

TB in foreign-born patients

The incidence of TB in Canada's foreign-born population has decreased annually since 1970. The proportion of foreign-born cases, however, has risen and now accounts for 66% of TB cases in Canada.¹ This rising proportion likely reflects the decreasing incidence in Canadian-born populations and the increasing proportion of migrants from high-burden countries. In 2010 BC accepted the third most immigrants of any province,² many of whom emigrated from high-burden regions, such as Southeast Asia and the western Pacific. In 2010 BC had the second highest

TB incidence in Canada, with 72% of cases emerging from the foreign-born population.¹

Prospective immigrants to Canada, including refugees and permanent residents, along with students, visitors, and workers staying for over 6 months, require an immigration medical exam. The immigration medical exam is comprehensive, and one of its purposes is to identify active tuberculosis.³ Individuals with active TB based on symptoms, sputum, and/or imaging at the time of screening must complete a course of antituberculosis therapy prior to entry to Canada. Those with radiological evidence of inactive TB or a TB history (treatment or otherwise) are granted entry and are then referred for post-landing surveillance

with public health.³ Post-landing surveillance is passive, and up to 50% of individuals fail to attend public health clinics after landing.³ Loss to follow-up of high-risk immigrants is a concern, given high rates of TB in this population.⁴ In addition, TB does occur in unscreened groups such as students, workers, and visitors staying less than 6 months. Improving our understanding of TB in foreign-born populations may reveal subgroups on which to focus our limited public health resources.

The BCCDC, in collaboration with Citizenship and Immigration Canada (CIC), evaluated TB incidence in people entering BC between 2004 and 2010. A total of 324 TB cases were detected in this cohort. The per-entry incidence was 44 per 100 000 entries, with highest incidence during the first year post-arrival and decreasing in subsequent years. This compares with an overall provincial TB incidence of 5.3 per 100 000 population in 2010.¹ TB incidence was greatest in those from Sudan (284 per 100 000 person-years), Vietnam (171 per 100 000 person-years) and Afghanistan (135 per 100 000 person-years), while most TB cases emerged from the Philippines, India, and China. Notably, 37% of TB cases (120 of 324 cases) were referred by CIC for surveillance.

Our findings suggest that nearly 40% of provincial TB cases occur in those identified by CIC for surveillance. Improving adherence with post-landing follow-up, especially in the years immediately following immigration, may be one way to reduce provincial TB rates. Physicians should consider referring for follow-up recent migrants from countries with a high burden of TB (see **Table 1**) and risk factors for developing TB such as HIV

This article is the opinion of the BC Centre for Disease Control and has not been peer reviewed by the BCMJ Editorial Board.

Table 1. Incidence rates for the 22 high-TB burden countries as identified by the WHO,⁴ which account for nearly 80% of yearly TB cases worldwide.

Country	TB incidence per 100 000 population*
Afghanistan	189
Bangladesh	225
Brazil	43
Cambodia	437
China	78
Democratic Republic of Congo	327
Ethiopia	261
India	185
Indonesia	189
Kenya	298
Mozambique	544
Myanmar	384
Nigeria	133
Pakistan	231
Philippines	275
Russian Federation	106
South Africa	981
Thailand	137
Uganda	209
United Republic of Tanzania	177
Vietnam	199
Zimbabwe	633

*Including those with HIV co-infection.

Continued on page 388

Continued from page 387

infection, diabetes, and renal failure (see **Table 2**). While additional work is needed to better understand the epidemiology of TB in BC's foreign-born communities, these preliminary findings may help guide new directions in

TB screening as part of BC's new Strategic Plan for Tuberculosis Prevention and Control.⁵

—David Roth, MSc

—James Johnston, MD, MPH

—Victoria Cook, MD, FRCPC

Table 2. Risk factors for developing active TB among persons infected with *Mycobacterium tuberculosis* (modified from the *Canadian Tuberculosis Standards*, 6th ed.).⁶

Risk factor	Estimated risk of TB relative to persons with no known risk factor
High risk	
Acquired immunodeficiency syndrome (AIDS)	110–170
Human immunodeficiency virus (HIV) infection	50–110
Transplantation (related to immunosuppressant therapy)	20–74
Silicosis	30
Chronic renal failure requiring hemodialysis	10–25
Carcinoma of head and neck	16
Recent TB Infection (≤ 2 years)	15
Abnormal chest X-ray—fibronodular disease	6–19
Increased risk	
Treatment with glucocorticoids	4.9
Tumor necrosis factor (TNF)-alpha inhibitors	1.5–4
Diabetes mellitus (all types)	2.0–3.6
Underweight (< 90% ideal body weight for most persons this is a body mass index ≤ 20)	2–3
Young age when infected (0–4 years)	2.2–5.0
Cigarette smoker (1 pack/day)	2–3
Abnormal chest X-ray—granuloma	2
Low risk	
Infected person, no known risk factor, normal chest X-ray ("low risk factor")	1

References

- Gallant V, Archibald C, Bourgeois A, et al. Tuberculosis in Canada 2010: Pre-release. Ottawa, ON: Minister of Public Works and Government Services Canada—Public Health Agency of Canada; 2011.
- BC Immigration Trends: 2010 Highlights. Policy and Decision Support Branch, Ministry of Jobs, Tourism and Innovation; 2011. Accessed 13 March 2012. www.welcomebc.ca/local/wbc/docs/communities/immigration_trends_2010.pdf.
- Gushulak B, Martin S. Immigration and tuberculosis control. In: Long R, Ellis E (eds). The Canadian Tuberculosis Standards. 6th ed. Ottawa: Canadian Lung Association and Health Canada; 2007. p. 298-307.
- Global Tuberculosis Control: WHO Report 2011—Annex 2: Country profiles 2011. Accessed 30 July 2012. www.who.int/tb/publications/global_report/2011/gtbr11_full.pdf.
- BC strategic plan for tuberculosis prevention, treatment, and control 2011; 13 June 2012. Accessed 20 August 2012. www.bccdc.ca/resourcematerials/statisticsandresearch/publications/TBStrategicPlan.htm.
- Menzies D, Kahn K. Diagnosis of tuberculosis infection and disease. In: Long R, Ellis E (eds). The Canadian Tuberculosis Standards. 6th ed. Ottawa: Canadian Lung Association and Health Canada; 2007. p. 53-91.



ARTHROSCOPY
OUR SPECIALTY

NEW!
SPECIALIST REFERRAL CLINIC - NEW WESTMINSTER

Call 604.737.7464
or toll-free 1.866.737.7460
specialistclinic.ca

CAMBIE
SURGERY CENTRE



SPECIALIST
REFERRAL
CLINIC

KNEE • SHOULDER • HIP • FOOT & ANKLE • HAND • ELBOW & WRIST • SPINE