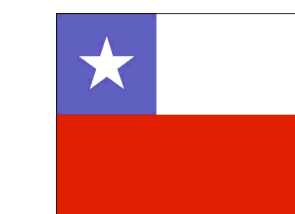


Tuberculosis (TB) in the general and the HIV population in Chile: Clinical and epidemiological comparison and the impact of antiretroviral therapy (ART)

M. Wolff, C. Beltrán*, and M. de Andraca

For the Chilean AIDS Cohort (ChiAC) Study Group and CONASIDA, Chile

mwoff@vtr.net
Grupo SIDA Chile
Santa Elvira 629
Santiago Chile

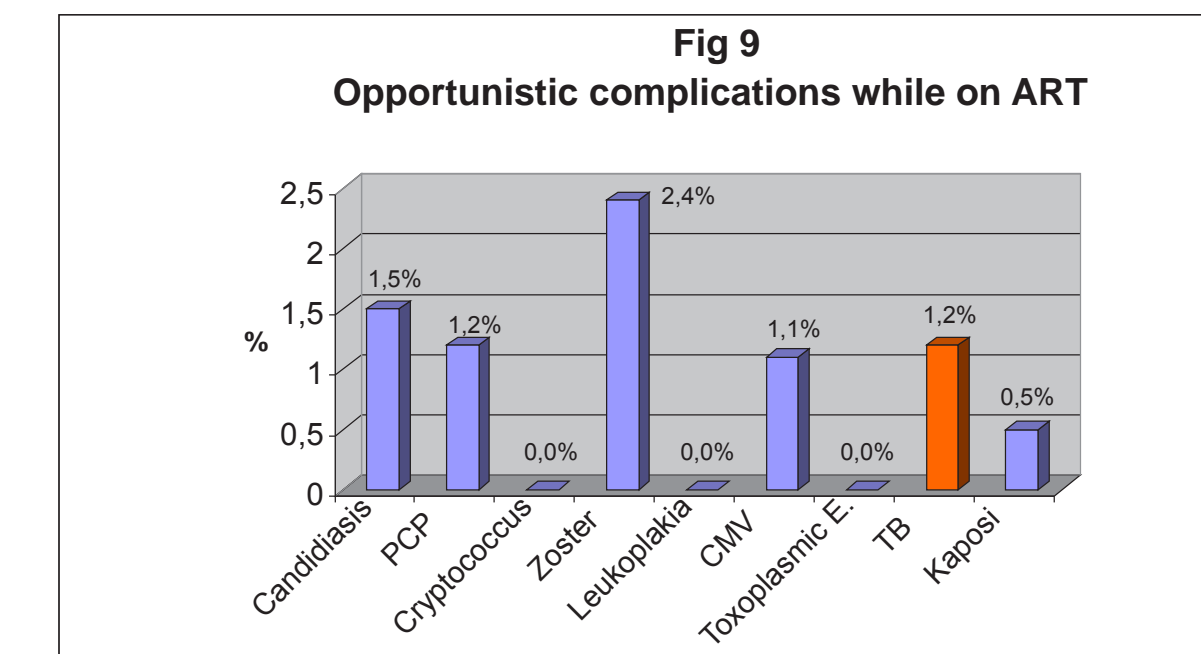
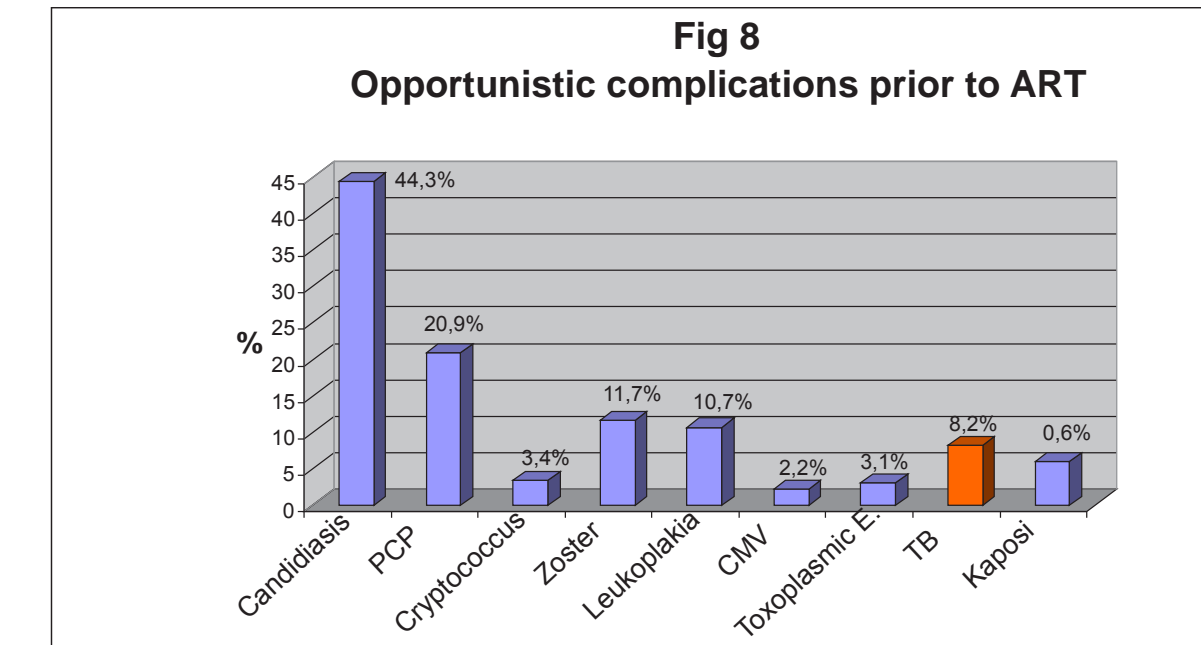
