
Section V - Reportable Disease Guidelines

Purpose

The purpose of this chapter is to provide information and resources that will assist in the prevention and management of outbreaks associated with reportable diseases within your facility.

Disease Guidelines in this section are driven by Best Practices and are able to steer health care facility protocols. More diseases will be included as information becomes available.

Diseases are collated alphabetically and have a fact sheet followed by a summary of recommendations which provide information geared towards staff in LTCHs. Where possible, teaching and management resources are provided for use by the facility.

Reportable Diseases specified under *Ontario Regulations 559/91* and amendments under the Health Protection and Promotion Act R.S.O. 1990, c.H.7 must be reported to the local Medical Officer of Health.

SMDHU is available for consulting with facilities on diseases not included in this section to date.

Included in the Reportable Disease Section:

Reportable Disease	Date developed
Chickenpox/Shingles	2006/10/01
Streptococcal Disease, Group A invasive (GAS, iGAS)	2006/10/01
Influenza	2006/10/01
Tuberculosis	2006/10/01

Reportable Disease Poster



Simcoe Muskoka District Health Unit
Communicable Disease Program
 15 Sperling Drive Barrie, ON L4M 6K9

Phone: (705)721-7520 ext. 8809
 After hours: 1-888-225-7851
 Fax: (705) 733-7738

Communicable Disease Reporting

Timely reporting of communicable diseases is mandated and essential for their control. If you *suspect* or have confirmation of the following specified Reportable Diseases or their etiologic agents, (as per Ontario Regulation 559/91 and amendments under the *Health Protection and Promotion Act, R.S.O. c.H.7*) please report them to the local Medical Officer of Health.

REPORTABLE COMMUNICABLE DISEASES

Note: Diseases highlighted (and influenza in institutions) should be reported immediately to the Medical Officer of Health by telephone. Other diseases can be reported by the next working day by fax, phone, or mail.

Acquired Immunodeficiency Syndrome (AIDS)	Group B Streptococcal disease, neonatal	Psittacosis/Ornithosis
Amebiasis	Haemophilus influenzae b disease, invasive	Q Fever
Anthrax	Hantavirus pulmonary syndrome	Rabies
Botulism	Hemorrhagic fevers, including:	Respiratory infection outbreaks in institutions
Brucellosis	1. Ebola virus disease	Rubella
Campylobacter enteritis	2. Marburg virus disease	Rubella, congenital syndrome
Chancroid	3. Other viral causes	Salmonellosis
Chickenpox (Varicella)	Hepatitis, viral	Severe Acute Respiratory Syndrome (SARS)
Chlamydia trachomatis infections	1. Hepatitis A	Shigellosis
Cholera	2. Hepatitis B	Smallpox
Clostridium difficile associated disease (CDAD) outbreaks in Public Hospitals	3. Hepatitis C	Syphilis
Cryptosporidiosis	4. Hepatitis D (Delta hepatitis)	Tetanus
Cyclosporiasis	Herpes, neonatal	Transmissible Spongiform Encephalopathy, including:
Cytomegalovirus infection, congenital	Influenza	1. Creutzfeldt-Jakob Disease, all types
Diphtheria	Lassa Fever	2. Gerstmann-Straüssler-Scheinker Syndrome
Encephalitis, including:	Legionellosis	3. Fatal Familial Insomnia
1. Primary, viral	Leprosy	4. Kuru
2. Post-infectious	Listeriosis	Trichinosis
3. Vaccine-related	Lyme disease	Tuberculosis
4. Subacute sclerosing panencephalitis	Malaria	Tularemia
5. Unspecified	Measles	Typhoid Fever
Food poisoning, all causes	Meningitis, acute	Verotoxin-producing E. coli infection indicator conditions including:
Gastroenteritis, institutional outbreaks	1. bacterial	Haemolytic Uraemic Syndrome (HUS)
Giardiasis, except asymptomatic cases	2. viral	West Nile Virus Illness
Gonorrhoea	3. other	Yellow fever
Group A Streptococcal disease, invasive	Meningococcal disease, invasive	Yersiniosis
	Mumps	
	Ophthalmia neonatorum	
	Paratyphoid Fever	
	Pertussis (Whooping Cough)	
	Plague	
	Pneumococcal disease, invasive	
	Poliomyelitis, acute	

Revised March 4, 2009

Insert Facility Logo
Here

Chickenpox/Shingles - Facts

What is Chickenpox/Shingles?

Chickenpox (varicella) is a highly contagious disease caused by the varicella-zoster virus (VZV). It manifests as a generalized disease with sudden onset of slight fever and development of a rash and/or blisters. The virus establishes latency after primary infection.¹

Shingles (herpes-zoster) is a reactivation of latent varicella. The rash and blisters are mainly restricted to one part of the body. However, immunocompromised persons may develop wide spread infection.²

How is the virus spread?

Chickenpox: Person-to-person transmission occurs by direct contact with blister fluid or by airborne transmission from coughing, sneezing, spitting etc.

Shingles: Direct contact with zoster lesions. Wide spread shingles may be transmitted by the airborne route, because of high viral shedding. *Shingles is not as infectious as chickenpox.*³

* Indirect contact with articles that are freshly soiled with discharges from vesicles and mucous membranes can also serve as a source of transmission.

It is possible to get chickenpox from someone with shingles, but you cannot catch shingles from someone with chickenpox.

Pregnant Workers

Adults, immunocompromised persons, and pregnant women in particular, may develop severe complications. If someone is pregnant that has not had chickenpox believes they have been exposed to VZV, it is recommended that they contact their physician as soon as possible. The physician can give the person a special type of immune globulin (VZIG) injection to help prevent the person from developing a severe infection. If a person catches chickenpox shortly before or after giving birth, their newborn may develop severe infections.⁴

Prevention and Control Measures

Immunity and Vaccination

- The immune status of all health care workers should be determined from reliable history or from vaccination.²

Evidence of immunity may include:

- *A self-reported history of chickenpox or shingles.*
 - *Written documentation of vaccination.*
 - *Evidence of physician-diagnosed chickenpox or shingles.*
 - *Laboratory evidence of immunity (IgG) or laboratory confirmation of disease.*
- Reports of mild infections should not be considered as having a valid history of disease because many other diseases may mimic mild VZV infections.
 - For those with a negative history of VZV, serological testing should be done.⁵
 - Vaccination consists of two doses of varicella vaccine administered 4-8 weeks apart.
 - ***Only health care workers known to be immune may be assigned to care for residents with chickenpox or shingles.***⁵

Resident Placement

Residents with disseminated or localized shingles that cannot be covered should be placed in a private room. A private room should also be provided for residents who contaminate the environment or those who do not (or cannot be expected to) maintain appropriate hygiene. Private rooms should be maintained until lesions have crusted over and no new lesions are forming.

Additional Precautions to Routine Practices

Gloves should be worn when entering the room of a resident with chickenpox or shingles. Gloves should be removed promptly after use, before touching non-contaminated items and environmental surfaces, and before coming in contact with another resident. ***Wash hands immediately after removing gloves.*** Signage indicating that contact precautions are in place should be posted on the door of any room of a suspected or confirmed chickenpox/shingles resident.

Gowns should be worn if direct contact with resident or environmental surfaces is likely.

Masks are not required for immune health care workers.

* Health care workers who are susceptible, but who absolutely must enter the room of residents should wear an N95 mask.

Resident-Care Equipment

Handle used resident-care equipment in a manner that prevents skin and mucous membrane exposures, contamination of clothing, and transfer of microorganisms to other residents and environments. Ensure that reusable equipment is not used for the care of another resident until it has been cleaned and reprocessed appropriately. Ensure that single-use items are discarded properly.

Environmental Control

Ensure that there are adequate procedures for the routine care, cleaning, and disinfection of environmental surfaces, beds, bedrails, bedside equipment, and other frequently touched surfaces. *VZV is susceptible to low level disinfectants.*

Linen

Handle, transport, and process soiled linen in a manner that prevents skin and mucous membrane exposures, contamination of clothing, and transfer of microorganisms to other residents and environments.

Visitors

Susceptible visitors should be educated and discouraged from resident contact until lesions have dried and crusted over. Immune visitors should be aware of contact precautions and the importance of hand-washing. If visitor is providing care for the resident, the appropriate PPE should be used.

