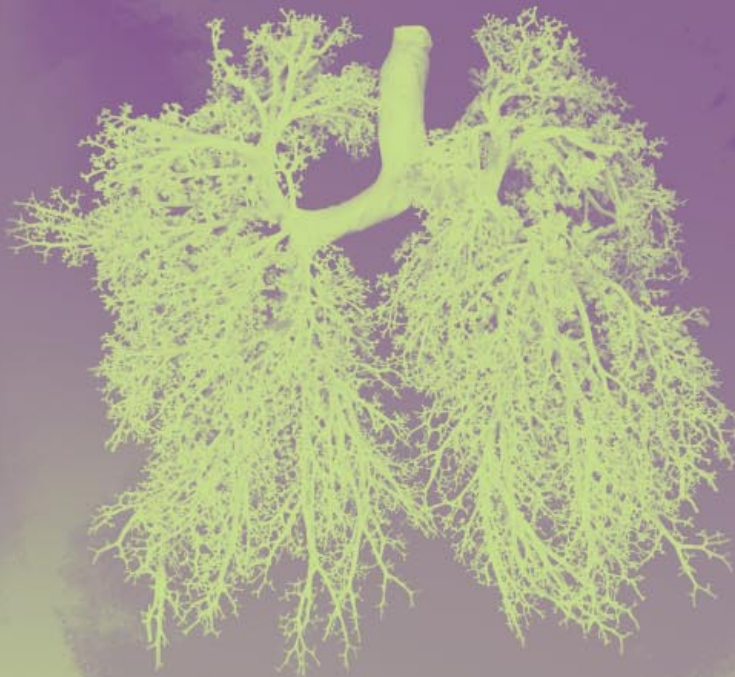


TB

Tuberculosis Control • 2004 Annual Report



BC Centre for Disease Control
AN AGENCY OF THE PROVINCIAL HEALTH SERVICES AUTHORITY

04

TB

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foreword



Dr. R.K. Elwood, Director

This report presents selected statistical and epidemiological information referring to tuberculosis (TB) in the province of British Columbia derived from the activities of the Division of Tuberculosis Control, BC Centre for Disease Control for the calendar year 2004.

On October 21st 2003 a new clinical TB module was introduced allowing the division to go largely paperless. The module is contained within the integrated Public Health Information System (iPHIS). In April 2003 the module was introduced in the Yukon and hopefully in 2006 will be made available to the Provincial Health Authorities.

The information contained in this report is wholly derived from statistics contained in iPHIS maintained in the Division of Tuberculosis Control. Although tuberculosis is a notifiable disease, the Division of Tuberculosis Control is informed of cases from several sources including directly from the Laboratory Services of the BC Centre for Disease

Control and through Pharmacy Services of BC Centre for Disease Control which is responsible for dispensing all anti-tuberculosis medication throughout the province. These additional reporting mechanisms help to ensure the Division of Tuberculosis Control is advised of all active and suspect tuberculosis treated in the province of British Columbia. The 2004 Annual Report is offered with high degree of confidence in its accuracy.

The care of those on reserve is administered by the Federal Government through First Nations and Inuit Health Branch (FNIHB) who contract with the Division of Tuberculosis Control for this service. All Aboriginals living off reserve are the responsibility of the provincial Ministry of Health Services.

The 2004 Annual Report includes details of in-patient treatment of tuberculosis patients which is not directly administered by the Division of Tuberculosis Control. The care of these patients is carried out in TB2 ward specifically dedicated to the care of patients with TB, located in the Vancouver General Hospital and Health Sciences Centre and run by the Division of Respiratory Medicine.

TB cases diagnosed between January 1st, 2004 and December 31, 2004 for whom data were entered into the database up to April 2005 were included in the analysis. Incidence rates (IR) of TB in British Columbia as a whole and in each health region were calculated, as were age specific rates. Population figures were based on the information provided by Statistics Canada (Statistics Canada, Population section, B.C. Stats, Ministry of finance and Corporate Relations).

Dr. R.K. Elwood, M.B., MRCP(UK), FRCP(C)

Provincial Director
Division of Tuberculosis Control

TB

executive summary

Active cases:

In 2004 there were 310 reported cases of tuberculosis in British Columbia (B.C.), a rate of 7.4 per 100,000 a 3% decrease in the number and rate of reported cases compared to 2003.

Rates for various health regions vary across the province. The Vancouver, Richmond, Fraser North and Fraser South health service delivery areas continue to have rates that exceed the provincial rate (7.4/100,000 population). The highest incidence rate was observed in Vancouver and Richmond (20.7 and 15.3/100,000 population respectively).

The majority of cases numerically are reported from Vancouver, Fraser South and Fraser North Health Regions (221 cases, 71%).

There has been a dramatic and consistent reduction in the incidence in the Downtown East Side, a 23% reduction compared to 2003, the 4th year consecutive year of rate reduction.

The average age of cases was 50 years. The rate was higher in men than women (7.7 vs 7.1) overall, but higher in women compared to men in individuals aged 15-25 years old. In individuals ≥ 60 years the rate of tuberculosis was considerably higher in men than in women (16.9 vs 10.4).

Rates of tuberculosis among registered Aboriginals living on and off reserve increased to 25.4 from 21.9/100,000 in 2003. Registered Aboriginals living off reserve continue to have the highest incidence rate of 29.9/100,000. The highest proportion of HIV infection was observed among Canadian born (8.2% vs 0.9-3.4% in other groups).

Drug resistance rates remain low and only one multiple drug resistant case was found in a foreign born patient. The commonest single drug resistance was to isoniazid (5%, n = 15).

Ninety five percent of cases received self-administered treatment. In June 2005, 46% (n = 143) of cases diagnosed in 2004, were still on treatment. Excluding those who either died or moved out of province, 96% completed their treatment satisfactorily.

Eight percent (n = 25) of cases had a reactivation of TB. Ten were reactivation in cases presumed to have inactive TB and 15 were reactivation of previously documented treated TB cases.

Preventive Therapy:

In 2004, 1166 patients were placed on preventive therapy for latent tuberculosis infection. The completion rate for preventive therapy was 50% and there was no difference between self-administered treatment and fully supervised preventive therapy. The commonest causes of non-completion were drug reactions followed by poor compliance.

Skin Test and BCG:

In 2004, 15691 TB skin tests were performed in the province. Of these 3990 (25%) tests were positive, 1797 were offered prophylaxis and 954 (53%) accept treatment for latent tuberculosis infection. Seven BCG vaccinations were administered. No adverse reaction was reported.

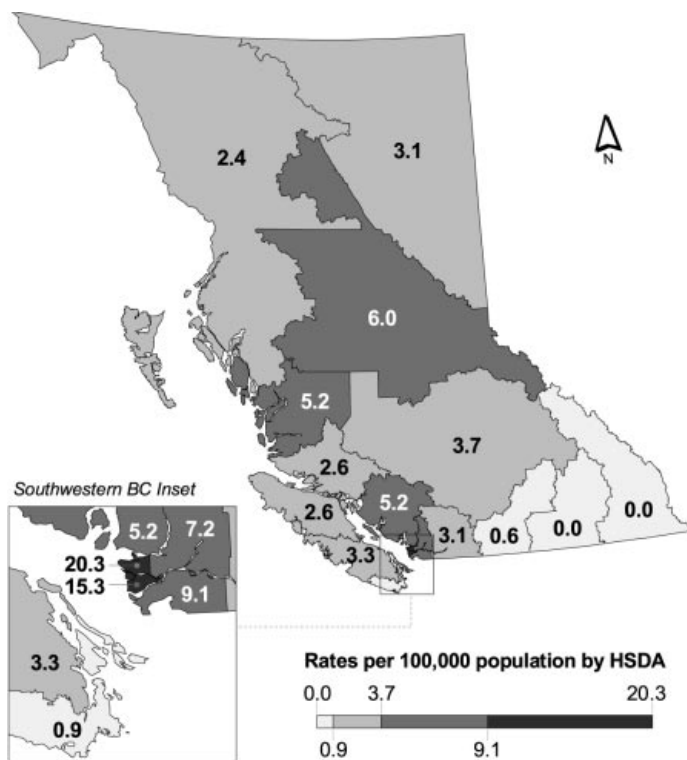
Contacts:

In 2004, 2990 contacts were identified, 369 of whom were household contacts. Further investigation identified 12 active cases among contacts, a rate of 400/100,000.

Admission:

During 2004 there were 60 patients admitted to the TB Ward, Vancouver General Hospital and Health Sciences Centre corresponding to 51 admissions, 9 were readmissions.

