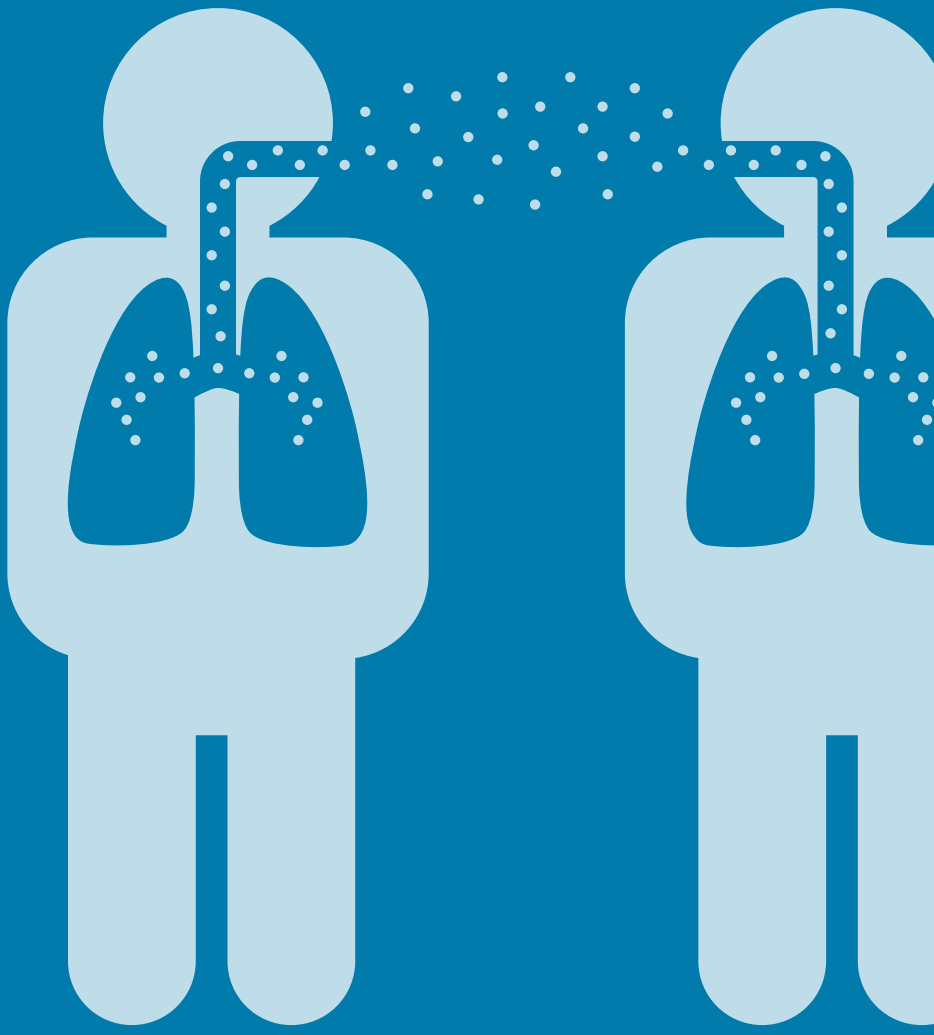
World Health Organization
REGIONAL OFFICE FOR Europe

GOOD PRACTICES IN THE PREVENTION AND CARE OF TUBERCULOSIS AND DRUG-RESISTANT TUBERCULOSIS IN CORRECTIONAL FACILITIES

GOOD PRACTICES IN THE PREVENTION AND CARE OF TUBERCULOSIS AND DRUG-RESISTANT TUBERCULOSIS IN CORRECTIONAL FACILITIES



Abstract

Tuberculosis (TB), especially drug-resistant TB, is a public health challenge in both civilian and penitentiary sectors worldwide. The Global End TB Strategy envisages specific measures to be taken by WHO Member States globally to tackle the problem and address the challenge. The WHO Regional Office for Europe has developed the Tuberculosis Action Plan for 2016–2020 to achieve the milestones and objectives set by the Global End TB Strategy. This first compendium of best practices in TB control in prisons is an essential document for the implementation of the Strategy, providing examples of treatment and care following the recommendations proposed for WHO and its partners.

Keywords

TUBERCULOSIS – prevention and control
TUBERCULOSIS, MULTIDRUG-RESISTANT – prevention and control
EXTENSIVELY DRUG-RESISTANT TUBERCULOSIS – prevention and control
PRISONS
COMMUNICABLE DISEASE CONTROL
DELIVERY OF HEALTH CARE
PRACTICE GUIDELINES AS TOPIC

ISBN 9789289052917

Address requests about publications of the WHO Regional Office for Europe to:

Publications
WHO Regional Office for Europe
UN City, Marmorvej 51
DK-2100 Copenhagen Ø, Denmark

Alternatively, complete an online request form for documentation, health information, or for permission to quote or translate, on the Regional Office website (http://www.euro.who.int/pubrequest).

Graphic design and production by Phoenix Design aid A/S.
ISO 9001/ISO 14001 certified and approved CO2 neutral company

Contents

Scientific editors

Dr Ogtay Gozalov
Medical Officer, Joint Tuberculosis, HIV and Viral Hepatitis Programme, WHO Regional Office for Europe

Dr Masoud Dara
Coordinator, Programme Manager, Joint Tuberculosis, HIV and Viral Hepatitis Programme, WHO Regional Office for Europe

Dr Elmira Gurbanova
Director, WHO Collaborating Centre on Prevention and Control of Tuberculosis in Prisons, Ministry of Justice, Azerbaijan

Dr Natavan Alikhanova
Senior Expert, WHO Collaborating Centre on Prevention and Control of Tuberculosis in Prisons, Ministry of Justice, Azerbaijan

Acknowledgements

The WHO Regional Office for Europe thanks the ministers of health, ministers of justice, ministers of internal affairs, country representatives and national and international experts who contributed to and/or provided support for the submission of the best practices received during this initiative.

Experts from many countries across the world, as well as the regional tuberculosis advisers and colleagues from WHO headquarters, made important comments during the development of the document.

Special thanks go to the members of the Regional Green Light Committee for Europe who participated in the selection committee for the best practices submitted.

Dr Andrei Dadu, Ms Arax Hovhannesyan and Ms Vittoria Gemelli of the WHO Joint Tuberculosis, HIV and Viral Hepatitis Programme provided expert input.

Abbreviations and acronyms

AFB	acid-fast bacilli
DOTS strategy	the core approach underpinning pillar 1 of the End TB Strategy
DST	drug susceptibility testing
ICRC	International Committee of the Red Cross
LPA	line probe assay
MDR-TB	multidrug-resistant tuberculosis
MGIT	mycobacteria growth indicator tube
M/XDR-TB	multidrug- and extensively drug-resistant tuberculosis
NTP	national tuberculosis programme
TB	tuberculosis
USAID	United States Agency for International Development

Foreword

Tuberculosis (TB), and especially multidrug-resistant TB, are major public concerns in many parts of the world, featuring continually among the top 10 causes of death worldwide. In correctional facilities, due to a variety of social and environmental factors, they pose an even more serious challenge. The notification rates of TB in prisons are up to 80 times higher than in the general population and the strains transmitted in these facilities are more likely to be drug-resistant or associated with HIV coinfection. In response to this alarming situation, the Tuberculosis Action Plan for the WHO European Region 2016–2020 explicitly addresses the needs of prisoners and other vulnerable populations.

To move towards ending this epidemic and to address TB control in correctional facilities, effective and efficient initiatives should be rapidly scaled up, using a health system approach. This compendium of Good practices in the prevention and care of tuberculosis and drug-resistant tuberculosis in correctional facilities *embodies this approach and presents a range of good practices from around the globe.*

The WHO Regional Office for Europe will continue to support Member States in the implementation of evidence-based approaches through intersectoral collaboration and whole-of-society and whole-of-government engagement so as to ensure that no one is left behind.

Dr Zsuzsanna Jakab
WHO Regional Director for Europe

Preface

Two years after the starting date for global implementation of the new Tuberculosis (TB) Action Plan for the WHO European Region 2016–2020 and the WHO End TB Strategy, it is time to take a deeper look at practices in one of the most challenging areas of TB prevention and control: that of care in correctional facilities. We are pleased to announce the publication of this first compendium of good practices in the prevention of and care for TB and multidrug- and extensively drug-resistant (M/XDR-) TB in prisons. Developed through the joint work of WHO headquarters and the WHO Regional Office for Europe, and in collaboration with the WHO Collaborating Centre on Prevention and Control of Tuberculosis in Prisons in Baku, Azerbaijan, this collection of good practices is designed to share and disseminate the lessons learned and to promote more effective implementation of the End TB Strategy around the globe.

Thanks to the strong commitment by Member States, supported by WHO and partners from civil society, the incidence of and mortality from TB have continued to decline in the last decade and a half, resulting in 53 million lives saved since 2000. At the same time, health systems have been strengthened so as to facilitate the introduction of people-centred and comprehensive TB care. Nonetheless, prisoners still face a much higher risk of contracting TB compared to the general population. TB, and especially M/XDR-TB, can seriously burden patients and their families, as treatment lasts up to two years and carries serious side-effects which both affect their capacities for health and earning their livelihoods and augment stigma and discrimination. Satisfactory treatment outcomes for all forms of TB and for everyone affected, without discrimination, are still to be achieved.

This compendium of good practices was created with the precise goal of sharing the knowledge gained in the management of TB in penitentiary systems globally. Scaling up good practices is crucial in achieving the ultimate goal of ending the TB epidemic. Only through intersectoral collaboration, stronger health systems, the assurance of universal access to care without financial hardship and a focus on leaving no one behind can the goal of ending TB be achieved and TB finally made a disease of the past.

Dr Mario Raviglione
Director, Global TB Programme
WHO headquarters

Dr Masoud Dara
Coordinator, Communicable Diseases
WHO Regional Office for Europe

Executive summary

In 2015, in consultation with Member States and national and international stakeholders, the WHO Regional Office for Europe prepared the Tuberculosis Action Plan for the WHO European Region 2016–2020. The Plan and its accompanying resolution EUR/RC65/17 were endorsed by all 53 Member States at the sixty-fifth session of the WHO Regional Committee for Europe in 2015.

In order to facilitate the transfer of knowledge and experience among countries and to improve the health system approach in correctional facilities, the Regional Office has been collecting and disseminating good examples of the prevention, control and care of tuberculosis (TB) and multidrug/extensively drug-resistant (M/XDR-) TB in the Region. In 2013, with examples from nearly half the Region, a compendium of *Best practices in prevention, control and care for drug-resistant TB* was presented at the sixty-third session of the WHO Regional Committee for Europe.

The Regional Office launched a special call on 27 March 2017 for good practices regarding TB control in correctional facilities, to continue the scaling up of effective interventions to strengthen health systems for the prevention and care of TB and M/XDR-TB. National health authorities, penitentiary health authorities, national TB programmes, partners and nongovernmental organizations working to control TB and M/XDR-TB in all WHO regions were invited to submit examples. The call was opened to all stakeholders and partners. Examples of good practice were collected over the five months April–September 2017, and were compiled and evaluated against predefined selection criteria.