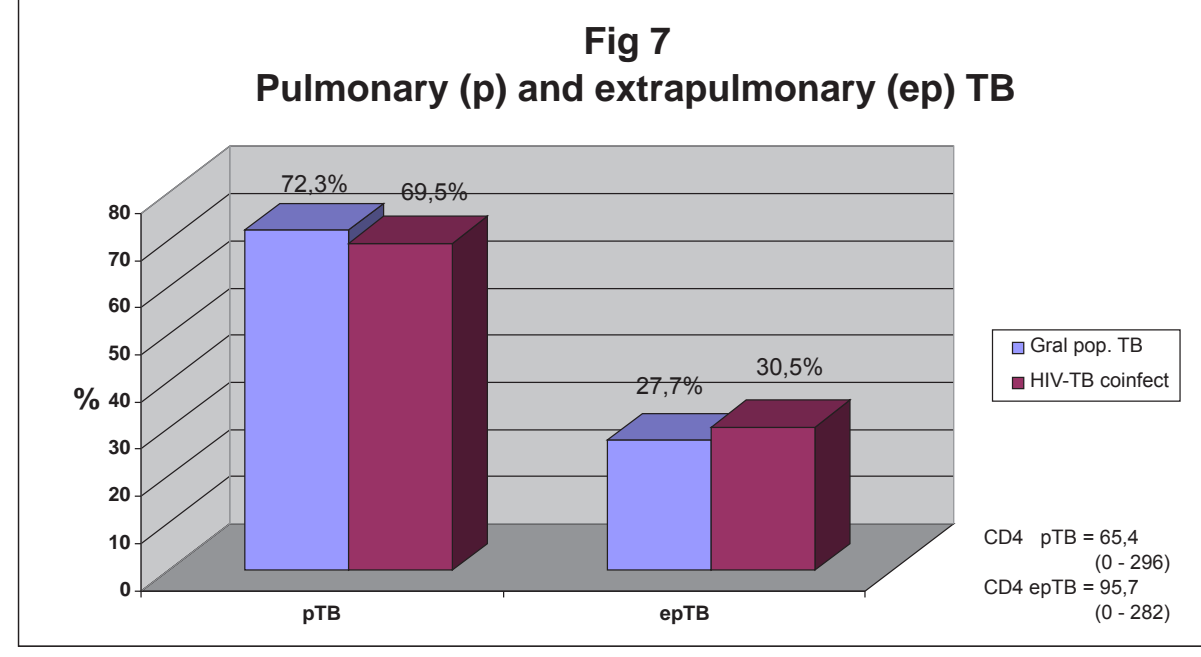
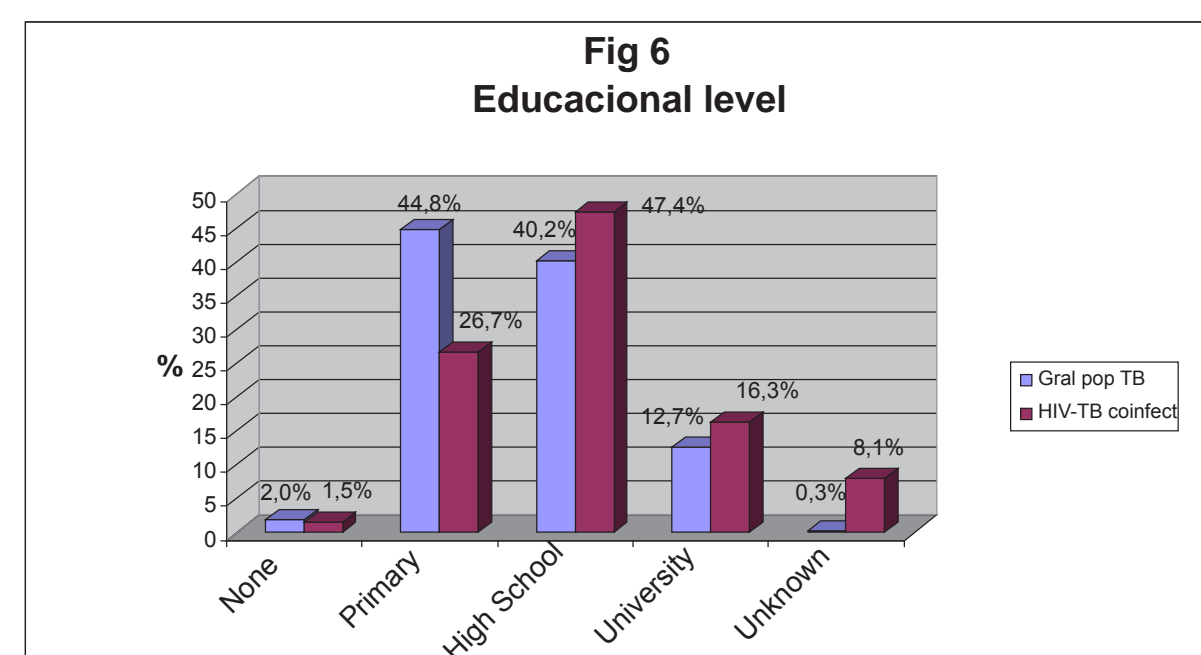
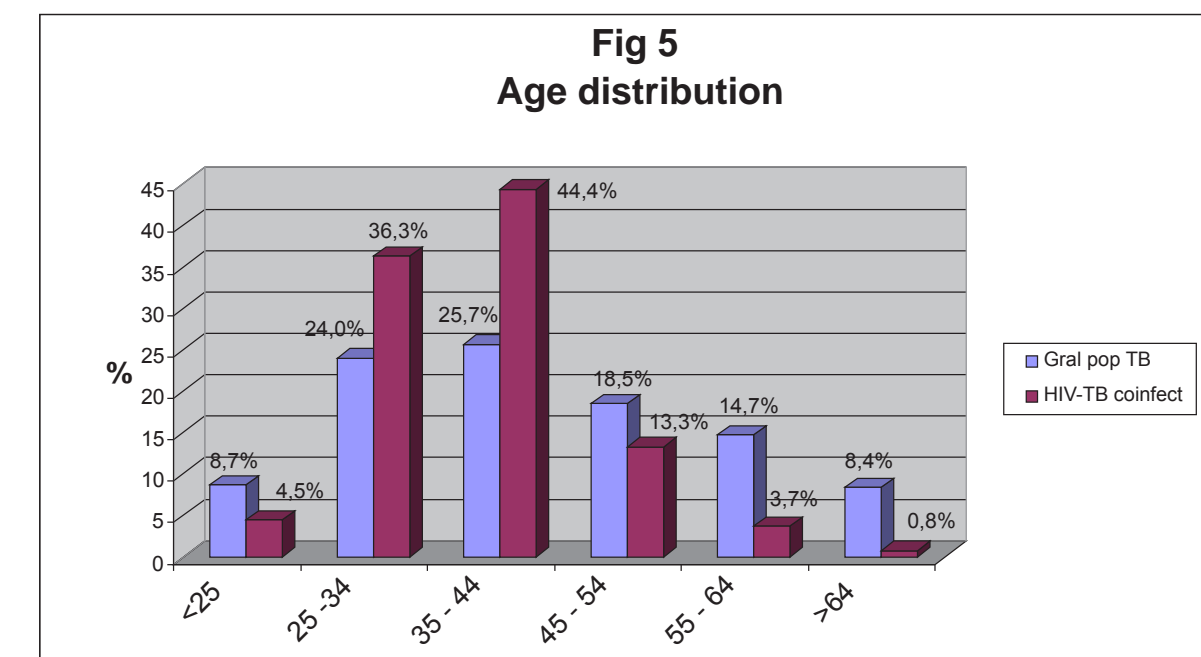
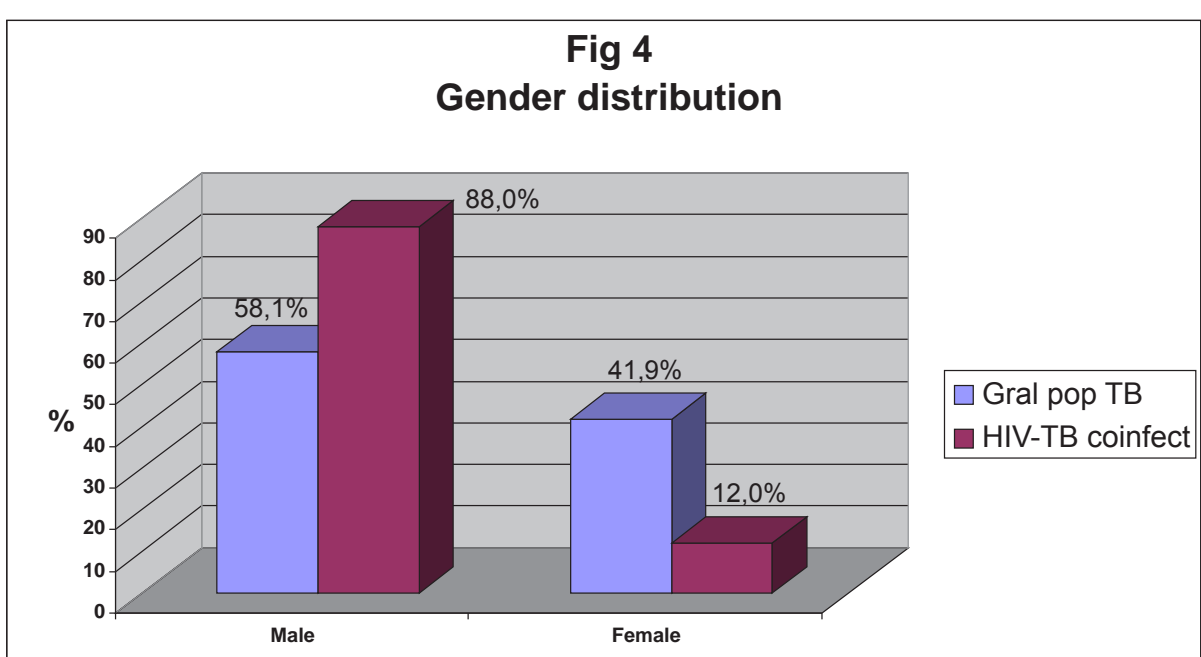
