease of the respiratory tract that is vaccine-preventable.

How is it transmitted?

Seasonal influenza spreads easily and can sweep through schools, nursing homes or businesses and towns. Influenza spreads through droplets from coughing and sneezing. It may also be spread by kissing a person who has the flu, shaking hands, or touching surfaces or objects that someone with the flu has touched, and then touching your eyes, nose or mouth with your contaminated hands. To prevent transmission, people should cover their mouth and nose with a tissue when coughing, or preferably cough or sneeze into their sleeve or elbow, and wash their hands regularly.

Yearly influenza epidemics can seriously affect all age groups, but the highest risk of complications occur among children younger than age two, adults age 65 or older, and people of any age with certain medical conditions, such as chronic heart, lung, kidney, liver, blood or metabolic diseases (such as diabetes), or weakened immune systems.

The incubation period is 1 to 4 days. The period of communicability is one day before to 7 days following the onset of symptoms and maybe longer in infants.

What are the symptoms?

Seasonal influenza is characterized by a sudden onset of high fever, cough (usually dry), headache, muscle and joint pain, severe malaise (feeling unwell), sore throat and runny nose. Most people recover from fever and other symptoms within a week without requiring medical attention. However, influenza can cause severe illness or death in people at high risk (elderly individuals, people with chronic medical conditions, pregnant women etc.).

What is the treatment?

Antiviral drugs for influenza are available. To be effective in treating influenza, antivirals must be started within 48 hours of developing symptoms. The use of antivirals for the treatment and/or prevention (i.e., prophylaxis) of influenza is typically reserved for controlling outbreaks among residents and staff of long-term care facilities and other residential care institutions, under the advisement of one of the provincial Medical Officers of Health.. Some influenza viruses develop resistance to the antiviral drugs, limiting the effectiveness of treatment. Public Health Services Lab monitors antiviral susceptibility in the circulating influenza viruses.

How can Influenza be prevented?

The most effective way to prevent the disease or severe outcomes from the illness is vaccination. Safe and effective vaccines have been available and used for more than 60 years. Among healthy adults, influenza vaccine can prevent 70% to 90% of influenza-specific illness. Among the elderly, the vaccine reduces severe illnesses and complications by up to 60%, and deaths by 80%. Vaccination is

especially important for people at higher risk of serious influenza complications, and for people who live with or care for high risk individuals.

National Advisory Committee on Immunization NACI recommendations include annual vaccination:

- nursing-home residents
- elderly or disabled individuals
- people with chronic medical conditions
- other groups such as pregnant women, health care workers, those with essential functions in society, as well as children from ages six months to two years.

Influenza vaccination is most effective when circulating viruses are well-matched with vaccine viruses. Influenza viruses are constantly changing, and the World Health Organization (WHO) monitors the influenza viruses circulating in humans. WHO annually recommends a vaccine composition that targets the three most common strains in circulation.

To avoid getting the flu or spreading it to others, ensure frequent hand hygiene:

- By washing your hands with soap under warm running water, you will reduce your chance of getting the flu.
- Alcohol-based hand sanitizer, with 60-90% alcohol, can also be used if soap and water are not readily available. It's a good idea to keep some with you in your pocket or purse.
- Practice proper cough and sneeze etiquette:
 - Cover your mouth and nose with your arm, not your hand, to reduce the spread of germs.
 - If you do sneeze or cough in your hand, wash your hands immediately or use a hand sanitizer.
- Avoid contact with people who appear to be sick.

Measles (Rubeola)

What is Measles?

Measles is a serious highly communicable illness, also known as “Red Measles” or Rubeola and is a very easily spread respiratory infection caused by a virus.

How is it transmitted?

Measles spreads very easily from person to person. It is passed from an infected person to others through coughing, sneezing and even talking. Less commonly, particles from an infected person can stay in the air for long periods of time and infect others in the same room or in neighboring rooms. People infected with measles can spread the disease to others 4 days before the rash appears and up to 4 days after the rash appears.

Anyone born after 1970 who is not vaccinated and who has never had measles can get infected. People born before 1970 have developed immunity to the virus and are considered protected. Infants under the age of 1 are most at risk because the vaccination is not given until children are 1 year of age or older.

What are the symptoms?

Symptoms (cough, fever, runny nose, red watery eyes) can appear from 7 days after contact with an infected individual but usually appear in 10 to 12 days. The rash usually appears 14 days after exposure but can take up to 21 days to appear. Measles lasts for one to two weeks. It can be complicated by ear infections or pneumonia in one out of every 10 children with measles. Measles can also be complicated by encephalitis, an infection of the brain, in about one out of every 1,000 children with measles. Measles can also make a pregnant woman have a miscarriage or give birth prematurely.

Measles symptoms appear in two stages. During the first stage, those infected have a cough, runny nose, and red and watery eyes that are sensitive to light and a slight fever. The second stage begins after 3 to 7 days when the fever increases, usually becoming very high (103 to 105°F). Small, white spots appear on the inside of the mouth (Koplik spots). A red rash then develops, first on the face and then moving down the body, legs and arms. These symptoms last approximately 5 days with the rash clearing on the face first and then the rest of the body.

What is the treatment?

There is no specific treatment for measles. Supportive care in hospital may be needed for severe infections, but most people can recover at home. If you think you have measles, it is important to speak to a doctor before visiting the doctor's office so that the infection is not passed to others.

How can Measles be prevented?