In this first compendium of *Good practices in prevention and care of tuberculosis and drug-resistant tuberculosis in correctional facilities*, 31 examples from 15 countries (including 16 high-priority countries for MDR-TB and countries with high and low incidences of TB) are presented. They are categorized according to the most relevant pillars of the global End TB Strategy and areas of intervention of the Tuberculosis Action Plan for the WHO European Region 2016–2020. This compendium complements the previous compendium of best practices, and may be used to scale up effective interventions in line with the new Tuberculosis Action Plan for the WHO European Region 2016–2020. It is intended as a resource for stakeholders at all levels. The examples presented are the joint work of the authors listed for each practice.

The Regional Office encourages continued submission of good practices to the Regional Office Joint Tuberculosis, HIV and Viral Hepatitis Programme (email: eurotb@who.int.) for possible inclusion in an open access database of good practices and future compendiums.

1. Introduction and background

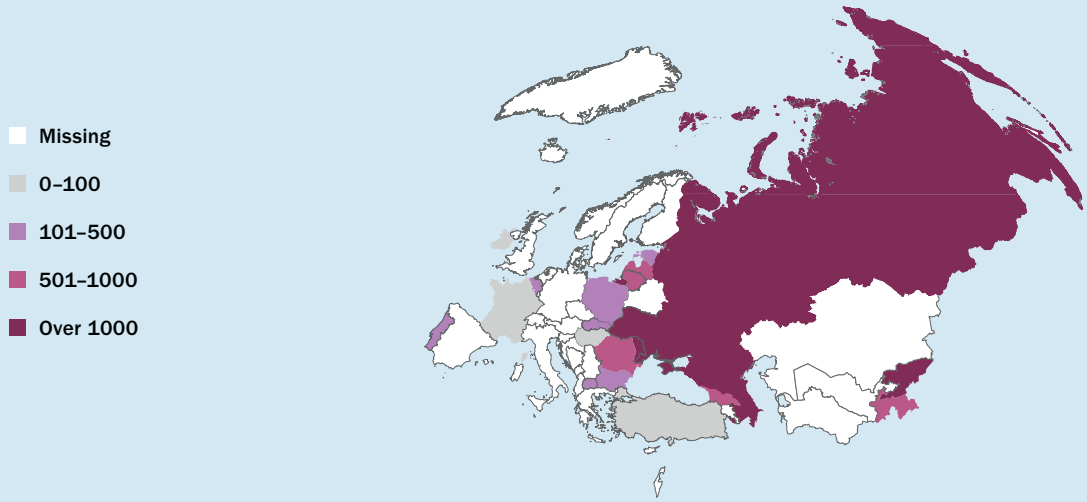
The global burden of tuberculosis and tuberculosis in prisons

Background

About one third of the world's population has latent tuberculosis (TB) infection and thus acts as a reservoir of *Mycobacterium tuberculosis*, the agent that causes active TB disease. More than 50 years after the first chemotherapeutic drugs for TB were introduced, the disease remains a leading cause of death and life-threatening illness which disproportionately affects low- and middle-income countries. The data on TB in correctional facilities remain challenging, as many countries do not integrate prison and national data and disaggregation of the available data is not always consistent. Worldwide in 2015, there were an estimated 10.4 million new cases of TB and 1.4 million people died from the disease *(1)*. Comparisons between treatment success rates in the civilian and prison sectors have been severely compromised by the inconsistency of the data and the increasing prevalence of multidrug-resistant (MDR-) TB and extensively drug-resistant (XDR-) TB *(1,2)*. Although the global rates of new TB cases have been falling since 2005, meeting Millennium Development Goal targets *(3)*, M/XDR-TB is a concern, with nearly half a million estimated new cases occurring annually *(1)*.

About one in 16 of the new TB cases notified in the WHO European Region occurs in the penitentiary system. Overall, the TB notification rate in correctional facilities in 2016 was 958 per 100 000 population (based on data from 27 Member States in the Region), over 30 times higher than in the general population (Fig. 1).

Fig. 1. TB notification rate in prisons, per 100 000 population, WHO European Region, 2016



Source: European Centre for Disease Prevention and Control *(4)*.

While the burden of TB in the penitentiary system in the Region is falling, the speed of decrease in the TB notification rate in the general population and in the penitentiary system varies little, ranging between -4% and -10% (Table 1). This decrease at regional level is strongly influenced by a steady decrease in the absolute and relative number of TB cases in Georgia, the Russian Federation and Ukraine.

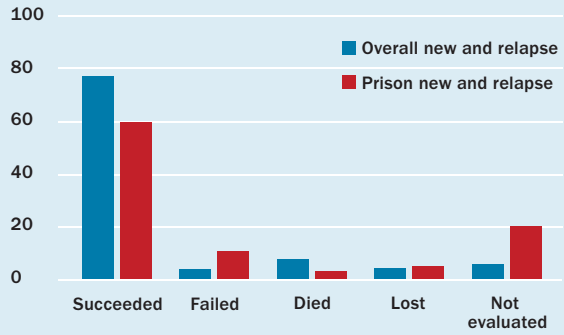
Treatment outcomes

The treatment success rate of new and relapse TB cases notified in prisons in 2015 was only 59.7% versus 77.2% in the general population (Fig. 2). The low treatment success rate in TB cases in correctional facilities is mainly due to the high proportion of cases not evaluated as well as failure of treatment.

Table 1. Trends in TB notification in the penitentiary system and general population, WHO European Region, 2014–2016

Notifications	Number			Rate per 100 000 population			Annual change 2014–2015	Annual change 2015–2016
	2014	2015	2016	2014	2015	2016	(%)	(%)
Prison TB notification data from all countries that provided data	15 461	13 670	12 116	1 060	1 001	958	-5.6	-4.3
Prison TB notifications from countries with complete notification data for last three consecutive years	14 213	12 835	11 836	1 201	1 078	1 015	-10.2	-5.9
Overall TB notifications in the Region	276 873	267 182	249 377	30.5	28.9	26.9	-5.2	-7.0

Fig. 2. Comparison of treatment outcomes of new and relapse cases in the overall and prison populations, WHO European Region, 2015



TB and M/XDR-TB in the WHO European Region

In the Region, 1000 people contract TB every day. The burden of TB in correctional facilities is geographically and socioeconomically disparate, and the incidence ranges from zero per 100 000 population in some Member States to over 2600 per 100 000 in others (Fig. 3). Even in low-incidence countries, certain cities and areas have high incidences of TB *(5)*. In 2015, an estimated 323 000 incident TB cases and 32 000 deaths were reported in the Region *(6)*. No data on estimates for TB incidence and death rates are available so far.

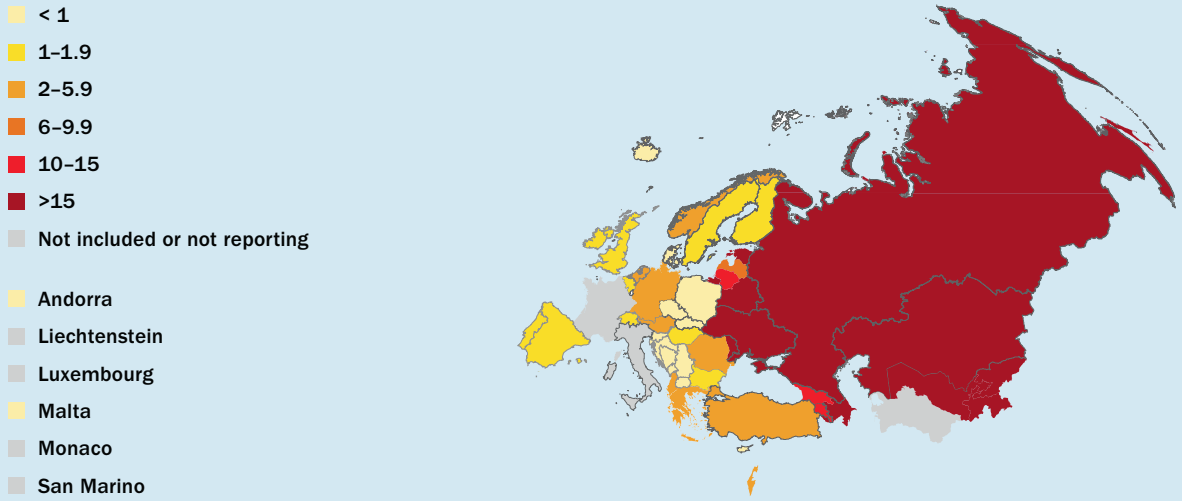
Despite the achievements made by some TB control programmes in penitentiaries, M/XDR-TB remains a major concern. The Region has nine[1] of the world's 30 countries with a high burden of M/XDR-TB, while 20% (120 000 in 2015 *(5)*) of all MDR/rifampicin-resistant TB cases in the world are in Europe. Fig. 3 shows the prevalence of primary MDR-TB among new TB cases in the Region.

The global and regional response to the threat of M/XDR-TB

In 2007, in response to the alarming problem of TB, the Berlin Declaration on Tuberculosis was endorsed by all Member States in the Region, who committed themselves to respond urgently to the re-emergence of TB in the Region. The commitment was echoed in the 2009 Beijing Declaration, in which ministers from the 27 countries of

[1] The nine countries in the Region with a high burden of MDR-TB are: Azerbaijan, Belarus, Kazakhstan, Kyrgyzstan, Republic of Moldova, Russian Federation, Tajikistan, Ukraine and Uzbekistan.

Fig. 3. Prevalence of primary MDR-TB among new TB cases per 100 000 population in the WHO European Region, 2016



Source: European Centre for Disease Prevention and Control *(4)*.

the world with a high burden of M/XDR-TB met in Beijing, China, to address this alarming threat. Subsequently, in May 2009, the Sixty-second World Health Assembly in resolution WHA62.15 urged all Member States to achieve universal access to diagnosis and treatment of M/XDR-TB by 2015 as part of the transition to universal health coverage, thereby saving lives and protecting communities.

Global End TB Strategy

Following the Global Plan to Stop TB 2006–2015, WHO developed an ambitious post-2015 global End TB Strategy which was endorsed by the World Health Assembly in 2014 through resolution WHA67.1. The Strategy comprises three main pillars and several milestones for 2020 and 2025 as well as targets for 2030 and 2035, with the goal of ending the TB epidemic. The Strategy's ultimate success depends on the commitment of Member States and partners. With this in mind, the resolution urges all Member States to adapt their use of the Strategy to their national priorities and specific circumstances, and invites regional partners to support the implementation of the Strategy. The WHO Regional Office for Europe has responded to this call by developing an ambitious roadmap and an action plan to end TB and MDR-TB in the Region (Table 2).

Good practices in the prevention and care of TB and DR-TB in correctional facilities in the Region

This compendium provides examples from countries with high and low incidences of TB and MDR-TB, in which TB in correctional facilities is addressed. The case studies are categorized according to the outline of the End TB Strategy blocks.

