TB and Measles

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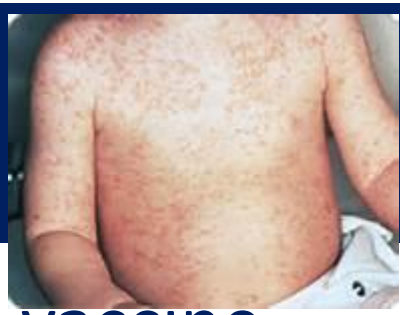
Ottawa Lanark Measles Situation

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

Measles

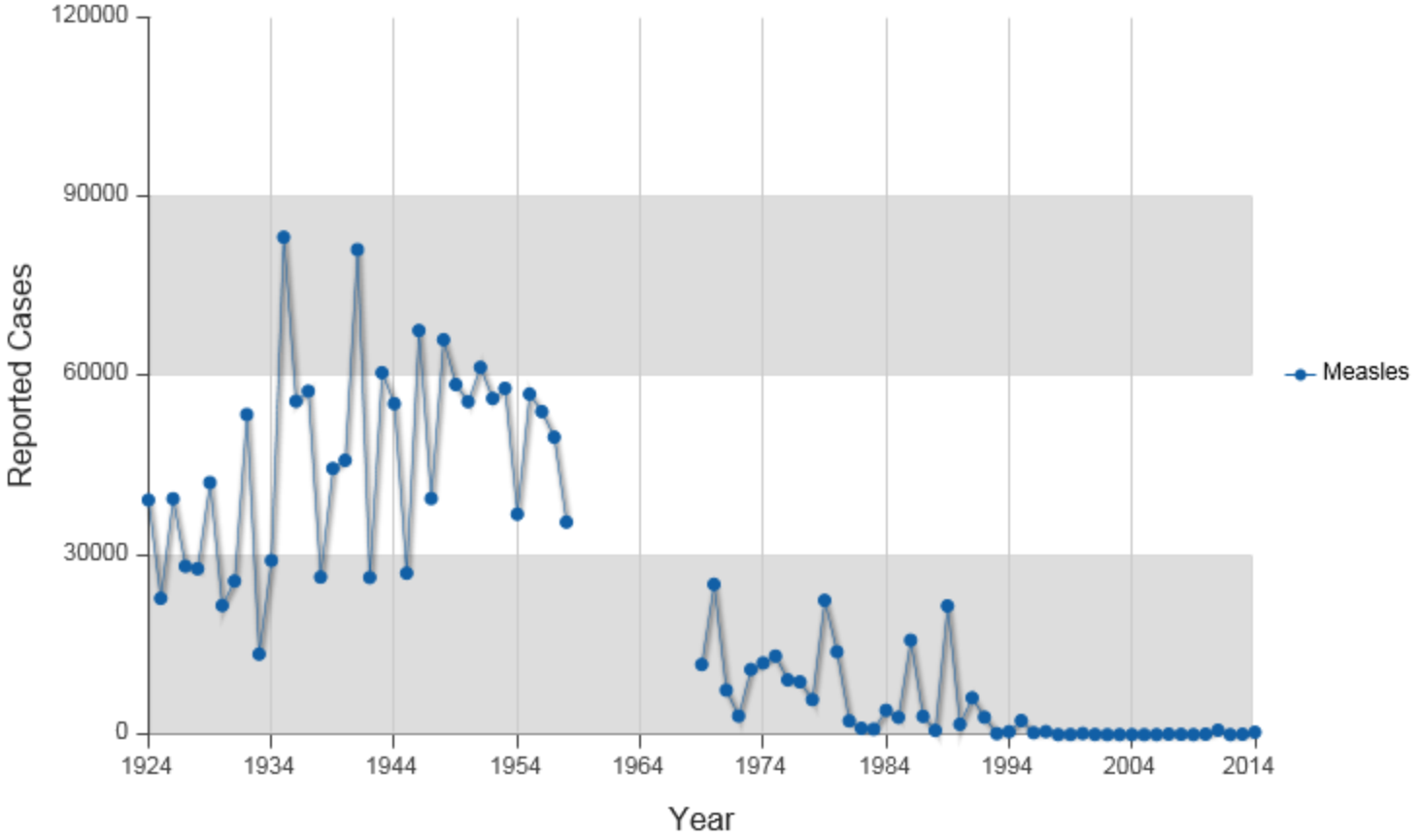


- Measles is one of the most contagious vaccine-preventable diseases in the world.
- Caused by a virus that is spread via air when someone inhales the throat or nasal discharges from an infected person.
- Measles virus can live for up to two hours in the air where an infected person has coughed or sneezed.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