People born before 1970 are considered protected from measles. Presently children receive two doses of measles vaccine, one after their first birthday and the other before school entry at 4-6 years of age. Most adults born after 1970 had one shot of measles vaccine as an infant. They should get a second shot, especially if they are students at post-secondary institutions, military recruits or health care workers, or if they will be traveling to areas where they may be exposed to measles (such as most developing

countries).

If an unvaccinated person comes into contact with someone who has measles, there are two ways to prevent infection:

- A dose of measles vaccine can prevent infection if given within 72 hours of contact with an infected person.
- Administration of immunoglobulin can be given if this is done within 6 days of coming into contact with an infected person. Immunoglobulin, a blood product containing antibodies that help prevent infection, is usually given to people at increased risk of severe complications from measles, such as infants and pregnant women. The use of immunoglobulin will greatly reduce the risk of measles infection after an unprotected person comes into contact with the disease.

Meningitis

What is Meningitis?

Meningitis is an inflammation of the membranes that cover the brain and spinal cord. People sometimes refer to it as spinal meningitis. Meningitis is usually caused by a viral or bacterial infection. Knowing whether meningitis is caused by a virus or bacteria is important because the severity of illness and the treatment differ depending on the cause. The symptoms of both are so similar that medical tests are needed to tell the difference.

Bacterial Meningitis is an extremely serious bacterial infection. It has the potential to cause long term complications, such as deafness or brain injury. It can also cause death. Bacterial meningitis requires immediate treatment with antibiotics. For bacterial meningitis, it is also important to know which type of bacteria is causing the meningitis because antibiotics can prevent some types from spreading and infecting other people. Before the 1990s, *Haemophilus influenzae* type b (Hib) was the leading cause of bacterial meningitis. Hib vaccine is now given to all children as part of their routine immunizations. This vaccine has reduced the number of cases of Hib infection and the number of related meningitis cases. Today, *Streptococcus pneumoniae* and *Neisseria meningitidis* are the leading causes of bacterial meningitis.

Viral Meningitis is the most common and least serious. It may be caused by a wide variety of common viruses. Antibiotics have no effect. People with viral meningitis almost always get completely well without treatment.

Meningitis caused by viral infections is sometimes called "aseptic meningitis." Other viral infections that can lead to meningitis include mumps, herpesvirus (such as Epstein-Barr virus, herpes simplex viruses, and varicella-zoster virus—the cause of chickenpox and shingles), measles, and influenza.

A. Bacterial Meningitis

How is it transmitted?

Bacterial Meningitis is transmitted from person to person through droplets of respiratory or throat secretions. Close and prolonged contact such as kissing, sneezing or coughing on someone, or living in close quarters (such as a dormitory, sharing eating or drinking utensils) with an infected person facilitates the spread of the disease.

The average incubation period is between 1 and 10 days.

N. meningitidis can be carried in the throat and sometimes, for reasons not fully understood, can overwhelm the body's defenses allowing infection to spread through the bloodstream to the brain. Although there remains gaps in our knowledge, it is believed that 10% to 20% of the population carries *N. meningitidis* at any given time..

What are the symptoms?

High fever, headache, and stiff neck are common symptoms of meningitis in anyone over the age of 2 years. These symptoms can develop over several hours, or they may take 1 to 2 days. Other symptoms may include nausea, vomiting, discomfort looking into bright lights, confusion, and sleepiness. As the

disease progresses, patients can experience seizures.

What is the treatment?

Bacterial meningitis can be treated with a number of effective antibiotics. It is important, however, that treatment be started early in the course of the disease.

How can Bacterial Meningitis be prevented?

Steps to prevent the spread of meningitis include hand washing, covering one's mouth when coughing or sneezing and throw away any used tissue. Do not share eating utensils, drinking glasses, cigarettes etc. Persons who have had contact with someone who has viral meningitis do not require any treatment. Casual contact, such as being in the same classroom or sitting at a table with an infected person, does not increase the risk of infection. If a person has had close contact with someone who is infected with bacterial meningitis, antibiotics may be required to prevent infection.

There are vaccines against some serogroups of *N. meningitidis* and many types of *Streptococcus pneumoniae*. The vaccines are safe and highly effective.

B. Viral Meningitis

How is it transmitted?

In the case of viral meningitis, transmission varies depending on the virus. Enteroviruses, the most common cause of viral meningitis, are most often spread through direct contact with an infected person's stool. The virus is spread through this route mainly among small children who are not yet toilet trained. It can also be spread this way to adults changing the diapers of an infected infant.

Enteroviruses and other viruses (such as mumps and varicella-zoster virus) can also be spread through direct or indirect contact with respiratory secretions (saliva, sputum, or nasal mucus) of an infected person. This usually happens through kissing or shaking hands with an infected person or by touching something they have handled and then rubbing your own nose or mouth. The viruses can also stay on surfaces for days and can be transferred from objects. Viruses also can spread directly when infected people cough or sneeze and send droplets containing the virus into the air.

What are the symptoms?

With viral meningitis, symptoms can appear quickly or they can also take several days to appear, usually after a cold or runny nose, diarrhea, vomiting, or other signs of infection show up. Symptoms in adults may differ from those in children, but include:

- high fever
- severe headache
- stiff neck
- sensitivity to bright light
- sleepiness or trouble waking up
- nausea, vomiting
- lack of appetite

What is the treatment?