The examples presented are the joint work of WHO and the authors listed for each practice. This compendium is not intended to be a comprehensive collection of all the excellent, indispensable work being carried out in correctional facilities for the prevention and care of TB and M/XDR-TB in the Region. Rather, it represents good practices compiled during the five-month period April–September 2017. None of the good practices submitted was rejected and a WHO selection committee has worked with the countries to assure the quality and conditions of the practices shared (Table 3). Knowing the time constraints or other logistical difficulties that may have prevented other programmes, partners and organizations from making submissions, WHO headquarters and the Regional Office encourage continued submission of good practices to the Regional Office Joint Tuberculosis, HIV and Viral Hepatitis Programme (email: eurotb@who.int.).

Table 2. Outline of the Tuberculosis Action Plan for the WHO European Region 2016–2020

Vision	An end to the TB epidemic, with zero affected families facing catastrophic costs due to the disease
Goal	To end the spread of drug-susceptible and DR-TB by achieving universal access to prevention, diagnosis and treatment in all Member States in the Region, thereby contributing to the global End TB Strategy goal of ending the TB epidemic
Targets (to be achieved by 2020)	• 35% reduction in deaths due to TB
	• 25% reduction in TB incidence
	• 75% treatment success rate among patients with MDR-TB

Strategic directions

1. Work towards elimination of TB by strengthening the response of health systems to the prevention, control and care of TB and DR-TB.
2. Facilitate intersectoral collaboration to address the social determinants of and underlying risk factors for TB.
3. Work in national, regional and international multistakeholder partnerships, including civil society and communities.
4. Foster collaboration for the development and use of new diagnostic tools, medicines, vaccines and other treatment and preventive approaches.
5. Promote the rational use of existing resources, identify gaps and mobilize additional resources to ensure sustainability.
6. Ensure that the promotion of sound ethics, human rights and equity is embedded in all areas of the strategic interventions against TB listed above.

Areas of intervention

1. Integrated, patient-centred care and prevention

A. Systematic screening of contacts and high-risk groups
B. Early diagnosis of all forms of TB and universal access to drug-susceptibility testing (DST), including with rapid tests
C. Equitable access to high-quality treatment and a continuum of care for all people with TB, including DR-TB, and support to facilitate adherence to treatment
D. Collaborative TB-HIV activities and management of comorbid conditions
E. Management of latent TB infection, preventive treatment of people at high risk and vaccination against TB

2. Bold policies and supportive systems

A. Political commitment with adequate resources, including a universal health coverage policy
B. Strengthening of all functions of health systems, including well-aligned financing mechanisms for TB and human resources
C. Regulatory frameworks for case-based surveillance, and strengthening of vital registration and of the quality and rational use of medicines and pharmacovigilance
D. Airborne infection control, including regulated administrative, engineering and personal protection measures in all relevant health care facilities and congregate settings
E. Community systems and civil society engagement
F. Social protection, poverty alleviation and action on other determinants of TB, such as migration and imprisonment

3. Intensified research and innovation

A. Discovery, development and rapid uptake of new tools, interventions and strategies
B. Research to optimize implementation and impact and promote innovation

Good practices could include: national health strategies that have clearly outlined targets or visions for managing TB and M/XDR-TB; initiatives and activities to address any of the determinants of TB and M/XDR-TB; introduction of services in non-traditional locations to ensure better access to care; financial incentives to promote certain models of service delivery; intersectoral alignment of funds to promote patient-centred service delivery; training of health professionals in the civilian and penitentiary sectors in the prevention or management of TB and M/XDR-TB; re-/profiling of health workers' skills to serve patients' needs better; financing schemes that provide coverage for medications; investments in public research and development of medicines for care and prevention; and mobilization of Mhealth (the practice of medicine and public health supported by mobile devices) or innovative technologies to improve the prevention and care of TB and M/XDR-TB.

Table 3. Selection criteria for good practices for the prevention and care of TB and M/XDR-TB in correctional facilities

Criterion	Description
Relevance[a]	Must address one of the targets or areas of intervention of the Tuberculosis Action Plan for the WHO European Region 2016–2020, as outlined above
Sustainability[a]	Can be implemented and sustained over a long time (including policy decisions) without any massive injection of additional resources
Efficiency[a]	Must produce results with a reasonable level of resources and time
Ethical appropriateness[a]	Must respect the current rules of ethics for dealing with human populations
Equity/gender	Addresses the needs of vulnerable populations and/or gender in an equitable manner
Effectiveness	Must work and achieve results that have been measured
Possibility for scale-up	Can be scaled up to a larger population
Partnership	Involves satisfactory collaboration between several stakeholders
Community involvement	Involves participation from the affected communities
Political commitment	Has support from the relevant national or local authorities

[a] Required

National health authorities, including national TB programmes (NTPs), ministries of internal affairs, ministries of justice or any other relevant responsible governmental, partner and nongovernmental organizations working to combat TB and M/XDR-TB were invited to submit examples of good practices by an open call and submission form available online in English and Russian. The call for good practices was launched on 27 March 2017 and further disseminated in the WHO headquarters newsletter, on the Regional Office website and in social media. The call was open to all stakeholders and partners. Examples were collected over the five months April–September 2017. At the end of the collection period, all the reported practices were compiled and evaluated against the selection criteria listed in Table 3.

INTEGRATED, PATIENT-CENTERED CARE AND PREVENTION

2. Systematic screening for TB

Brazil. Improving the diagnosis and treatment of TB in correctional facilities in a Brazilian state

Submitted by: Beatriz Jatobá Pimentel,[1] Maria Telma Pinheiro Amorim,[2] Polyanna Teixeira Cavalcante,[3] Isis Fernandes Gonçalves Bomfim,[3] Tatiana Almeida do Nascimento[4]

[1]Public Health Laboratory, Maceió, Alagoas, Brazil; [2]Nursing Department, Penitentiary Complex, Maceió, Alagoas, Brazil; [3]Municipal TB Control Programme, Maceió, Alagoas, Brazil; [4]Municipal TB Laboratory, Maceió, Alagoas, Brazil

Background

From 2007 to 2010, the mean incidence rate of TB in the penitentiary complex of Maceió was 1166.2/100 000 inmates, but bacteriological tests were not performed for 25.6% of the notified cases. Additionally, since culture was rarely performed, drug resistance information was not available. Many patients were receiving improper treatment (the wrong dose or regimen) and follow-up during treatment was not standardized.

Description of the good practice

The penitentiary complex in Maceió is composed of eight correctional facilities. Each prison has a health staff responsible for evaluating the inmates' health status. Before entering the system to serve their sentences, all individuals are screened for TB symptoms. If they present with such symptoms, sputum samples are collected and sent for diagnosis. The person is isolated until the diagnosis is confirmed and he/she is sent for treatment. Symptomatic inmates are usually screened so that they can be submitted to diagnostic tests, and inmates who have been in contact with any diagnosed TB cases are evaluated. To find symptomatic TB cases the health staff are helped by people elected as representatives among the inmates, who report the presence of any sick person in the cells. Based on a partnership between different actors in TB control in the municipality, the municipal TB laboratory and the public health laboratory perform the tests (acid-fast bacilli (AFB) microscopy, Xpert MTB/RIF, culture and DST). Each month there is a "B day" when patients can consult health staff about their treatment. When inmates are about to be released, they are usually given a medical referral so that treatment can be kept up at health facilities near their homes.

The different areas of the End TB Strategy are involved in this good practice. Political commitment by the municipality/state enables samples to be sent to the municipal laboratory and to the public health laboratory for the tests to be performed. This made it possible for the inmates to have access to Xpert MTB/RIF testing, which is only available in the municipal laboratory in the city of Maceió. Culture and DST are also performed, allowing the patient to be put on the right treatment regimen. Symptomatic patients are isolated to avoid infection spreading in the cells and individual masks are offered for protection. Treatment is available in the facilities for all the diagnosed cases. The "B day" ensures that all the patients are followed up accurately.

Evidence of impact/efficacy

According to the available data, 2238 samples have been sent to be tested for TB since 2011. It was observed that the number of tests performed tended to increase, apart from in 2015 (possibly because of governmental changes). In total, 156 inmates had a bacteriological diagnosis, corresponding to a median positivity of 8.5%. The number of AFB microscopies for follow-up rose from 25 in 2011 to 116 in 2016 (Table 4). The number of cultures went from four in 2014 to 493 in 2016, from which 36 DST were carried out. Drug resistance was observed in five cases and another two were non-tuberculous mycobacteria. Some 48.7% of TB patients were cured in prison, while the rest continued their treatment in civilian facilities after release. In some cases, however, when inmates were released from prisons at weekends, the medical referrals were not available. The possibility of performing HIV tests on TB patients improved when case management also improved. In 2012, only 8% of inmates had this information; in 2013, the test was performed for 59% of the TB cases, and in 2016 this percentage increased to 100%.

Sustainability of the practice

This policy is being maintained in the facilities based on the commitment of the personnel and staff involved. Resources are available for the laboratories to perform the tests and the partnership between the prison and the

Table 4. Number of tests performed for TB by year and status (follow-up or diagnosis) among the inmates in the penitentiary system in Maceió, Alagoas, Brazil, 2011–2016

Year	Diagnosis tests	Positive cases	Positivity for diagnosis (%)	Follow-up AFB	Total number of tests
2011	101	16	15.8	25	126
2012	257	22	8.6	44	301
2013	423	33	7.8	91	514
2014	351	31	8.8	81	432
2015	157	16	10.2	56	213
2016	536	38	7.1	116	652
Total	1825	156	8.5	413	2238

laboratories enables the examinations, including rapid tests, culture and DST, to be carried out. The organization of "B days" in correctional facilities does not require extra funding and all necessary inputs are available. In 2015, there was a decrease in the number of tests performed during the transition between governments but this was rapidly sorted out. More TB-related educational activities are needed among the inmates so that they are more likely to be referred to the health staff. The question of medical referrals at weekends to keep patients in treatment also needs to be solved. Nevertheless, the results show that the practice is sustainable and able to bring about better management of TB in the correctional facilities where it was implemented.

Germany. TB control within the Berlin prison system: active case-finding

Submitted by: Friedemann Groß

Prison Hospital Berlin, Plötzensee Prison, Federal Republic of Germany

Background

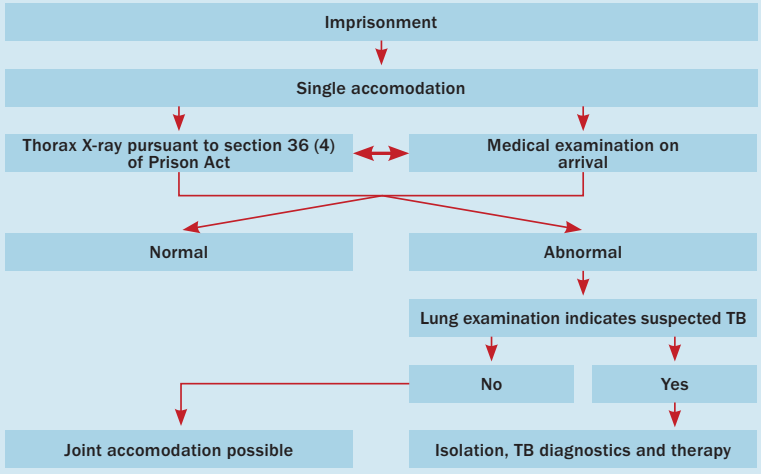
In more than 85% of cases detected in the Berlin prisons over the period 2006–2016, patients had no or only non-specific symptoms. For instance, even a productive cough did not prove to be a specific symptom indicating TB since the majority of prisoners suffer from chronic bronchitis as a result of smoking. Medical anamnesis and examination upon admission are, therefore, not sufficient on their own to identify suspected cases. The majority of cases can only be identified through active case-finding.