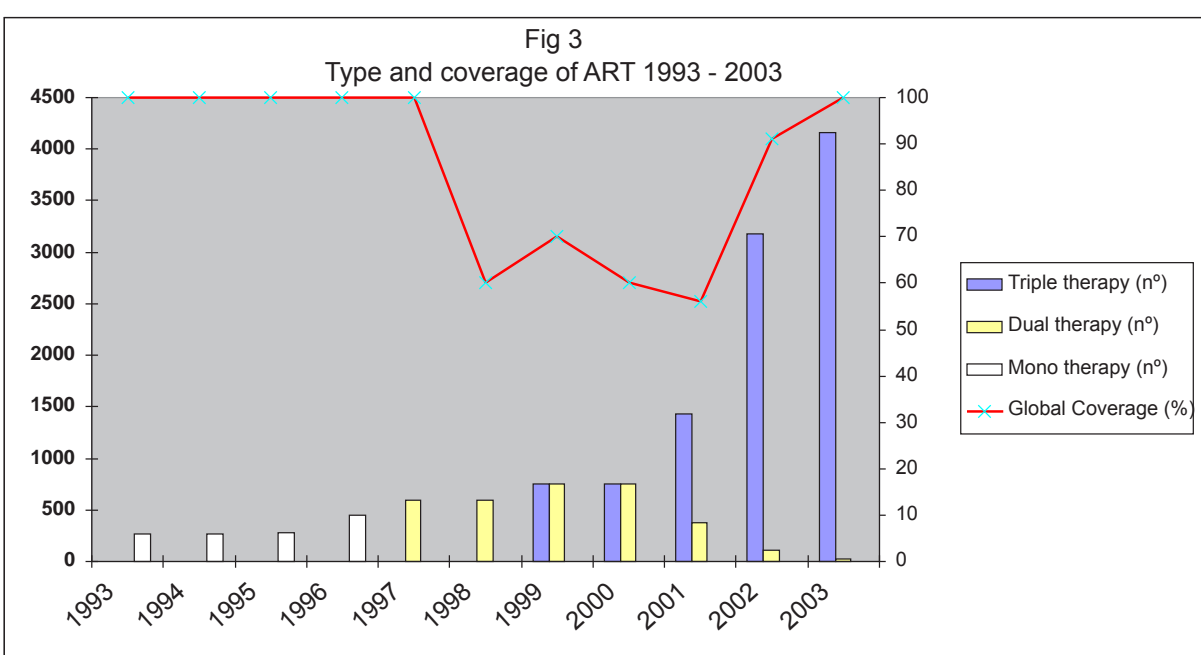
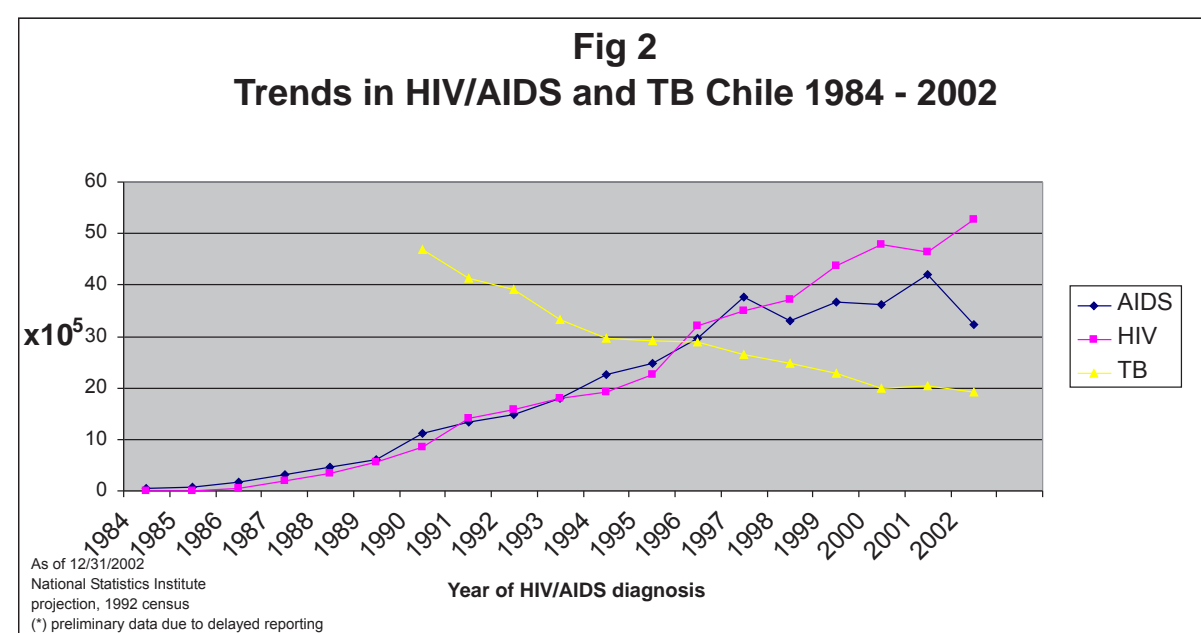
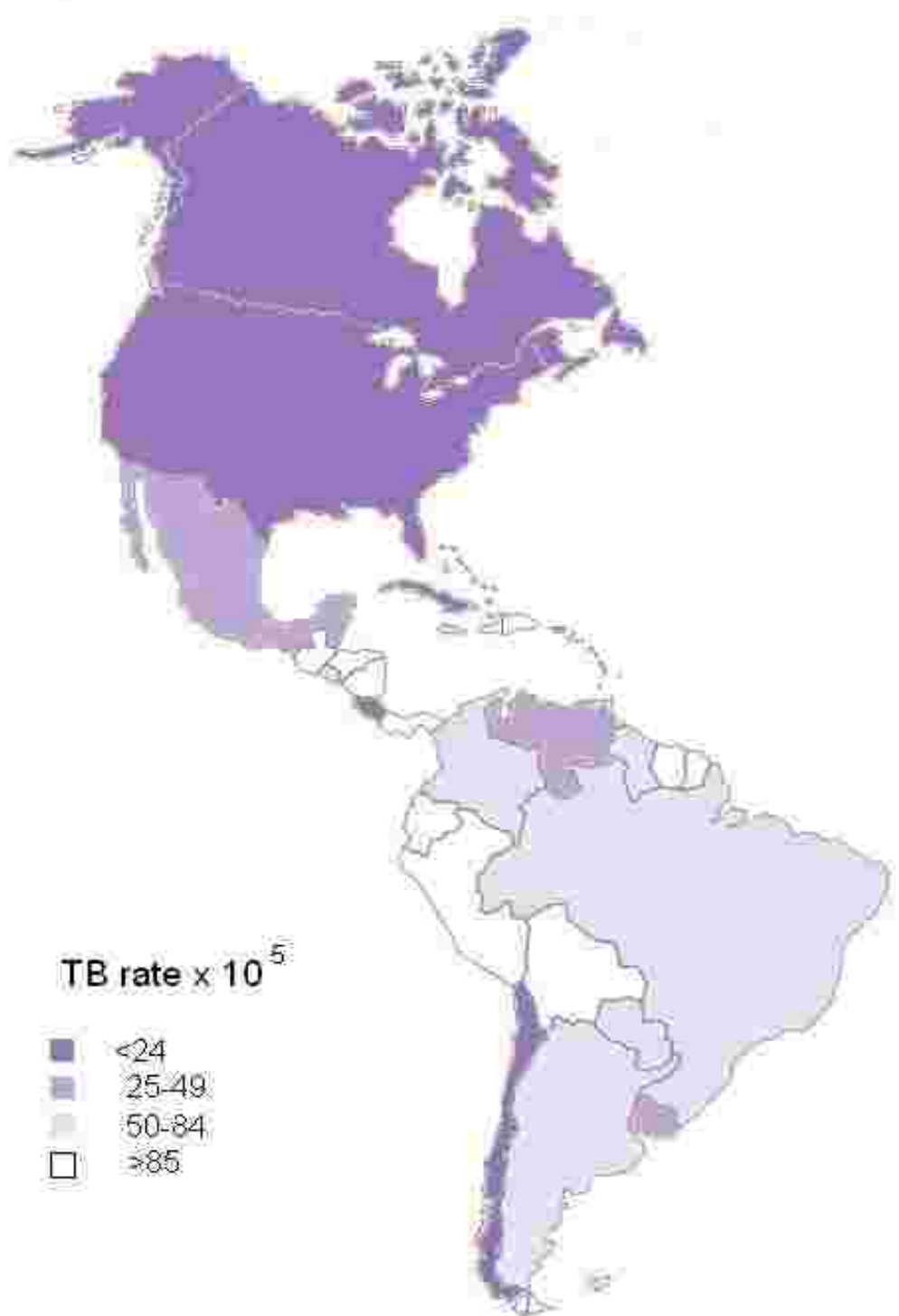
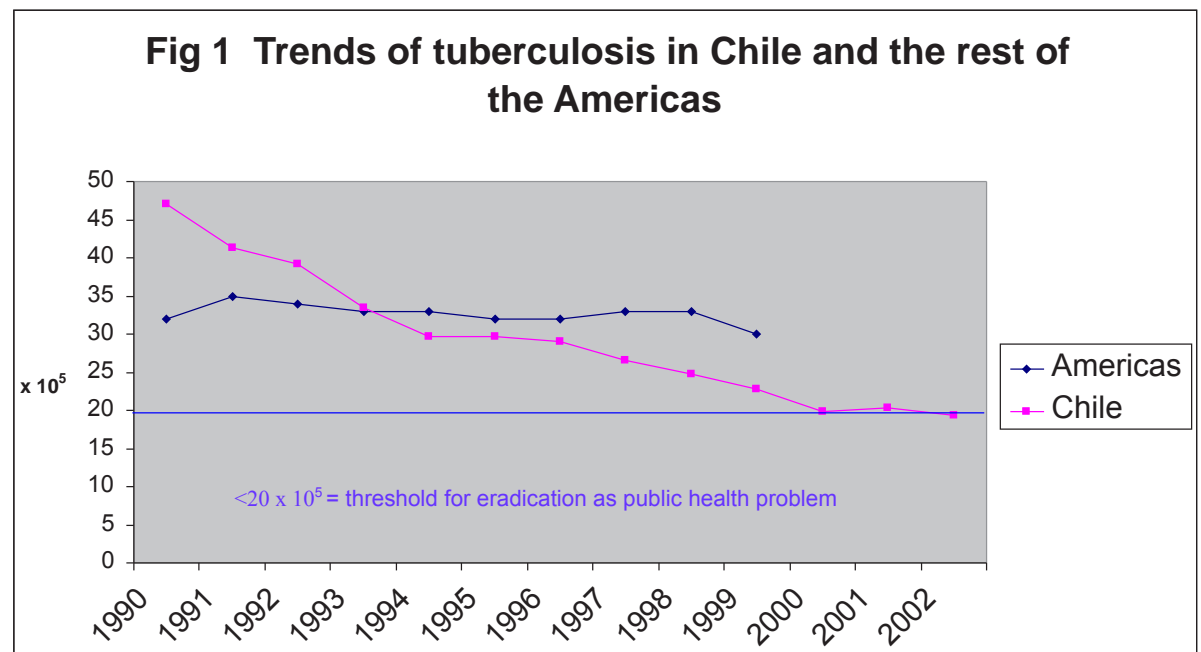