There is no specific treatment for viral meningitis. Most patients completely recover on their own within 2 weeks. Antibiotics do not help viral infections, so they are not useful in the treatment of viral meningitis. Doctors often will recommend bed rest, plenty of fluids, and medicine to relieve fever and headache.

A hospital stay may be necessary in more severe cases or for people with weak immune systems.

How can Viral Meningitis be prevented?

Practicing good hand hygiene and respiratory etiquette (covering your mouth with your sleeve or elbow when cough or sneeze) are the best methods to prevent viral meningitis.

Mumps

What is Mumps?

Mumps is a viral infection of the salivary glands and is also referred to as infectious parotitis.

Complications of mumps infection include encephalitis (infection in the brain), meningitis (infection in the lining of the brain), painful swelling of the testicles (orchitis) or the ovaries (oophoritis), pancreatitis (inflammation of the pancreas) or deafness. Pregnant women who become infected with mumps during the first three months of pregnancy are at risk of miscarriage.

How is it transmitted?

The mumps virus is found most often in saliva and respiratory droplets. It is spread from person-to-person by coming into contact with an infected person's droplets during coughing, sneezing or even talking; or coming into contact with a person's saliva such as sharing drinks, food, water bottles or kissing.

Mumps symptoms begin 14 to 25 days after exposure.

A person is able to spread mumps up to seven days before any symptoms appear and up to nine days after salivary glands begin swelling. A person is most contagious in the one to two days before and up to four days after the salivary glands begin to swell.

What are the symptoms?

Symptoms of mumps include:

- Painful swelling of one or both salivary glands (located within your cheek, near your jaw line, below your ears), called parotitis
- fever
- headache
- muscle aches and pains
- tiredness
- loss of appetite

Up to 20% of persons infected with the mumps virus do not have symptoms, 30% to 40% develop parotitis and about 40% to 50% of infected persons have nonspecific or mainly respiratory symptoms (symptoms similar to a cold).

What is the treatment?

There is no treatment for mumps. A virus causes mumps, therefore antibiotics are not given. Some medications can be given to relieve some of the symptoms.

How can Mumps be prevented?

Mumps can be prevented by:

- Performing frequent hand hygiene, especially after contact with respiratory secretions.

- Avoid sharing of eating utensils
- Objects and surfaces that are frequently touched (toys, counters, doorknobs, phones, etc) should be regularly cleaned with soap and water or other cleaning agents.

Mumps can be prevented with a vaccine and is given in the same Vaccine with measles and Rubella (MMR).

Adults, who have not had mumps or have never been vaccinated with a mumps-containing vaccine, can be vaccinated with MMR.

Erythema Infectiosum (Human Parvovirus B19) (Fifth Disease)

What is Fifth Disease?

Parvovirus B19 is a virus that commonly infects humans; about 50% of all adults have been infected sometime during childhood or adolescence. The most common illness caused by parvovirus B19 infection is "fifth disease," a mild rash illness that occurs most often in children. The person typically has a "slapped-cheek" rash on the face and a lacy red rash on the trunk and limbs. There are also animal parvoviruses, but they do not infect humans. Therefore, a person cannot catch parvovirus B19 from a dog or cat.

How is it transmitted?

Parvovirus B19 has been found in the respiratory secretions (e.g., saliva, sputum, or nasal mucus) of infected persons before the onset of rash, when they appear to "just have a cold." The virus is probably spread from person to person by direct contact with those secretions, such as sharing drinking cups or utensils. In a household, as many as 50% of susceptible persons exposed to a family member who has fifth disease may become infected.

Usually, there are no serious complications for a pregnant woman or her baby when exposed to a person with fifth disease. About 50% of women are already immune to parvovirus B19, and these women and their babies are protected from infection and illness. Even if a woman is susceptible and gets infected with parvovirus B19, she usually experiences only a mild illness. Likewise, her unborn baby usually does not have any problems attributable to parvovirus B19 infection. Sometimes, however, parvovirus B19 infection will cause the unborn baby to have severe anemia and the woman may have a miscarriage. This occurs in less than 5% of all pregnant women who are infected with parvovirus B19 and occurs more commonly during the first half of pregnancy. There is no evidence that parvovirus B19 infection causes birth defects or mental retardation.

A susceptible person usually becomes ill 4 to 14 days after being infected with the virus, but may become ill for as long as 20 days after infection.

What are the symptoms?

Typically has a "slapped-cheek" rash on the face and a lacy red rash on the trunk and limbs. Occasionally, the rash may itch. Joint pain and swelling in adults usually resolve without long-term disability. During outbreaks of fifth disease, about 20% of adults and children are infected without getting any symptoms at all.

What is the treatment?

Treatment of symptoms such as fever, pain, or itching is usually all that is needed for fifth disease. Adults with joint pain and swelling may need to rest, restrict their activities, and take medicines such as aspirin or ibuprofen to relieve symptoms. The few people who have severe anemia caused by parvovirus B19 infection may need to be hospitalized and receive blood transfusions. Persons with immune problems may need special medical care, including treatment with immune globulin (antibodies), to help their bodies get rid of the infection.

How can Fifth Disease be prevented?

There is no vaccine or medicine that prevents parvovirus B19 infection. Frequent hand hygiene is recommended as a practical method to decrease the chance of becoming infected. Excluding persons with fifth disease from work, child care centers, or schools is not recommended as it is unlikely to prevent the spread of the virus, since people are contagious before they develop the rash.

Pediculosis (Lice)

What is Pediculosis?

Pediculosis is not an infectious disease, but rather an infestation. Lice are a nuisance.