Description of the good practice

The basis for active case-finding in Berlin prisons is a chest X-ray on admission to the facility. Section 36 (4) of the Protection against Infection Act provides express authorization for this: "Persons admitted to prison are obliged to undergo medical screening for communicable diseases, including a chest X-ray." The Prison Act also imposes an obligation on prisoners to cooperate in maintaining and restoring their health. The prisons, in turn, have an obligation to assure the health of the prisoners. Under the duty of care, prisoners are entitled to be protected from any physical harm that may result from imprisonment and from any dangers such forced community entails (sections 56–58 of the Prison Act).

In the Berlin prison system (with a capacity of approximately 5000 prisoners in eight prisons), the preconditions for active case-finding in terms of personnel, space and technical equipment are met. The flowchart in Fig. 4 illustrates the approach taken within the Berlin prison system to ensure rigorous active TB case-finding via two-level thorax X-ray examination of ALL prisoners directly upon arrival in prison.

Fig. 4. Flowchart of case-finding in the Berlin prison system



Source: Prison Hospital Berlin, Plötzensee Prison, 2017 (personal communication).

Sustainability of the practice

The Berlin prison system has applied rigorous active case-finding to all new arrivals for more than 30 years. The two X-ray facilities at Moabit Prison and Berlin Prison Hospital at Plötzensee Prison are essential in this regard.

Haiti. TB screening in an overcrowded prison

Submitted by: John P. May, Mark C. Andrews, Karine Duverger

Health through Walls

Background

Haiti's national penitentiary in the nation's capital, Port-au-Prince, is one of the most overcrowded prisons in the world. In 2012, the prison had a population exceeding 3200 adult men in a space intended for 800 (over 400% of capacity). At that time, TB was prevalent among prisoners but no systematic process existed for disease screening except for screening for symptoms upon arrival. The introduction of a digital X-ray unit enabled systematic screening of the prison population to be carried out, resulting in a nearly sixfold increase in the identification of active TB cases. This model can be replicated in prisons in other low-income countries.

Description of the good practice

The health services in Haiti's prisons are provided by the Haitian Prison Authority with support from various nongovernmental organizations. In 2012, the United States Agency for International Development (USAID) funded the procurement of a mobile digital X-ray machine through a collaborative agreement with Health through Walls, a nongovernmental organization based in Haiti and other countries to assist prison health programmes in low-income countries. Even though all prisoners had already received traditional screening for symptoms upon entry, followed by sputum microscopy for those with positive symptoms, the prison organized a campaign to rescreen all prisoners using the digital X-ray machine.

To prepare for the screening campaign, educational programmes were conducted for the correctional officers. Each was offered TB screening, information about the disease and a description of the screening process for prisoners. Next, a group of 20 prisoners who had previously been trained as HIV/AIDS prisoner peer health educators received training in TB disease, including the signs and symptoms and the importance of detection. They then shared their knowledge with fellow prisoners to inform them about the campaign and motivate them to participate (Fig. 5).

Fig. 5. Art created by Haitian prisoners reflecting on a TB education campaign by prisoner peer educators

Source: Health through Walls (*7*).

The process of performing chest X-rays for the entire prison population took 10 weeks, working Monday–Friday. Groups of prisoners were escorted by security staff to the X-ray room in the medical unit from sequential housing units. At the end of the process, 3263 prisoners (an average of 65.3 per day) had received the X-ray screening. The range of completed screening was 0–111 but varied considerably depending on other prison activities, holidays, movements and security concerns in the prison. The process was voluntary, yet fewer than 20 (<1%) prisoners refused to participate.

The X-ray images were transmitted electronically to a volunteer radiologist who conducted the readings. Of the 3262 chest X-rays taken, 134 (4.1%) had abnormalities consistent with a pulmonary infection. Prisoners with abnormal X-rays were placed in respiratory isolation, evaluated by physicians and asked to provide sputum samples for smear microscopy. Of these, 50 (37%) had smear-positive TB and 38 (28%) had smear-negative disease clinically or radiographically suggestive of TB. All identified TB cases were placed in treatment. For the remaining 46 (34%) cases with presumptive TB, there was insufficient laboratory, clinical or radiographic evidence to initiate TB treatment. These prisoners were followed over time with repeat examinations and X-rays; 20 were determined to have TB disease at later dates.

The approached used by the Haitian Prison Authority conforms to pillar one of the End TB Strategy – integrated patient-centred care and prevention – in emphasizing systematic screening and early identification of TB disease. Without the interventions, many prisoners would not have known about or identified with TB disease and would not have entered into care, treatment and cure.

Evidence of impact/efficacy

The screening campaign, through the efforts of the prisoner peer educators and adaptability of the digital radiography, had a significant impact on the identification and cure of and mortality from the disease. During the year prior to the intervention, 24 prisoners died of TB. In the year following the intervention nine prisoners died of TB disease (a nearly threefold reduction), and in the year after that there were no TB-related deaths. The number of prisoners identified with TB who were enrolled in and completed treatment increased from 13 to 79 (a sixfold increase) during the first year and exceeded 150 in the following year. Because the X-ray machine is mobile, it has been taken to Haiti's other 15 prisons to screen prisoners at each one.

Several positive impacts have resulted from this approach. Education for correctional officers about TB disease has engendered cooperation and support. Peer education of the prisoners has resulted in a greater than 99% screening acceptance rate and support for adherence to treatment. An important lesson from the campaign has been that symptom screening upon admission is not sufficient for TB control in an overcrowded prison in a community with a high prevalence of TB. Latent TB infection is estimated to be more than 80% in the general population. Individuals entering the prison are likely to have the same prevalence, if not more, although no study has examined this. Although individuals might not have active TB disease upon entry to prison, they risk activation of their latent disease in the overcrowded and stressful conditions, particularly when nutrition is inadequate. As a result, much of the TB disease in Haitian prisons is likely to be activation of latent disease as much as transmission of new disease. Consequently, TB screening with digital X-ray upon intake and then at least once annually has proved to be one of the most effective mechanisms to identify the disease and facilitate treatment.

Sustainability of the practice

Both prisoner peer education and digital radiography are sustainable and effective practices. Prisoners able and willing to serve as peer educators are eagerly identified in most prison systems. Digital X-ray systems, while requiring an initial investment upfront for the equipment, are less costly to maintain than nondigital radiography and more sensitive than AFB microscopy. Mobile systems allow the screening to be carried out in many prisons. In the five years following the introduction of the digital X-ray machine in the Haitian Prison Service, 31 521 screening X-rays have been performed and 992 (3.1%) prisoners have been identified with TB and completed treatment.

India. Enhanced TB case-finding through advocacy and sensitization meetings in prisons in central India

Submitted by: Gayadhar Mallick,[1] Hemant D. Shewade,[1] M.V. Ajay Kumar,[1] Sarabjit S. Chadha,[1] Tarun Kumar Agrawal[2]

[1]International Union Against Tuberculosis and Lung Disease; [2]Directorate of Health Services, State TB Cell, Chhattisgarh, India

Background

Worldwide, an estimated three million TB cases were missed in 2013 and 4.3 million in 2015. To detect these missed cases, in addition to strengthening the existing infrastructure under the NTPs, various measures are recommended in the End TB Strategy. These include an improved notification system, involvement of the private sector through public-private partnership models, and enhanced and active case-finding using new rapid point of care diagnostic tests among vulnerable and marginalized populations who are at high risk for TB. Enhanced case-finding is defined as providing information about the appropriate type of health-seeking behaviour when people experience symptoms of TB, often combined with improving access to diagnostic services.

TB in prisons is a major public health problem in many settings, particularly in India where there is a high incidence of the disease (217 per 100 000 population). TB spreads in prisons for several reasons including the concomitant conditions, particularly HIV infection, injecting drug use, poor nutritional status, smoking, overcrowding and inadequate or inaccessible medical care. The TB incidence rate in prisons is 23 times higher than in the general population. The situation is further worsened by the emergence and spread of M/XDR-TB.

Chhattisgarh in central India is a vulnerable state affected by conflict. In August 2016, 19 473 inmates were held in accommodation built for 9267 (twice the capacity) in 28 out of the 30 different high-security prisons in the state (two prisons were not operating). This paper describes the advocacy and sensitization activities undertaken in the state's prisons and the associated change in TB case notification.

Description of the good practice

Intervention in prisons is a flagship activity under the Indian NTP. Prior to 2014 in Chhattisgarh, however, activities related to TB control in prisons were neither systematically implemented nor reported. In view of this and the overcrowding in the prisons in the state, the technical consultant of the International Union Against Tuberculosis and Lung Disease, in collaboration with officials from the Chhattisgarh state TB programme, advocated the need for regular sensitization of the prison inmates about TB with state-level policy-makers and administrators of the State Department of Prisons. As a result, instructions were issued by the state prison authorities to all the prisons and by the State TB Cell to staff at district and subdistrict levels to coordinate and organize regular meetings for this purpose (at least one every three months per prison) and report on them in the subdistrict- and district-level quarterly reports.

Sensitization meetings were conducted in all 28 functioning prisons in Chhattisgarh in 2014 using tools such as videos, flipcharts and contests, including question-and-answer games. Inmates who realized they had symptoms of TB and sought care during the meetings or during routine health check-ups later were given access to sputum smear microscopy. In the 25 prisons where direct microscopy was not available, the district health system and prison authorities made arrangements for sputum smear examination either through accompanied patient referrals or sputum collection and transport to the nearest microscopy centres. In districts where the the Union's Axshya project was involved (10 out of 27 districts), community volunteers were involved in sputum collection and transport. The Axshya project is a flagship programme of the Union being implemented in 300 districts across 21 states in India to enhance the visibility and coverage of the NTP.

In 2014, 92 sensitization meetings were conducted for 16 199 prisoners and 735 prison staff. Sputum examination of 1348 inmates with presumptive TB resulted in diagnoses of 124 patients with TB (96 smear-positive pulmonary TB and 28 smear-negative culture-positive TB). Moreover, three patients were diagnosed with MDR-TB. All

diagnosed patients were started on treatment as per the national guidelines. Prisoners made up 1% of the state's 154 868 patients with presumptive TB examined and 0.5% of the state's 28 832 notified TB cases in 2014.

This innovative intervention involved more than one area of the End TB Strategy. Addressing TB among prisoners is an equity and human rights issue, as often people in correctional facilities do not get equitable access to health care. This intervention involved advocacy with the authorities in many sectors, systematic communication with prisoners and linking to screening, early diagnosis and treatment for TB (including MDR-TB), and demonstrated a partnership between the government and civil society organizations. Early diagnosis and care of prisoners with TB is crucial if these hotspots of transmission are to be eliminated and the global TB epidemic ended.