Exclusion

Health care workers with acute chickenpox or wide spread shingles must be excluded from work until lesions are dried and crusted. Health care workers with localized shingles may work in most cases if appropriate barriers are used (i.e. all lesions are covered and good hand-washing technique is used before resident care). Health care workers with shingles may not work with immunocompromised residents until lesions have dried and crusted.

Outbreak Management

An outbreak should be considered if more than one resident on the same unit meets the criteria for diagnosis. Facility should liaise with the Simcoe Muskoka District Health Unit if an outbreak is suspected.

Reporting Requirements

Suspected or confirmed cases of chickenpox must be reported to the Simcoe Muskoka District Health Unit.

There are no reporting requirements for shingles.

References

1. Pickering LK, editor. Red Book: 2003 report of the committee on infectious diseases. 27th ed. Elk Grove Village, IL: American Academy of Pediatrics; 2006:711–25.
2. Atkinson W, Hamborsky J, McIntyre L, Wolfe S [editors]. Epidemiology and prevention of vaccine-preventable diseases. 9th ed. Washington DC: Centers for Disease Control and Prevention; 2006.
3. Health Canada. Prevention and control of occupational infections in health care. An infection control guideline. Can Commun Dis Rep 2002;28S1:1-26.
4. Canadian Paediatric Society. Well beings. 2nd ed. Ottawa: Canadian Paediatric Society; 1999:162-64.
5. Ontario Hospital Association, Ontario Medical Association Joint Communicable Disease Surveillance Protocols Committee. Varicella/Zoster (chickenpox/shingles) surveillance protocol for Ontario hospitals. Toronto: Ontario Hospital Association; 2006.

Insert Facility Logo
Here

Group A Streptococcal Infections (GAS) – Facts

What is Group A Streptococcal infection (GAS)?

Group A streptococci are bacteria that can live in the throat or on the skin of healthy individuals. Sometimes, GAS can cause illnesses such as "strep throat," scarlet fever or impetigo (a skin infection). Rarely, GAS can cause serious infections such as necrotizing fasciitis (flesh eating disease) and streptococcal toxic shock syndrome.

Necrotizing fasciitis (NF) is an infection that destroys fat or muscle tissue. Streptococcal Toxic Shock Syndrome (STSS) is an infection that leads to damage to organs like your kidneys, liver and lungs.

How is it spread?

GAS is spread by direct contact with secretions from the nose and throat of infected persons or by contact with infected wounds or sores on the skin. It is not spread by household items like plates, cups or toys. You are most infectious when you are sick. You cannot spread GAS after taking antibiotics for 24 hours.

What are the symptoms of GAS infections?

Early signs and symptoms include fever, muscle aches and pains, chills, sore throat, dizziness, confusion and a rash.

How soon do symptoms of GAS infections appear?

It varies. Consult with the Occupational Health and Safety department of your facility when you think you might have acquired GAS infections.

How is GAS infection diagnosed?

To diagnosis GAS, you must have a "swab" of the area that may be infected by the bacteria. For example: for "strep throat" a swab of the tonsils and/or the back of the throat is done. Blood and other body fluids can also be tested.

What is the treatment for GAS?

GAS infections are treated with antibiotics. It is always important that you finish all the pills.

How do I protect myself and others?

You can help stop the spread of GAS infections by washing your hands after coughing or sneezing, before preparing foods and before eating. If you have a sore throat, see your doctor to find out if you have "strep throat". Wash your wounds and watch for signs of infection. If you see it turning red, draining or it gets sore and you have a fever, see your doctor.

If someone close to you is diagnosed with either NF or STSS, you might need to take antibiotics to prevent you from getting sick.

For more information please call the CD Team in the Barrie Office at (705) 721-7520 ext. 8809.

Revised 2006-06-15

References:

1. Ontario Ministry of Health/Public Health Branch/Disease Control Service. Guidelines for management of contacts of cases of invasive groups A streptococcal disease (GAS) including streptococcal toxic shock syndrome (STSS) and necrotizing fasciitis. Ontario Ministry of Health; 1995.
2. Ontario Nursing Home Association. Guidelines for the management of residents with group A streptococcus infection in long-term care facilities. Markham (ON); Ontario Nursing Home Association; 1997.
3. Ontario Hospital Association, Ontario Medical Association Joint Committee on Communicable Diseases Surveillance Protocols Committee. Group A streptococcal disease surveillance protocol for Ontario hospitals. Toronto: Ontario Hospital Association; 2004.

Group A Streptococcal Disease

The most current Canadian guidelines are:

- i) Public Health Agency of Canada: [CCDR Canada Communicable Disease Report – Supplemental Guidelines for the Prevention and Control of Invasive Group A Streptococcal Disease. Volume 32S2 October 2006.](#)
- ii) [Ontario Hospital Association and the Ontario Medical Association and approved by the Minister of Health and Long-Term Care: Group A Streptococcal Disease Surveillance Protocol for Ontario Hospitals Publication #309: September 2004, Revised September 2006](#)

Surveillance

Group A Streptococci can cause a variety of diseases such as: strep throat, pharyngitis, pneumonia, impetigo, pyoderma, wound infections, scarlet fever, rheumatic fever, erysipelas, cellulites, paronychia, otitis media and conjunctivitis.⁽ⁱ⁾

A diagnosis of invasive Group A streptococcal disease (iGAS) is confirmed when a specimen from a normally sterile site on culture presents with *streptococcus pyogenes*, or *s. pyogenes*. Only confirmed cases of iGAS disease are reportable to the Simcoe Muskoka District Health Unit (SMDHU) under the Health Protection and Promotion Act (HPPA) and should be included under facility infectious disease surveillance.

The Canadian Guidelines for the Prevention and Control of Invasive Group A Streptococcal Disease defines a severe case of iGAS as a case of streptococcal toxic shock syndrome (STSS), soft-tissue necrosis (including necrotizing fasciitis, myositis or gangrene), meningitis, GAS pneumonia, other life-threatening conditions or a confirmed case resulting in death.⁽ⁱ⁾ This classification of severe iGAS is important, as close contacts of these severe cases may be recommended chemoprophylaxis (see Management of Contacts section below).

Management of Group A Streptococcal Disease ⁽ⁱ⁾

When a single case of iGAS has been identified and reported, it is recommended that the following occur:

1. The facility will be contacted by a SMDHU investigator and a meeting held with occupational health, infection prevention and control and SMDHU in attendance.
2. Upon recommendation of the Medical Officer of Health and the Infection Control Committee, it may be recommended that the facility initiate an outbreak investigation:
 - i) if in the past 4 – 6 weeks there are culture-confirmed cases of GAS disease and any suggested cases of non-invasive or invasive GAS infection, including skin and soft tissue infections (eg. pharyngitis and cellulites) and excluding pneumonia and conjunctivitis not confirmed by culture,
 - ii) if a potential source of infection from outside the facility can be identified (eg. regular visits from children),
 - iii) if the incidence of GAS infections is higher than normal for the facility.

Long-term care facility outbreak definition	An incidence rate of culture-confirmed invasive GAS infections of >1 per 100 residents per month or at least two cases of culture-confirmed invasive GAS infection in 1 month in facilities with fewer than 200 residents or an incidence rate of suggested invasive or non-invasive GAS infections of >4 per 100 residents per month.
--	---

If there is found to be an excess of GAS infection identified, the following actions need to be considered:

- All patient/resident care staff should be screened for GAS with throat, nose and skin lesion cultures. Where the LTCF has less than 100 beds, all residents should be screened for GAS. In LTCF with 100 beds or greater, screening can be limited to all residents within the same care unit as the infected case and contacts of the case if necessary, unless patient and care staff movement indicate a broader approach.
- Anyone colonized with GAS should receive chemoprophylaxis.

- Non-patient/resident care staff should be asked about possible recent GAS infections. Those with a positive history should be screened for GAS, and those who are positive should be treated with antibiotics.
- All GAS isolates should have further typing done to identify an outbreak strain. Culture for test of cure is indicated for individuals found to have the outbreak-related strain, particularly if there is epidemiologic evidence indicating that contact with the individual is significantly related to illness. Culture for test of cure is not needed for individuals infected with a strain of GAS not related to the outbreak.
- All GAS positive residents and staff should be re-screened, including throat and skin lesions, 14 days after chemoprophylaxis has been started; this should be followed by screening at 2 and 4 weeks after the first re-screening. If the person is found to be positive, a second course of chemoprophylaxis should be offered. If the person remains colonized after the second course of chemoprophylaxis, discontinue chemoprophylaxis unless the facility continues with GAS infection issues.
- Active surveillance for GAS infection should be initiated and continued for 1-2 months.
- Appropriate specimens should be taken for culture when persons are identified by the surveillance program.