Pediculosis is caused by the infestation with any of three species of lice:

1. *Pediculus humanus capitus* (human head louse)
2. *Pediculus humanus corporis* (human body louse)
3. *Phthirus pubis* (pubic or crab louse)

Outbreaks of head lice are common among children in schools and institutions everywhere. Body lice are common among populations with poor personal hygiene, especially in cold climates where heavy clothing is worn and bathing is infrequent, or when people cannot change clothes (i.e. in the case of the refugee).

How is it transmitted?

Direct contact is the most frequent mode of transmission; however, lice can live on clothing, bedding or other personal items, like hats or hairbrushes.

Head lice are transmitted by head to head contact, and by contact with infested fomites such as hats, combs or brushes. Lice may be in the hair, eyelashes or eyebrows. Healthcare associated transmission has occurred but is uncommon.

Body lice are transmitted by direct skin to skin contact or by exchange of infested clothing or bedding. Healthcare associated transmission is unlikely.

Pubic lice, which are primarily found in the pubic hair, may also be found in the axilla, eyelashes, or eyebrows. It is primarily transmitted through sexual contact.

Lice will leave a febrile host; therefore, fever and overcrowding increase the transfer from person to person

Communicability continues as long as lice and nits are alive on the individual or in clothing and other personal articles. Head and body lice live for 7-10 days off a host. Lice that fall off the head rarely survive for longer than 36 hours.

What are the symptoms?

Pediculosis causes intense itching of affected body sites that is usually worse at night. The louse bites develop as painless macules and then papules, especially on the scalp. Scratching may lead to excoriation. There are usually eggs (nits) on the hair shaft, and on occasion, lice may be visible on the scalp.

What is the treatment?

Shampooing with a *permethrin*-based product into the hair, to be left on for 10 minutes, is the treatment of choice. The permethrin solution should kill the nits as well.

In the case of a pregnant woman or a child under two, the physician should be contacted. *Lindane* based products may have some potential toxicity; however, they are still effective when used according to product instructions.

A second treatment 7-10 days after the first is suggested to kill the newly hatched lice. Lindane should be used with caution in pregnant women, children under two years of age and on people with inflamed or traumatized skin.

How can Pediculosis be prevented?

Avoid head-to-head contact with an infested person, and avoid contact with items that have been in contact with hair from an infested person (i.e. hats, scarves, combs, brushes, pillowcases, towels, etc.).

Perform direct inspection of body and clothing for evidence of body lice, when indicated. Household contacts and close personal contacts should also be inspected for evidence of lice. Treat those who are infested.

Laundry clothing, bedding, and other personal belongings in hot water (55 degrees C or 131 degrees F for 20 minutes)

Educate the public, especially children, about lending combs, brushes, hats and other personal belongings.

Pertussis (Whooping Cough)

What is Pertussis?

Pertussis (Whooping Cough) is a highly contagious bacterial infection of the respiratory tract, caused by bacteria known as, *Bordetella pertussis*. Pertussis can affect individuals of any age but severity in young infants is greatest, complicated by pneumonia, seizures, and encephalopathy.

Most adults are susceptible to pertussis because immunization induced immunity from the older vaccine wanes with time.

Period of communicability is from 1-2 weeks before onset of paroxysmal cough until 3 weeks after the onset of cough, if not treated, or 5 days after initiation of effective antibiotic treatment.

How is it transmitted?

Pertussis is transmitted through direct contact with discharges from respiratory mucous membranes of infected persons, probably via large droplets. In vaccinated populations, bacteria are frequently brought home by an older sibling and sometimes by a parent.

Indirect spread through the air or by contact with contaminated objects is very rare, if it occurs at all.

What are the symptoms?

In classical pertussis, there are three clinical stages of the disease: catarrhal, paroxysmal and convalescent.

- A cough that will progress within 1-2 weeks to severe paroxysms of cough, characterized by an inspiratory whoop
- Paroxysmal coughing, characterized by violent coughing spells with high pitched inspiratory whooping, a stage that can last approximately 1-3 weeks, may be followed by expectoration of mucous or vomiting. There is usually an absence of fever.
- In the later stages of the disease, the paroxysms will stop while a chronic cough continues.

What is the treatment?

Antibiotic therapy can shorten the period of communicability but does not reduce the symptoms unless given during incubation, catarrhal stage or early paroxysmal stage. A 10-day course of Erythromycin is indicated for household and close contacts, regardless of immunization status and age. For persons who cannot tolerate erythromycin, trimethoprim-sulfamethoxazole (Bactrim, Septra) is recommended as an alternative.

How can Pertussis be prevented?

Immunization is the most rationale approach to pertussis control. Active, primary immunization against *B. Pertussis* infection is done by administering 3 doses of a vaccine consisting of acellular preparations (aP) that contain 1-5 different components of *B. Pertussis*. This primary series usually occurs (in North America) at 2, 4 and 6 months of age. Booster doses of the vaccine, approximately 1-6 years after the primary series, are recommended.

- Reporting cases to the local health authorities (Public Health Services Agency) permits better outbreak control.
- Respiratory Isolation for known cases until at least 5 days of antibiotic therapy.
- Suspected cases should be removed from the presence of young children and infants, especially non-immunized infants, until 3 weeks after onset of paroxysmal cough or until they have received 5 days of antibiotic therapy.
- All contacts must have their immunization status verified and brought up-to-date.
- Educate the infected individual and their family regarding the disease state and susceptibility to the disease. Advise parents about the immunization of children, especially those who have not started their primary series.
- Educate infected individuals and their families about pertussis vaccination and treatment. Advise them that they are considered infectious for three weeks after the onset of the paroxysmal cough **or** until 5 days after they begin antibiotic therapy.