Evidence of impact/efficacy

In 2014, quarterly reports from the NTP and prison records in Chhattisgarh state showed that 39% more patients with presumptive TB were examined for sputum microscopy per 100 000 prisoners than in 2013, and the TB case notification rate increased by 38%.

Sustainability of the practice

Implementation of the enhanced case-finding strategy in 2014 with improved access to diagnostic services (accompanied patient referral or sputum collection and transport) was associated with increased presumptive TB examination and TB case detection rates. All relevant stakeholders in the prisons and TB control were involved at the highest level. This was critical for success and will also be helpful in sustaining the practice.

Netherlands. TB care for prisoners: a patient-centred and multisectoral approach

Submitted by: Niesje L. Jansen-Aaldring,[1] Connie G.M. Erkens,[1] Alies de With[2]

[1]KNCV Tuberculosis Foundation, Netherlands; [2]GGD Flevoland, Netherlands

Background

The Netherlands is a low-incidence country with a TB incidence of 5.1 per 100 000 population in 2015. Since the early 1990s, one of the pillars of TB control has been active case-finding in risk groups, defined as populations with an annual incidence of at least 50 per 100 000 persons, 10 times the national average. At that time repeated outbreaks in prisons showed the need to screen detainees for active TB; screening of new prison entrants for active TB has been routine since then. In addition, to enhance case-holding and adherence to treatment in this mobile population, a guideline for screening and management of TB treatment in prisons was developed in close collaboration between the prison health services under the Ministry of Justice, public health centres (which come under the Ministry of Health) and the KNCV Tuberculosis Foundation. The guideline covers the guiding principles and rationale for screening, the roles and responsibilities for all the parties involved, the standard operating procedures for screening on entry, and the management of prisoners with presumptive or confirmed TB. The guideline is updated periodically (most recently in 2016), based on systematic monitoring and evaluation of the results of the screening and TB surveillance.

Since 2011, between 15 000 and 25 000 new prisoners have been screened annually and 10–20 detainees with TB have been detected through the screening programme. More than 90% of the TB patients diagnosed in prison settings are foreign-born. The screening programme detects 80% of the TB cases diagnosed in the detention facilities. The remaining cases occur later in the period of detention. The number of cases detected passively has decreased in recent years. Detainees with TB often belong to marginalized communities: almost a third of this patient group is undocumented. A smaller group (<10%) reports substance abuse or homelessness.

Description of the good practice

The prison services, operating under the Ministry of Justice, are responsible for organizing the screening, which is carried out by the TB departments of public health centres. Since 1994, mobile X-ray units (buses with digital mobile X-ray devices) operated by regional public health centres visit the prisons weekly and screen the new entrants who are eligible. X-rays are evaluated within 24–48 hours by dedicated TB physicians working at the public health centres. When the TB physician detects abnormalities indicating possible TB, the prison health staff collect sputum and the prisoner is called for further medical evaluation to the public health centre. Overall, 6% of people with X-ray abnormalities called for further investigation are actually diagnosed with TB. The results of the screening are reported annually and prison health and public health authorities evaluate periodically whether the screening still meets the requirements for the screening of risk populations.

In recent decades, the incidence of TB in the Netherlands has fallen considerably to the point where it has become an imported disease in people from countries where it is still common. This trend was also observed in the prison population: after 2006 the prevalence of TB among screened prisoners fell below 50 per 100 000 persons screened, the cut-off for TB risk populations. Consequently, the prison population as such could no longer be regarded as a population at risk for TB. The Committee for Practical TB Control advised the Ministry of Justice to restrict the X-ray screening to prisoners with specific risk factors for TB. Since 2011, the prison health services have been performing a triage and only detainees with one or more risk factors are guided to the X-ray screening.

Entry screening in detention is often the first opportunity to reach vulnerable and marginalized risk groups. Therefore, until 2015 substance abuse and homelessness were also included as risk factors. In 2015 the yield from the screening was evaluated and it was found that substance abuse was common and not discriminative enough to select the actual risk groups among the Dutch-born prison population. Moreover, the epidemic of

TB among drug users outside prisons seemed to have come to an end and routine screening programmes for this particular target group were terminated. At the same time it was recognized that not all foreign-born prisoners can be considered as risk populations for TB. Therefore, on the advice of the Committee for Practical Tuberculosis Control, the Ministry of Justice adjusted the triage. As of 2016, only prisoners with one or more of the following risk factors are eligible for X-ray screening: being born in a country with WHO-estimated TB incidence above 10 per 100 000 population, a history of previous TB, imprisonment abroad in the last five years or signs and symptoms suggestive of TB.

Integrated care for prisoners with (presumed) TB is the leading principle of the guideline. The TB specialist based at the public health centre is responsible for diagnosis and treatment. From the start of the treatment the TB nurse provides individual care and support to the patient and initiates the investigation of contacts. The involvement of the TB nurse is key in ensuring adherence to treatment. This is important, as in the Netherlands prison sentences are short. In 2015, half of the prisoners were imprisoned for three weeks or less and the average stay in the detention centres for foreign nationals was eight weeks.

In general, patients receive their medication through directly observed treatment during imprisonment. Directly observed treatment is coordinated by the public health centre TB nurse, but the medical or other prison staff provide the daily observed treatment. To promote adherence to treatment after release, the TB nurse educates the patient and discusses the options for continuing treatment as soon as possible. Release is a crucial phase for the continuation of TB treatment, so the guideline contains a detailed description of the procedure to follow on (impending) release from prison. In cases involving undocumented migrants, the procedure for a permit to stay in the country for the duration of the TB treatment will be started by the medical staff of the prison. As release can sometimes be unexpected, the patient is told that he/she will be given contact information for all public health centres in the country. When a release date is known, the medical staff will inform the public health centre as soon as possible and an appointment will be arranged with the public health centre in the patient's home town. The patient will be informed by the medical staff of the prison about what to do after release and will be given a box with TB medication for one week.

The guideline stipulates that the public health centre is responsible for public health measures in prison related to the TB case. Thus, the TB nurse provides health education and advice to the prison staff and authorities. The public health centre will assess whether transmission is likely to have occurred and initiate and coordinate the investigation of contacts, in close collaboration with the prison health service and the prison authorities. According to the national guidelines for contact investigation, prison staff and inmates who are in close contact with the prisoner, and the prisoner's close contacts outside, will be screened for latent TB infection and offered preventive treatment if they are infected. The public health centre is responsible for the management of inmates identified with latent TB infection as well as for the management of TB patients.

Routine monitoring and evaluation of the policy's performance and impact is an important component of policy development. For this purpose, the yield of the screening and the outcome of TB treatment among those identified through the screening are reported annually and evaluated periodically in order to fine-tune and adjust the guidelines for screening and case management.

Evidence of impact/efficacy

The patient pathway: a case history

Mr X, a Dutch man was incarcerated in prison. Routine triage revealed he had been in prison abroad for several years but had no symptoms of TB. Based on the risk factor, he was eligible for chest X-ray screening, which was performed within one week.

The X-ray showed abnormalities very suspicious for TB. The TB specialist in the public health centre informed the prison medical staff immediately by telephone and gave instructions for sputum to be collected for further diagnostic evaluation. He also advised that the patient should be isolated in his own cell from other prisoners until the sputum results were known

and that prison staff should take appropriate infection control measures, such as wearing FFP2 masks when entering the prison cell. The sputum specimens were collected as instructed and sent immediately to the local microbiological laboratory for microscopy and culture. The sputum microscopy results came back the same day and showed AFB-positive ++ disease. Within two days the TB nurse of the public health centre arranged for the patient to be transferred to one of the two clinical TB centres in the Netherlands. In this centre prisoners remain incarcerated while receiving appropriate care until they are no longer considered infectious. After this, they return to the prison where treatment is continued on an ambulatory basis.

Mr X received the same care that TB patients normally receive. The public health centre TB nurse visited him to interview and inform him about TB treatment in general and the importance of adhering to the treatment. During the interview the nurse assessed the risk of non-adherence and discussed with him the possibilities and potential bottlenecks for adherence, so as to give him tailored support during treatment. In addition, the nurse collected the necessary information to assess the need for contact investigation and to identify close contacts eligible for evaluation.

The laboratory tests confirmed drug-sensitive TB. The patient was discharged from hospital after one month, by which time his prison sentence was over, although he needed to continue medication for another five months. The care for the patient was carried over to the public health centre TB nurse near his home. She supported him with weekly home visits and a supply of drugs. After some weeks his adherence to treatment and motivation seemed to be satisfactory, so the frequency of the home visits changed. He completed his treatment successfully after six months.

In agreement with the medical service and management of the prison, the TB nurse informed all staff and inmates by letter about TB in general and the procedure for contact investigation in prison. The prison staff were also informed in a special group session about TB to avoid stigmatization and (unnecessary) panic. As in any case of TB, the public health centre performed a routine contact investigation in the family of the patient and among a selection of staff and inmates in the prison who were reported to have had close contact with the patient. Seven of his family members were checked and four were diagnosed with latent TB infection. In addition, a colleague who was a particularly close contact was tested and was also diagnosed with latent TB infection. In the prison 16 staff members and five inmates were invited for contact investigation, but no further persons with TB or latent TB infection were found.

Following the introduction of the triage system, the number of screenings fell from nearly 40 000 to 15 000 annually. The new triage system introduced in 2016 has further reduced the number of prisoners eligible for X-ray screening. As a consequence, the comparative cost of the X-ray screening per person screened has increased, as the cost of the screening infrastructure remains more or less the same.

Sustainability of the practice

The practice is sustainable. In the coming years, the feasibility and cost–benefit of alternative screening methods (such as interferon gamma release assays) will be explored in pilot projects.

The Philippines. New Bilibid Prison Hospital TB treatment unit

Submitted by: Cecilia V. Villanueva

New Bilibid Prison Hospital, Philippines

Background

The New Bilibid Prison Hospital's TB unit became operational in 2013. This unit was established with substantial support from the International Committee of the Red Cross (ICRC) through a Memorandum of Understanding with the Bureau of Corrections. It serves as a reference and coordination body for the diagnosis and treatment of TB among the 22 000 prison population.

Description of the good practice

The algorithm for screening all new inmates on entry into the prison system consists of a TB questionnaire, clinical examination and digital chest X-ray. Sputum samples from identified cases with presumptive TB are referred to Xpert MTB/RIF testing.

In addition, cough surveillance is employed to detect cases with presumptive TB during the sentence. The medical staff have trained inmates to monitor their fellow inmates for signs and symptoms of TB. Cases with symptoms suggestive of TB are referred to Xpert MTB/RIF testing. Recently, an annual mass screening was launched in the penitentiary system. During a mass screening performed at a medium security compound from March to June 2017, approximately 6000 inmates were screened out of a population of 6039. As a result, 276 drug-susceptible and 27 DR-TB cases were identified.

As soon as TB is diagnosed and rifampicin susceptibility is identified, the effective treatment with first- or second-line anti-TB drugs is initiated in the respective treatment ward. Patients who convert to negative continue their treatment in an outpatient department as per the national treatment protocol. All TB patients are offered HIV screening. The average turnover of the hospital is 613 drug-susceptible and 52 DR-TB patients annually. The TB unit has nine working staff: a physician, a nurse coordinator for drug-susceptible and DR-TB, a nurse/Xpert MTB/RIF technician, an Xpert MTB/RIF technician, a microscopist and three DR-TB nurses employed by the Philippine Business for Progress social development foundation, as part of a Memorandum of Understanding with the Bureau of Corrections.