Tuberculosis Active Cases by HSDA 2004



HSDA	Health Service Delivery Area	Cases	Rate
11	East Kootenay	0	0.0
12	Kootenay Boundary	0	0.0
13	Okanagan	2	0.6
14	Thompson Cariboo Shuswap	8	3.7
21	Fraser East	8	3.1
22	Fraser North	41	7.2
23	Fraser South	58	9.1
31	Richmond	27	15.3
32	Vancouver	118	20.3
33	North Shore/Coast Garibaldi	14	5.2
41	South Vancouver Island	3	0.9
42	Central Vancouver Island	8	3.3
43	North Vancouver Island	3	2.6
51	Northwest	2	2.4
52	Northern Interior	9	6.0
53	Northeast	2	3.1

Note: Map classification by Jenks natural breaks method.

R.K. Elwood, M.B., MRCP(UK), FRCP(C)
 Provincial Director
 Division of Tuberculosis Control
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TB

Incidence rates

From January 1st, 2004 to 31, December 2004, 310 new cases of TB were reported in B.C. Of these 11 (4%) were diagnosed outside of Canada. The provincial TB incidence rate was 7.4/100,000 which represents 3% decrease in the number and rate of reported cases compared to 2003.

Health regions:

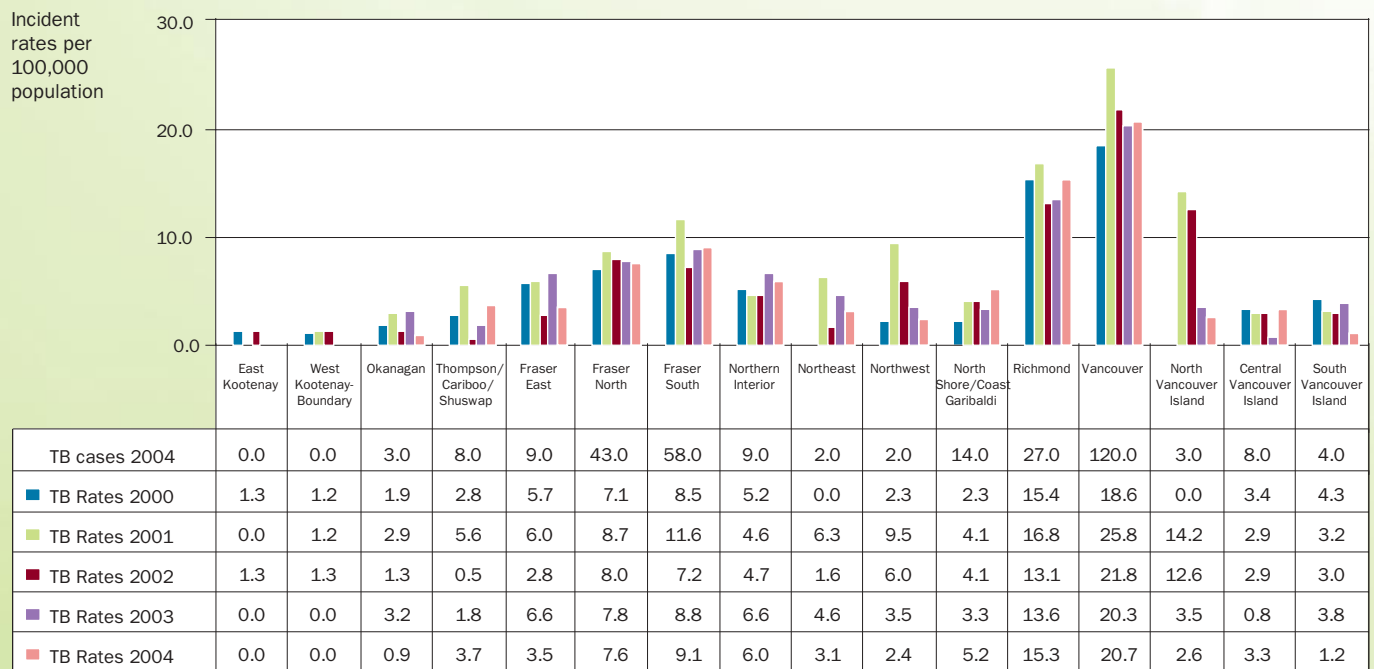
Rates for various health regions vary across the province. The Vancouver, Richmond, Fraser North and Fraser South health service delivery areas have rates exceeding the

provincial rate (7.4/100,000 population). The highest incidence rate was observed in Vancouver and Richmond (20.7 and 15.3/100,000 population respectively) while the lowest incidence rates were observed in East/West Kootenay where no cases were reported.

Compared to 2003, the rate of tuberculosis increased in Thompson/Cariboo/Shuswap, North Shore and Central Vancouver Island.

Thirty nine percent (n = 120) of cases lived in Vancouver and 33% (n = 101) in Fraser North or Fraser South.

Figure 1. Tuberculosis incidence rates per 100,000 by health region, 2000-2004, B.C.



Incidence rates, sub-Vancouver areas

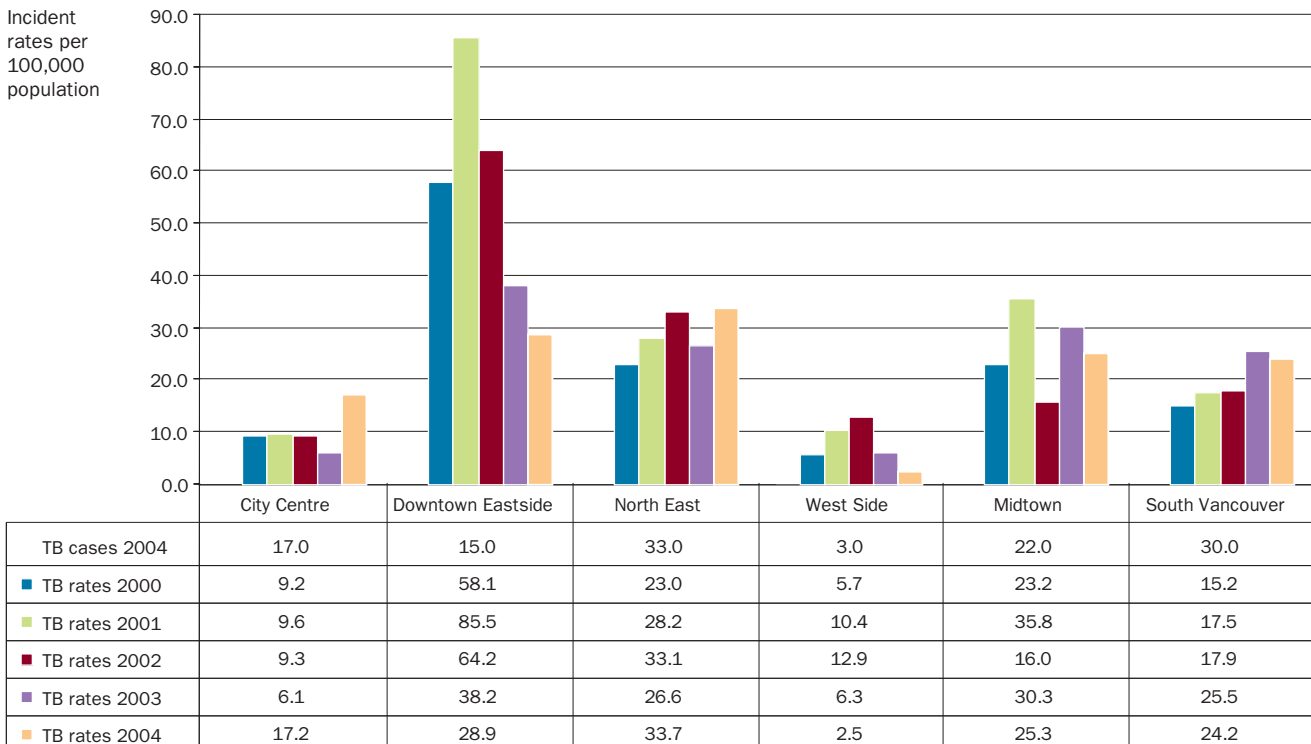
Sub-Vancouver areas:

The incidence rate of TB was 28.9/100,000 in Downtown Eastside a 25% reduction compared to 2003. Among those diagnosed in Vancouver, 28% were diagnosed in North East (n = 33), 25% in South Vancouver (n = 30) and 18% in Midtown of Vancouver (n = 22). Compared to 2003, rate of TB decreased in all sub-Vancouver areas except in the City Centre and in the North East of Vancouver (Figure 2).

Clinics:

Majority of the cases visited TB Control Vancouver clinic (63%, n = 194), 26% (n = 80) of cases attended TB Control New Westminster clinic, 8% (n = 25) of cases were managed by field operation and 4% (n = 11) were managed by TBSAC program.