Rubella (German Measles)

What is Rubella?

Rubella is an acute viral infection most often characterized by a diffuse rash.

How is it transmitted?

Rubella is transmitted by direct contact of the oral or nasal mucous membrane with respiratory secretions from an infected individual as well as through airborne droplet contact.

What are the symptoms?

Symptoms of Rubella may include:

- low fever,
- a mild rash that lasts one to three days
- aches in the joints
- swollen glands, behind the ears and the back of the neck.

These symptoms start about 2-3 weeks after contact with someone with the disease. Half the people who get Rubella don't get any symptoms at all.

What is the treatment?

There is no treatment for Rubella.

Most children and adults can recover from Rubella without any problems. However, if a pregnant woman gets the Rubella infection, her baby can be born with deafness, eye and heart problems, and/or mental retardation. Congenital Rubella Syndrome (CRS) is transmitted to the fetus during pregnancy in 25% of cases of susceptible women who are exposed to Rubella during the first trimester of pregnancy. Congenital defects are rare when maternal infection occurs after the 20th week of gestation. Anyone can get Rubella, except those persons who have had the disease before or those who have had their Rubella immunizations.

Every woman should get a blood test before she becomes pregnant to see if she has protection against Rubella infection. **If a pregnant woman has been in contact with someone with Rubella, she should contact her family physician for a blood test and to discuss the dangers to her baby.**

How is Rubella Infection prevented?

Rubella can be prevented by immunization. Adults can get Rubella vaccine if they do not have protection against the disease. Women should not get the vaccine if they are already pregnant or if they plan to get pregnant within one month of the immunization.

Scabies (Typical or Norwegian)

What is Scabies?

Scabies is caused by infestation with the mite *Sarcoptes scabiei*. Norwegian scabies, also known as crusted scabies, may develop among the elderly or those who are immunocompromised. There may be widespread crusted hyperkeratotic lesions and pruritis may not be present which makes diagnosis more difficult. When transmitted to HCW it manifests as typical scabies.

In conventional scabies, 10 to 50 mites are present, but in crusted scabies, thousands of mites are harbored in the skin. This is the reason Norwegian scabies are more easily transmitted.

The incubation period is 2-6 weeks before the onset of itching, if not previously exposed. Those previously sensitized to scabies develop symptoms 1 to 4 days after repeat exposure.

The period of communicability continues as long as the person is infested and untreated, including the interval before symptoms develop. (usually until 1 or 2 courses of treatment, 7 days apart) (CDC).

How is Scabies transmitted?

Scabies is transmitted via direct skin to skin contact or through sexual contact or possibly through contact with bedclothes or towels of infected individuals.

What are the symptoms of scabies?

The typical clinical presentation of scabies includes intense itching and cutaneous tracks, where mites have burrowed into the skin

Itching is most prominent at night. Small blisters or vesicles may be evident. If scratching is vigorous, secondary infection of the lesions may be evident.

What is the treatment?

The recommended treatment for scabies is one application of a cream or lotion containing 5% Permethrin. The cream or lotion should be left on for only 8-14 hours and then washed off. Alternative treatment by Lindane containing products can also be effective, though they should be used with caution in children under 2 years of age. The individual should check with a physician if pregnant or if a child under 2 years of age is infected.

How is Scabies prevented?

Scabies can be prevented by:

- Avoid skin-to-skin contact with those who are known to have or suspected of having scabies.
- Avoid sharing personal belongings of those who are known to have or are suspected of having scabies.
- Launder bedding and clothing of infected individuals and all those who are in close contact with the infected individual. Wash clothes in hot water or dry in hot drying cycle. For heavy blankets, jackets, etc., put in dryer on high for 15 minutes.

Staphylococcus aureus (S. aureus)

Staphylococcus aureus, often referred to simply as "staph," are bacteria commonly carried on the skin or in the nose of healthy people. Approximately 25% to 30% of the population is colonized (when bacteria are present, but not causing an infection) in the nose with this bacterium.

MRSA are *S. aureus* bacteria that are resistant to the commonly prescribed antibiotic methicillin are known as Methicillin-resistant *Staphylococcus aureus* or MRSA. Most people with MRSA are colonized by the bacteria but not all with develop infections.

Community-associated MRSA (CA-MRSA) - *S. aureus* and MRSA can also cause illness in persons outside of hospitals and healthcare facilities. MRSA infections that are acquired by persons who **have not** been recently (within the past year) hospitalized or had a medical procedure (such as dialysis, surgery, catheters) are known as CA-MRSA infections. *S. aureus* or MRSA infections in the community are usually manifested as skin infections, such as pimples and boils, and can occur in otherwise healthy people.

A. Methicillin Sensitive *S. aureus* (MSSA)

How is it transmitted?

MSSA is transmitted by direct or indirect contact of skin or mucous membrane from an individual with colonized or infected body sites, wound drainage, or respiratory secretions primarily as a result of hand contamination and subsequent self-inoculation of the nostrils or transfer to individuals/equipment.

Incubation period varies according to clinical presentation, host immune status and use of effective antibiotic therapy. Communicability is as long as purulent lesions continue to drain or the carrier state persists.

What are the symptoms?