More on Measles

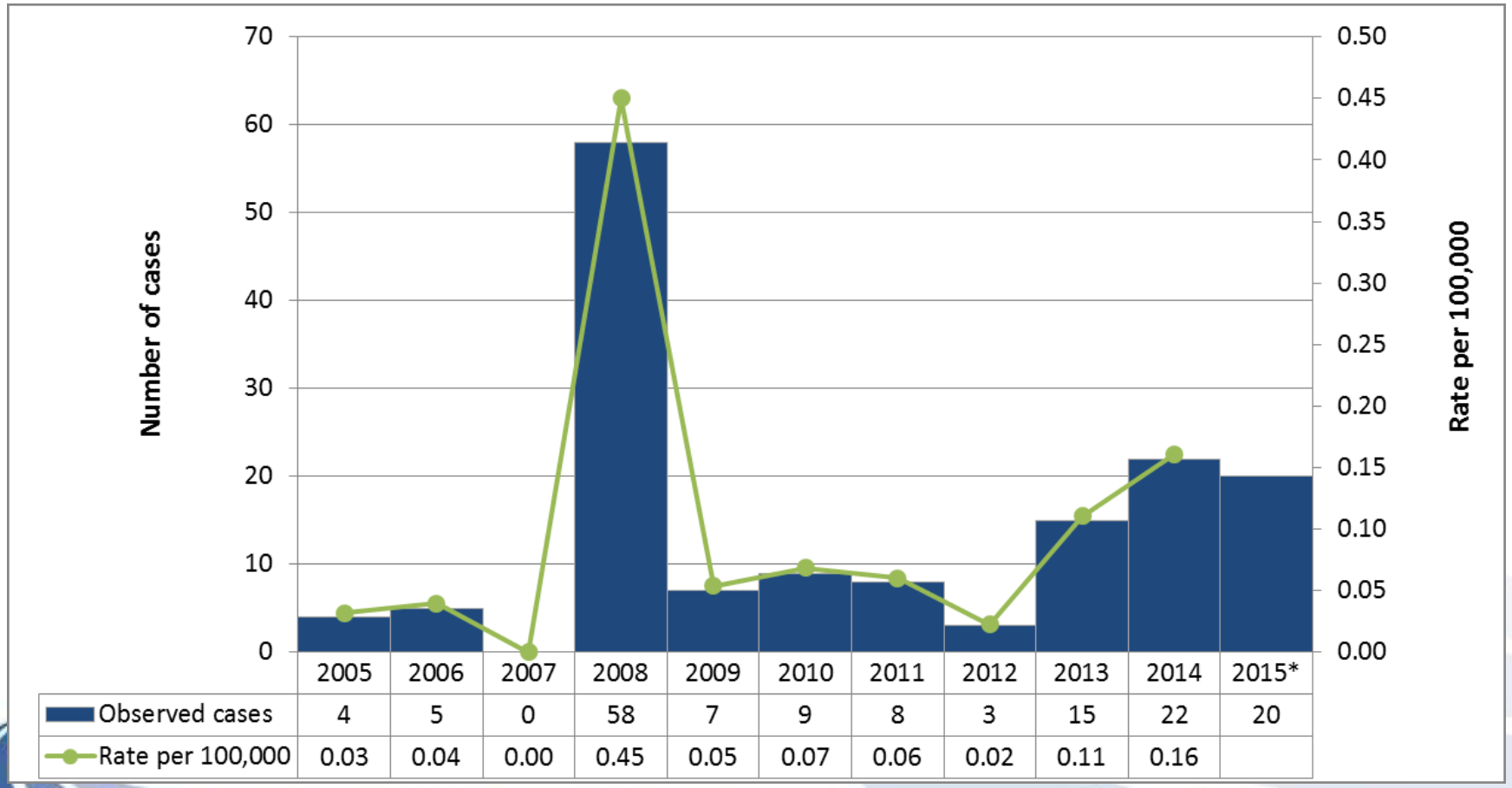
- The symptoms develop approximately ten days after exposure (7 to 21 days) and include fever, a red blotchy rash, red watery eyes, and Koplik (white) spots in the mouth.
- A person can transmit the virus to non-immune contacts four days before and four days after the appearance of the rash.
- Complications of measles infection occur in about 10% of measles cases.

