

Lets talk TB/HIV:



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TB Services for Aboriginal Communities

BCCDC



BC Centre for Disease Control
An agency of the Provincial Health Services Authority

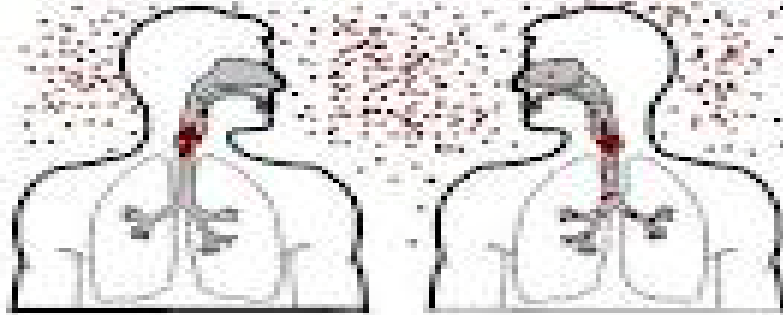


Content

- TB 101
 - Latent TB Infection
 - Active TB Disease
- Risk of Exposure
- Risk for Health-care–Associated Transmission of *M. tuberculosis*
- Fundamentals of Infection Control
- Respiratory Protection
- TB and HIV Coinfection



Transmission of *M. tuberculosis*



- Spread by airborne route; droplet nuclei
- Transmission affected by
 - Infectiousness of patient (smear result)
 - Environmental conditions (sro vs. ER)
 - Duration of exposure (type 1, 2, 3)
- Most exposed persons do not become infected

TB Pathogenesis (1)

Latent TB Infection

- Once inhaled, bacteria travel to lung alveoli and establish infection
- 2–12 wks after infection, immune response limits activity; infection is detectable
- Some bacteria survive and remain dormant but viable for years (latent TB infection, or LTBI)



TB Pathogenesis (2)

Latent TB Infection

- Persons with LTBI are
 - Asymptomatic
 - Not infectious
- LTBI formerly diagnosed only with TST
- Now IGRA can be used (blood test)



TB Pathogenesis (3)

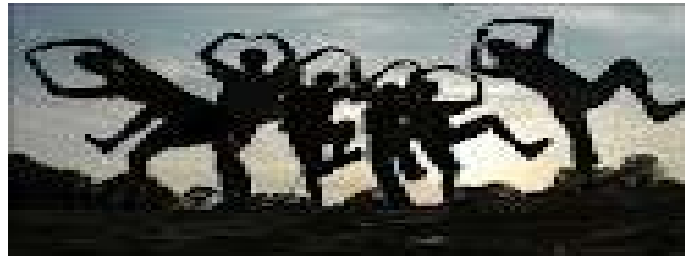
Active TB Disease

LTBI progresses to TB disease in

- Small number of persons soon after infection
- 5%–10% of persons with untreated LTBI sometime during *lifetime*
- About 10% of persons with HIV and untreated LTBI *per year*

Persons at Higher Risk for Exposure to and Infection with *M. tuberculosis* (1)

- Close contacts
- Foreign-born persons from or areas with high TB incidence
- Residents and staff of high-risk congregate settings
- Health-care workers who serve high-risk clients



Persons at Higher Risk for Exposure to and Infection with *M. tuberculosis* (2)

- HCWs unknowingly exposed to TB patient
- Low-income, medically underserved groups
- Locally defined high-risk groups
- Young persons exposed to high-risk adults

Persons at High Risk for LTBI Progressing to TB Disease

- Persons coinfecting with HIV and *M. tuberculosis* (highest risk)
- Those with recent *M. tuberculosis* infection (within 2 years)
- Children under 5 years of age
- Persons with certain clinical conditions or other conditions of compromised immunity
- Those with a history of untreated or poorly treated TB

Environmental Factors That Increase Risk for Transmission



- Exposure in small, enclosed spaces
- Inadequate ventilation
- Recirculating air containing infectious droplets
- Improper specimen-handling procedures