If no excess is identified, especially if there is evidence of an outside source of infection for the index case, then active surveillance alone for 2-4 weeks to establish the absence of additional cases is warranted.

Isolation

1. Residents can participate in facility activities after receiving 24 hours of antibiotic treatment. If the resident is symptomatic (runny nose/cough) and is carrying GAS in his/her nose or throat, evaluation of his/her participation should be made until these symptoms have subsided. Consult with your SMDHU liaison.
2. Colonized staff can return to work after 24 hours of antibiotic treatment provided all of the following 3 conditions do not exist: ⁽ⁱⁱ⁾
 - iv) one or more residents have an invasive GAS infection; AND
 - v) the staff person has failed to decolonize; AND
 - vi) it has been epidemiologically shown that the staff member is transmitting the GAS to residents and other staff.

Management of Contacts ⁽ⁱ⁾

Once a resident has been diagnosed with iGAS, SMDHU and LTCF will work collaboratively to identify close contacts and plan next steps. Where a close contact has been identified, preventative prophylaxis (chemoprophylaxis) must be offered.

To be considered a close contact, any of the following criteria must be met ⁽ⁱ⁾ :

- Household contacts of a case that have spent at least 4 hours/day on average (or 20 hours/week with the case) in the previous 7 days preceding the onset of symptoms and up until 24 hours following the start of appropriate antibiotic treatment.
- A person who shared the same bed or had sexual relations with the case from 7 days prior to illness until 24 hours following the start of antibiotic treatment.
- Any person whose nose or mouth has been contaminated with oral/nasal secretions of a case, (eg. Mouth-to-mouth resuscitation, open mouth kissing*) or unprotected direct contact with an open skin lesion of the case.
- Injection drug users who have shared needles with the case.

Direct mucous membrane contact should be **prolonged** for a person to be considered a close contact. This would exclude kissing with closed mouths and sharing of utensils, water bottles or cigarettes. ⁽ⁱ⁾

Patients/residents who share a room with a patient/resident with invasive GAS are not considered exposed and do not need prophylaxis unless they fit close contact requirements. ⁽ⁱ⁾

Chemoprophylaxis should only be offered ⁽ⁱ⁾

- To close contacts of a confirmed severe case, that is, a case of STSS, soft-tissue necrosis (including NF, myositis or gangrene), meningitis, GAS pneumonia, other life-threatening conditions or a confirmed case resulting in death;

AND

- If the close contacts have been exposed to the case during the period from 7 days prior to onset of symptoms in the case to 24 hours after the case's initiation of antimicrobial therapy.

Chemoprophylaxis of close contacts to a severe iGAS should be administered as soon as possible, preferably within 24 hours of case identification but is still recommended for up to 7 days after the last contact with an infectious case.

Close contacts of all confirmed cases (regardless of severity) should be educated to signs and symptoms of invasive GAS disease and be advised to seek medical attention immediately should they develop febrile illness or any other clinical manifestations of GAS infection within 30 days of diagnosis in the index case.

Clinical manifestations of pharyngeal and iGAS infection include:

- influenza-like symptoms (fever, rapid breathing, aches, pains and chills)
- sore throat, localized severe muscle pain
- dizziness, confusion, diffuse rash or abdominal pain.

The purpose of chemoprophylaxis is to eradicate nasopharyngeal colonization of GAS and potentially prevent disease in close contacts and transmission to other people.

Recommended Chemoprophylaxis Regimens for Close Contacts(i)

Drug	Dosage	Comments
First-generation cephalosporins: cephalexin, cephadroxil, cephadrine	First line. Children and adults: 25 to 50 mg/kg daily, to a maximum of 1 g/day in 2 to 4 divided doses × 10 days	Recommended drug for pregnant and lactating women. Should be used with caution in patients with allergy to penicillin. Use of cephalosporins with nephrotoxic drugs (e.g. aminoglycosides, vancomycin) may increase the risk of cephalosporin-induced nephrotoxicity.
Erythromycin	Second line. Children: 5 to 7.5 mg/kg every 6 hours or 10 to 15 mg/kg every 12 hours (base) × 10 days (not to exceed maximum of adult dose) Adults: 500 mg every 12 hours (base) × 10 days	Erythromycin estolate is contraindicated in persons with pre-existing liver disease or dysfunction and during pregnancy. Sensitivity testing is recommended in areas where macrolide resistance is unknown or known to be ≥ 10%.
Clarithromycin	Second line. Children: 15 mg/kg daily in divided doses every 12 hours, to a maximum of 250 mg po bid × 10 days Adults: 250 mg po bid × 10 days	Contraindicated in pregnancy. Sensitivity testing is recommended in areas where macrolide resistance is unknown or known to be ≥ 10%.
Clindamycin	Second line. Children: 8 to 16 mg/kg daily divided into 3 or 4 equal doses × 10 days (not to exceed maximum of adult dose) Adults: 150 mg every 6 hours × 10 days	Alternative for persons who are unable to tolerate beta-lactam antibiotics.

Prevention and Control Measures ⁽ⁱ⁾

1. Staff must wash hands before and after every contact with the resident with GAS; wash hands after leaving the affected resident room; wash hands after glove use. Handwashing must be reviewed with visitors, students and volunteers.
2. Gloves should be worn during dressing changes (skin lesions) and when in contact with blood or other body fluids. Gloves should be changed after contact with infectious material; even with the same resident and should be discarded upon leaving the affected resident's room.
3. Shared equipment must be cleaned with a hospital approved disinfectant between resident use.
4. Unsoiled linen can be placed in the regular laundry hamper. If heavily soiled with body fluids; place items in a plastic bag before placing in laundry hamper.
5. Personnel can reduce the risk of infection by the consistent use of Routine Practices in all direct patient/resident care activities, including wearing a mask and eye protection or face shield when contamination with respiratory droplets is likely. ⁽ⁱ⁾
6. In addition to routine practices, apply additional precautions specifically contact and droplet precautions when caring for patients/residents with suspected or known invasive GAS disease until 24 hours of effective antimicrobial therapy has been completed. ⁽ⁱⁱ⁾

Health Care Workers (HCWs) are to be encouraged to report illness possibly due to GAS (pharyngitis, impetigo, wound or skin infections, cellulites) and comply with policies regarding not working when ill. An occupationally acquired GAS infection is reportable to the Ministry of Labour and WSIB ⁽ⁱⁱ⁾

Insert Facility Logo
Here

Streptococcal Pneumonia invasive – Facts

What is Streptococcal Pneumonia?

Streptococcal Pneumonia also referred to as “strep pneumo” is a contagious disease caused by the streptococcal pneumonia bacteria. People can carry these bacteria in their nose and throat and be healthy.

While this bacteria can be found anywhere on the body, it often appears in the lungs and causes pneumonia which is a type of lung infection. Rarely, these bacteria can be found in the tissue surrounding the brain and spinal cord causing pneumococci bacterial meningitis. The bacteria can also be found in the blood causing pneumococcal bacteraemia, and when this happens it is referred to as *invasive* pneumococcal disease.

How is the bacterium spread?

This bacterium is found in the nose and throat of individuals. You may get strep pneumo by breathing in droplets which are either coughed or sneezed into the air by someone who is infected with the bacteria. The bacteria are also transmitted by touching objects contaminated by these droplets and then touching your eyes, nose or mouth.

What are the symptoms of Streptococcal Pneumonia?

Symptoms of pneumococcal disease vary depending on the illness caused by the bacteria.

In adults, symptoms of pneumonia are often quite sudden and include chills, fever, shortness of breath or rapid breathing, chest pain that is worsened by breathing deeply and a productive cough.

Symptoms of pneumococcal meningitis include stiff neck, fever, confusion and disorientation, and photophobia (sensitive to light).

Invasive streptococcal pneumonia is characterized by symptoms similar to pneumonia and meningitis, and includes joint pain, fever and chills.

Prevention and Control Measures

You can help stop the spread of pneumococcal disease by washing your hands regularly, especially after you cough or sneeze and prior to preparing and consuming food.

Do not share cigarettes or drink from the same glass, water bottle or straw as others and ensure you throw used Kleenex into the garbage.

Immunity and Vaccination

The best way to prevent invasive pneumococcal disease is to ensure you have received all your immunizations.