The TB unit has two wings. The front part is divided into a pharmacy, laboratory, nurse station, doctor's clinic, conference room and stock room. The back part contains the treatment department which is divided into several wards in accordance with patients' drug resistance profile and treatment phase.

The staff of the unit also provide health education before, during and after treatment. There are general assemblies/discussions as part of the treatment and care of patients.

Sustainability of the practice

Despite severe limits on the number of prison health care staff, the programme is able to provide the recommended scope of TB services thanks to continuous support from partners, especially the ICRC.

Portugal. Systematic screening for TB in inmates: a protocol between the Ministry of Health and the Ministry of Justice

Submitted by: Bernardo Mateiro Gomes,[1] Agostinho Simão,[2] Ana Maria Correia,[3] Erica Cardoso,[4] José Leon Bernardo,[4] Judite Maia,[5] Letícia Malta,[6] Maria Conceição Gomes,[7] Ricardo Crawford,[8] Rui Miller,[9] Rui Morgado,[9] Teresa Galhardo,[10] Ulisses Brito,[11] Raquel Duarte[12]

[1]Northern Region Health Administration, Public Health Department, Portugal; [2]Alentejo Region Tuberculosis Programme Coordination, Portugal; [3]Northern Region Tuberculosis Programme Coordination, Portugal; [4]São João de Deus Prison Hospital Facility, Portugal; [5]Centre Region Tuberculosis Coordination Programme, Portugal; [6]Directorate General of Reinsertion and Prison Service, Portugal; [7]Lisbon and Tagus Valley Region Tuberculosis Programme Coordination, Portugal; [8]Madeira Region Tuberculosis Programme Coordination, Portugal; [9]Directorate General of Reinsertion and Prison Services, Portugal; [10]Prison System Health Care Management Competence Centre, Portugal; [11]Algarve Region Tuberculosis Programme Coordination, Portugal; [12]Directorate General of Health, Tuberculosis National Programme, Portugal

Background

Prisons are widely considered to be reservoirs for TB infection. At the same time, TB is frequently associated with socioeconomic determinants and risk comorbidities, including HIV infection, drug use and alcoholism. The high occupancy of prisons (calculated to be 105% of the capacity in 2015) encourages infections, and any entry of an infectious TB case represents an important future burden on the prison health system. TB outbreaks and long-lasting chains of transmission associated with prisons are recognizable problems in a country where the incidence of TB has been decreasing in recent years. Prison inmates are a vulnerable population and should be considered a priority when the health needs of a population are addressed.

Description of the good practice

The current practice reflects collaboration between the Ministry of Justice and the Ministry of Health in the drafting and signing of a protocol regarding the detection and prevention of TB in Portuguese prisons. This protocol establishes the following activities:

- integration of active TB screening in all prison health services, with definitions of the procedures and deadlines for follow-up if symptoms are detected;
- allocation of mobile X-ray units for screening and public funding for medical examinations performed in the private sector in cases of temporary inconvenience;
- implementation of screening on two levels: for all inmates at the point of entry into the prison system and periodic screening for all inmates within a maximum period of six months;
- definition of reporting times for all TB-related statistics (cases and screenings) in addition to the existing mandatory disease electronic recording and reporting system;
- clarification of the communication framework between prisons, the health services and public health authorities;
- implementation of good practices in contact-screening, in coordination with existing procedures, in primary care settings;
- creation of a joint technical committee, with health and justice representatives to coordinate, supervise and evaluate the implementation of the measures established in the protocol.

Since the End TB Strategy provides a global framework for the guidance of national, regional and local interventions, this practice in the national context is an expression of partnership between the prison and health systems and the public health authorities to combat TB among people deprived of liberty.

Evidence of impact/efficacy

Although implementation only started effectively in September 2014 and was not uniform throughout the prison system, the impact so far is noticeable in the number of secondary cases in or related to prisons. Even though the size and number of outbreaks in prisons have decreased noticeably, the overall number of cases in prisons has not decreased; this could be due to previous missing diagnoses and cases arising in former inmates that can be considered

cases associated with prisons in the surveillance system. The overall number of TB cases in the country has, however, fallen. Further evidence of impact should be available in the next few years.

Improved coordination between the prison health system and other institutions such as TB outpatient centres is another positive output of the current practice.

Sustainability of the practice

This protocol is built on long-lasting efforts for coordination and good practice in some prisons. The procedures described thus have at least some associated experience and are easier to implement, modify and sustain. The current protocol has no end date and is automatically renewed every year. The costs are fully met by funds from the national budget and represent a small proportion of the costs of the prison health system, which usually carries a far heavier burden from expenditure on drugs regarding other pathologies. The practice is expected to continue with no sustainability issues since now it has no deadline. No other health care provision for inmates was jeopardized by this investment in TB prevention, and appropriate treatment for other health problems as well as TB is available.

3. Early diagnosis of all forms of TB and universal access to DST, including the use of rapid tests

Azerbaijan. Routine surveillance in the penitentiary system

Submitted by: Rasim Tahirli,[1,2] Rafail Mekhtiev,[2] Natavan Alikhanova[2]

[1]Specialized Treatment Institution for Inmates with TB, Azerbaijan; [2]Main Medical Department, Ministry of Justice, Azerbaijan

Background

Worldwide, the incidence, prevalence and mortality of TB in penitentiary systems is known to vastly exceed the rates in the civil sector. The control and management of TB in penal institutions have their own additional challenges associated both with the social status of the prison population and the need to meet certain conditions of imprisonment in line with the current legal status of a prisoner or detainee.

According to WHO estimates, only 35% of patients with MDR-TB are detected in the Region. Azerbaijan is one of the nine countries with a high burden of DR-TB in the Region. A survey carried out in the civilian sector in 2012–2013 showed that the prevalence of MDR-TB was 13% among new cases and 28% among retreated cases. Prompt detection and enrolment of patients in treatment is very important for planning TB control activities. In Azerbaijan, less than 60% of the estimated number of MDR-TB patients start in treatment.

Certain requirements need to be met in order to ensure the prompt detection of TB patients. Key among these are sufficient technical and human resources in the laboratory service, quality performance, full coverage with the laboratory examinations and use of the most efficient work algorithms.

In the mid-1990s, the reorganization of the medical service in the penitentiary system was initiated with the active participation of the ICRC. By 1998, full coverage of the medical service with the DOTS programme,[2] together with the introduction of its main component – sputum smear microscopy – was achieved in the penitentiary sector. One of the prisons was reorganized and a specialized TB treatment facility was established.

In subsequent years, thanks to political will in the Ministry of Justice and Bureau of Medicine and fruitful cooperation with such partners as Expand TB/FIND projects, the Global Fund to fight HIV, Malaria and Tuberculosis and WHO, the laboratory service has developed its structure and the human and technical capacities necessary for successful operation.

Description of the good practice

In the mid-2000s, the laboratory service of the specialized TB treatment facility began testing drug resistance in TB patients in the penitentiary sector. In 2005, the laboratory received its first certificate of excellence from the supranational reference laboratory in Borstel, Germany, confirming the high quality of its first-line DST, and in 2007 a second certificate for the high quality of its second-line DST. For about 10 years, the laboratory of the specialized TB treatment facility annually received evaluation results for sensitivity and specificity of the tests at the level of 98–100% for such drugs as isoniazid and rifampicin and 90–100% for the rest of the first- and second-line drugs. In 2007, the BACTEC mycobacteria growth indicator tube (MGIT) 960 system and second-line drugs were introduced into the penitentiary sector. Between 2008 and 2009, the laboratory of the specialized TB treatment facility was one of six laboratories in the world which performed pilot testing of the diagnostic system Xpert MTB/RIF. In 2012, line probe assays (LPA) for detection of drug resistance were put into practice.

Over the past decade, with support from the Bureau of Medicine, the staff of the penitentiary laboratory service has been increased and financial support from the state and donors has enabled the purchase of the necessary equipment, including Xpert MTB/RIF and consumables for first- and second-line DSTs on solid and liquid media. The most up-to-date algorithm for laboratory TB diagnosis and one of its components (Xpert MTB/RIF testing coverage of all patients with TB symptoms) have been introduced into laboratory practice. Since 2012, three out of

[2] The core approach underpinning pillar 1 of the End TB Strategy.

seven existing Xpert MTB/RIF machines have been used in peripheral health care institutions. Sputum specimens are now collected and examined from all patients with presumptive TB after they have seen a doctor.

Since 2006, annual active mass screening with mandatory questionnaire surveys, chest X-rays and sputum examinations has been carried out among the population in the penitentiary sector. In 2011, the system for transporting the sputum specimens from individuals with TB symptoms in all penal institutions to the laboratory of the specialized TB treatment facility was established to ensure the full range of bacteriological examinations. The collection of two sputum specimens from each patient with symptoms suggestive of TB is important. All test methods, including rapid molecular and conventional phenotypic methods, are used for DST. The system of internal and external quality control and assurance is well established. A unified electronic database of TB patients that includes data from the TB and laboratory registers has been in place since 1995.

The efficient operation of the laboratory service, confirmed by external quality assurance and modern laboratory algorithms, the establishment of systems for the active annual screening of the entire population of the penitentiary sector, screening upon admission to penal facilities and transport of the sputum specimens have all allowed for routine drug resistance surveillance among TB patients in the penitentiary system.

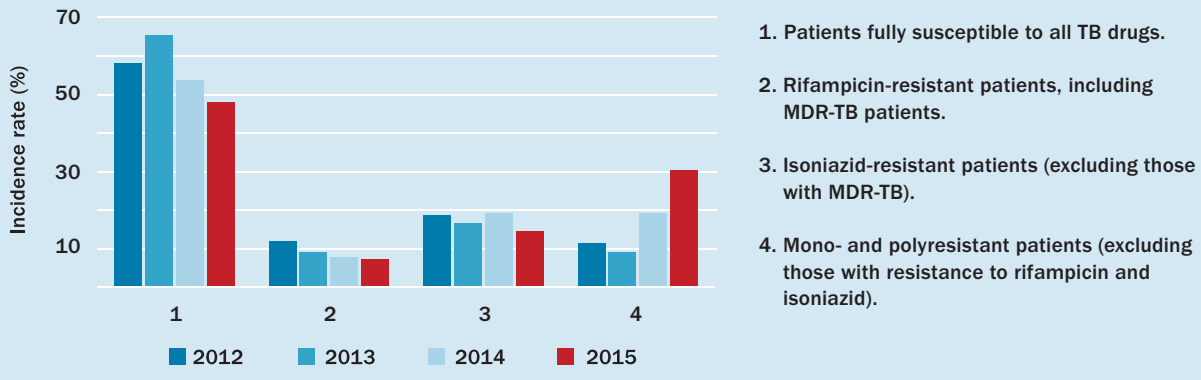
Without such strong political will and commitment, supported by adequate financial and human resources and efforts to introduce new methods and interventions, it would not be possible to ensure the early diagnosis of TB, and universal access to DST and rapid diagnostic tests in particular.

