

# Tuberculosis In Armenia: Still An Open Question

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## Abstract

Tuberculosis (TB) is a major public health in Armenia. This paper reviews the available information on TB in Armenia. All general population and 85% of the prison population are currently covered by the directly observed treatment, short course strategy. There are significant achievements in active case-finding in prison population. The incidence of smear-positive pulmonary tuberculosis in general population in Armenia in 2004 was 16 per 100 000, in the same year in penitentiary system 391 new smear-positive TB cases per 100 000 prison population were notified. Important work to improve the current situation with TB epidemic in Armenia is carried out. However, more needs to be done to tackle the TB problem in the country. Without the financial and technical support of the international partners and without the collaboration between the Ministries of Health, Justice, Internal Affairs, and Defence the situation with TB in Armenia would be much worse.

## ABBREVIATIONS

MOH, Ministry of Health of Armenia;

NTP, the National TB Program of Armenia;

AMD, Armenian drams;

ICRC, the International Committee of the Red Cross

## REVIEW

The problem of tuberculosis (TB) has been recognised by the government of Armenia decades ago. After the collapse of the Soviet Union in 1991 the health system in Armenia became decentralised and during the next few years has deteriorated dramatically. Public spending on health is low; in 2004 it comprised 1.3% of GDP, while citizens have spent 4.5% of GDP— most of it through informal payments.<sup>1</sup> The poor, who constitute about 34% of the population, in general do not seek health services because they can not afford paying for health care.<sup>1</sup> Health care utilization is low, especially among the poor and those living in rural regions of Armenia.<sup>1</sup> Political instability in the past, considerable unemployment rate, lack of anti-TB drugs in TB hospitals, insufficient laboratory supplies, uncontrolled air flow in laboratories and patient wards, lack of personnel in TB health care facilities because of low motivation of doctors, nurses and laboratory technicians to have hard, dangerous and low-paid job, and increasing non-compliance to TB treatment have worsened the situation. Unemployment rate in Armenia is high, official sources report about 12.1%, other sources estimate unemployment rate to be four times higher.<sup>2</sup> About 64% of people officially registered as

unemployed are women.<sup>2</sup> Almost all population in Armenia is literate; boys and girls have equal access to basic education. <sup>1</sup> Fewer men receive post-graduate education than women [2], which can be attributable to high number of men leaving the country in search of employment and obligatory recruitment of men in military service. As of 2004, hospital physician's average monthly income was about 30000 Armenian drams (AMD) <sup>3</sup> (equivalent to 72 USD <sup>4</sup>), daily transportation from Yerevan, where the majority of TB specialists in the country reside, to a Republican TB Dispensary located in Abovyan city costs about 400 AMD, which means that a physician spends on average one-fourth of his/her monthly income on transportation costs.

Foreign assistance, financial support from Armenian Diaspora worldwide and flow of remittances from Armenians who went abroad in search of better-paid jobs play an important role in sustaining<sup>2</sup> and improving the economic situation in the country. People in Armenia are currently not covered by statutory or private health insurance, although considerable work has been done during the past several years to introduce obligatory medical insurance in the country. <sup>5</sup> The prerequisites of the development of such insurance system are increases in per capita GDP, stabilization of economy, better employment rate, and compliance with income tax payments, so it may take additional several years for establishment of obligatory insurance system in the country.<sup>6</sup> The Ministry of Health of Armenia (MOH) through 1998 used to be a major third-party

payer for basic package health care services for vulnerable groups (e.g. elderly, children). Starting from 1999 this role was taken over by the State Health Agency (SHA), which has been reimbursing health care institutions in 11 regions of Armenia.<sup>6</sup>

Budgetary resources for health care are funded by general tax revenues; the budget is estimated by the MOH, approved by the Ministry of Finance and by the Parliament, after the approval the budgetary resources are distributed between the MOH (about 20%) and SHA (about 80%).<sup>6</sup> Basic package includes, but is not limited to, treatment of TB, STDs, maternity care, psychiatric diseases, and emergency health care. Treatment of vulnerable populations such as prisoners, elderly, and children officially is free of charge. Health service in Armenia for non-vulnerable groups is predominantly financed by out-of-pocket payments, which were legalized in 1996 according to the Law "On medical aid and medical services for the population".<sup>6</sup> The general population has been reported to be 100% covered by the directly observed treatment, short course strategy (DOTS)<sup>7</sup>, and 5% of the prison population has been reported to be covered by DOTS.<sup>8</sup>