Polysaccharide pneumococcal vaccine is recommended for all individuals ≥ 65 years of age.¹

If the immunization status is unknown in individuals ≥ 65 years of age the vaccine should be administered.¹

Recommended strategies for delivering pneumococcal vaccine to individuals at higher risk of invasive disease include:

- Ensuring that all recipients receiving the influenza vaccine are also immunized with the pneumococcal vaccine, if appropriate. Providers should have both vaccines available to facilitate concurrent administration.
- Implementing standing orders for pneumococcal immunization of residents on admission to long-term care facilities if appropriate.

For further information regarding the pneumococcal vaccine please contact the Vaccine Preventable Disease program at (705) 721-7520 ext. 8806.

Resident-care Equipment

Ensure that reusable equipment is not used for the care of another resident until it has been cleaned and reprocessed appropriately. Ensure that single-use items are discarded properly.

Environmental Control

Ensure that there are adequate procedures for the routine care, cleaning, and disinfection of environmental surfaces, beds, bedrails, bedside equipment, and other high touch surfaces.

Visitors

High risk visitors such as those ≥ 65 years of age, people with underlying medical conditions and infants should be counseled as appropriate to wash their hands regularly and appropriate PPE should be used.

Outbreak Management

When an outbreak occurs, regardless of the etiological agent, major emphasis must be placed on careful surveillance, early diagnosis and immediate treatment of suspected cases. Discussion should take place immediately with Medical Officer of Health re: epidemic control measures.

References

1. National Advisory Committee on Immunization. Canadian Immunization Guide. 7th ed. Public Health Agency of Canada; 2006.

American Public Health Association. (2004). Pneumococcal pneumonia. Heymann, D.L. (Ed), Control of communicable diseases manual (18th ed., pp. 413-417). Washington DC: American Public Health Association.

Insert Facility Logo
Here

Influenza - Facts

What is influenza?

Influenza or “flu” is a highly contagious respiratory tract infection that affects people of all ages and causes moderate to severe illness. As many as 1,500 Canadians, mainly seniors, die of influenza complications each year.

How is it spread?

You may get influenza by breathing in droplets coughed or sneezed into the air by someone who has influenza, or by transferring those droplets to your eyes, nose and mouth after touching objects contaminated by those droplets.

What are the symptoms?

Symptoms may include: sudden onset of high fever lasting 3-4 days, severe headache, severe aches and pains, severe fatigue lasting 2-3 weeks or more, runny stuffy nose, sore throat, coughing and chest discomfort that can become severe, and sometime sneezing.

How soon do symptoms of influenza appear?

Short, usually one to three days.

How is it diagnosed?

A swab from the back of your nose can be tested by a laboratory to confirm if you have influenza.

What is the treatment for influenza?

You can lessen the discomfort of influenza by treating the symptoms:

- Treat fever and muscle aches with aspirin, acetaminophen or ibuprofen. Never give aspirin to children under 18 years of age as they may develop a severe condition of the liver and central nervous system
- Drink plenty of fluids to prevent dehydration
- Rest

Some drugs are available to treat or prevent influenza when taken before or within 48 hours of developing symptoms. Most people recover in a week or ten days. Some are at greater risk for severe and longer-lasting complications, such as pneumonia. These include very young children, people over 65, and people with medical conditions, e.g. chronic respiratory disease, heart or kidney disease, diabetes or a depressed immune system due to cancer, HIV infection, or some other cause.

How do I protect myself and others?

The best protection is to get an annual influenza vaccination. The vaccine is considered safe for pregnant or breastfeeding women. People who have had a severe allergic reaction to eggs or a previous dose of the vaccine should not receive influenza vaccination. If in doubt, check with your doctor.

How well does the vaccine work?

When the vaccine strains match the circulating strain, the vaccine can prevent influenza illness in 70% to 90% of healthy young adults, as well as protecting the elderly against severe complications, hospitalizations and death.

Who should get the vaccine?

The National Advisory Committee on Immunization recommends that the following people receive influenza vaccine: people at high risk of influenza-related complications, including people with selected chronic health conditions; people capable of transmitting influenza to those at high risk of influenza-related complications, including health care and other care providers in facilities and community settings who, through their activities, are potentially capable of transmitting influenza to those at high risk of influenza complications.

Who should not get this vaccine?

The National Advisory Committee on Immunization advises that influenza vaccine should not be given to:

- People who have had an anaphylactic reaction to a previous dose
- Persons with known hypersensitivity to eggs or chicken
- Adults with serious acute febrile illness usually should not be vaccinated until their symptoms have subsided
- Persons who have previously experienced severe lower respiratory symptoms (wheeze, chest tightness, difficulty breathing) within 24 hours of influenza vaccination, an apparent allergic reaction to the vaccine, or any other symptoms that raise concern regarding the safety of re-immunization should seek expert opinion on the risks and benefits of vaccination.

What are the side effects of this vaccine?

You might notice fever, fatigue and muscle aches within 6-12 hours after your shot. This may last a day or two. Some people develop red eyes, cough, wheezing, chest tightness, difficulty breathing, or sore throat. In most cases, the symptoms are mild and disappear within 48 hours.

A rare but possible side effect is Guillain-Barré syndrome (GBS). This disease attacks the nervous system and results in weakness and abnormal sensations. Most people recover fully. There is no evidence that the flu vaccine causes Alzheimer's disease. The vaccine cannot cause influenza because it does not contain live virus.

When should I seek medical attention?

You should seek medical attention if you believe you have had a reaction to a vaccine, such as:

- Hives, swelling of the mouth and throat, throat constriction, difficulty swallowing or breathing, wheezing, chest tightness, paleness, weakness, dizziness or fast heart beats or anaphylactic shock occurring within 48 hours after receiving influenza vaccination
- Shock-like collapse, high fever or convulsions occurring within three days after receiving influenza vaccination
- Arthritis occurring within 42 days after receiving influenza vaccination
- Generalized hives, residual seizure disorder, brain disease (encephalopathy), inflammation of the brain (encephalitis) or any other reactions in unexpected or unusual severity occurring within 15 days after receiving influenza vaccination, OR

Are there any special concerns about influenza vaccine?

Long-Term Care Homes and Retirement Homes cannot force health care workers (HCWs) to be immunized. However, if there is an influenza outbreak in the facility, the Ministry of Health and Long-Term Care [Guide to the Control of Respiratory Infection Outbreaks in Long-Term Care Homes](#) states that the facility should not allow unvaccinated HCWs, who refuse to take appropriate antiviral medication to prevent influenza, to provide resident care or carry out activities where they have a potential to acquire or transmit influenza.

Who can I talk to if I have more questions?

Consult with the Occupational Health and Safety department of your facility, or call Health Connection of Simcoe Muskoka District Health Unit at 705-721-7520 or 1-877-721-7520.

References:

1. National Advisory Committee on Immunization. Statement on influenza vaccination for the 2006-2007 season. *Can Commun Dis Rep* 2006 Jun 15;32(ACS-7).
2. Ministry of Health and Long-Term Care/Public Health Division. Influenza vaccine fact sheet [Online]. 2005 Aug 12 [cited 2006 Aug 16]; Available from URL:http://www.health.gov.on.ca/english/public/program/pubhealth/flu/flu_05/factsheets/flu_vaccine.pdf

Insert Facility Logo
Here

Tuberculosis – Facts

What is tuberculosis?

Tuberculosis is an infectious disease caused by the bacteria *Mycobacterium tuberculosis*. The bacteria usually cause infection in the lungs, but they can affect other parts of the body. It is possible to carry the bacteria in your body without being sick for many years. This is called “latent tuberculosis” or “tuberculosis infection”. A small percentage of people may progress from latent to “active” disease and become sick.

How is tuberculosis spread?

The tuberculosis bacterium is spread through the air when someone who is sick with tuberculosis (active disease) in their respiratory system (i.e. lungs, trachea, larynx etc.) expels air, such as with coughing or talking. Transmission requires close, frequent and prolonged exposure to become infected. Tuberculosis is not easily transmitted. People with latent tuberculosis cannot transmit the bacteria to others.

Risk factors for tuberculosis:

- Past history of TB or close contact to a person with active tuberculosis disease.
- Travel/residence in endemic country - especially in last 2 years.
- Co-infected with HIV/AIDS.
- High risk medical conditions - such as transplantation, silicosis, chronic renal failure, diabetes and carcinoma of the head and neck.
- Aboriginal communities with high rates of latent tuberculosis infection or TB disease.
- Occupational exposure – such as hospitals, shelters, correctional staff and volunteers.
- Homeless or under housed.
- Congregate living arrangements – such as nursing homes, correctional facilities.
- Elderly who have lived through an era where TB was common.
- Substance abuse.
- Cigarette smoker (1ppd).
- Diabetes (all types).
- Persons receiving treatment with glucocorticoids.
- Receiving tumor necrosis factor (TNF)- alpha inhibitors.