MSSA bacteria can cause skin infections that may look like a pimple or boil and can be red, swollen, painful, or have pus or other drainage. More serious infections may cause pneumonia, bloodstream infections, or surgical wound infections.

What is the treatment?

MSSA infections are treatable with antibiotics. If you are given an antibiotic, take all of the doses, even if the infection is getting better, unless your doctor tells you to stop taking it. Do not share antibiotics with other people or save unfinished antibiotics to use at another time.

However, many *S. aureus* skin infections may be treated by draining the abscess or boil and may not require antibiotics. Drainage of skin boils or abscesses should only be done by a healthcare provider.

If after visiting your healthcare provider the infection is not getting better after a few days, contact them again. If other people you know or live with get the same infection tell them to go to their healthcare provider.

How can MSSA be prevented?

Practice good hygiene:

- Keep your hands clean by washing thoroughly with soap and water or using an alcohol-based hand sanitizer.
- Keep cuts and scrapes clean and covered with a bandage until healed.
- Avoid contact with other people's wounds or bandages.
- Avoid sharing personal items such as towels or razors.

B. Methicillin Resistant *S. aureus* (MRSA)

How is it transmitted?

MRSA is primarily spread by skin-to-skin contact or through contact with items contaminated by the bacteria. If you pick up the bacteria on your hands through physical contact with an infected person or from a contaminated surface, you can spread it to others if you don't do proper hand hygiene. You can also infect yourself through an open wound on your own body. Those with weakened immune systems and chronic illnesses are more susceptible to the infection and MRSA has been shown to spread easily in healthcare settings.

What are the symptoms?

S. aureus, including MRSA, can cause skin infections that may look like a pimple or boil and can be red, swollen, painful, or have pus or other drainage. More serious infections may cause pneumonia, bloodstream infections, or surgical wound infections.

What is the treatment?

If MRSA is detected early, it can usually be treated effectively with antibiotics other than methicillin. It is important that individuals who think they might have an MRSA infection seek advice from a health professional quickly, so that the infection can be properly diagnosed and treated effectively.

Early diagnosis also ensures that appropriate measures can be taken to limit the spread of the infection.

To diagnose an MRSA infection, often a sample from the infected area is taken. Once the sample has been taken, the organism must be allowed to grow in the laboratory. The organism is then tested to determine which antibiotics may be effective for treating the infection.

How can MRSA be prevented?

In order to prevent these infections, it is important to:

- Practice good hygiene. Keep your hands clean by washing thoroughly with soap and water or by using an alcohol-based hand sanitizer.
- Make sure that any cuts and scrapes are kept clean and covered until they have healed. It is also important that you avoid unprotected contact with other people's wounds or bandages.
- Do not share personal items such as towels or razors.

If I have an MRSA skin infection, what can I do to prevent others from getting infected?

To prevent the spread of MRSA skin infections you must:

- Cover your wound. Any wounds that are draining or have pus must be kept covered with clean, dry bandages. Pus or other drainage from the wound can contain MRSA, so make sure that the bandages and tape used to cover the wound are properly discarded. Healthcare providers can answer any questions about how to properly care for any wounds.
- Wash hands frequently. This is especially important after changing bandages or touching the infected area. By washing your hands you can limit the transmission of the bacteria.
- Avoid sharing personal items. Bacteria can be transferred to another person through contact with items such as towels, razors or washcloths so try to avoid sharing these items. Make sure any soiled clothing is washed; water and regular laundry detergent is sufficient.
- Talk to your doctor or healthcare provider. Tell them that you have, or have had, an MRSA skin infection.

MRSA are capable of causing the same infections as methicillin sensitive strains of *S. aureus*.

Streptococcus, Group A (GAS)

What is Group A Streptococcus?

Group A Streptococcus causes a wide range of infections from localized to invasive diseases. The most common are respiratory and skin/soft tissue infections e.g. impetigo, but GAS can cause severe invasive disease, including necrotizing fasciitis and toxic shock syndrome.

Patients at greatest risk for invasive GAS disease are the elderly and those with underlying medical conditions. Outbreaks have involved a variety of patient groups: postpartum women and newborns, post op surgical patients, burn patients and patients in geriatric wards or extended care facilities.

HCW have been epidemiologically or microbiologically linked as the source of transmission to patients, often with asymptomatic colonization of the pharynx, vagina, rectum or skin. Close contact with invasive GAS may place HCW at risk when exposed to secretions from infected patients, i.e. suctioning or intubation without mask.

How is it transmitted?

GAS is transmitted via respiratory droplets and by direct or indirect contact of the oral or nasal mucous membranes of an infected individual (i.e. respiratory or wound secretions). Transmission also occurs when there is direct contact of non-intact skin with infectious respiratory or wound secretions.

The period of communicability is from 7 days before onset of GAS, until 24 hours of effective antibiotic treatment is completed.

What are the symptoms of Group A Streptococcus Infection?

Symptoms preceding the onset of invasive GAS disease may include:

- unusually severe pain
- swelling
- fever
- chills
- flu-like symptoms
- myalgia
- generalized macular rash
- nausea
- vomiting
- diarrhea
- malaise
- joint pain

Streptococcal Toxic Shock Syndrome (STSS) is the most serious manifestation of invasive GAS disease. It involves a primary site of GAS infection together with hypotension (low blood pressure), adult respiratory distress syndrome, kidney impairment, rapid onset of shock and multi-organ failure. The most common primary site of invasive GAS infections is soft tissue, but pneumonia, septic arthritis and blood stream infections may also occur. Upper respiratory tract manifestations of GAS are more common in young adults, and Necrotizing Fasciitis (NF) is more common in the elderly.