Figure 2. Tuberculosis incidence rates per 100,000 in sub-Vancouver areas, 2000-2004, B.C.



TB

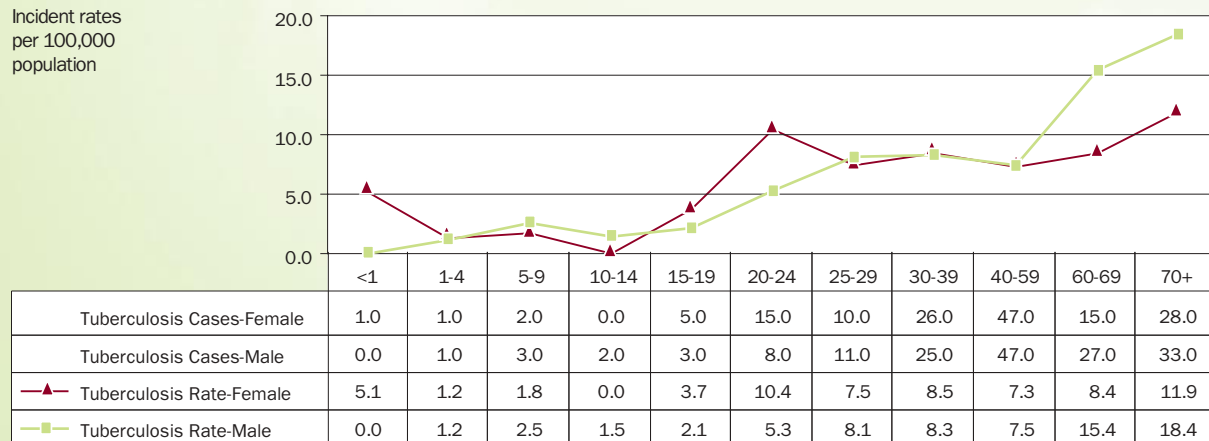
General description of active cases

The average age of cases was 50 years (median = 47). Overall, the tuberculosis rate was higher in men than in women (7.7 vs 7.1), but for the age group 15-25 years, the rate of tuberculosis was slightly higher in women than

men. In those ≥ 60 years old, the rate of tuberculosis in men was 1.6 times higher than in women (16.9 vs 10.4).

The average age at diagnosis was higher in men than in women (mean; 52 vs 48, median; 53 vs 44, respectively).

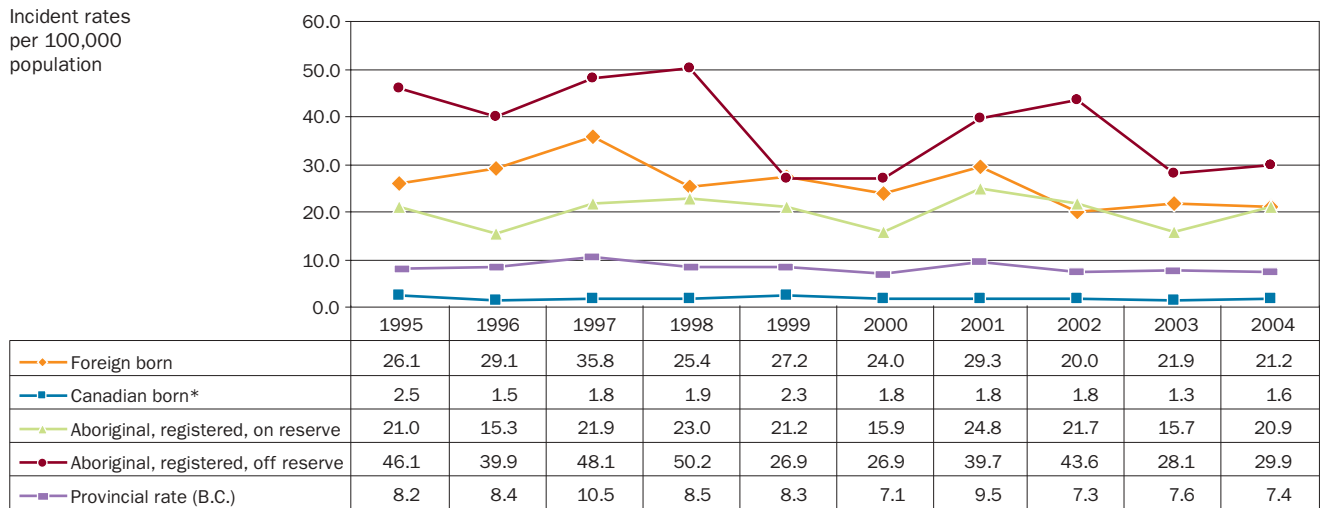
Figure 3. Tuberculosis incidence rates by age and gender, 2004, B.C.



Demographics

Seventy five percent (n = 232) of subjects were foreign born and 16% (n = 49) Canadian born. Nine percent of cases (n = 29) were registered Aboriginals of whom 17 were living off reserve and 12 living on reserve (Figure 4).

Figure 4. Tuberculosis incidence rates per 100,000, by birthplace and year, B.C.



* Non-registered aboriginal were included.

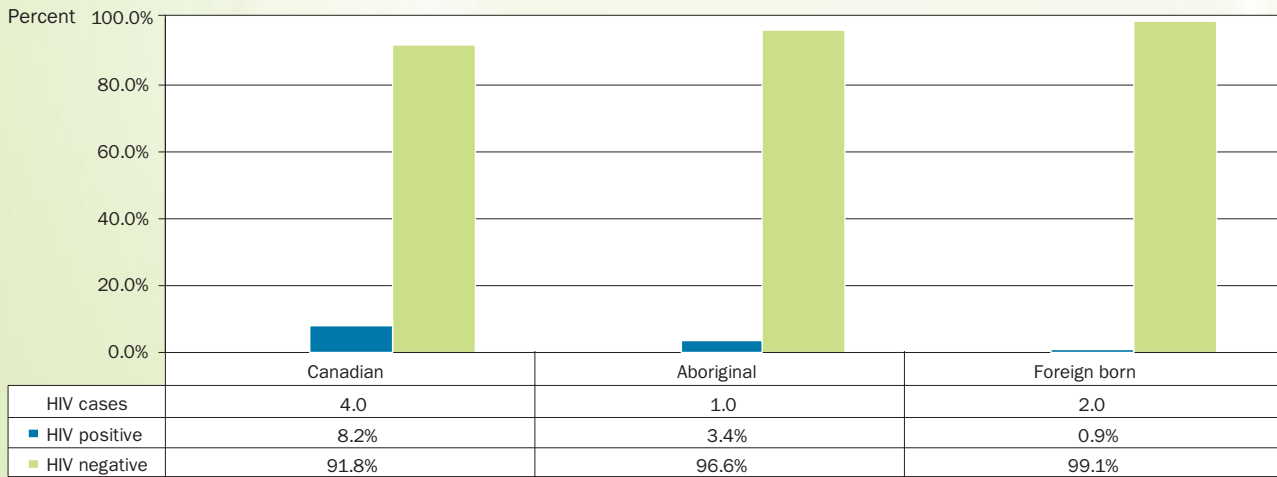
TB

HIV status

Seven (2%) patients with active tuberculosis were positive for HIV infection. Four more people (1%) were classified in the high-risk group for HIV.

Four (8%) Canadian born, 2 (1%) foreign born and 1 (3%) Aboriginal were HIV positive (Figure 5).

Figure 5. HIV status of tuberculosis cases by birthplace, 2004, B.C.