What are the symptoms?

- Unexplained weight loss.
- Loss of appetite.
- Fever.
- Fatigue.
- Night sweats.
- Cough, chest pain, shortness of breath, coughing up blood.

How soon do symptoms of tuberculosis appear?

Not everyone who is infected with tuberculosis will get sick. Talk to your doctor to discuss your risk factors.

How is it diagnosed?

Medical tests such as a Mantoux skin test, chest x-ray and sputum test can determine if a person has been exposed to the bacteria and has latent tuberculosis, or has active tuberculosis disease.

What is the treatment for tuberculosis?

Tuberculosis infection and disease is treatable and can be cured by antibiotics.

How do I protect myself and others?

There is no vaccine available against tuberculosis infection. Practicing airborne precautions and wearing a properly fitted N95 mask will decrease the risk of transmission. If you think you might have been exposed to tuberculosis in your facility, talk to your occupational health department. Unless you are sick with active tuberculosis in your respiratory system, you are not able to spread tuberculosis.

References:

1. Public Agency of Canada (2007). Canadian Tuberculosis Standards (6th Edition), pg. 425, 132. <http://www.phac-aspc.gc.ca/tbpc-latb/pubs/tbstand07-eng.php>
2. The Ontario Lung Association (2009). Tuberculosis Information for Health Care Workers. <https://lung.healthdiary.ca/Guest/Product.aspx?IDS=yaQAZ%2f8w5Dph%2fsSJ8eLtw%3d%3d>

Management of Tuberculosis Infection and Disease

This section has been updated to reflect current recommendations from the:
Ontario Ministry of Health and Long-Term Care: Tuberculosis Protocol, September 2006 (Version 1.0)

Surveillance

Employees and Volunteers

In Long-term care institutions (homes for the aged, nursing homes, chronic care facilities, retirement homes or any other collective living centre), employees and volunteers are recommended to have a two-step tuberculin skin test (TST) within 14 days of hire unless they have a documented history of a positive TST or it is medically contraindicated. Where there is a documented history of, or current positive TST, further medical assessment including a current chest radiograph should be completed to rule out tuberculosis disease.⁽ⁱ⁾ In addition, these employees and volunteers need to be educated about elective prophylactic treatment and instructed to promptly report any symptoms suggestive of tuberculosis to the IPCP and their physician.^(27, 28)

The Canadian Tuberculosis Standards state that annual screening is not recommended unless the annual skin test conversion rate is greater than 0.5% within the facility.⁽ⁱ⁾ Retest only individuals who were initially skin test negative and have been subsequently exposed to an infectious case of tuberculosis as part of contact investigation.⁽ⁱ⁾

Frequency of Ongoing HCW Surveillance for TB³⁰

Activity Risk	Health Care Facility Risk	
	Medium	Low
High ¹	annual	annual
Intermediate ²	annual	post-exposure ⁴
Low ³	post-exposure	post-exposure ⁴
<p>Hospital with > 200 beds < 6 TB patients admitted annually = low risk ≥ 6 TB patents admitted annually = medium risk</p> <p>Hospital with < 200 beds < 3 TB patients admitted annually = low risk ≥3 TB patients admitted annually = medium risk</p> <p>Other facilities, such as long term care < 3 TB patients admitted annually = low risk ≥ 3 TB patients admitted annually = medium risk</p>		
<p>NOTES: 1 High-risk activity include activities of personnel who are involved with cough-inducing procedures, autopsy, morbid anatomy and pathology examinations, bronchoscopy and designated mycobacterium laboratory procedures. 2 Intermediate-risk activities include activities of personnel who have regular direct patient contact and work on units with patients with active TB (all personnel, including housekeepers, clerks and maintenance staff). 3 Low-risk activities include activities of personnel who have minimal patient contact (e.g., working in medical records, administration) or regular patient contact but rarely with patients with TB (e.g., obstetrics, gynaecology, neonatal intensive care unit).</p>		

* CTS pg. 339 states annual skin testing is recommended for HCW involved in moderate-risk activities in medium-risk hospitals and for workers involved in high-risk activities in all hospitals.

Residents

Residents should have a two-step TST either before or within 14 days of admission to the facility unless the resident is known to be TST positive or a TST is medically contraindicated. TST for those residents with negative readings need only be repeated when an exposure to a diagnosed case of active tuberculosis occurs. Regardless of TST status, investigation of residents who develop symptoms suggestive of tuberculosis should occur.²⁷

Management of Tuberculosis Infection

Treatment for latent tuberculosis infection (LTBI) is undertaken to prevent active disease in infected persons thereby preventing transmission to others. Treatment is completed under the guidance of a physician and is

optional depending on the individual's risk factors and potential benefits from treatment. No isolation requirements are needed when the individual has LTBI.^(30, 31)

Management of Tuberculosis Disease

Active disease should be considered in symptomatic individuals from the following high risk groups:

- Close contacts of individuals with known or suspected active TB
- Foreign-born individuals from endemic areas who have arrived in Canada within the past two years
- Persons who are homeless or under housed
- Persons with HIV infection and AIDS
- Persons with high risk medical conditions such as transplantation (related to immunosuppression therapy, silicosis, chronic renal failure, diabetes, carcinoma of the head and neck
- Aboriginal communities with high rates of LTBI or TB disease
- Persons at risk due to occupational exposure (e.g. hospital and shelter staff/volunteers)
- Substance abusers
- Cigarette smokers (1ppd)
- Staff and residents of long-term care institutions (e.g. nursing homes and correctional facilities)
- Individuals with a history of past TB disease
- Elderly people who lived through an era when TB was common or who have come from an endemic country.^(30, 31)

Prevention and Control Measures

- ❖ Notify the Infection Prevention Control Professional of suspected and confirmed cases of tuberculosis **immediately**.
- ❖ **Tuberculosis is a reportable disease and must be reported to SMDHU by the next working day. Under the Health Protection and Promotion Act of Ontario, physicians and other health care professionals, including laboratory technicians and infection control practitioners, must report cases of active tuberculosis disease and latent tuberculosis infection to the local Medical Officer of Health in the jurisdiction in which they practice.**^(27, 30, 31)

Accommodation

If the facility does not have the ability to isolate the resident suspected of active tuberculosis under airborne precautions, provision should be made for rapid transfer of the resident to another health care setting that can provide this.³⁰

Where transfer is delayed or not possible, place the resident in a single room with the door and window closed. Limit the number of people entering the room and ensure proper airborne precautions are instituted. Ensure a sign is posted on the resident's door and that N95 respirators/surgical masks are available at the entry.³⁰

Precautions

All HCWs should wear an approved fit-tested respirator (N95 mask without valves) when caring for the resident. The resident suspected of tuberculosis should be instructed to cover mouth and nose with tissues when coughing or sneezing and wear surgical masks whenever around other people.³⁰

Environmental Cleaning

No additional precautions are needed.

Visitors

All non-essential visits should be postponed until the resident is deemed non-infectious. Visitors that decide to visit must be educated to ensure proper airborne precautions are followed during the visit. Visits by children should be prohibited because they are highly susceptible to infection with *M. tuberculosis*.²⁷

Resident Transfer

Both transportation services and the receiving facility must be notified that the resident is on airborne precautions prior to the transport. Suspected residents should be provided with surgical masks. Elective procedures should be postponed until the resident is deemed non-infectious.³⁰

Only discontinue precautions after consultation with Public Health, IPC Team and treating physician.

Contact Follow up

Where it has been confirmed that there has been resident/staff exposure to an individual with active tuberculosis, contacts must be identified and screened. When identifying contacts, all transmission risk factors must be considered. Consultation with treating physician and SMDHU tuberculosis staff is recommended.

Screening is initiated as soon as a contact is identified. Where the initial results are negative, final TST is done 8 weeks after the last exposure date. Previous TST negative persons should have a TST immediately and a repeat test 8 weeks after contact. Previous TST positive persons should be followed clinically and advised about symptoms by the IPCP under the direction of a physician. This will usually include a chest x-ray.