ABSTRACT
Tuberculosis (TB) in the general and the HIV population in Chile: Clinical and epidemiological comparison and the impact of antiretroviral therapy (ART). M. Wolff, C. Beltrán*, and M. de Andraca. For the Chilean AIDS Cohort (ChiAC) study group and CONASIDA.
Background: Chile has a TB rate of 10.3×10^5 , the lowest in South America and it has reached the threshold for aiming of its eradication as a public health problem. HIV incidence in Chile is $1.5-2 \times 10^3$ (corrected) and according to PAHO guidelines for contacts, in late 2001 a national expanded access program (EAP) in the public health system (caring for 70% of the population). ChiAC: 139 of these pts are being followed prospectively as the ChiAC. The purpose of this study is to compare TB rates and associated risk factors in the general and HIV population and the impact of ART.
Methods: Analysis of the ChiAC HIV/TB data base as compared with national general statistics on TB.
Results: According to national guidelines all pts with HIV and TB have indication of ART. 704 (8,2%) HIV pts on ART and prospectively followed up had TB before ART and it is thought to represent most of the infected cases due to early enrollment in ART. The rate range could go from 8.2% (observed) to 4.6% (if all TB cases of the cohort were already in treatment).
The national TB program and ChiAC have a registry of associated TB and HIV pts as follows: 58 and 88 % pulmonary TB and 42 and 59 % and 42 and 59 % extrapulmonary TB. 27 and 30 % respectively. Age distribution is similar in the general population with TB and concentrated in the 25-44 year group in HIV-TB cases. Mean CD4 in pulmonary and extrapulmonary HIV-TB was similar: 65.4 and 95.7 (0-296) and 65.4 and 95.7 (0-282) respectively. During the first 6 months of ART, TB rate decreased from the observed 8.2% accumulated 8.2% before ART to 1.2% (fig 8 and 9).
Conclusions: The AIDS epidemic is affecting Chile while its general TB rate is markedly decreasing, but TB rate in HIV pts is at least 100 times higher than in the rest of the population. ART is contributing significantly to bring that higher rate down, even early after its initiation, so contributing to the steady decreasing rate of TB in the country.