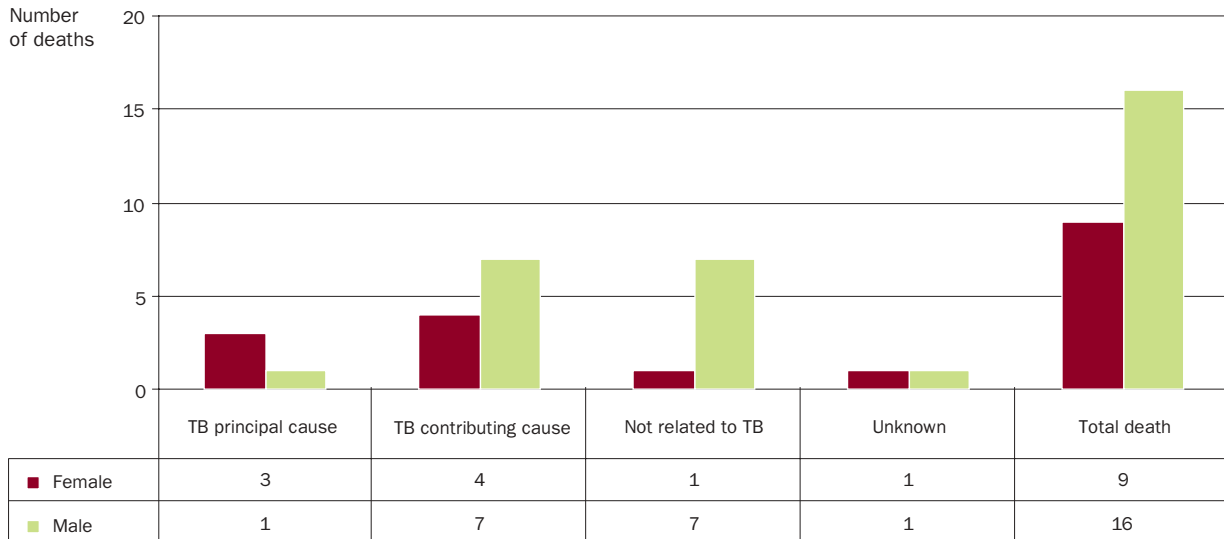


Mortality

Twenty five (8%) cases died during 2004, all of them were 31 years or older. In 4 cases TB was the principal cause of death, for 11 cases TB was a contributing cause of death and for 8 cases the cause of death was unrelated to

tuberculosis (Figure 6). The causes of death for 2 cases were not available. Of these 8 cases were discovered at post mortem.

Figure 6. Number of deaths among tuberculosis cases by sex, 2004, B.C.



TB

Mortality

Death due to tuberculosis varied according to the birthplace. For 5 (10%) Canadian born and 10 (4%) foreign born tuberculosis was considered to be the principal or contributing cause of death (Figure 7). No TB-related death occurred in Aboriginals.

Diagnosis process:

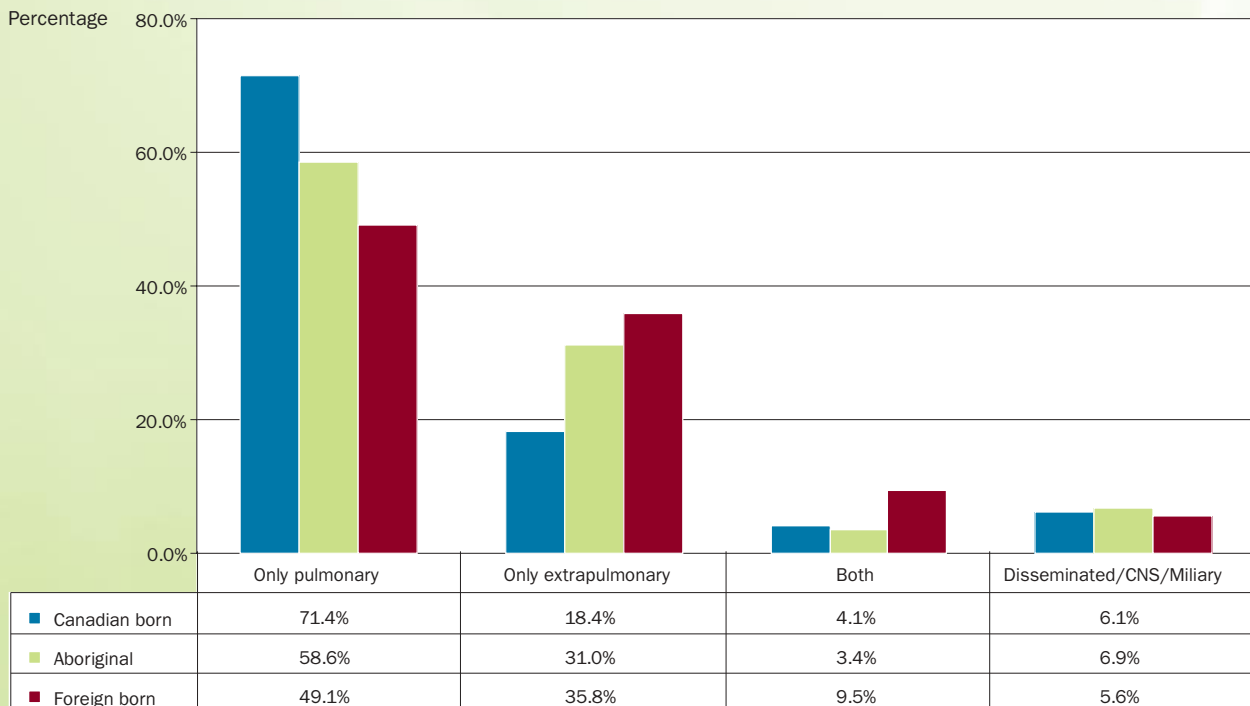
Seventy five percent (n = 231) of cases were diagnosed because of symptoms, 5% (n = 17) by immigration surveillance/referral, 4% (n = 12) as a result of contact investigation, 3% (n = 9) as a result of screening

programs, and 3% (n = 8) were diagnosed at post mortem. For 5% (n = 16) of came to diagnosis by other means and for 5% (n = 17) this data was missing.

Reactivation:

Ninety two percent of cases (n = 285) were newly diagnosed. Twenty five cases (8%) had a reactivation of TB. Ten were reactivation of presumed inactive TB (type II reactivation) and 15 were reactivation of previously documented treated TB (type I reactivation). The majority of reactivations were pulmonary (60%, n = 15). Five cases with reactivation had drug resistant disease but none had MDR.

Figure 7. Death by birthplace, 2004, B.C.



Types of TB

There were 18 cases of disseminated/CNS/ miliary TB (6%). Isolated pulmonary TB was the commonest form (54%, n = 166). Extrapulmonary TB without pulmonary involvement accounted for 101 (33%). Twenty five cases (8%) had both pulmonary and extrapulmonary involvement.

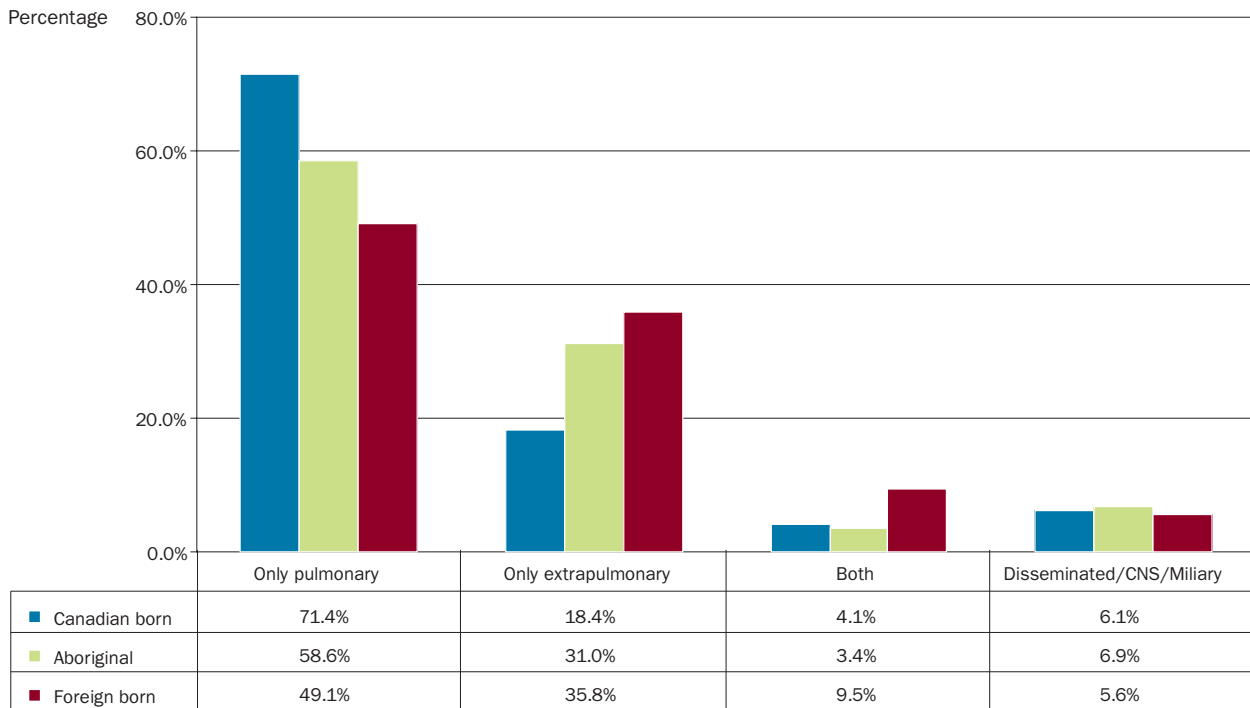
The most frequent type of extrapulmonary TB was lymph node involvement (19%, n = 58). Lymph node

involvement was more frequent in foreign born (20%, n = 47) than Aboriginals (17%, n = 5) or Canadians (12%, n = 6).