Note: There is no indication for two-step TST in the setting of a contact investigation. TST conversion can occur as early as 2 weeks after the exposure and it will be impossible to differentiate true conversion and booster reaction in the setting of a contact investigation. Any change in TST will be considered a true conversion.²⁸ Individuals who are found to have converted should be evaluated for active disease. Once active disease has been excluded, treatment for LTBI (LTBI chemoprophylaxis) is recommended for recent converters.²⁷

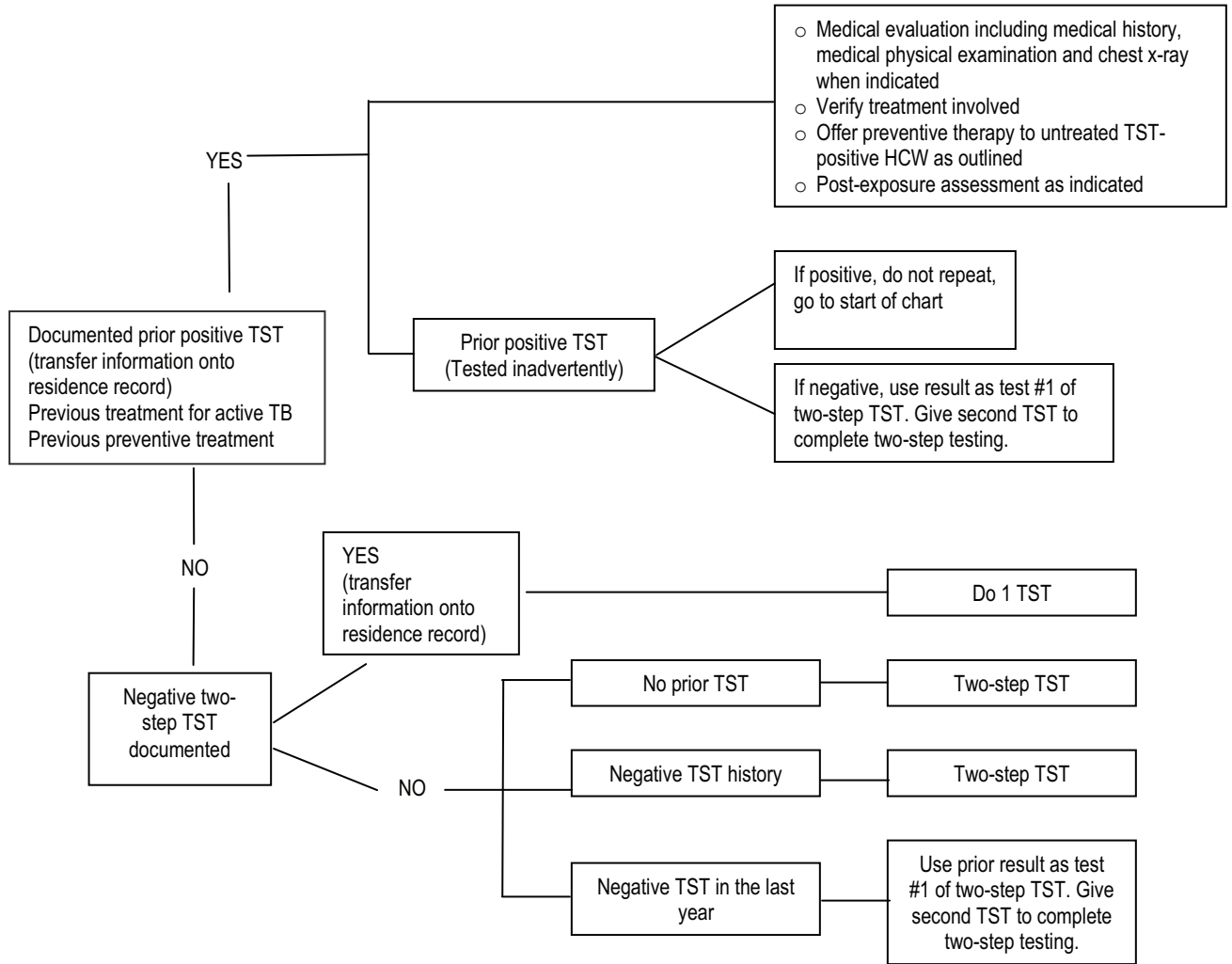
For conversion after contact with a case of drug resistant *M. tuberculosis*, consultation with a respirologist or infectious diseases physician experienced in TB management should be sought.

All contacts and converters (individual with a positive should be reported to SMDHU. **Under the Ontario Health Protection and Promotion Act, physicians, hospital administrators, superintendents of institutions, school principals, laboratory operators, and practitioners, including chiropractors, dental surgeons, nurses, pharmacists, optometrists and drugless practitioners, must report cases or active tuberculosis disease and latent tuberculosis infection to the local Medical Officer of Health in the jurisdiction in which they practice.**^(27, 30, 31)

Insert Facility Logo Here

Tuberculosis Chart I

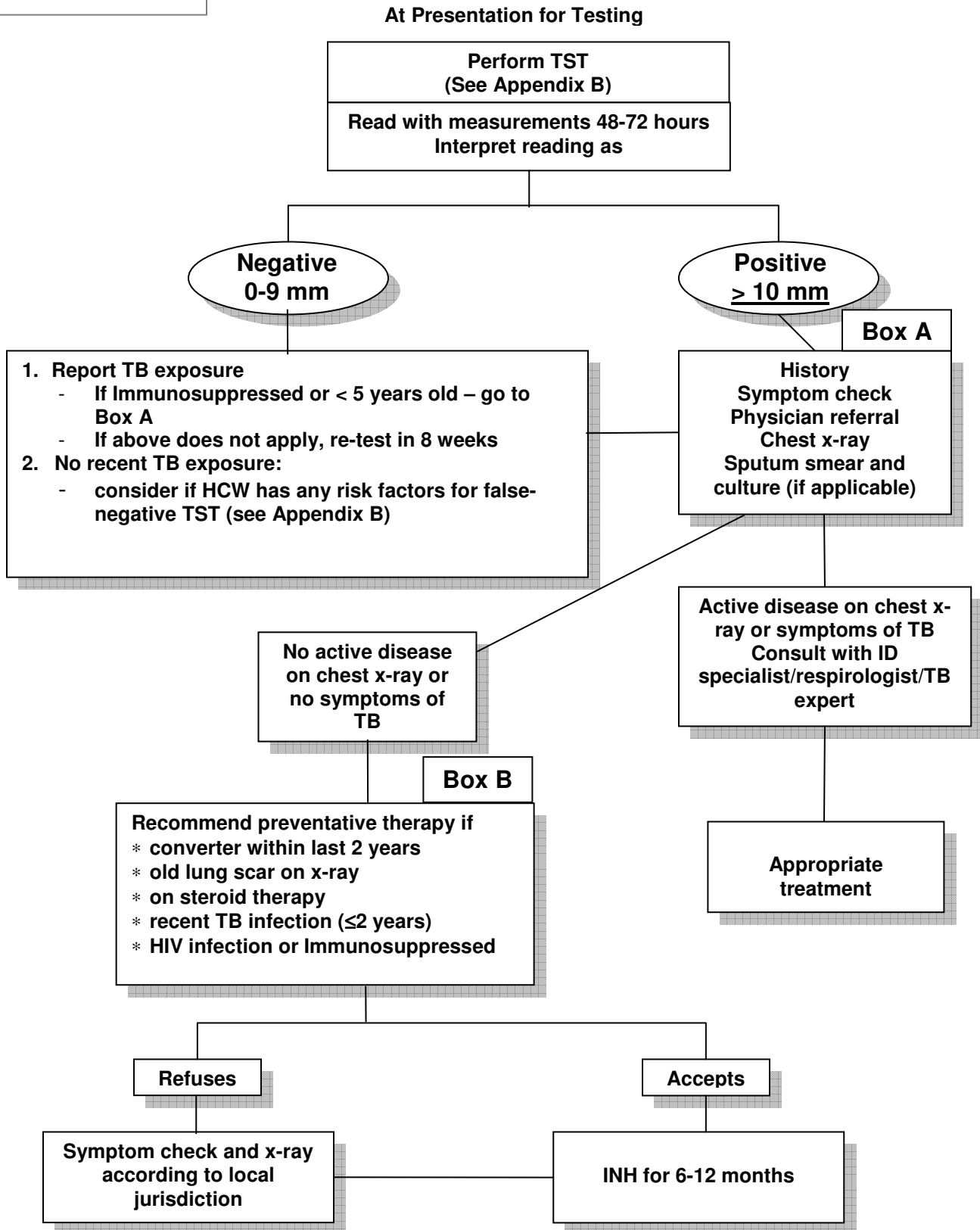
Pre-Placement and Initial Screening Test Flow Chart