Background: Chile is a Latin American country with a population of 15,600,000 and a per capita annual national gross product of US \$ 4,600. The 2002 tuberculosis (TB) rate was 19.3×10^5 , the lowest in South America, having reached the epidemiological threshold for eradication as a public health problem (fig1). HIV infection rate is $1.5-2 \times 10^3$ (fig 2) and steadily increasing in Chile which, due to the frequent co-infection, may threaten the goal of TB eradication. Intravenous drug use is a risk factor for HIV infection in < 5% of this population. Due to this TB rate and according to national and PAHO guidelines, chemoprophylaxis of TB in HIV+ patients (pts) is focused to latent TB infection (PPD+ or abnormal chest X ray suggesting previous TB) and contacts of active cases, provided active TB is ruled out. Therefore no universal TB prophylaxis is recommended in Chile for HIV+ patients. In addition and according to National Guidelines for Antiretroviral Therapy all pts with the co-infection of HIV and TB have indication of ART, but only 55% of HIV+ pts under follow up and without TB meet that criteria for therapy. In late 2001 a national expanded access program (EAP) to antiretroviral therapy (ART) was begun (fig 3); by 08/2003 it had reached almost 100% coverage (4,178) pts cared for by the public health system (responsible for the care of 70% of the population). Close to 80% of this pts nationwide are being followed prospectively as a national cohort (Chilean AIDS Cohort: ChiAC). The purpose of this study is to compare TB rates and associated risk factors in the general and the HIV+ population and the early impact of ART in TB.