Laboratory Result:

Eighty two percent (n = 253) of cases were bacteriologically confirmed and 45% (n = 139) were positive on both smear and culture.

Figure 8. Type of TB by birthplace, 2004, B.C.



TB



Resistance and treatment

Resistance:

Multiple drug resistance (MDR; resistance to both isoniazid and rifampin) was found in a 33 year old case (0.03%) who was born outside Canada. The most common single drug resistance was to isoniazid (5%, n = 15). Other type of resistance to TB medications was identified in 5% (n = 16) of cases

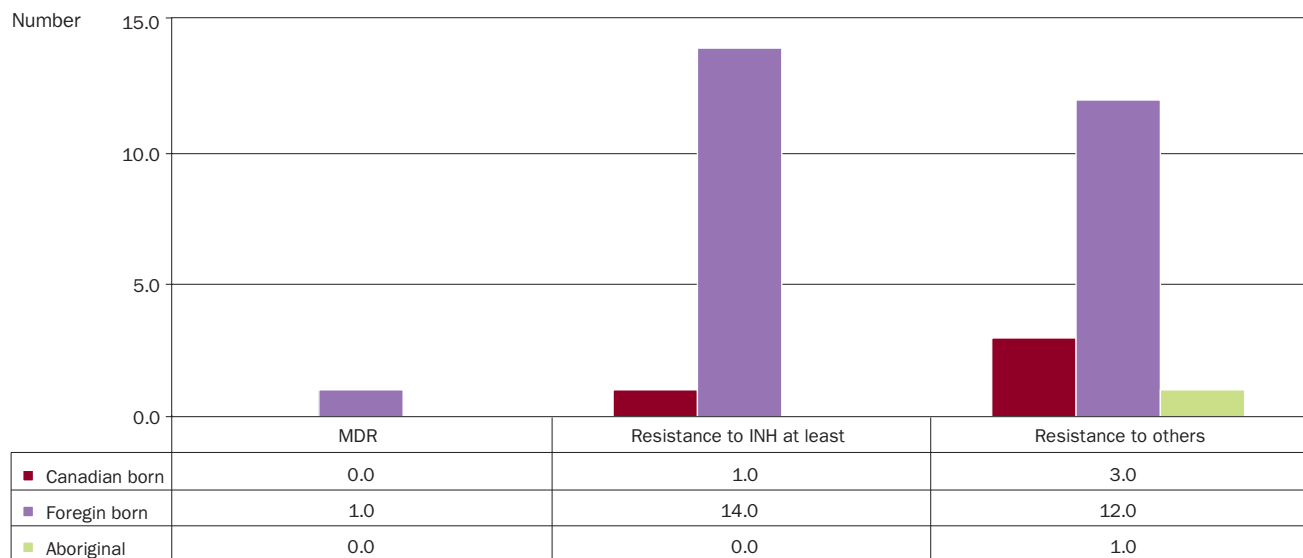
(Figure 9). No resistance developed while on treatment (acquired drug resistance).

Treatment:

Seventy two percent (n = 222) of cases were treated in the community, 17% (n = 53) were treated at the Vancouver General Hospital (VGH) and 5% (n = 15) were treated in TB ward. For 3% (n = 11) of cases treatment started outside of B.C. and for 3% (n = 9) this information was missing.

In June 2005, 46% (n = 143) of cases diagnosed in 2004, were still on treatment. Ninety five percent of cases (n = 294) received self-administered treatment. For the 54% (n = 167) of cases whose treatment was stopped, 83% (n = 139) completed treatment, 9% (n = 15) died while on treatment and 4% (n = 7) left the province and 4% (n = 6) of cases had other reasons listed. Excluding those who either died or moved out of province, 96% completed treatment satisfactorily.

Figure 9. Drug resistance by birthplace, 2004, B.C.



Latent Tuberculosis Infection 2004

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Latent tuberculosis infection rates

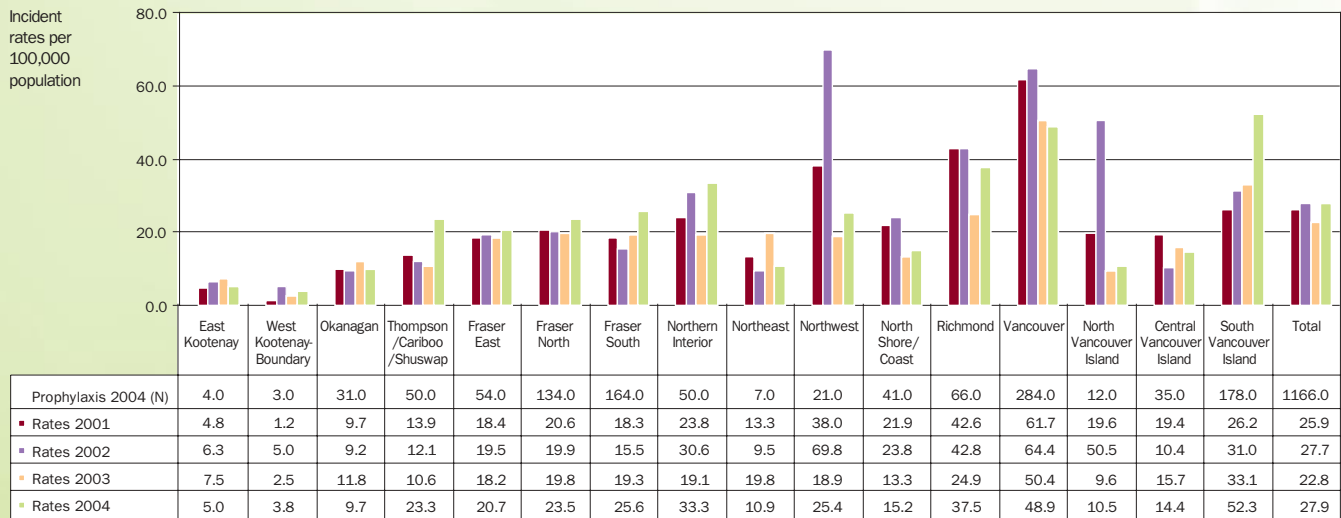
In 2004, 2370 individuals were offered TB prophylaxis, 1180 accepted the treatment and 1166 of them had started their treatment at the time of data extraction (June 2005). The overall prophylaxis acceptance rate was 50%, this rate decreased with increasing age. All the individuals aged 5 years or less who offered prophylaxis were put on preventive therapy whereas only 50% of those aged 20 years or more accepted treatment. This rate did not change by gender (50%) but varied greatly across the province (30% in West Kootenay-Boundary and Northeast/North West vs 80% in Central/South Vancouver

Island).

South Vancouver Island, Vancouver, Richmond and Northern Interior health service delivery areas have rates of treatment of latent tuberculous infection exceeding the provincial rate (27.9/100,000 population). Compared to 2003, the rate of prophylaxis increased in all areas except East Kootenay, Northeast, Vancouver and Central Vancouver Island.

Overall, 284 individuals were put on preventive therapy in Vancouver. South Vancouver (28%, n = 78), North East (24%, n = 67) and Midtown (22%, n = 62), included 73%

Figure 10. Rates of preventive therapy per 100,000 by health region, 2001–2004, B.C.



*For 32 individuals the region was unknown.

Demographic characteristics

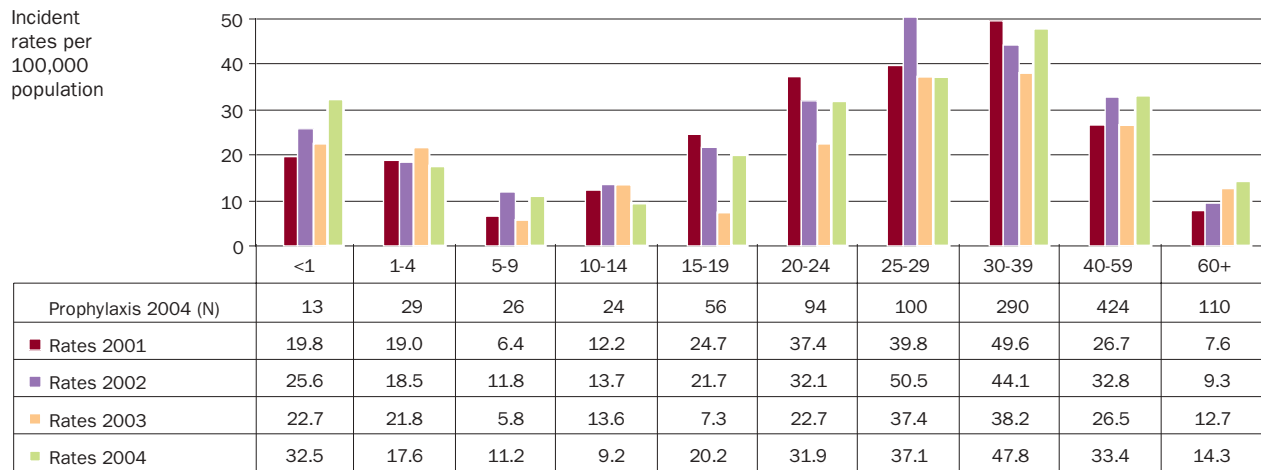
of these subjects.