Reference: (29) Public Health Agency of Canada (1996). [Guidelines for Preventing the Transmission of Tuberculosis in Canadian Health Care Facilities and Other Institutional Settings.](#)

Insert Facility Logo Here

Tuberculosis Figure II - Initial and Ongoing Mantoux Screening



Public Health Agency of Canada (1996). [Guidelines for Preventing the Transmission of Tuberculosis in Canadian Health Care Facilities and Other Institutional settings](http://www.phac-aspc.gc.ca/publicat/ccdr-rmtc/96vol22/22s1/index.html#contents). <http://www.phac-aspc.gc.ca/publicat/ccdr-rmtc/96vol22/22s1/index.html#contents>
Public Agency of Canada (2007). Canadian Tuberculosis Standards (6th Edition), pg. 425, 132. <http://www.phac-aspc.gc.ca/tbpc-latb/pubs/tbstand07-eng.php>

How to do a Mantoux Skin Test

Preparing for a Skin Test

Prepare for TB skin testing by gathering a 25 or 26 mm needle, a 1.0 mL syringe, alcohol, PPD 5TU solution and ball point pen. Epinephrine Hydrochloride Solution (1:1000) and other appropriate agents should be available for immediate use in case an anaphylactic or acute reaction occurs.

The label on the vial should indicate the expiration date. If it has been open more than 30 days or the expiration date has passed, the vial should be properly discarded and a new vial used. When you open a new vial, write the date and your initials on the label to indicate when the vial was opened and by whom.

To ensure potency and accuracy of tuberculin solution:

- Do not freeze – store in refrigerator between 2 and 8 degrees centigrade.
- Store and transport in the dark and avoid exposure to light.
- Do not use if open more than 30 days.



1. Patient Education

- Discuss why the skin test is given, what is involved in the procedure, and when the individual should return for the test to be read (result provided).
- If the individual cannot return within the 48-72 hour time period, do not administer the test. Instead, schedule another time that allows the individual to come for both the test and the return appointment.

2. Approach the skin at a 5 to 15 degree angle

Cleanse the skin in the area to be tested with alcohol and allow to air dry. Prepare the syringe with 0.1 mL of PPD 5TU solution and clear the syringe of any air. With the bevel up, approach the skin at a 5–15° angle. The intradermal injection should be placed on the palm-side up surface of the forearm, about 5-10 cm below the elbow, slowly and without aspirating.



The wheal (front view)

A wheal, which is elevated about 1 mm above the surrounding skin, is formed with an orange-peel like surface.



The wheal (side view)

The wheal – approximately 6-10 mm in diameter – will usually disappear within 10-15 minutes.



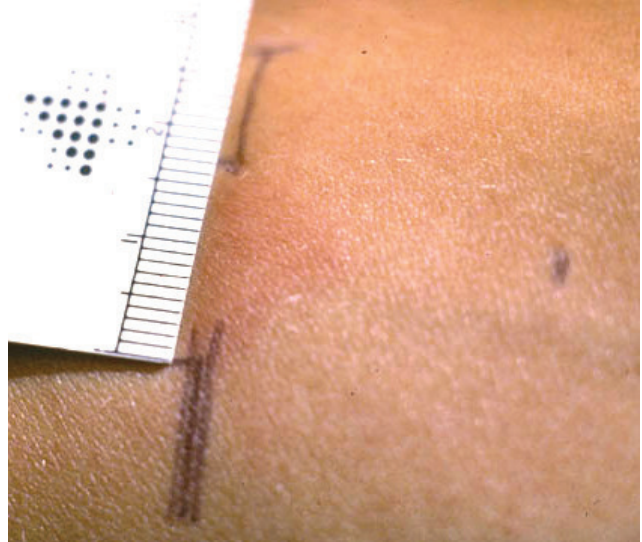
3. Mark the site

Using a pen, mark the test site so that in 48-72 hours the site can be readily located for reading.



5. Taking the measurement

Measure the induration in millimetres, using the transverse diameter to the long axis of the forearm. Record measurement in the individual's chart or record sheet.



4. Reading the TB test

The test must be read within 48-72 hours of administration. Using a ballpoint pen, start from the periphery of the test site and move toward the centre at a 45 degree angle. The pen will usually stop at the edge of the reaction site, making measurement easier. Remember, induration is measured, not the redness.



6. Necrotic pustular reaction

A necrotic pustular reaction resulted when the area tested was covered (note the marks left from the bandage) because of itching. As a result, the reaction was exacerbated.



Notes:

- Follow appropriate hand washing and hand hygiene before and after the procedure.
- To prevent needlestick injuries, do not recap the used needle and dispose in puncture resistant container.
- If the intradermal implant does not produce a wheal or if a lot of liquid runs out, repeat the test on the opposite arm and make note of the second implant. Site should be at least 10 cm from the previous injection.
- It is normal for a drop of blood to appear at the injection site, even when the needle is inserted properly. Should this happen, lightly blot the blood away with a gauze pad or cotton ball. Do not cover with an adhesive bandage as this will interfere with the test.
- Remember to instruct the individual to avoid scratching the site, keep the site clean and dry, and avoid putting creams, lotions, or adhesive bandages on it. Mild itching, swelling or irritation may occur as normal reactions and usually resolve within a week.³³

Contraindications for Mantoux Skin Test

The following persons should not undergo tuberculin testing:

- Individuals with severe blistering tuberculin reactions in the past.
- Individuals with documented active tuberculosis or a clear history of treatment for TB infection or disease in the past.
- Individuals with extensive burns or eczema.
- Individuals with major viral infections or live-virus vaccinations in the past month, for example, vaccination against mumps or measles. Individuals with a common cold may be tuberculin tested.

There is no contraindication for individuals, who are pregnant, have had BCG vaccination in the past or they give an undocumented history of a positive tuberculin skin test.^(27, 30, 31, 32, 33)

As identified in a letter dated May 19, 2005: Sanofi Pasteur Limited, in consultation with Health Canada and the Public Health Agency of Canada, draws your attention to the potential for serious allergic reactions with the use of TUBERSOL™.

- Acute allergic reactions including anaphylaxis, angioedema, urticaria and/or dyspnea have been very rarely reported following intradermal skin testing with TUBERSOL™.
- These reactions may occur in persons without a prior history of a tuberculin skin test.
- Epinephrine Hydrochloride Solution (1:1000) and other appropriate agents should routinely be available for immediate use in case an anaphylactic or other acute hypersensitivity reaction occurs.
- Health care providers should be familiar with the current recommendations of the National Advisory Committee on Immunization for monitoring the patient for immediate reactions for a period of at least 15 minutes after inoculation and for the initial management of anaphylaxis in non-hospital settings.⁴⁵

Any occurrences of serious allergic reactions or other serious and/or unexpected adverse events in patients receiving TUBERSOL™ should be reported to Aventis Pasteur Limited or Health Canada at:

Global Pharmacovigilance Department
Program
Sanofi Pasteur Limited
1755 Steeles Avenue West
Toronto, ON M2R 3T4
Tel: 1-888-621-1146
Fax: 416-667-2435

Canadian Adverse Drug Reaction Monitoring
Program
Marketed Health Products Directorate
HEALTH CANADA
Address Locator: 0701C
Ottawa, ON K1A 0K9
Tel: 866-234-2345

How to Interpret a Mantoux Skin Test

Sensitivity to tuberculin may be the result of a previous infection with mycobacteria. This infection, likely due to *Mycobacterium tuberculosis*, may have occurred years ago or may be of recent origin.

- Test should be read 48 to 72 hours after administration of the Tuberculin.
- Induration **not** redness should be measured. Some individuals will have allergic reactions that result in localized redness or rash without induration. This is not an indication of tuberculosis infection. If there is any blistering, this should be noted on the individual's chart/record sheet.
- The transverse diameter (to the long axis of the forearm) should be measured and recorded in **millimetres**. Recordings of "negative", "doubtful", or "positive" are **not** recommended.