Methods: Analysis of the ChiAC HIV database and the national general statistics on TB.

Results: 139 of the first 1,704 (8,2%) HIV+ pts properly followed by the ChiAC study group had had TB before ART was initiated as compared with an incidence of 3,016 cases in a population of 15.6 millions in the country (19.3×10^5). Most cases of TB occurred in the two-year period before ART (observed and corrected RR = 212). This group of pts is thought to represent most cases of the co-infected cases due to early enrollment in ART. Therefore, the TB rate in HIV+ pts could vary from 8.2% (observed) to 4.6% (least RR = 119) if all the TB cases of the much larger cohort (3,000) had already been diagnosed and begun ART. Some characteristics among the general population with TB and those with HIV infection are as follows: 58% and 88% male respectively (fig 4), age distribution is uniformly spread among adults in the general population and concentrated in the 25-44 year-group in the co-infected population, mimicking the HIV epidemic distribution (fig 5), educational levels is higher in HIV-TB cases (fig 6).



There were no significant differences in distribution of pulmonary (pTB) and extrapulmonary TB (epTB) between TB cases in the general population TB and those co-infected with HIV and TB), 72% and 69.5 % pTB involvement, 27.7% and 30% epTB involvement respectively. Mean CD4 count in pTB and epTB was not statistically different in the co-infected group: $65.4 \times \text{mm}^3$ (0-296) and $95.7 \times \text{mm}^3$ (0-282) respectively (fig 7). During the first 6 months of ART follow up, TB rate decreased from the observed accumulated 8.2% (prior to ART) to 1.2% (fig 8 and 9).

HIV/TB update: As of Jan. 31, 2004 ChiAC has HIV/TB baseline information of 3,189 enrolled pts; 254 (8.0%) had had TB, providing a relative risk compared with the general population of 200. Ep TB had increased to 38.3%

Conclusion: The AIDS epidemics is affecting Chile at a time when its general population TB rate is markedly decreasing, but TB rate in HIV+ pts is at least 100 times higher than in the rest of the population. ART is contributing significantly to bring that higher rate down even early after its initiation, this way contributing to the steadily decline of TB rate in the country

Updated information (Jan., 2004) confirms the upper-figure scenario of the rate of TB in HIV pts (200 folds)

Members of ChiAC:

- | | | |
|--------------------|---------------------|----------------------|
| Carlos Gallo | Patricia Vásquez | Amalia Adasme E. |
| Roxana Galvez | Mariol Bustos | Miguel Valenzuela |
| David Wachter | Claudia Ledezma | Johanna Huerta |
| Patricia Sarabia | Juan Ballesteros | Diana Yanine |
| Marcela de Andraca | Alexis Diomedí | Manuel Amigo |
| Patricia Pérez | Rinna Ortega | Mauricio Maturana |
| Gail Mizner | Jeanette Sobarzo | M. Angélica Olivares |
| Carmen Aguayo | Jorge Pérez | Luis Uribe |
| Marisol Ayala | Martín Lazo | Eugenia Rodríguez |
| Viviana Turi | Ana M. Fernández | Elizabeth Daube |
| Luis Montes | Aurora Garín | M. Eugenia Cancino |
| Eduardo Hermosilla | Enna Zunino | Alvaro Liencaqueo |
| Gladys Varela | Laura Bahamondes | M. Elena Novoa |
| Erna Ripoll | Patricia Olea | José Carreño |
| Elizabeth Barthel | Lucía Aguad | M. Isabel Mendoza |
| María Teresa | M. Moreno | Carolina Chahín |
| de Mateo | C. Montenegro | Claudia Molina |
| Werner Jensen | C. Valdés | Mario Calvo |
| Rodrigo Ahumada | Margarita Emberg | Mónica Hering |
| Alvaro Covarrubias | Alvarez de Maturana | Alcira Retolledo |
| Luis Bavestrello | R. Pizarro | Iván Becerra |
| Sylvia Gómez | M. Quezada | Ana M. Sáez |
| Roy Cabrera | Gregorio Ramírez | Carmen Toro |
| Hernán López | Johanna Bravo | Lucía Alata |
| Katty Zúñiga | Enka Molina | |
| Marcelo Wolff | Carlos Beltrán | |
| Rebeca Northland | Ricardo Morales | |
| Teresa Bidad | David Gallardo | |
| Jeanette Dabanch | J.M. Arancibia | |
| Claudia Bustamante | | |
| Ingrid Flores | | |
| Patricia Alvarez | | |

CONASIDA:
Anabella Arredondo
Gloria Berrios