Females represented 59% (n = 1140) of subjects. Rate of prophylaxis was highest among subjects aged 30-39 years old and lowest among those aged 5-14 years old (Figure 12). Compared to 2003, the rate of prophylaxis increased in all age groups, except in those aged 1-4 years old and 10-14 years old.

Sixty percent (n = 701) of subjects were foreign born and 10% (n = 121) were Canadian born. Registered

Aboriginals accounted for 9% (n = 107) of subjects. For 237 subjects information on country of birth was missing. The rate of prophylaxis was estimated to be 93.6/100,000 year for registered Aboriginal, 64.2/100,000 year for foreign born and 4.1/100,000 year for Canadian. The highest rate of prophylaxis acceptance was observed in Canadian born (56%) and the lowest was in registered Aboriginals living on reserve (28%).

Figure 12. Rates of preventive therapy per 100,000 by age, 2001-2004, B.C.



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Reasons for prophylaxis and treatment

Reasons for prophylaxis:

The commonest reasons for prophylaxis were: positive tuberculin test 65% (n = 655), contact with a TB case 28% (n = 283), radiological evidences of inactive TB 5% (n = 48) and positive HIV infection 0.6% (n = 6). For 1% (n = 11) the reason of prophylaxis was not available at the time of data extraction.

Treatment:

Treatment was administered in outpatient facilities for almost all the subjects (98%, n = 1144). Among subjects, all but 4 received non-supervised treatment. INH, alone or combined with other medications, was prescribed for 96% (n = 1120) of subjects. Rifampin, alone, was prescribed for 0.2% (n = 22).

Up to June 2004, 46% (n = 534) of subjects were still on treatment. Of those who ended (n = 632) their treatment, 50% (n = 313) of subjects completed their treatment satisfactorily. The commonest causes of incomplete treatment were drug reaction (n = 84, 13%), poor compliance (n = 76, 12%), being lost of follow up or moving to other provinces (n = 65, 10%).

Duration of treatment was available for 616 out of 632 cases that ended their treatment. Among them 70% (n = 616) were treated for 4 months or more.

Other Activities in 2004

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Contact Tracing

In 2004, 2990 contacts for 310 active cases were identified of whom 2419 (81%) were contacted by TB control. Majority of contacts were female (n = 1598, 56%). The most common types of contacts were; casual (n = 1328), non-household (n = 659), household (n = 396), in educational centers (n = 143), in work place (n = 117) and in care facilities (n = 73). There were 18 contacts screened within a correctional institute and 1 within a residential facility. For 250 contacts the nature of contact was not available.

Among contacts 12 had active tuberculosis and 363 were offered prophylaxis and 231 were placed on preventive therapy.

Of household contacts, 7 had active TB (secondary attack rate = 1768/100,000) and 104 were diagnosed with latent TB, and 77 were placed on preventive therapy.

Among others, 5 had active TB (secondary attack rate = 193/100,000) and 259 were diagnosed with latent TB, and 154 were placed on preventive therapy.

Skin Test and BCG

In 2004, 15691 TB skin tests were performed in the province. Of these 3990 (25%) tests were positive, 1797 were offered prophylaxis and 954 (53%) accepted treatment for latent tuberculosis infection.

Seven BCG vaccinations were administered. Three of them were 3 months or younger at the time of vaccination. No adverse reaction was reported.

Admission:

The designated TB ward is located at Vancouver Health Science Centre, VGH. This ward serves the whole province of B.C. and medical coverage is provided by the UBC Division of Respiratory medicine. In 2004 there were 69 admissions. Fifty one cases were admitted for the first time in TB ward and 9 individual patients were readmissions.

The 69 discharges spent a total of 2914 patient days on the TB ward. Fifty two percent (n = 31) of patients stayed \leq 1 month and 12% (n = 7) stayed 4 months or more. The average stay was 49 days (Median = 31, Range: 1 to 182). The majority (77%, n = 46) of discharges were on medical advice.



Research, Publications and Presentations

Publications:

1. Marra F, Cox VC, FitzGerald JM, Moadebi S, Elwood RK. Successful treatment of multidrug-resistant tuberculosis following drug-induced hepatic necrosis requiring liver transplant. *Int J Tuberc Lung Dis* 2004 8(7):905-909.
2. Elwood RK, Cook VJ, Hernández-Garduño E. Risk of tuberculosis in children from smear negative source cases. *Int J Tuberc Lung Dis* 2005;9(1): 49-50
3. Cook VJ, Hernández-Garduño E, Kunimoto D, Hershfield ES, Fanning EA, Hoepfner VH, Elwood, RK, FitzGerald MJ and the Canadian Molecular Epidemiology of Tuberculosis Study Group. The lack of association between bacilli Calmette-Guérin vaccination and clustering of Aborigines with tuberculosis in western Canada. *Can Respir J* 2005;12(3)134-138.
4. Hernández-Garduno E, Cook V, Kunimoto D, Elwood RK, Black WA, FitzGerald JM. Transmission of tuberculosis from smear negative patients: a molecular epidemiology study. *Thorax*, April 2004 Vol. 59 No. 4.

Abstracts:

5. Cook VJ, Elwood RK, Hernández-Garduno E. Risk of tuberculosis in children from smear negative source cases. Abstract presented at Chest 2004, the 70th annual international scientific assembly of the American College of Chest Physicians (ACCP). October 23-28, 2004 in Seattle, Washington.
6. Marra CA, Coombes ME, Moadebi S, Yeh E, FitzGerald JM, Elwood, RK, Brazier JE, Marra F. Comparison of the HUI-3 and SF-6D in patients with Latent and Active tuberculosis. Abstract 1793. Submitted for ISOQOL 12th Annual Scientific Conference – May 2005.

TB

Tuberculosis Services for Registered Aboriginals 2004

Victoria J Cook MD, FRCPC
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TB Services for Aboriginal Communities
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Ramak Shadmani, MD, MSc

Introduction

Tuberculosis Services for Aboriginal Communities (TBSAC) is the Tuberculosis Control program for Aboriginal persons living on-reserve in British Columbia. This program is administered out of the Division of TB Control at the British Columbia Centre for Disease Control (BCCDC) located in Vancouver, BC. Dr. Victoria Cook is the physician consultant and nursing support continues to be supplied by Shirley Rempel and Shelley Dean. The following report includes data extracted as of June 2005 for registered Aboriginal persons, living both on and off-reserve in BC for the year 2004.

Active TB Disease

Incidence:

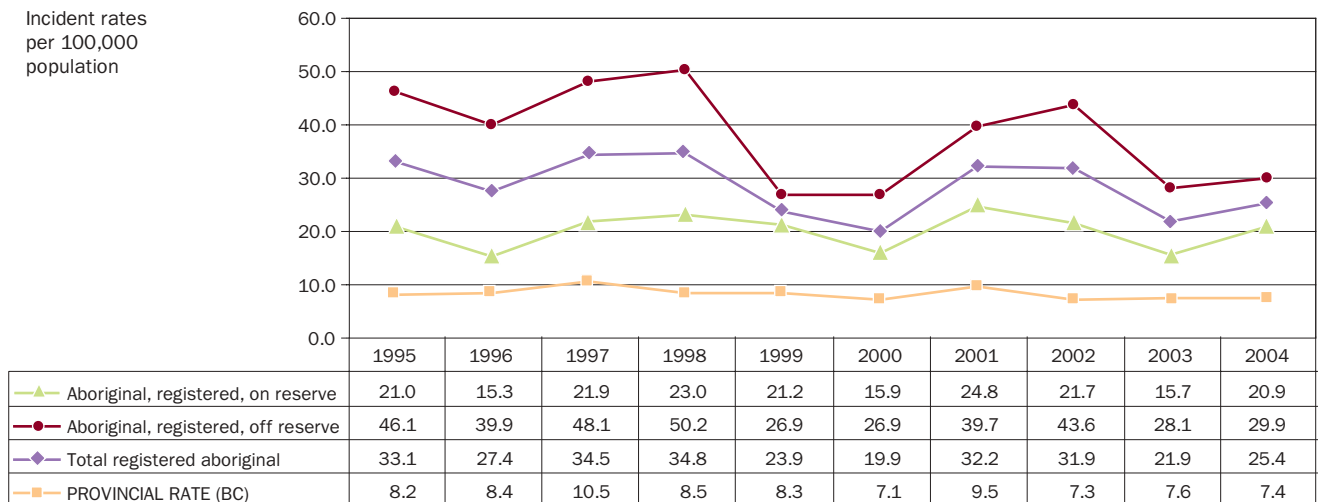
Between January 1st, 2004 and December 31st, 2004, 29 new cases of active tuberculosis (TB) were diagnosed in Aboriginals, corresponding to an incidence of 25.4 per 100,000.