This strong political will and commitment may ensure not only the development of a long-term strategy with the use of modern approaches in TB control and efforts focused on human resource development and better use of the internal funding opportunities, but also serve as guarantors for international partners and donors.

Evidence of impact/efficacy

Between 2011 and 2015, the level of bacteriological confirmation among new pulmonary TB cases in the penal system increased from 55% to 98% and for retreated cases from 68 to 85%. DST coverage reached almost 100% (Fig. 6, 7).

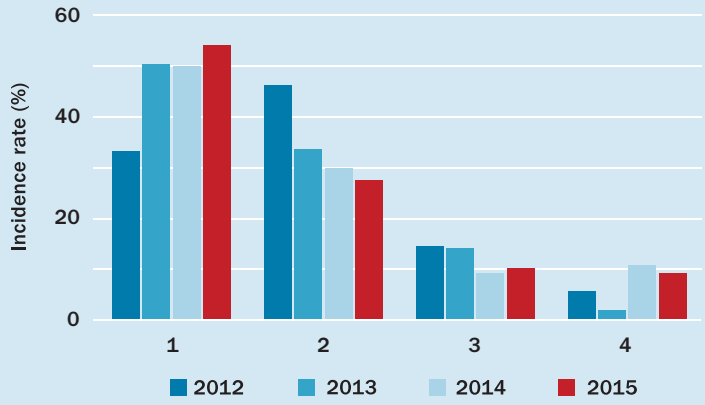
Fig. 6. Drug susceptibility profile of new TB cases, Azerbaijan penal system, 2012–2015



Source: Ministry of Justice, Azerbaijan (unpublished information).

Surveillance data enable activities to be properly planned, including the more rational procurement of TB drugs and laboratory consumables, assessment of the efficiency of TB control activities in the penitentiary sector as a whole and in each institution in particular, and identification of the level of transmission of drug-resistant strains.

Fig. 7. Drug susceptibility profile of retreated TB cases, Azerbaijan penal system, 2012–2015



1. Patients fully susceptible to all TB drugs.
2. Rifampicin-resistant patients, including MDR-TB patients.
3. Isoniazid-resistant patients (excluding those with MDR-TB).
4. Mono- and polyresistant patients (excluding those with resistance to rifampicin and isoniazid).

Source: Ministry of Justice, Azerbaijan (unpublished information).

The professionalism of the laboratory staff and a well-established system of work have become models for many countries which can learn from the experience of the penitentiary system of Azerbaijan.

Sustainability of the practice

Costly activities, such as routine surveillance among vulnerable population groups, should be jointly supported by local and external sources of funding. Success in TB control is not possible without the stable implementation of the necessary set of procedures, especially in the context of the penitentiary system. Joint efforts should be made to develop mechanisms that provide access to such procedures with minimal costs for patients at risk.

Brazil. Rapid molecular test and DST for first-line drugs for persons deprived of liberty in São Paulo state

Submitted by: Lucilene Tenório Garcia, Carina Michel Omura, Aglaé Gambirasio, Adalberto Antunes, Ana Portela Lindoso

Clemente Ferreira Institute, Brazil

Background

In São Paulo state, 12% (about 200 000 people) of the new TB cases occur among prison inmates. Delays in diagnosis and treatment among this population occur frequently. Although there have been improvements in the rates of cure and loss to follow-up among prisoners, the emergence of MDR-TB is now a major challenge in this group.

Description of the good practice

From January 2014 to date, with the objective of early diagnosis of pulmonary TB in the prison population, the Clemente Ferreira Institute laboratory has carried out rapid molecular testing and first-line DST for three temporary detention centres located in the state of São Paulo, the military police hospital and the penitentiary hospital centre of São Paulo. Biological samples are brought to the laboratory and analysed weekly. The results are sent by email to the respective centres as soon as they have been released.

Evidence of impact/efficacy

During this period, the Institute has received 3251 samples for rapid molecular testing: 4% were detected with *M. tuberculosis* and 0.27% with resistance to rifampicin. Moreover, all cases with detected TB underwent DST for first-line drugs; 2.4% were detected with isoniazid resistance and 1.8% with MDR.

This practice offers quality and specific diagnosis and accelerates access to treatment for a vulnerable population. At the same time, it ensures that infection control measures are more adequate and effective, with the purpose of reducing the transmission of resistant TB among prisoners. It is hoped that in the long run it will lead to a decrease in TB and DR-TB incidence in prisons.

This practice may also reduce the risk of TB transmission to professionals from the provisional detention centres and the hospital centre. Prisoners' relatives may be less exposed and at a lower risk of acquiring TB and its drug-resistant forms.

Sustainability of the practice

The rapid molecular test for the diagnosis of TB and DR-TB should be regularly used as a first step in respiratory symptomatic prisoners. First-line DST should also be performed in this population. However, for this protocol to be adequate without prejudice or the loss or inappropriate spending of the budget, adequate control of the performance of these tests with correct medical indications is required. An adequate and viable collection of biological samples is equally important to avoid unnecessary repetition of the tests. Moreover, to ensure individualized treatment regimens, all cases with diagnosed resistance to rifampicin need to pass DST to second-line dugs.

United Kingdom (England). Developing improved TB prevention and control in West Midlands prisons

Submitted by: Nic Coetzee, Sarah Dowle

Public Health England, West Midlands, United Kingdom (England)

Background

In 2014, people in prison in the United Kingdom (England) were four times more likely to have active TB than people in the general population, on the basis of incidence rates of 48/100 000 (41 notifications) in prison and 12/100 000 (6520 notifications) in the general population *(8)*.

The numbers of TB cases (pulmonary and nonpulmonary) diagnosed among people in prison in England have shown a decline since a peak of 68 cases in 2013 to 48 cases in 2015. The number of TB incidents (one infectious pulmonary case with potential for transmission to prison contacts) has not decreased significantly, and there is increasing evidence of outbreaks (two or more cases linked by person, place or time). The most recent data *(9)* show that 33 pulmonary and 12 extrapulmonary active TB cases were reported among people in prisons in the 12 months ending March 2016, including two outbreaks of TB *(10)*.

Delays in diagnosis among people in prison are common. National surveillance data from cases notified during the period 2010–2015 show that the highest proportion (33.3%, 320/962) of cases with a delay in treatment from onset of symptoms of more than four months was in those with current or a history of imprisonment *(8)*. Restricting this to those who were currently in prison showed that 29.5% (62/210) endured a diagnostic delay of more than four months. This not only increases the risk of transmission of infection to prisoners, prison staff and visitors but also the complexity of contact-tracing.

Description of the good practice

In the West Midlands region, the occurrence of six significant prison TB incidents during the three years April 2014 to April 2017 prompted a review of TB management and control in the 12 prisons in this region. All the incidents were characterized by delays in diagnosis and the late detection of a significantly infectious pulmonary index case, resulting in exposure and infection in multiple close contacts. In two separate TB incidents further transmission resulted in secondary linked cases (outbreaks) during 2015. In all incidents, the index prisoners entered the prison from high-risk social environments characterized by drug/alcohol use and prior prison history. Rapid churn of prisoner populations, both in the prison where the outbreak occurred and between multiple prisons, posed additional challenges in the follow-up of contacts. The four single-case prison TB incidents resulted in 570 contacts being offered latent TB screening, with a positivity ranging from 17% to 36%. Both outbreaks resulted from delays of more than four months in diagnosis of the index case. The first outbreak occurred in a prison with a capacity for 650 young men and resulted in a further eight prisoners contracting the disease. The second outbreak occurred in a prison with a capacity for 1605 male prisoners, resulting in a further three prisoners developing the disease. In both prison outbreaks. the screening of 389 potentially exposed staff and prisoners for symptoms and latent TB infection identified 66 with latent TB who were subsequently treated on site.

In total, 131 prisoners had been transferred (or released) before on-site mass screening was introduced and needed following up across nine regions for eight months: this yielded 30 cases positive for latent infection who were offered treatment. A total of 51 dispersed prisoners were lost to follow-up.

Because of extensive transmission in the first outbreak, on-site mobile digital chest X-ray case-finding of the entire prisoner population was used. A total of 550 prisoners accepted mobile X-ray imaging, resulting in two prisoners being diagnosed early with active pulmonary TB. Both these prisoners were confirmed as contacts of the index case.

These incidents and outbreaks have focused collaborative work in the West Midlands region towards improved TB prevention and control in prisons. Joint work between partnership services during these incidents and outbreaks has improved collaboration between public health teams, prison administrations, health care providers, commissioners and TB teams. A task and finish group has been set up and is working in the following priority areas.

- A recommendation from a recent baseline audit assessing the quality of TB services in each of the 12 prisons is being used to set the work plan of the task and finish group.
- Health care staff, prisoners, link nurses and prison officers are being trained in early symptom recognition coupled with rapid investigation protocols and referral pathways.
- Clinical systems for TB control and infection prevention in prisons are being revised, coupled with comprehensive early detection, improved directly observed treatment services and rapid referral pathways. This will also include improved handover agreements when patients or contacts need to be transferred between prisons or released.
- Public health teams and TB services are adopting an extended early contact screening approach when an infectious index case is identified.
- Mobile digital chest X-rays are being used for case-finding during outbreaks. This is an efficient and convenient method of rapidly screening for undetected active TB cases across the prison and thus providing assurance of no ongoing (and undetected) transmission to other wings in the prison.
- Whole genome sequencing of confirmed prison TB cases is being used to investigate clusters and transmission patterns in prisons and links to the community.

During the next year these priority areas will be taken forward at the West Midlands Tuberculosis Control Board and linked to local TB control networks in the region.

Evidence of impact/efficacy

Extensive screening of prison contacts has resulted in a far higher proportion of latent infection cases being detected and offered treatment. The use of mass digital mobile X-ray for early case detection led to the early detection of two cases, which contributed to reducing transmission in one prison.

Sustainability of the practice

The interventions do not require additional resources but are focused on a redesign of the clinical system and improved access for trained staff and diagnostics. The work is overseen by the multiagency West Midlands TB Control Board which is providing continuing leadership and assurance.

4. Equitable access to quality treatment and continuum of care for all TB patients released from correctional facilities to the civilian system, and support for patients to facilitate their adherence to treatment

Brazil. A strong partnership involving the prison system and municipalities leading to long-term good results in the control of TB in a large population of inmates

Submitted by: Vera Maria Neder Galesi,[1] Laedi Alves Rodrigues dos Santos,[1] Solange Aparecida Pongelupi[2]

[1]São Paulo State Secretariat of Health, Brazil; [2]São Paulo State Secretariat of Penitentiary Administration, Brazil

Background

From 1998 to 2016, the prison population in the state of São Paulo, Brazil, increased from 73 615 to 230 152. On average seven new prisons were created each year (an increase from 39 to 168) in the same period. At the same time, the detection of new TB cases in prisons increased from 147 in 1998 to 2411 in 2016. The control of TB in this population has been a huge challenge.