What is the treatment?

Prompt antibiotic therapy is indicated for treatment of GAS infections. Penicillins are the main treatment of choice, however, others may be used. In invasive cases of GAS infection such as necrotizing fasciitis, surgery may be necessary.

How can GAS be prevented?

The primary method for preventing GAS infection is to implement good hand hygiene practices, especially after coughing or sneezing, and before and after preparing or eating foods.

Prevention also includes checking all wounds to ensure cleanliness and to observe for signs of infection (i.e. redness, swelling, drainage, and pain at wound site). All persons with signs of infection to a wound, especially if fever occurs, should seek medical attention.

Tinea (Ringworm)

What is Tinea?

Tinea is a fungal disease of the skin (*Tinea corporis*), scalp (*Tinea capitis*), and feet (*Tinea pedis*).

How is it transmitted?

Transmission occurs through direct or indirect skin contact with scalp or skin lesions of an infectious individual, animal or contaminated environment (i.e. back of seats, barber clippers, etc.)

The period of communicability is for as long as lesions are present or viable fungus persists on contaminated environmental surfaces.

What are the symptoms?

The infection usually begins as a small area of redness and/or scaling and spreads outwards leaving scaly patches of temporary baldness. It can be confused with many diseases and the fungus can remain viable on contaminated items or surfaces, providing reservoirs for transmission.

What is the treatment?

In mild cases, daily washing of scalp removes loose hair. Selenium sulfide or ketoconazole shampoos help remove scale. In severe cases, wash scalp daily and cover hair with a cap, which should be boiled after use.

Topical agents are ineffective for true infections. Oral griseofulvin prescribed for at least 4 weeks is effective. Terbinafine and itraconazole are also effective.

How can Tinea be prevented?

Preventive measure for Tinea infection focus on maintaining good personal hygiene practices:

- Good hand washing practices
- Taking special care in drying between toes after bathing
- Regularly using a dusting powder or cream containing an effective antifungal on the feet and between toes
- The use of occlusive shoes may predispose individuals to infection and disease
- laundering towels and clothing with hot water and/or fungicidal agent if they are contaminated
- Ensuring that you are using public washrooms, showers and dressing rooms that are cleaned and disinfected regularly

Tuberculosis (TB)

What is Tuberculosis?

Tuberculosis (TB) is a bacterial infection of the respiratory tract usually caused by *Mycobacterium tuberculosis*.

In Canada, TB occurs primarily in well-defined population subgroups, including Aboriginal Canadians, the elderly, the inner-city poor and emigrants from countries in Asia, Eastern Europe, Africa and Latin America, where tuberculosis is still common. In addition, immunocompromised persons, such as those with HIV infection, and diabetes, are at increased risk for developing active TB if they are infected with *M. tuberculosis*.

How is it transmitted?

Transmission of TB infection occurs almost exclusively from individuals with acid fast bacilli (AFB) found in their sputum.

Transmission is by inhalation of airborne organisms when; coughing, sneezing, speaking, or during cough-inducing procedures, such as bronchoscopy.

Most people are unaware they have been “infected” with TB. They are not ill and have no symptoms because their immune system prevents the development of active TB. A positive tuberculin skin test (TST) may be the only indication that someone has latent or “inactive” infection. Approximately 10% (Health Canada) of all individuals infected with *M. tuberculosis* develop active disease (TB) sometime during their life; the risk is greatest in the first two years after initial infection.

Period of communicability lasts as long as viable tubercle bacilli are being released in the sputum. The communicability of tuberculosis depends on the infectiousness of the individual, the degree of contact (i.e. in terms of the likelihood of the contact having breathed the same air as the individual when he/she was infectious), and the susceptibility of those people exposed to the infected person.

What are the symptoms?

Symptoms include:

- a persistent cough (greater than 3 months)
- pleuritic pain
- fever
- night sweats
- unexplained weight loss
- bloody sputum has often been noted in persons with active tuberculosis.

What is the treatment?

M. tuberculosis is slow to produce disease and equally slow to respond to drug therapy. A combination of anti-TB drugs with full compliance for a minimum of 6 months is required to achieve 100% cure rate. It is very important to ensure you take the anti-TB drugs exactly as prescribed as skipping doses can lead to serious delays in your recovery.

How can Tuberculosis be prevented?

Tuberculosis occurs as a result of infection that most commonly takes place months to years before the onset of clinically apparent disease. The tuberculin skin test (TST) is used to identify those persons who carry the TB bacillus before clinical disease is evident.

The best prevention of TB is prompt diagnosis and treatment. HCW's need to be aware of when to use and how to choose the appropriate respirator (N95) to prevent exposure to and the spread of tuberculosis.

Treating latent TB infections (also called preventive chemotherapy) has been effective in preventing active TB disease in up to 90% of adherent individuals.

Typhoid Fever (*Salmonella typhi*/Enteric fever)

What is Typhoid Fever?

Typhoid Fever is a foodborne illness caused by one species of *Salmonella* bacteria. *Salmonella typhi* causes disease and is associated with foreign travel, i.e. to areas that lack safe food or drinking water. *Salmonella paratyphi* causes similar clinical symptoms but tends to be milder.

How is it transmitted?

