

Tuberculosis in Canada

Case scenario

You are at the dinner table with your family and have been describing some of the medical and legal challenges you and a public health colleague have experienced detecting and treating tuberculosis (TB) in an inner-city marginalized population. Your son pipes up: "Is TB really still an issue?"

He then challenges you: "Wasn't that a problem at the time of Dickens and Dostoyevsky? Surely modern medicine has been able to control that by now."

Evidence

It is true that both Dickens and Dostoyevsky described the ravages of TB in novels written at the end of the 19th century. The BCG (bacillus Calmette-Guérin) vaccine was developed in 1906, streptomycin was first used to treat TB in 1944, and isoniazid has been a mainstay of treatment since the 1950s. Yet more than 60 years later, an estimated 10 million people developed active TB in 2015 and it remains in the top 10 causes of death worldwide.¹ With a national rate of approximately 4.6 cases per 100 000 population, Canada is fortunate to have one of the lowest rates of TB in the world.² The 2 highest-risk groups for TB in Canada are indigenous populations and immigrants from endemic countries. But there are other risk groups too. In a recent 13-year outbreak, TB spread through a network of inner-city substance users who were largely homeless, many of whom were also HIV-positive. It appeared that crack houses might have been a site of transmission.³

One of the key challenges to eradicating this disease is dealing with latent TB infection (LTBI). In LTBI the *Mycobacterium tuberculosis* bacilli are walled off, usually in a small area in the apex of the lung. People with LTBI do not feel ill and are not contagious, but they do have a reservoir of bacteria. The 2 states of TB infection have been considered Boolean—the infection is either active or inactive. However, TB infection is increasingly believed to be a spectrum of disease states.⁴ Latent TB infection can change to active TB infection when the wall breaks down. The biggest risk factors for shifting from latent to active TB infection are HIV-AIDS, organ transplantation (related to immunosuppression), silicosis, and chronic renal failure requiring dialysis.⁵

The good news is that there have been some advances in addressing 2 big challenges of LTBI: identifying those at risk of active infection and finding a treatment regimen that people can complete. Currently, neither the tuberculin skin test nor the newer IGRA (interferon- γ release assay) (preferred for those who have had the BCG vaccine) can accurately distinguish active from latent disease. A promising area of research

is assessing serum markers that can be used as predictors of activation.⁶ Even when those at risk of activation have been identified, it is difficult to complete the treatment: taking isoniazid for 6 to 9 months. We all know how hard it is to complete 7 to 10 days of antibiotic therapy when we are ill. Imagine completing 9 months of therapy when one is feeling well! A new treatment regimen under investigation is a weekly dose of isoniazid and rifapentine under direct observation for 12 weeks, and initial results have been promising.⁶

Bottom line

Despite the fact that TB is a treatable disease it remains a huge global challenge. And although we are fortunate to have low prevalence rates in Canada, we are not free of the disease and we need to remain plugged in to efforts to eradicate TB. Stay tuned for new developments to detect and treat those with LTBI at high risk of activation.

References

1. World Health Organization. *Global tuberculosis report 2016*. Geneva, Switz: World Health Organization; 2016. Available from: www.who.int/tb/publications/global_report/en. Accessed 2017 Mar 10.
2. Gallant V, Duvvuri V, McGuire M. Tuberculosis in Canada—summary 2015. *Can Commun Dis Rep* 2017;43(3):77-82.
3. Aho J, Lacroix C, Bazargani M, Milot DM, Sylvestre JL, Pucella E, et al. Outbreak of tuberculosis among substance users and homeless people in Greater Montréal, Canada, 2003-2016. *Can Commun Dis Rep* 2017;43(3):72-6.
4. Kiazky S, Ball TB. Latent tuberculosis infection: an overview. *Can Commun Dis Rep* 2017;43(3):62-6.
5. Amaratunga KR, Alvarez GG. Primary care pearls to help eliminate tuberculosis in Canada. *Can Commun Dis Rep* 2016;42(3):63-7.
6. Pease C, Amaratunga KR, Alvarez GG. A shorter treatment regimen for latent tuberculosis infection holds promise for at-risk Canadians. *Can Commun Dis Rep* 2017;43(3):67-71.



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