There were 12 cases (41%) of active TB diagnosed in Aboriginals living on-reserve (4 in South Pacific Zone and 8 in North Pacific Zone) with an incidence of 20.9 per 100,000. There were 17 cases (59%) diagnosed in Aboriginals living off-reserve with an incidence of 29.9 per 100,000 (Figure 1). Incidence was calculated using population figures from the Registered Indian Population by Sex and Residence, Information Management Branch, Department of Indian Affairs and Northern Development, Minister of Public Works and Government Services of Canada.

Demographics:

Fifty percent (n = 6) and 35% (n = 6) of the cases occurred in females living on-reserve and off-reserve, respectively. The mean age of cases was 44 years (off reserve; mean=46, on reserve; mean=41), median 46 years (off reserve; median=47, on reserve; median=44) and the total age range varied from 5 to 78 years (off reserve age range (17 to 74), on reserve age range (5 to 78)).

Figure 1: Incidence rates of active TB in Aboriginals, on and off-reserve, 1995-2004, B.C.



TB

Tuberculosis services to registered Aboriginals

Site of Disease and HIV status:

There were 17 cases (59%) of pulmonary TB, 9 cases (31%) of extra-pulmonary TB, 2 cases (7%) of tuberculous meningitis/miliary/disseminated TB (1 was diagnosed with central nervous system (CNS) infection alone), and 1 case (3%) of both pulmonary and extra-pulmonary disease. Three of these 29 cases were primary TB. Of the 29 cases of active TB, only 1 case was HIV positive (diagnosed off-reserve).

Laboratory and Treatment:

Fifty five percent of sputum specimens were smear positive. Culture results were available for 25 cases (86%) and of these isolates only one was resistant to ethambutol. No other drug resistance was noted. No resistance developed while on treatment (acquired drug resistance). Of all patients put on treatment only 9 (31%) received supervised or Directly Observed Therapy (DOT). Of these 5 were living off reserve and 4 were living on reserve. As of June 2005, 11 cases had successfully completed treatment, and 17 cases remained on treatment at the time of data collection. There were 2 deaths, both living off reserve, noted but no TB-related death occurred. One case died before the end of treatment although TB was not considered as a cause of death for this case.

Contact Investigations:

Four hundred and eighty nine contacts (on reserve = 212, 43%; off reserve = 277, 57%) were identified through the contact investigation of these 29 active TB cases. Of these contacts, 452 (92%) were reviewed by TB control (on reserve = 197, 93%; off reserve = 255, 92%). Of all the Aboriginal contacts screened, 44% of the screening activities occurred on-reserve. There were 30 household, 41 non-household and 364 casual contacts screened. There was 1 contact screened in a hospital setting.

The type of contact was not listed for 16 individuals.

Contact tracing identified 4 secondary active cases of TB (2 active cases on reserve and 2 active cases off-reserve).

Tuberculin Skin Testing:

Tuberculin skin testing (TST) was completed in 2991 Aboriginals during 2004 (on-reserve; n = 1788, 60%, off-reserve; n = 522, 17% and unknown; n = 681, 23%). Of all TST planted, 15% (n = 434) were read as positive (on reserve; n = 278/1788, 15% and off-reserve; n = 101/522, 24%). For 55 positive skin tests, information on Aboriginal status was not available.

Latent Tuberculosis Infection (LTBI)

In 2004, 363 Aboriginal persons were offered treatment for latent TB infection and 132 (36%) Aboriginal persons agreed to treatment for latent TB infection (LTBI). Isoniazid (INH) treatment of LTBI was prescribed to 123 (93%) of the agreeable subjects. The majority of persons receiving treatment for LTBI (69%, n = 91) lived on-reserve. Of those put on treatment for LTBI, 37% (49) had finished treatment by June 2005 leaving 63% (n = 83) of subjects to complete treatment. Of those persons who ended treatment (n = 49), only 39% (n = 19) of subjects completed their treatment satisfactorily. The most common causes for non-completion of therapy were poor compliance (n = 10) and drug reaction (n = 5).

BCG Vaccination:

Effective June 1st, 2003, the FNIHB BC-Yukon Region elected to discontinue routine BCG vaccination of on-reserve newborn Aboriginal children. Therefore, BCG vaccinations are no longer offered to Aboriginal infants living on-reserve in BC. No infants living on-reserve in BC received BCG vaccination in 2004.



Discussion

Tuberculosis remains a significant public health problem for Aboriginal persons living on and off reserve in BC. Rates of active TB disease for 2004 have increased compared to 2003. It is important to note that TB disease rates in many communities will vary from year to year and data from a single year may not predict a coming trend. However, TB rates in Aboriginal persons are more than three times the provincial rate which highlights the need for ongoing work towards the elimination of TB in Aboriginal communities.

Since 1989, the on-reserve Aboriginal Tuberculosis Program for the province of British Columbia has been known as "Tuberculosis Services to Aboriginals" (TBSA). This program has worked closely with health-care workers and community members to control tuberculosis (TB) in Aboriginal communities. In late 2004, we felt that a small, yet meaningful change to our program name would better reflect the relationship between this program and the communities that we have been pleased to support. A memo was circulated to all Health Centres, Health Authorities, and Health Units to introduce our new program title "Tuberculosis Services for Aboriginal Communities" (TBSAC) which was chosen in consultation with representatives from the Chiefs Health Committee, First Nations and Inuit Health Branch (Pacific Region), and Chee Mamuk (BCCDC).

In 2004, TBSAC continued to provide routine TB program activities including active case finding and management with appropriate infection control measures, contact evaluation, identification and treatment of latent TB infection, community and school-based screening as well as ongoing education of physicians, nurses and community members regarding all aspects of TB. Our educational program is fundamental to the success of TBSAC and we continue to strive to adequately support the CHNs and CHRs working in Aboriginal communities. Educational support is provided by a number of means including, but not limited to, a toll-free telephone consultation service, CHN and CHR training, BCCDC orientation and certification sessions, on-reserve community in-services, TST workshops, and training of DOT outreach workers. We are active participants in nursing conferences and teleconferences, as well as national and international TB meetings. We provide community in-services as needed and are also available for physician and hospital educational sessions. The educational materials developed by TBSAC are extensive and include our recently released Children's Video "What is TB (not TV)?" that was developed to help educate young children about TB, especially around the times of school screening. We also have pamphlets, reference laminated algorithms (active TB, LTBI, contact screening, sputum collection), educational posters, medication information sheets, Power Point presentations, and the TB Control Manual (TBSAC Appendix E) which was updated and released in January 2004. This manual was revised to accurately reflect the current activities of the Aboriginal TB Control program and was distributed to all Health Centers. It is also available on-line.

TB

Discussion

Given the high rates of TB in Aboriginal persons in BC, the prompt diagnosis and appropriate management of active TB disease remains paramount. Directly Observed Therapy (DOT) is recommended by TBSAC and the First Nations and Inuit Health Branch for all cases of active TB disease and, where possible, Directly Observed Preventative Therapy (DOPT) for treatment of LTBI. Incentives are available for children taking DOT/DOPT and funding is in place to support the hiring of lay dispensers at the community level. The number of persons placed on DOT/DOPT remains low and we encourage more widespread acceptance of this treatment plan. Unfortunately, the lowest rate of LTBI treatment acceptance in BC was observed in registered Aboriginals living on reserve (28%).

Furthermore, the number of Aboriginal persons completing INH treatment for LTBI remains suboptimal. Recent published data on the interpretation of TB skin tests in patients with previous BCG vaccination, as well changes to international standard guidelines for those persons considered eligible for INH treatment, have led to more aggressive diagnosis and management guidelines for LTBI. These increased efforts will hopefully ensure that all Aboriginal persons with LTBI who could potentially benefit from treatment are identified and offered this option.

