mPOSH Update #25

June 16, 2022

Preventing active tuberculosis (TB) in medical staff at VCH

mPOSH occupational tuberculosis exposure follow up

The Medical Practitioners Occupational Safety and Health (mPOSH) service (formerly called POSH) is working with Public Health and Infection Prevention and Control to prevent a wide array of infectious diseases to which VCH medical staff may occasionally be exposed.

Primary prevention

Mycobacterium tuberculosis spreads mainly through airborne transmission and may result in TB infection with exposure that is improperly protected.

While latent TB is noninfectious and asymptomatic, in Canada:

- Ninety per cent of the people infected never develop active disease
- Five per cent develop active TB disease within two years
- Five per cent have reactivation and active disease after two years

Active TB disease is infectious and typically characterized by fever, night sweats, weight loss, and unremitting cough +/- hemoptysis. (See BCCDC for description of active TB in various forms.)

Healthcare workers can reduce their risk of TB infection by:

- **Observing airborne precautions (including using properly fitted N95 respirators) when caring for patients with active TB; and**
- **Obtaining screening/treatment after high-risk TB exposures**

TB prevalence

- Across the world, more people died every year from TB than any other infectious disease, before the detection of COVID-19 (WHO).
  - 9.9 million people worldwide became ill from TB in 2020, and it is estimated that 41 per cent of new cases were undiagnosed.
- In Canada, the rate of active TB is 4.7 per 100,000 in 2020 (Government of Canada).
- In BC, there are 250 - 300 new diagnoses of active TB annually (BCCDC).

Screening occupational TB exposures

1. Public Health sends mPOSH a notification of a new TB case.
2. mPOSH contacts all medical staff who provided care during the patient's infectious period and asks about their duration of encounters, use of PPE, and comorbidities that places them at high risk.
3. mPOSH makes a decision about TB screening using the criteria in Table 1.
4. If screening is required, mPOSH assesses contraindications for a tuberculin skin test (TST):
   - Prior allergic response, or severe reaction (e.g. blistering) to TST or any components of Tubersol
   - A previously positive TST result
   - Previous interferon gamma release assay reactive
   - Previous active TB or latent TB infection, whether treated or not
5. If exposure criteria is met, mPOSH refers the medical staff to a communicable disease intake nurse for an assessment and TST, if indicated. High-risk contacts who have immunosuppressive conditions and are high risk of active TB will receive a referral to Provincial TB Services for an assessment and prophylactic treatment, if eligible.

Table 1: Criteria for TB screening

Level of patient infectivity	Medical staff we screen
High - Presence of cough ***AND*** Laryngeal TB disease ***OR*** Cavitary pulmonary TB disease on CXR ***OR*** AFB smear-positive respiratory specimens, regardless of Gaffky count	• Provided direct patient care with ≥24 hours of cumulative exposure • Performed aerosol aerosol-generating medical procedures (AGMP) without PPE • Immunocompromised HCW (e.g. HIV+, on chemotherapy or immunosuppressive medications) who provided direct patient care with ≥4 hours of cumulative exposure
Medium - Presence of cough ***AND*** Non-cavitary pulmonary TB disease on CXR ***AND*** AFB smear-negative / culture-positive respiratory specimens	• Provided direct patient care with ≥48 hours of cumulative exposure • Performed AGMP without appropriate PPE • Immunocompromised HCWs (e.g. HIV +, on chemotherapy, those taking immunosuppressive medications) who provided direct patient care with ≥4 hours of cumulative exposure
Low -No cough ***AND*** Concomitant respiratory TB disease ruled out ***OR*** Respiratory TB disease with AFB smear- and culture-negative respiratory specimens (i.e., "clinical case") ***OR*** Patient has received and is tolerating adequate treatment for 2 weeks or longer and respiratory specimens have become or continue to be AFB smear-negative	• Performed AGMP without appropriate PPE • Immunocompromised HCWs (e.g. HIV +, on chemotherapy, those taking immunosuppressive medications) who provided direct patient care with ≥4 hours of cumulative exposure
Non-respiratory and not infectious index Case	• HCWs who performed aerosol-generating medical procedures without using appropriate personal protective equipment.

Between April 15, 2021, and May 10, 2022, there were 89 new TB cases, comprised of 33 high infectivity, 18 medium infectivity, 31 low infectivity and 7 extra-pulmonary/non-infectious TB cases.

mPOSH conducted contact tracing for medical staff involved in the care of these cases (see Table 2, which indicates exposure of medical staff in different roles), of which seven medical staff received referrals for screening.

Table 2: Specialties of medical staff connected with recent cases

Specialty or designation	Number of encounters assessed	Specialty or designation	Number of encounters assessed
Respiratory Medicine	79	Hematology	13
Emergency Medicine	62	Geriatric Medicine	12
Internal Medicine	60	General Surgery	11
Radiology	30	Other Specialties	62
Hospitalist Medicine	24	Inactive*	41
Infectious Diseases	18	Non VCH†	78
Cardiology	15	Residents†	93
Family Practice	14	Medical Students†	14
Total	**626**		

* Individual did not have a current active VCH appointment at the time of producing this infographic

† While personnel in these categories are not, strictly speaking, part of the regular mPOSH cohort, mPOSH followed them up in instances when contact information were available and it was expedient to do so.

Contact mPOSH

Please contact us at mPOSH.vch@ubc.ca with questions or feedback, or to speak with an mPOSH physician.

Resources:

1. Global Tuberculosis Report 2021. World Health Organization
https://www.who.int/teams/global-tuberculosis-programme/tb-reports/global-tuberculosis-report-2021

2. Tuberculosis: Monitoring. Government of Canada
https://www.canada.ca/en/public-health/services/diseases/tuberculosis/surveillance.html

3. Chapter 4: Tuberculosis. BC Centre for Disease Control
http://www.bccdc.ca/resource-gallery/Documents/Communicable-Disease-Manual/Chapter%204%20-%20TB/8.0%20Assessment%20and%20Followup%20of%20TB%20Contacts.pdf