Measles, Canada 1924 0 2014



Measles in Ontario 2005 – June 2015

http://www.publichealthontario.ca/en/eRepository/Ontario_Measles_Epidemiologic_Summary.pdf



	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015*
Observed cases	4	5	0	58	7	9	8	3	15	22	20
Rate per 100,000	0.03	0.04	0.00	0.45	0.05	0.07	0.06	0.02	0.11	0.16	

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

http://www.healthunit.org/professionals/rd_toolkit/Reportable_Diseases.pdf

- 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….

Tuberculosis
CTS TB Standards 7th Edition 2013

- 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

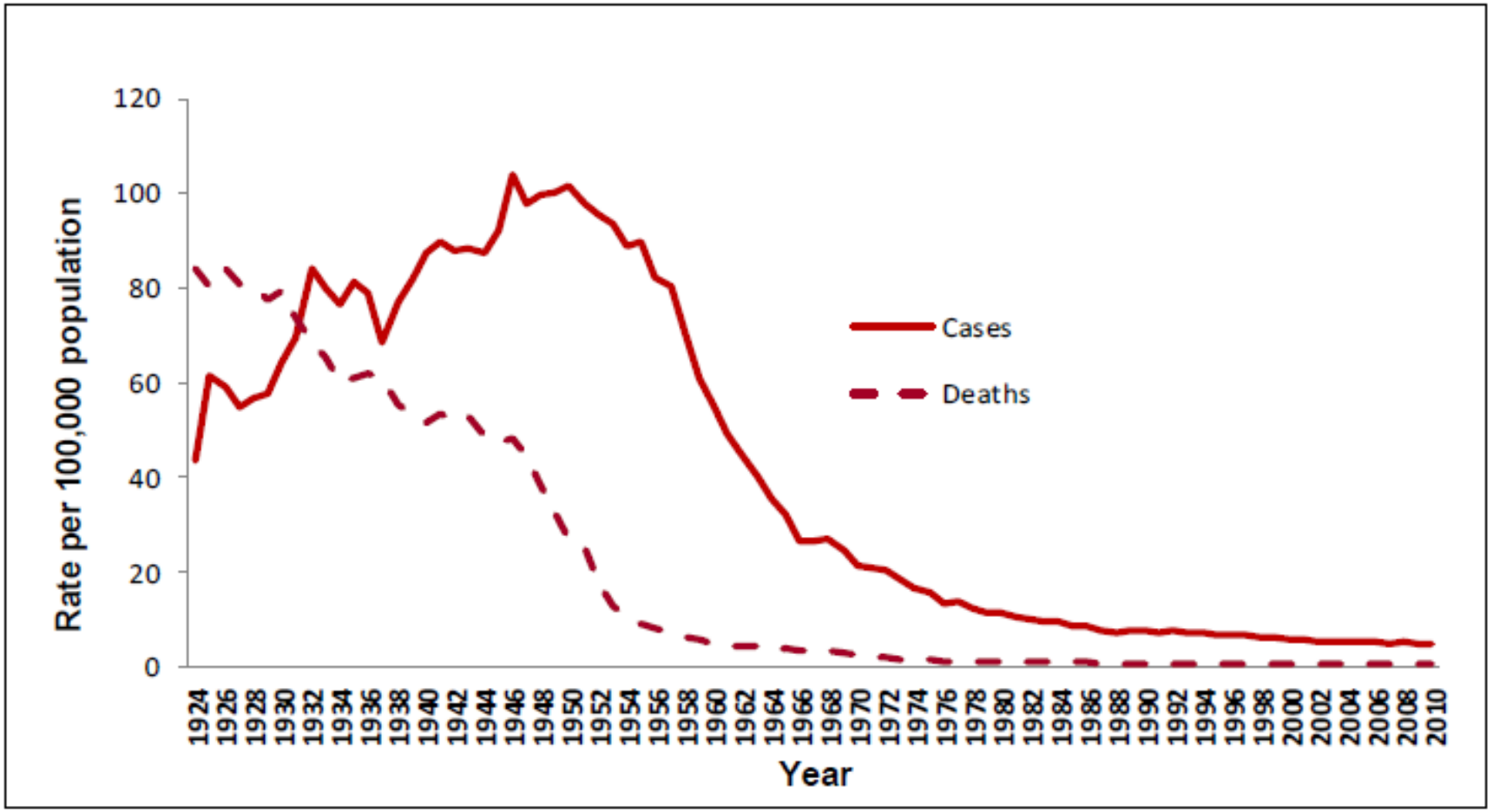