To improve TB control efforts on-reserve, TBSAC has developed an enhanced surveillance program for all Aboriginal communities which includes TB skin testing for children attending Band Schools as they enter Grade 1 and Grade 6 and annual TB screening for those living on-reserve who are at higher risk of developing TB (for example: HIV/AIDS, diabetes, renal disease, prednisone use). Aboriginal people have shown high rates of clustering of TB cases (reflecting ongoing active transmission) and there is an increased risk of HIV infection among

high-risk Aboriginal communities in Canada. This suggests that the potential impact of HIV on TB transmission in Aboriginal communities has yet to be realized and supports our programmatic goals of enhanced surveillance of high-risk persons.

For Aboriginal communities with one or more cases of contagious TB in the past five years, we recommend community-wide TB skin testing surveys every two years and annual TB skin testing of children five years of age and younger. The enhanced screening program for young children will also help to monitor the impact of BCG discontinuation (June 1st, 2003). All children born after June 1st, 2003 in these communities will be offered TB skin testing (TST) at 10 months, then yearly until age 5. Positive TSTs will prompt the recommendation to treat LTBI using the standard 9 month isoniazid (INH) regimen. Following this cohort of children over 5 years will allow an accurate determination of the annual risk of infection. TST interpretation will be facilitated as BCG will no longer be a confounder.

Challenges to Aboriginal TB Control include community isolation, high nursing turnover, continuity of care on and off-reserve, low rates of DOT and DOPT, complete HIV testing of all active TB cases, health care worker “buy-in” of treatment for LTBI, and the ongoing social stigma and misinformation regarding TB. To address these challenges, TBSAC will continue to work closely with community partners to improve TB control efforts in Aboriginal communities.



Plans for 2005

1) First Nations Nurse Educator

We have successfully secured funding to enable the hiring of one FTE contract position ongoing in order to support the Aboriginal TB program at the community level. This position has been posted and we welcome applications. The exact mandate and responsibilities of this nursing position remain flexible at this early stage to ensure ongoing valuable input from the CHNs, CHRs and senior nurses working within Aboriginal communities. The goal for this position is to support those areas of need with the institution of our program policy changes. We foresee this position assisting with field trips, the in-service education of CHNs regarding implementation of enhanced surveillance, and the development of standardized training modules for both CHNs and CHRs.

2) Educational Materials:

Revised screening guidelines recommend annual screening of individuals at risk for developing active TB, such as those persons with diabetes or HIV/AIDS. Prevention and or early detection of active TB disease will reduce the risk of exposure to young children. Often, these individuals who are most at-risk do not routinely access CHN/CHR services. Wall size posters listing the risk factors and recommendations for TB screening will be available for placement in a variety of community settings. Pocket cards are also in development as a quick reference tool for CHN/CHR use and distribution containing similar information. A pamphlet for parents discussing the program policy changes for children <5 has also been developed, revised with input from focus groups. A chart label system for flagging the TB/LTBI status of clients is also being developed to assist CHN/CHR to prioritize at-risk patients. We expect these additional tools to be available to the communities before the end of 2005.

3) Parent's TB Information Video:

At a recent nursing meeting, CHNs expressed feeling overwhelmed with increased number of injections

children may require due to new TB policy guidelines.

Explaining the risks and benefits to parents can take from 15 minutes to an hour. CHNs have requested a short video for parents which would explain the new TB skin test screening guidelines for children ≤ 5 years of age. The video would be used with parents and CHRs whom parents frequently consult. We have secured funding for this project and will proceed with this video with the hiring of the nurse educator.

4) Scrap-TB:

Scrap-TB is a national tuberculosis elimination strategy for Aboriginal peoples of Canada that will be used in British Columbia to better understand TB related community risk and plan TB programming in Aboriginal communities. A pilot community was selected and the community-risk assessment is under evaluation.

5) TB Advisory Group:

Aboriginal communities need to feel a sense of ownership and participation in TB Control processes. Such sentiment may result in more effective TB Control through community buy-in. In order to support communication with First Nations communities and leaders such as the Chief's Health Committee, Aboriginal Health Associates of B.C. and community leaders, TBSAC in partnership with FNIHB have secured funding to establish a First Nations advisory committee with representation from the Chief's Health Committee, Health Directors, First Nations CHN's working on reserve, CHR's and community members. A physician from FNIHB and/or BCCDC TBSAC program, as well as one TBSA nurse will attend these sessions. The committee will meet once or twice per year and provide MHO input into TB programming. This group will provide First Nations members an opportunity to convey concerns they and the communities they represent have around TB and TB programming.

TIB

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Appendix

04

Active cases demographics

Demographic characteristics of active cases by age, 2004, B.C.

Age group Number of cases	< 1 1	1-4 2	5-9 5	10-14 2	15-19 8	20-24 23	25-29 21	30-39 51	40-59 94	60+ 103	Total 310
TB Cases – Female	1	1	2	0	5	15	10	26	47	43	150
TB Cases – Male	0	1	3	2	3	8	11	25	47	60	160
Female death	0	0	0	0	0	0	0	1	2	6	9
TB principal	0	0	0	0	0	0	0	1	0	2	3
TB contributing	0	0	0	0	0	0	0	0	1	3	4
Unrelated to TB	0	0	0	0	0	0	0	0	0	1	1
Unknown	0	0	0	0	0	0	0	0	1	0	1
Male death	0	0	0	0	0	0	0	0	4	12	16
TB principal	0	0	0	0	0	0	0	0	1	0	1
TB contributing	0	0	0	0	0	0	0	0	2	5	7
Unrelated to TB	0	0	0	0	0	0	0	0	1	6	7
Unknown	0	0	0	0	0	0	0	0	0	1	1

Bacillary status and type of TB

Bacillary status and type of TB by age group, active cases, 2004, B.C.

Age group Number of cases	< 1	1-4	5-9	10-14	15-19	20-24	25-29	30-39	40-59	60+	Total
Bacillary											
Female	0	0	0	0	5	10	8	22	37	38	120
Male	0	1	0	1	2	7	10	19	40	53	133
Type of TB											
Only Pulmonary	1	2	4	0	7	11	8	27	47	59	166
Only Extrapulmonary	0	0	0	2	1	7	8	17	35	31	101
Both	0	0	1	0	0	3	3	5	5	8	25
Disseminated/ miliary/CNS	0	0	0	0	0	2	2	2	7	5	18

HIV status and death

HIV status, drug resistance and reactivation by age, active cases, 2004, B.C.

Age group	< 1	1-4	5-9	10-14	15-19	20-24	25-29	30-39	40-59	60+	Total
Number of cases	1	2	5	2	8	23	21	51	94	103	310
HIV positive	0	0	0	0	0	0	0	1	5	1	7
MDR	0	0	0	0	0	0	0	1	0	0	1
Resistant to INH alone or with others (not MDR)	0	0	0	0	2	0	0	1	7	5	15
Other resistance combination	0	0	0	0	0	1	3	5	3	4	16

Active cases by birthplace

Birthplace by age, 2004, B.C.

Age group	< 1	1-4	5-9	10-14	15-19	20-24	25-29	30-39	40-59	60+	Total
Number of cases	1	2	5	2	8	23	21	51	94	103	310
Canadian	0	1	1	0	1	3	0	6	20	17	49
Foreign born	1	1	2	2	5	19	19	41	62	80	232
Aboriginal Registered											
Off reserve	0	0	0	0	1	1	2	2	7	4	17
On reserve	0	0	2	0	1	0	0	2	5	2	12
Unknown	0	0	0	0	0	0	0	0	0	0	0

HIV status, death and resistance to TB medication by birthplace, 2004, B.C.

Number of cases	Canadian 49	Foreign born 232	Aboriginal off reserve 17	Aboriginal on reserve 12	Unknown 0	Total 310
Death						
HIV positive	4	2	1	0	0	7
Death						
TB principal	1	3	0	0	0	4
TB contributing	4	7	0	0	0	11
TB not related	5	2	1	0	0	8
Unknown	0	1	1	0	0	2
MDR	0	1	0	0	0	1
Resistant to INH alone or with others (not MDR)	1	14	0	0	0	15
Other resistance combination	3	12	1	0	0	16

04

Type of Tuberculosis by birthplace

Type of TB by birthplace, 2004, B.C.

Number of cases	Canadian 49	Foreign born 232	Aboriginal off reserve 17	Aboriginal on reserve 12	Unknown 0	Total 310
Type of TB						
only Pulmonary	35	114	10	7	0	166
only Extrapulmonary	9	83	5	4	0	101
Both	2	22	1	0	0	25
Disseminated/ miliary/CNS	3	13	1	1	0	18

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