Salmonella typhi is transmitted by ingestion of food or water, contaminated with infectious feces or urine and/or by direct or indirect ingestion of infectious feces or urine.

The period of communicability is as long as the bacteria appear in stool or urine. About 10% of those untreated will continue to have bacteria in the stool at three months after onset of symptoms, and 2-5% will become permanent fecal carriers.

What are the symptoms?

The symptoms of *S. typhi* infection include:

- fever
- malaise
- constipation more commonly than diarrhea
- rose spots on the trunk and chest in about 25% of cases
- non-productive cough in the early stages of illness
- slow pulse
- occasionally intestinal hemorrhage.

What is the treatment?

Typhoid Fever is treated with a course of antibiotics.

How is Typhoid Fever prevented?

Prevention of Typhoid is based on access to safe water and proper sanitation, as well as adherence to safe food handling practices. Hand hygiene is the key to prevention.

Immunization for Typhoid Fever is not routinely recommended in non-endemic areas, except for those subject to unusual occupational exposure to enteric infections.

Immunization may be considered for household contacts and nursing home contacts of carriers only. Vaccination is also warranted for persons traveling to endemic areas and those at risk because of their occupation.

The protection, purification and chlorination of public water supplies also help to prevent the spread of Typhoid Fever.

Vancomycin Resistant Enterococcus (VRE)

What is VRE?

Enterococci are normal flora of the gastrointestinal tract in 95% of healthy individuals, and are usually not a cause of disease. Enterococcus species are important nosocomial pathogens having emerged as the second or third most common cause of hospital-acquired infections. **Enterococci are hardy organisms and are able to survive on environmental surfaces for extended periods.**

Over the past two decades there have been increasing numbers of reports of Enterococcus species with resistance to multiple antibiotics. Vancomycin resistance is of concern.

Patients from critical care units, hematology/oncology wards, dialysis units, or transplantation units, as well as patients who have had major abdominal or thoracic procedures appear to be at higher risk for VRE than other populations. Healthy individuals do not become infected.

Healthcare workers colonized with VRE have rarely been implicated in transmission. HCW and their household contacts may be at slight risk of acquiring VRE, but no transmission to HCW in Canada has been reported.

How is it transmitted?

Transmission is by direct or indirect contact of hands or skin with infectious feces/urine/wound drainage or with areas of colonized skin.

Communicability is as long as the carrier state persists.

What are the symptoms?

If you become a carrier of VRE but do not have an infection, you will have no symptoms. Infections caused by VRE will have symptoms specific to that type of infection. i.e., if VRE is causing a urinary tract infection, symptoms will be consistent with such an infection caused by any other bacteria.

What is the treatment?

Doctors and hospitals have become increasingly concerned about these bacteria in recent years as they have developed resistance to most antibiotics, including the previous drug of last resort, vancomycin. In a study of 300 strains of enterococcal bacteria only one antibiotic, nitrofurantoin, was effective against them all. Enterococci are a common cause of urinary tract infections, but can cause a variety of other diseases including endocarditis and meningitis. Newer antibiotics are available but should be used under the guidance of an infectious disease physician.

There is no effective decolonization therapy at this time.

How can VRE be prevented?

The use of *Routine Practices*, including good hand hygiene, particularly after toileting, or assisting someone else in toileting, will help minimize the spread of VRE.

Varicella-Zoster Virus (VZV)

What is Varicella-Zoster Virus (VZV)?

VZV is a virus which can cause two distinct diseases: varicella or chicken pox as the initial infection, and then later on can cause herpes zoster or shingles, a reactivation of the VZV from the chicken pox infection.

Chicken pox is most commonly associated with a blistery type of lesion (rash) primarily over the face, scalp, underarms, and upper respiratory tract. After the initial infection, VZV remains dormant in the body after the infection.

Shingles is a reactivation of the dormant VZV from a previous chicken pox infection that affects skin areas along certain sensory nerve routes. A vesicular rash appears, unusually along one side of the body in the chest, neck or eye region and can be quite painful. Shingles can also be considered disseminated if it is covering a greater area of the body.

How is it transmitted?

Chicken pox is transmitted person-to-person by direct contact, droplet, or airborne spread of fluid from the blistery rash or secretions from the respiratory tract of someone with the disease. Chicken pox can also be transmitted by contact with the rash of a person with shingles to a person without a history of chicken pox infection. The period of communicability for chicken pox lasts from up to 5 days (but usually 1-2 days) prior to onset of symptoms until the lesions are crusted. In a non-immune person, chicken pox is one of the most readily communicable of diseases.

Shingles has a lower rate of transmission than chicken pox. It is transmitted by contact with the vesicle fluid of the rash.

What are the symptoms?

Symptoms of chicken pox include:

- Generalized itchy, blister-like rash that eventually crusts over and scabs
- Mild fever
- Secondary skin infections with other bacteria can occur

Symptoms of shingles include:

- Painful vesicular rash, usually on one side of the body
- 30% cases develop chronic pain after acute infection (post-herpetic neuralgia)

What is the treatment?

Antiviral treatment is moderately effective in treating both chicken pox and shingles, perhaps lessening the duration or severity of symptoms. There are a few options that can be considered in cases of exposure of susceptible person including administration of varicella vaccine or immunoglobulin (VZIG), however these have a limited window of opportunity to be given in order to be effective.

How is VZV prevented?

Varicella is a vaccine preventable disease.

Practicing good hand hygiene anytime you come in contact with rashes is important however it is best to avoid contact altogether if possible.

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