

Epidemiology of Tuberculosis: Informing future preventative strategies

Helena M. Czubernat, Anne McCarthy
University of Ottawa, The Ottawa Hospital

INTRODUCTION

- ❖ Tuberculosis (TB) is an airborne transmissible infectious disease caused by *Mycobacterium tuberculosis*, and is known as an urban disease in developed countries.
- ❖ The incidence of TB cases in Ontario has consistently exceeded the national average of 4.7 with 5.3 cases per 100,000 population in 2007¹.
- ❖ Foreign-born population represents 85% of cases in Ontario, despite the fact that it only represents ¼ of the general population.¹
- ❖ Majority of cases of active TB are seen in aging populations (>65 years old).²
- ❖ Pulmonary TB was the most frequent reported diagnostic site (70%) in Canada in 2004².
- ❖ The present study examined local demographic and diagnostic trends.

METHODS

- ❖ Of all the patients over the age of 18 who presented at the Infectious Disease Clinic with *active* TB and were diagnosed and treated in Ottawa between 2005 and 2007, 39 were randomly selected.
- ❖ A systematic chart review was performed to extract demographic, diagnostic and treatment information.

RESULTS

- ❖ 56.4% female and 43.6% male
- ❖ 87.2% were foreign-born
- ❖ Of those who were foreign-born, the median time between their arrival to diagnosis with active TB was 10.5 years, and 1/3 of them were diagnosed with active TB within 5 years of their arrival to Canada.
- ❖ The median length between initial symptoms and their first visit, as reported by the patient, was 6 weeks (mean \pm SD = 8.6 \pm 2).
- ❖ HIV status was reported in 66.7% of cases studied
- ❖ Among the 36 individuals for which use of directly observed therapy (DOT) was specified, 86.1% of individuals were placed on DOT during the course of treatment

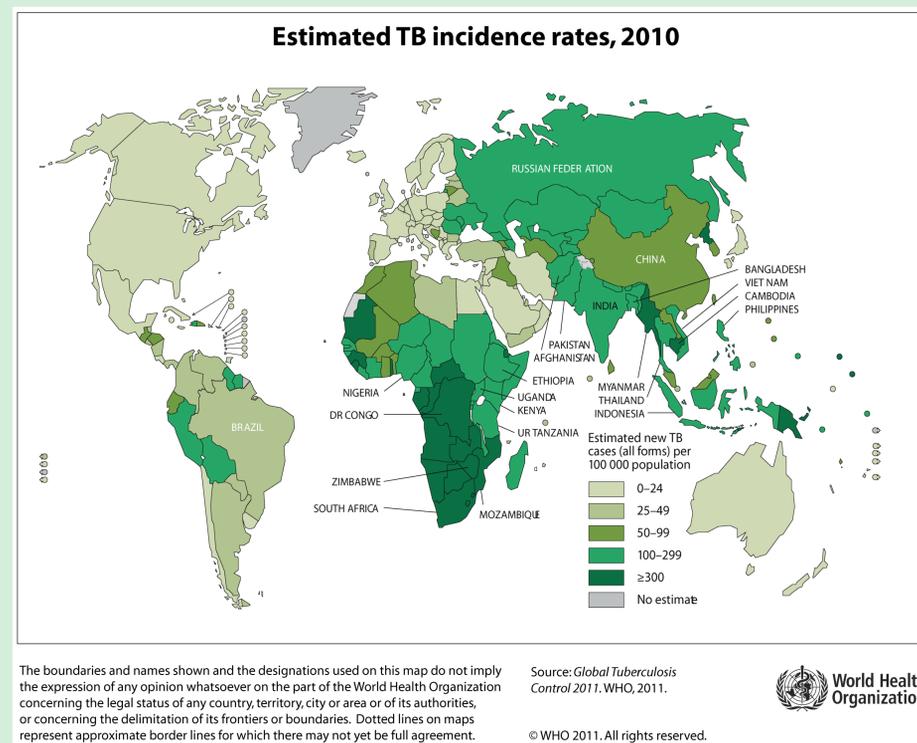


Table 2. Age Specific Presentation with TB

Age (years)	Cases n (%)
≤24	4 (10.3)
25-44	18 (46.2)
45-54	27 (69.2)
55-64	2 (5.1)
≥65	10 (25.6)
Total	39 (100)

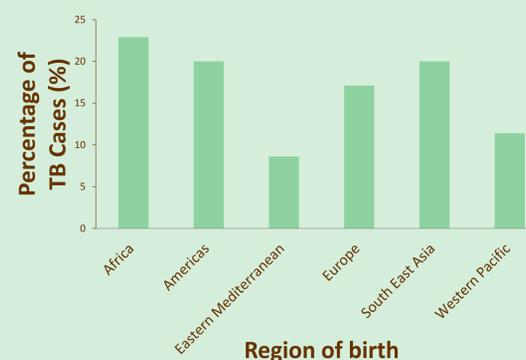
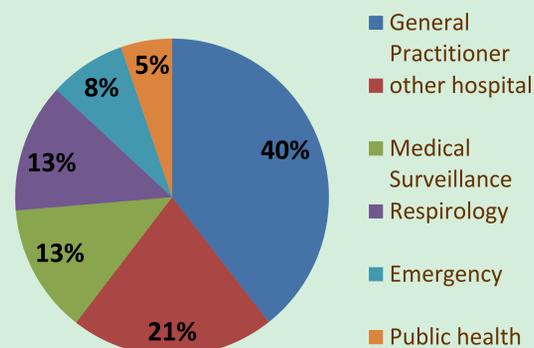


Figure 1. Percentage of Tuberculosis (TB) cases by WHO region

Table 1 Tuberculosis cases classified by origin and anatomic site

Anatomic Site	Origin		Total n (%)
	Foreign-born n (%)	Canadian-born n (%)	
Pulmonary	18 (46.2)	5 (12.8)	23 (59.0)
Extrapulmonary	13 (33.3)	0 (0)	13 (33.3)
Extrapulmonary + Pulmonary	3 (7.7)	0 (0)	3 (7.7)
Total	34 (87.1)	5 (12.8)	39 (100)

Figure 2. Source of Referral



DISCUSSION

Our results show that:

- ❖ Foreign burden was concordant with the provincial average of 85% between 1998-2007, though much higher than the national average of 67% in 2004.^{1,2}
- ❖ The rates of TB is highest among populations originating from Africa and Asia, mirroring previous findings.^{3,4}

Our results further illustrate:

- ❖ The increase in the rate of immigrants coming from countries with higher rates of TB.²
- ❖ That immigrants remain at high risk for TB even a decade or more after their arrival.^{5,6}
- ❖ The low efficacy of medical surveillance and screening programs in detecting TB. New screening measures should be considered.^{4,7}
- ❖ An improvement in documentation of HIV and use of DOT in Ottawa was observed in the 2005-2007 period studied, compared to findings by Kim et al. (2008).
- ❖ Patients with HIV are at higher risk of developing TB and in turn, TB is a leading cause of morbidity and mortality among HIV patients.⁸
- ❖ Directly observed therapy (DOT) allows for a reduced rate of drug resistance and relapse.²
- ❖ In future studies, a greater sample size would be needed to further evaluate trends observed in age groups affected as well as, anatomic site of disease, especially across a greater number of years.
- ❖ Associations with time to diagnosis since arrival to Canada are worth exploring as well as, identifying factors contributing to diagnostic delay.

REFERENCES

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