Risk for Health-care–Associated Transmission of *M. tuberculosis* (1)

Risk varies by

- TB prevalence in health-care setting
- TB prevalence in community
- Patient population served
- Health-care worker occupational group
- Effectiveness of infection control measures

Risk for Health-care–Associated Transmission of *M. tuberculosis* (2)

Linked to close contact with infectious TB patients during procedures generating aerosols

- Bronchoscopy
- Endotracheal intubation or suctioning
- Open abscess irrigation
- Autopsy
- Sputum induction
- Aerosol treatments



Fundamentals of Infection Control (1)

Hierarchy of Infection Control



Administrative Controls



Environmental Controls



Respiratory Protection

Fundamentals of Infection Control (2)

Hierarchy of Infection Control

- **Administrative controls:** reduce risk of exposure via effective IC program
- **Environmental controls:** prevent spread and reduce concentration of droplet nuclei
- **Respiratory protection controls:** further reduce risk of exposure in special areas and circumstances

Administrative Controls (1)

Most Important

- Assign responsibility for TB infection control –(local Health Authority)
- Work with Health Authorities & TB Control to improve TB IC plan (conduct TB risk assessment)
- Ensure timely lab processing and reporting
- Implement effective work practices for managing TB patients –(isolation precautions when potential TB case id)

Administrative Controls (2)

- Test and evaluate HCWs at risk for TB or for exposure to *M. tuberculosis*
- Train HCWs about TB infection control
- Use appropriate signage advising cough etiquette and respiratory hygiene

Environmental Controls

- Control source of infection
- Dilute and remove contaminated air
- Control airflow (clean air to less-clean air)

Respiratory Protection (RP) Controls

- Implement RP program
- Train HCWs in RP (mask fit)
- Train patients in respiratory hygiene

Professional Practice Tools:

Masks:

N95 Masks are recommended when caring for patients with TB



Surgical Masks are recommended for patients (community)



TB Patient Characteristics That Increase Risk for Infectiousness (1)



- Coughing
- Undergoing cough-inducing or aerosol-generating procedure
- Failing to cover cough
- Having cavitation on chest radiograph

TB Patient Characteristics That Increase Risk for Infectiousness (2)

- Positive acid-fast bacilli (AFB) sputum smear result
- Disease of respiratory tract and larynx
- Disease of respiratory tract and lung or pleura
- Inadequate TB treatment

TB and HIV Coinfection

- Among people with latent TB infection, HIV infection is the strongest known risk factor for progressing to TB disease.
- A person who has both HIV infection and TB disease has an AIDS-defining condition.
- TB is the most common cause of death in HIV-infected individuals (globally)

TB and HIV Coinfection (2)

- BCCDC recommends –all pts newly diagnosed with TB undergo informed HIV testing (informed consent)
- counseling information can be given in written form (no longer need pre-test counseling)
- Newly identified pts with HIV infection should be screened for TB

TB and HIV Coinfection (3)

- Health care workers caring for pts with HIV infection should maintain a high index of suspicion for TB
 - **THINK TB!**

How can your organization help prevent HIV-related TB in your clients?

- Collaboration of Provincial Health Authority and TB Control
 - ✓ Educate your staff and clients about TB/HIV
 - ✓ Educate your staff and clients about testing for TB/HIV
 - ✓ Educate your staff about the proper treatment of persons coinfecting with TB and HIV

TB Resources / References

- BCCDC TB Control Manual
http://www.bccdc.ca/resourcematerials/educationalmaterials/tbsac_order_form.htm
- BCCDC- www.bccdc.org
- Canadian Tuberculosis Standards – 6th Edition
- World Health Organization <http://www.who.int/tb/en/>
- BC Lung Association
http://www.bc.lung.ca/lungdiseases/tuberculosis_iaatld.html
- Center for Disease Control (USA) <http://www.cdc.gov/tb/>

QUESTIONS