In Armenia, only newly diagnosed patients with pulmonary TB or those having drug susceptible TB are treated with DOTS. Those who have confirmed multi-drug resistance, or chronic cases that have failed treatment according to DOTS, normally should receive DOTS-Plus. DOTS-Plus has not yet been implemented in general or prison population. The "individualised" treatment of these patients is in part covered by state funds, but because of shortage of anti-TB medications in TB hospitals, some of these patients will have to buy anti-TB medications from pharmacies to complete the treatment course, if they can afford paying for these medications which are often expensive. Hovhannisyanyan et al. report that even patients who belong to vulnerable groups "often must pay out-of-pocket" for pharmaceuticals.<sup>6</sup> It is important to note that prescription usually is not required for purchasing antibiotics in pharmacies in Armenia, leading to possibility of people with TB treat themselves inadequately by improperly used antitubercular medications, varying their dosages and shortening duration of treatment, which may contribute to survival, selection and spread of multi-drug resistant *Mycobacterium tuberculosis* species.

Active case-finding in general population of Armenia is usually not done, compared to the significant achievements

in active case-finding in prison population.

The yearly detection rates of new smear-positive cases of TB in Armenian general population reported to WHO between 1996 and 2001 almost did not change, they ranged between 48 and 62 per 100 000.<sup>9</sup> However, in 2002 and 2003 the detection rate was almost 20-fold higher compared to that in 2001.<sup>9</sup> The data on prevalence of TB in Armenia is lacking. The incidence of smear-positive pulmonary tuberculosis (TB) in general population (per 100 000) in Armenia in 2004 was 16,<sup>7</sup> in the same year in penitentiary system 391 new smear-positive TB cases per 100 000 prison population were notified.<sup>8</sup> It has been reported, that about 42% of all new pulmonary TB cases in 2004 were smear-positive,<sup>10</sup> the remaining 58% of the cases were probably smear-negative. The incidence of smear-positive and smear-negative pulmonary TB in 2004 in general population<sup>10</sup> was about 38 per 100 000, and in the prison population<sup>8</sup> 1674 per 100 000.

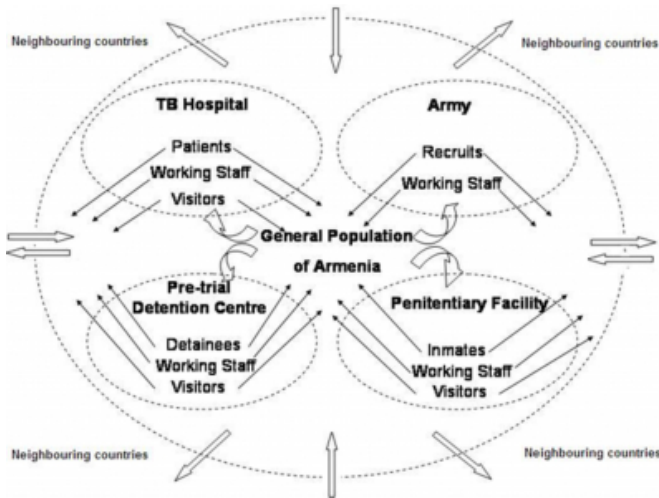
It has been estimated, that number of prisoners<sup>11</sup> per 100 000 population in Armenia lies between 100 and 150, which taking into account the Armenian population<sup>12</sup> of 3.2 million sums to about 3200 - 4800. The annual turnover of the prisoners in 2004 was 4600.<sup>8</sup> The surveillance on TB among inmates and detainees in Armenia starting from 2004 has improved, currently all detainees are being regularly screened for TB.

Overcrowding in prisons, lengthy incarceration, and rotation of prisoners according to Drobniewski<sup>13</sup> increase the probability of infection with TB in inmates. Other factors contributing to higher risk of TB among prison inmates compared to general population are insufficient ventilation, poor hygiene, malnutrition and poor general health condition.<sup>14</sup> The rates of TB in prisons worldwide,<sup>15</sup> and in Armenia<sup>8</sup> are much higher than in general population.

Prisoners with TB experience re-entry into the general community and later may be re-incarcerated again, contributing to spill-over of this infection into the community.<sup>13</sup> Not only prisoners, but also their family, visitors, and the prison staff may become infected with TB and if they go on to develop active disease they will be contagious for other people (see Figure 1).

**Figure 1**

Figure 1: Flow of people contributing to spread of TB in Armenia.



