TB and Measles

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Ottawa Lanark Measles Situation

• Two travel related cases CHEO and Ottawa Hospital exposures
  – Possible hospital contacts identified
• Lanark contact developed symptoms of measles
Measles

- Measles is one of the most contagious vaccine-preventable diseases in the world.
- Caused by a virus that is spread via air when someone inhales the throat or nasal discharges from an infected person.
- Measles virus can live for up to two hours in the air where an infected person has coughed or sneezed.
- [http://www.publichealthontario.ca/en/BrowseByTopic/InfectiousDiseases/Pages/IDLandingPages/Measles.aspx](http://www.publichealthontario.ca/en/BrowseByTopic/InfectiousDiseases/Pages/IDLandingPages/Measles.aspx)
More on Measles

• The symptoms develop approximately ten days after exposure (7 to 21 days) and include fever, a red blotchy rash, red watery eyes, and Koplik (white) spots in the mouth.

• A person can transmit the virus to non-immune contacts four days before and four days after the appearance of the rash.

• Complications of measles infection occur in about 10% of measles cases.
Measles, Canada 1924-2014

Recent Ontario Cases

• Initial cases
  – Travel related in most cases in Ontario
  – Occasional sporadic ones (Jan – June 2015 Ontario)

• Secondary cases
  – Very few due high level of immunization
  – Unimmunized, incomplete immunization
Public Health Role

• Consult re diagnosis and testing, possible exposures
• Refer to Reportable Disease Toolkit
• Assess possible exposures and risk level
  – Under 6 months – Immune Globulin (IG)
  – 6 to 12 months IG and MMR
  – Child and adult – assess 2 MMR’s or known or suspected immunity
  – Symptoms and call ahead to see health care provider
  – Restrict contact to high risk groups during incubation period
Ottawa Lanark Measles Situation

• Lanark contact developed symptoms consistent with measles – identified during follow-up call
  – Long week-end with delay in lab tests results
  – Follow-up of close contacts offer IG, MMR, symptoms recognition
  – Follow-up of “Place” contacts – hospital emerg, Dr’s office – offered MMR, symptom recognition
Learnings

• Be prepared for the unexpected – it could happen!
• Ensure employees are immunized or have immunity and keep records
• Consider measles in differential diagnosis of a rash – child or adult
  – Isolated in a single room with negative air flow
• Have a plan if it occurs on a week-end....
Infection with *Mycobacterium tuberculosis* is acquired by inhalation of bacilli-containing droplet nuclei small enough to reach the alveoli.

Alveolar macrophages eradicate the bacteria in some individuals.

In others, the bacteria are able to replicate and establish tuberculosis (TB) infection.

- 90% no progression to active disease
- 5% develop early primary TB disease unless they first receive treatment.
  - Most frequent in infants and young children, and in people with immune compromise.
- 5% later reactivation TB in the absence of treatment for latent TB infection (LTBI).
  - Risks are much higher for people with immune compromise, notably HIV infection.
  - Most extra pulmonary TB is reactivation of disease
Figure 1. Reported tuberculosis incidence and mortality rates in Canada, 1924-2010

- Rate per 100,000 population
- Year
- Cases
- Deaths
Figure 2. Reported TB cases and incidence rates in Canada, 1990-2010
Figure 4. Percentage of reported TB cases by population group in Canada, 1970-2010

- Canadian-born non-Aboriginal
- Canadian-born Aboriginal
- Foreign-born
Transmission

- Only those with active pulmonary and/or laryngeal TB are likely to be contagious.
- The probability of transmission increases with:
  - bacterial burden (smear positivity), cavitary and upper lung zone disease, and laryngeal disease;
  - amount and severity of cough in the source case;
  - duration of exposure;
  - proximity to the source case;
  - crowding and poorer room ventilation;
  - delays in diagnosis and/or effective treatment.
Symptoms

• Cough is classic symptom of pulmonary TB disease
  – chronic cough of at least 2-3 weeks' duration
  – cough is initially dry but after several weeks to months will become productive.
• Fever and night sweats are common but may be absent in the very young and the elderly.
• Hemoptysis, anorexia, weight loss, chest pain and other symptoms are generally manifestations of more advanced disease.
Testing

• Testing for active tuberculosis (TB) is indicated in everyone with signs and symptoms of TB or considered to be at high risk of TB disease.
• Acid-fast bacilli on smear microscopy  
  – May be other mycobacterium e.g. M. Avium (from soil)
• Culture of *Mycobacterium tuberculosis*, or amplification and detection of *M. tuberculosis* complex (MTBC) nucleic acids using nucleic acid amplification tests (NAATs).
• At least three sputum specimens should be collected and tested with microscopy as well as culture.
• Chest X-ray is not specific for the diagnosis of pulmonary TB.
Latent TB and Tuberculin Skin Test (TST)

- TST is recommended
  - to identify individuals who are at increased risk for the development of active tuberculosis (TB) and would benefit from treatment of LTBI
  - to assess risk of new infection with repeat testing in a contact investigation
  - to monitor, with serial testing, health care or other populations with potential for ongoing exposure
  - quality of the TST decreases, and risk of complications with treatment increases, with age

- Interpreting TST
  - On-Line TST Interpreter
  - size of induration, positive predictive value and risk of disease if the person is truly infected
  - poor positive predictive value >95% of positive do not go onto develop disease
  - increased risk of developing active TB with HIV, diseases with immunosuppression – had to have had exposure at some point
TB Screening in LTC and Retirement Homes

• Ensure active TB is not brought into the facility

• New residents
  – History, physical exam and chest X-ray in preceding 90 days or within 14 days after admission
  – If TB suspected, delay admission until 3 sputum samples for acid fast bacilli and culture are negative
  – Two step TST if resident ≤ 65, and previously skin test is negative or unknown.
TB Screening in LTC and Retirement Facility

• New short-term residents
  – History, physical exam in preceding 90 days or within 14 days after admission
  – Chest X-ray if symptoms review suspicious for TB
Employees and Volunteers

• New employees
  – Unknown TST – do 2 Step
  – Previous 2 Step <6 months – no TST
  – Previous 2 step > 6 months – one TST
  – Previous or current TST positive – refer to Public Health
    • Health care provider – symptoms review and chest X-ray
    • If no symptoms can return to work
    • If symptoms or abnormal chest X-ray – 3 sputums and off work till proven no TB
Employees and Volunteers

• Contract Workers and Students
  – Agencies, school responsible for assessments
  – TST and follow-up if needed
• No annual screening or chest x ray
• If an infectious case of TB occurs, Public Health will follow up with contacts
Managing TB in LTC Home

• If TB suspected, isolate individual – single room, door closed
• Limit contact with others
  – Resident wear surgical mask
  – N95 mask for staff and visitors
• Investigate
• Contact Public Health
• Medication for latent and active TB provided by MOHLTC through Public Health
Resources

• Canadian Thoracic Society Tb Standards
• Public Health website
  http://www.healthunit.org/professionals/infectious/tuberculosis.html
• Communicable Disease Team - Public Health Nurses