Figure 2. Reported TB cases and incidence rates in Canada, 1990-2010

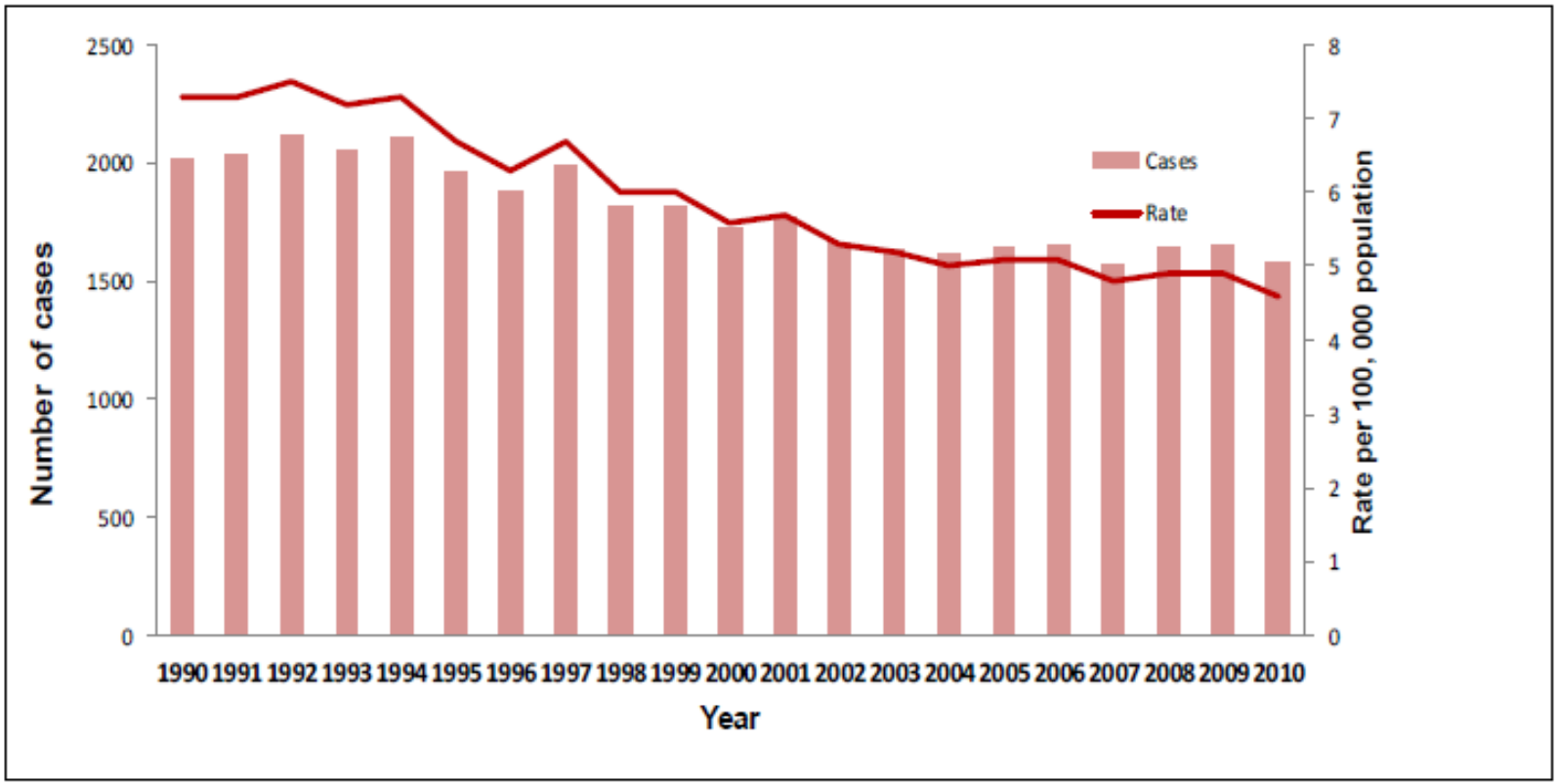
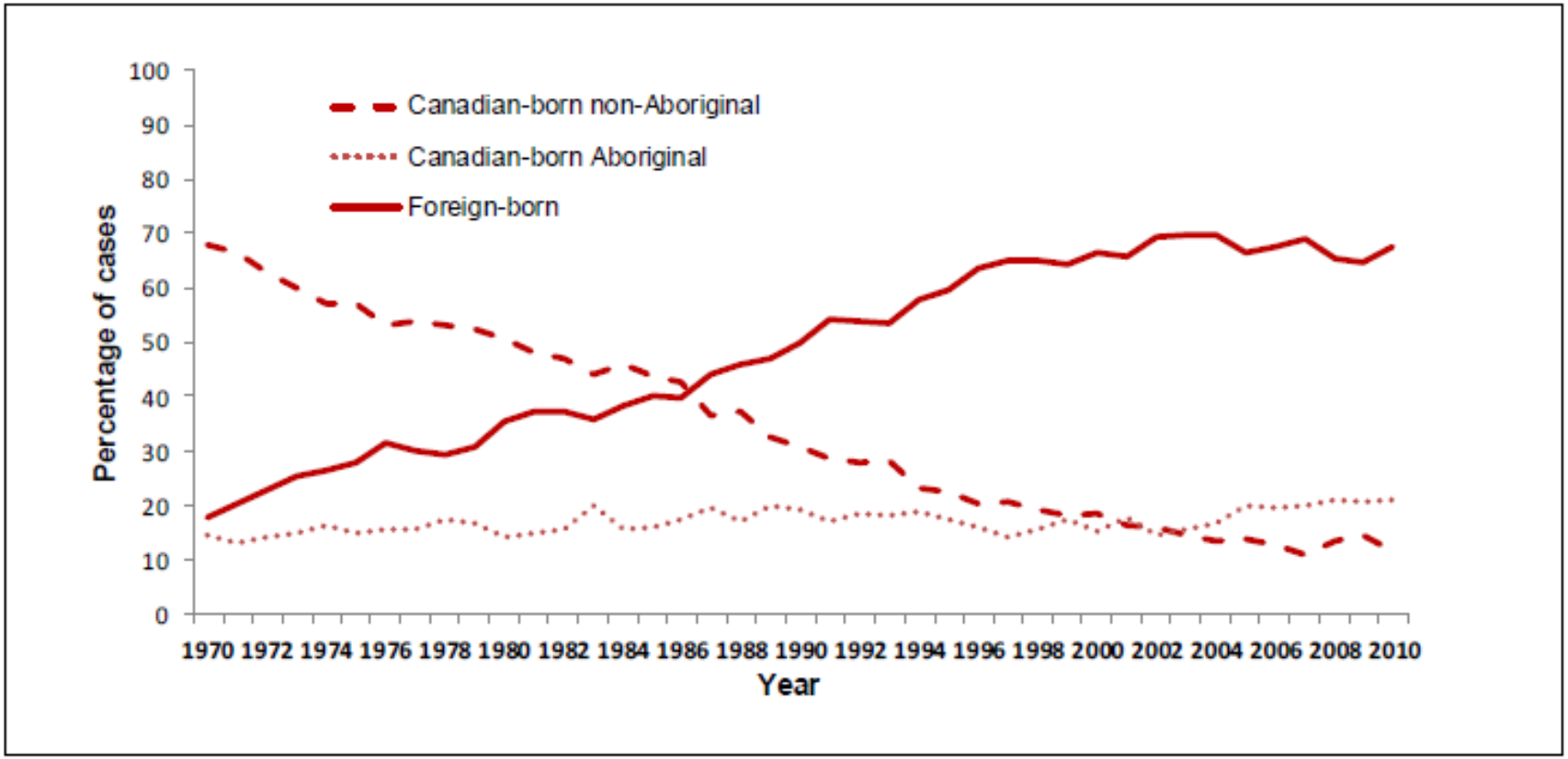


Figure 4. Percentage of reported TB cases by population group in Canada, 1970-2010



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 > 6months – 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