Until 2001 the penitentiary system in Armenia was under the jurisdiction of the Ministry of Internal Affairs, and the pre-trial detention establishments were under the jurisdiction of the Ministry of National Security, due to recent reforms both the penitentiary and pre-trial establishments have been transferred to the Ministry of Justice.<sup>16</sup> The penitentiary system in Armenia is represented by the Criminal-executive Department and 14 following criminal executive establishments: general security institutions (2), medium security institution (1), maximum custody type institution (1), level-6 security institution (1), prison (1), detention houses (6), correctional center with medical department (1), and correctional institution for women and minors (1).<sup>16</sup> Some of them are located in old buildings requiring proper renovation, e.g. Sevan correctional facility which was built in 1957 and is “falling apart”, despite of several renovation attempts undertaken in this facility.<sup>17</sup> Human Rights Watch, a non-governmental organization, and the International Prison Support to Prisoners, a local Armenian organization, have considered prison conditions in Armenia as an issue of violation of human rights.<sup>18</sup>

There is almost no information on TB among army recruits, the data on prevalence or incidence of TB or any other disease is routinely not reported for this population. The recruits are screened by the chest X-ray for the TB upon their recruitment as a part of general medical assessment and at least yearly afterwards. If TB diagnosis is confirmed, then the recruit receives DOTS in the Republican TB Dispensary, and after the completion of his treatment course he continues his military service. In the absence of the published information regarding TB issues in army one might

speculate that there might be a TB problem there from the reported data, that the highest number of new cases of smear-positive pulmonary TB in 2002 in Armenia was in the age group 15-24 years, and males were about 5 times more likely to have pulmonary TB as females.<sup>8</sup> However, the detection bias has to be accounted for, because the males (recruits) are routinely screened for TB, and females not.

Important work to improve the current situation with TB epidemic in the country is carried out. The National TB Program (NTP) was adopted by the government of Armenia in 2003. Its objectives are to develop and implement national TB control policy, to implement TB prevention, to detect TB patients, to promote the role of the national reference laboratory, to ensure the treatment of all TB cases, to cooperate with HIV/AIDS Program, to ensure continuous care of TB patients in the penitentiary system as well as after their release, to ensure continuous care of TB patients doing military service as well as after their demobilization, to increase attention and respect for all TB patients and staff employed in TB services, and to ensure the monitoring of the NTP performance.<sup>8</sup>

In 2000, an agreement was signed by the International Committee of the Red Cross (ICRC), the Ministry of Justice, the Ministry of Internal Affairs and the MOH to address the TB problem in penitentiary system of Armenia.<sup>16</sup> The annual turnover of people in penitentiary system decreased from 7700 in 2003 to 4600 in 2004 due to changes in Penal Law after Ministry of Justice took over the responsibility for penitentiary system.<sup>8</sup> A new TB hospital with 250-bed capacity for the prisoners has been built,<sup>16</sup> DOTS has been implemented in correctional system since 2002 and in 2003 also detainees with TB started DOTS in pre-trial detention center of Novbarashen. The TB microscopy laboratory for TB diagnostics in penitentiary system has been rehabilitated and equipped; doctors, nurses and laboratory staff of the Ministry of Justice have had specialised training workshops in TB diagnostics and treatment organised by the ICRC in 2005.<sup>19</sup> The Delegation of Médecins sans Frontières (MSF) in Armenia in 2004 announced a program (2005-2008) to combat the problem of multi-drug resistant (MDR) TB in Armenia, and it is planned to treat about 30 new MDR TB cases per year by DOTS-plus, MSF also planned to conduct a population-based survey to measure the magnitude of the MDR TB.<sup>8,20</sup> In 2002, the German Agency for Technical Cooperation (Gesellschaft für Technische Zusammenarbeit, GTZ) started providing technical support regarding the following areas: policy, training, surveillance, supervision,

laboratory equipment and supplies, and another German Agency - Kreditanstalt für Wiederaufbau, provides financial support for first-line anti-TB medications, laboratory equipment and supplies.<sup>8</sup> CDC in collaboration with the MOH in Armenia and Georgia in 2003 developed a “Development of Multiple-drug Resistant Tuberculosis Surveillance and National TB Program Evaluations, Republics of Armenia and Georgia” project<sup>21</sup>; one of its tasks is estimation of the prevalence of TB and MDR TB in Armenia.

As reported by Vink et al, effective collaboration between the NTP, Ministry of Justice and non-governmental organizations is still missing.<sup>8</sup>

In conclusion, more transparency regarding health status of the recruits and health status of detainees and convicted individuals has to be achieved; proper quality control system of the TB diagnostics is required; all people with pulmonary TB including MDR cases need to have access to treatment that will not only temporarily stop them from being infectious, but also completely cure them from TB once and for all; a common TB database where all data on TB in general and vulnerable population groups will be entered by all parties involved in TB management needs to be established; properly designed cross-sectional surveys and prospective studies need to be conducted and the results published in peer-reviewed journals.

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