Interpretation of tuberculin test

Tuberculin reaction size, mm induration	Setting in which reaction considered significant
0-4	HIV infection with immune suppression AND expected risk of tuberculosis infection is high (e.g., patient is an immigrant from a country where TB is endemic, is a close contact, or has an abnormal x-ray).
5-9	HIV infection Contact of active contagious case Abnormal chest x-ray with fibronodular disease Children suspected of having tuberculosis disease Other immune suppression: TNF-alpha inhibitors, chemotherapy
>10	All others

Since tuberculin reactivity does not indicate the presence of active tuberculosis disease, individuals showing a tuberculin reaction should be referred to a physician for further diagnostic procedures.
([27](#), [30](#), [31](#), [32](#), [33](#))

Appendix B: Tuberculin Skin Testing

The Canadian Tuberculosis Standards (43) and the article by the Canadian Thoracic Society (9) provide further information concerning tuberculin skin testing.

The TST should be performed by injecting 5 tuberculin units (TU) of purified protein derivative (PPD) intradermally in the anterior aspect of the forearm (Mantoux test). Only 5 TU PPD should be used since there are no standardized interpretations of other doses of PPD. In Canada, the multi-puncture tuberculin tests are no longer considered to be appropriate screening tests.

In order to minimize inter-observer variation, the technique of injecting PPD and interpreting reactions must be standardized. Health care facilities may choose to train a cadre of professionals to read TSTs so that the test result may be read in the immediate work environment of the HCW.

TST tests must be read 48 to 72 hours after the TST is applied and, as stated above, must be read by trained staff members. The designation of a "significant" reaction is based on the size of induration present (measurement, in millimeters, of the induration present at right angles to the long axis of the forearm) and the person's medical history. No single cut-off size can be established. Organizations, such as the American Thoracic Society and the Canadian Thoracic Society, have published schemes to interpret TST results. These schemes are slightly different. This document uses the interpretations recommended by the Canadian Thoracic Society (2).

A converter is defined as someone who has a positive TST within 2 years of having a documented negative TST.

Administration of a TST

- Follow universal precautions.
- Seat your client comfortably, resting his/her exposed arm on a firm, well lighted surface.
- Clean the injection site with an alcohol pad and allow it to dry completely.
- Use a single-dose, disposable tuberculin syringe and a 1 ½-inch, 26 or 27 gauge needle with a short bevel.
- Use PPD tuberculin as the injectable because it provides a testing material of standardized strength. Confirm the dosage required to administer 5 TU of PPD tuberculin (usually 0.1 mL).
- Draw up a little more than 0.1 mL of PPD solution in the TB syringe. Hold the syringe upright and tap it lightly to remove air, then expel one drop. Check that a full 0.1 mL remains in the syringe.
- Avoid areas on the skin that are red or swollen. Avoid visible veins.
- The usual injection site is on the anterior surface of the forearm, about four inches below the elbow. Avoid placing a TST on an area of skin that has anything which would interfere with reading the TST.
- Stretch the skin taut with your non-dominant hand. While holding the syringe parallel to (almost resting on) the surface, insert the needle, bevel up, so that the tip of the needle is visible just below the surface of the skin.
- As you slowly inject the contents of the syringe, you will feel a slight resistance. A firm, white wheal about 6-10 mm in diameter should appear at the injection site immediately.
- If the injectable (PPD) leaks out onto the skin and no wheal appears, it means you did not place the needle deeply enough. If the wheal is shallow and diffuse, you have given the injection too deeply. In either case, administer a second injection at least two inches from the first site and circle the second injection site.
- You may see a drop of blood when you withdraw the needle. This is normal. Offer the participant a 2x2 gauze to remove the blood. Advise the participant not to press the gauze over the injection site but to just dab gently to remove the blood. This will avoid squeezing out the tuberculin thereby disrupting the test.
- Do not recap needle. Place the syringe in a puncture-resistant container.

Instructions to Patient

- Do not rub or scratch the site of the TST test.
- Keep area clean.
- No restrictions with respect to diet, type of activities.
- Return in 48 to 72 hours for reading.

Reading a TST

- The TST is read 48 to 72 hours after being applied. However, if a person presents more than 72 hours after the TST was applied and the test result is greater than 10 mm, this test should be considered positive. If a person presents after 72 hours and the result is less than 10 mm, the test is invalid and must be repeated.
- The TST must be read by a trained physician or nurse.
- The reading should be made in good light, with the person's forearm slightly flexed at the elbow.
- The presence or absence of induration should be documented. Erythema or redness is not measured. The development of erythema does not indicate infection.
- Induration is determined by inspecting the arm from a side view against the light as well as by direct light and by palpating the arm with a gentle stroke of the finger.
- If induration is present, the diameter is measured across the width of the forearm, (e.g., measure the width at right angles to the long axis of the forearm). Sometimes the precise edge of induration is difficult to palpate. Use a pen to help mark the beginning and end points of induration. Use a flexible ruler to measure the size of induration between the pen points.
- Record the size of induration in millimetres. If the measurement falls between demarcations on the ruler, record the smaller of the two numbers. If the participant has no induration, record the result as 0 mm.

Interpreting a TST (Canadian Tuberculosis Standards (43))

After recording the size of the TST, it is necessary to interpret if the test is positive or negative to ensure that the appropriate follow-up actions are taken.

- A tuberculin reaction of 0 to 4 mm is classified as negative. Be aware of conditions that cause a false-negative TST (see below).
- A tuberculin reaction of 5 to 9 mm or more is classified as positive when any of the following risk factors are present:
 - a. The individual was a recent close contact of an individual with infectious TB.
 - b. The individual has a chest x-ray with apical fibrotic lesions suggestive of old healed TB.
 - c. The individual is known or suspected of having HIV infection or is immunosuppressed because of other conditions.

If none of the risk factors listed above is present, a tuberculin reaction of 5 to 9 mm is classified as negative.

- A tuberculin reaction of 10 mm or more is classified as positive for all individuals (i.e., the test result for a participant who has a history of a BCG will be interpreted as positive when a reaction of 10 mm or greater is present).

False Negatives

A person with a negative TST may be infected with *M. tuberculosis* but, because of a number of factors, the immune system can not respond to the TST. This person has a false-negative TST. This reinforces the need for obtaining an adequate medical history prior to testing. If individuals have a temporary condition likely to yield a false-negative test at the time of screening, their TST should be postponed. Reasons for a false-negative test include giving the TST:

- Within 1 month of administering a live virus vaccine (polio, measles, rubella, mumps or yellow fever); if the live vaccine has already been given, ideally **WAIT** 30 days before administering the TST;

N.B. A TST may be given **PRIOR** to administration of a live virus vaccine or at the same time as the live vaccine.

- Within 1 month of the following illnesses: measles, mumps, chicken pox, infectious mononucleosis; typhoid, brucellosis, influenza or whooping cough (pertussis);
- During a severe or febrile illness [A small percentage (5% to 10%) of people with active TB will not have a positive TST];
- To an individual who has Hodgkin's disease, sarcoidosis or who is infected with HIV;
- To an individual who is taking corticosteroids or immunosuppressive drugs;
- To an individual with severe metabolic disturbances, such as chronic renal failure, severe protein deficiency or burns; and
- To individuals at the extremes of age:
 - newborns < 6 weeks of age cannot respond to a TST
 - children aged 6 weeks to 6 months and the elderly may not respond to a TST

Individuals with the above conditions are not necessarily precluded from having a TST performed. If a positive response occurs, it must be read and interpreted as such. Medical personnel must be alert to the possibility of a **false-negative** response if the conditions listed above are present and ensure that a thorough evaluation of the risk of the individual being infected with *M. tuberculosis* is performed.

False-negative results also occur when:

- Incorrect injection technique is used;
- The TST is read by an inexperienced person; and
- Improper storage, exposure to light or heat of the tuberculin has occurred.

A significant TST reaction almost always represents previous *M. tuberculosis* infection. Other causes of reactivity include cross-reactivity to non-tuberculous mycobacterial infections or reception of BCG vaccine (live attenuated mycobacterial strain derived from *M. bovis*). The prevalence of atypic mycobacterial infection varies geographically and thus varies in its importance.

Vials of PPD should be stored at 2° C to 8° C under conditions of minimal air contact. A small decrease in PPD potency has occurred within 24 hours of contact with air, thus open vials should be used within 1 month.

Reference:

Public Health Agency of Canada (1996). Guidelines for Preventing the Transmission of Tuberculosis in Canadian Health Care Facilities and Other Institutional Settings. <http://www.phac-aspc.gc.ca/publicat/ccdr-rmtc/96vol22/22s1/index.html#contents>