The prison population is under the responsibility of the Secretariat of the State Prison Administration. Each prison has a small team composed of three to four people in charge of health care, including a nurse, social worker or psychologist and a doctor. In the late 1990s there was an important organizational change in the São Paulo prison system, with the transfer of most of the people deprived of their liberty (including those not yet sentenced) from the Secretariat of Public Security (where the conditions were worse) to the State Prison Administration Secretariat. This decision was to some extent motivated by the need to facilitate TB control.

Currently, samples from cases with presumptive TB are collected at all correctional facilities and respective smear microscopy is provided by the municipal and regional health laboratories. Reference laboratories perform culture, identification and DST. Since 2015, many prisons have also had access to rapid molecular test (Xpert MTB/RIF). Patients in need of diagnostic clarification, as well as cases with drug resistance, are referred to a central penitentiary hospital which can either admit the patient to the hospital itself or return him or her to the prison of origin. Most of the drug-resistant patients are sent to hospitals for treatment, given the lack of facilities in prisons for isolation and treatment.

Description of the good practice

The São Paulo TB control programme has prioritized the population deprived of liberty since 1996. Initially, the programme promoted a working group of the State Health and State Prison Administration secretariats. The main focus of this interinstitutional group is TB case-finding and provision of diagnosis and adequate treatment. In 2008, the State Prison Administration published a protocol of basic health care in prison units that clearly defines these activities.

TB case-finding

As well as encouraging detainees to seek medical care, active TB case-finding is done in various ways.

- Since 2000, the state TB programme has been promoting systematic (twice yearly) activities to increase the detection of individuals with prolonged respiratory symptoms throughout the state, including in the prison system, with further smear examination.
- According to the approved protocol, routine screening for cough is done every time a detainee arrives in a prison unit, whether they come on first entry or on transfer.
- When a TB case is discovered, the prison health team is mobilized to report and examine the contacts.

Diagnostics of TB

Cases with presumed TB used to undergo direct smear examination. Since 2015, screening has been done with Xpert MTB/RIF with about 17 regional laboratories performing the tests. DST is carried out for all rifampicin-resistant cases and the results are monitored both by the prison staff in charge and by the state TB team, who

monitor the DST results available weekly through an on-line information system. As soon as a DR-TB case is detected, the monitoring team gets in touch with the respective facility's health staff and ensures that each drug-resistant patient is sent to one of the reference hospitals for the prison system.

Treatment

Directly observed treatment, which at first sight seems simple to organize in the prison system, is difficult to implement since in this environment priority is centred on security issues. The above-mentioned protocol includes the recommendation that TB treatment has to be supervised. The implementation of directly observed treatment required administrative changes and related human resources. Patients were taken daily to the prison clinic or, in some facilities, the staff observed the ingestion of the drugs in the cells. Supervised drug administration was agreed at the planning meetings, involving the State Prison Administration health coordination and the health teams of the prison units.

Educational activities for the prison population

At least twice a year, in active TB campaigns, the prison population receives detailed information on the symptoms, treatment and prevention of the disease. At such times, activities such as theatre, gymnastics and the creativity of the State Prison Administration staff and health secretariats have proved effective in raising responsibility among inmates for their own health.

TB surveillance system

In 2006, the TB surveillance system was changed to a web-based one (the Tbweb) which allows for reliable analysis in real time and has instruments to monitor each case, wherever it is found. With the implementation of the Tbweb system, there was a significant improvement in the follow-up of TB cases. Today, it is possible separately to evaluate treatment success rates and other indicators, both in the total number of cases and for each prison separately.

Transfers between prisons and after release

To organize proper health care for detainees, the Secretariat of the State Prison Administration published standards and resolutions determining that each patient has a health record which has to be sent with the inmate to the new establishment on transfer to another prison. The Tbweb surveillance system also contributes to the avoidance of breaks in treatment. When a person is transferred between prisons or released, an automatic email is sent to the destination to warn that a patient is on the way. Thus, the site that receives a patient knows that he or she is being treated and can access information about the medicines in use and other clinical data. In the case of a release permit, the municipality of destination also receives the release and may initiate measures to ensure the patient receives treatment. By 2009, prison workers were being trained to fill in the Tbweb database so that all transfers are recorded punctually and breaks in treatment avoided. To date, a total of 282 health officials from 139 prisons have been trained and are keeping information on patient care up to date.

Monitoring and evaluation

Currently, the staff of the penitentiary system participate actively in the planning, execution, training, campaigning and other activities of the NTP in the state. On a quarterly basis, the secretariat of the State Prison Administration team participates in joint evaluation and planning meetings with the state's regional health and municipal surveillance teams, where specific issues relating to the prison population are always included. In these meetings the main indicators and action plans are evaluated. Joint planning of activities leads to integrated action between teams from the secretariat of the State Prison Administration and the people responsible at state and municipal levels responsible for the TB epidemiological surveillance of the laboratories.

All the interventions described are part of integrated, patient-centred care and prevention. Working together, from planning to execution and evaluation, has resulted in administrative decisions that have facilitated the incorporation of case-finding, directly observed treatment and surveillance into the NTP. The consensus on the part of state and municipal authorities about the importance of the problem is fundamental to the co-responsibility for the population deprived of liberty, either during the time of imprisonment or after release. The practice of

patient-centred care is encouraged by the joint organization of procedures for prison releases by the various actors in health care.

Evidence of impact/efficacy

The indicators show that the control of TB in the prison system, although laborious and difficult, can lead to positive results. Routine screening with systematic active case-finding has been implemented since 2000, but proper registration started in 2003. In that year, 6693 symptomatic prisoners were examined, corresponding to 5% of the prison population. In 2016, 24% of the prison population, or 56 602 detainees, underwent smear examination. During the last rounds of active case-finding carried out in March and November 2016 (15 days in each period), 26 052 inmates (more than 10% of all the prison population) underwent smear examination. In 2003, one in every 14 presumptive TB cases was positive. For comparison, in 2010 the positivity decreased to one in every 33 presumptive TB cases. The Tbweb surveillance system has allowed for an evaluation of the impact of interventions. An analysis has been made of data from 2006 to 2015, during which time the prison population rose from 130 814 to 225 563 (58%) and TB cases detected in detainees increased to 30%. In 2006, when the Tbweb surveillance system was deployed, there were 687 new TB cases and 191 retreated cases among detainees; in 2015 there were 2269 reported new cases and 640 retreated cases. As well as the better organization of the information system, a great contribution came from the improvement in TB case-finding activities. During the same period, testing for HIV rose from 60% to 92%. The percentage of pulmonary TB cases with available culture results increased from 34% to 81%. Of 1875 pulmonary TB cases found to be culture-positive in 2015, 1439 (77%) had DST results, of which 1363 were drug-sensitive, 58 were resistant to either rifampin or isoniazid and 12 were found to be MDR. All drug-resistant cases are monitored by the state TB control staff, so that the appropriate treatment regimen is administered under the guidance of specialists. In 2015, 89% of TB patients had directly supervised treatment, as against only 41% in 2006.

As a result of all the measures described the treatment success rate among TB patients increased from 58% in 1998 to 72% in 2006 and 90% in the 2015 cohort, while the death rate fell from 3% to 2%. This suggests that cases are being identified at the earliest stage of the disease and also reflects better treatment and proper follow-up. With supervised treatment, intense communication in case of transferred or released patients and educational efforts, the loss to follow-up rate decreased from 18% to 5%. There are still some cases of loss to follow-up, most of which are due to individuals released from prison before the end of their treatment. In these cases, municipalities seek to follow up patients to continue treatment, but some detainees report their residential addresses incorrectly or refuse treatment.

Sustainability of the practice

Partnership for TB control with the Health Secretariat, the Prison Administration Secretariat and the municipalities has been sustained for the last two decades. Active TB case-finding activities, directly supervised treatment, monitoring and training activities have been maintained even during political changes.

Georgia. Treatment of DR-TB in the penitentiary system with new TB medications

Submitted by: Nana Kiria,[1] Zaza Avaliani,[1] Lali Mikiashvili,[1] Tamta Demurishvili[2]

[1]National Centre or Tuberculosis and Lung Diseases, Georgia; [2]Penitential Facility No. 19, Tbilisi, Georgia

Background

Over the last several decades there has been a vast improvement in TB care in Georgia. However, a large amount of work still needs to be done to reach the goal of the End TB Strategy. As TB generally remains a major health problem, the emergence of DR-TB has made the care of TB even more complex and costly, requiring more effort in every direction for the successful management and care of patients.

Since the introduction of second-line drugs in 2008, more than 5000 DR-TB patients, including those in the penitentiary system, have been enrolled in WHO-recommended second-line TB treatment. Nevertheless, the treatment success rate remains low, mainly due to suboptimal treatment regimens, intolerable, severe and serious adverse events and amplified resistance. All those factors have unintentionally led to high rates of treatment failure or loss to follow-up, with no drugs available to replace the existing inadequate regimens.

The TB epidemiological situation in prisons did, however, significantly improve during the period 2010–2015. The absolute number of TB patients in prisons fell from 1280 in 2010 to 115 in 2015, but the prevalence of DR-TB was still high at 48.5% in retreatment cases and 16.1% in new cases. In September 2015, DR-TB treatment with the use of new TB drugs was started in the penitentiary system.

Description of the good practice

Introduction of new anti-TB drugs

The introduction in September 2014 of the new anti-TB drugs, bedaquiline and delamanid, for compassionate use, with the support of Médecins Sans Frontières France, was one of the greatest achievements in TB care in Georgia. In July 2015, USAID and Janssen Therapeutics launched the bedaquiline donation programme. Earlier, the Green Light Committee had approved the use of the repurposed drugs, linezolid and imipenem plus cilastatin, along with bedaquiline and delamanid, and an order was placed with the Global Drug Facility through the Global Fund to Fight AIDS, Tuberculosis and Malaria. From September 2015, the new anti-TB drugs were introduced in penitentiary facilities.

Introduction of new anti-TB drugs in prisons

Despite the wide availability of the new anti-TB drugs, the enrolment of inmates in the TB treatment programme is centralized. From September 2015 until November 2016, 24 patients who were HIV-negative but with 42% of hepatitis C virus coinfection and a mean age of 35 years were selected for the new treatment regimens at penitential facility No. 19. Bedaquiline, delamanid and the repurposed drugs linezolid, clofazamine and imipenem/cilastatin were included in the treatment regimen with other second-line drugs, in accordance with WHO recommendations. Of those 24 patients, 11 (45.8%) had extensively DR-TB. Twelve patients (50%) had a previous history of TB treatment with failure as the treatment outcome.

In the framework of the application of new drugs in correctional facilities, 17 patients were prescribed bedaquiline and seven patients received delamanid. In the cases of five of the bedaquiline patients, however, delamanid was added to the regimen six months after they finished a full course of bedaquiline. Three inmates required surgical intervention. The use of the new TB drugs in correctional facility No. 19 is showing promising results: in all 24 cases culture conversion was achieved in a mean time of 2.8 months, although culture was reconverted in two patients as a result of poor adherence, in the sixth and twelfth months of treatment, respectively. In addition, one patient interrupted treatment in the sixth month of the course.

Evidence of impact/efficacy

The preliminary results of the use of the new anti-TB medications in the correctional facilities showed high bactericidal activity and good safety. However, adherence to treatment remains a significant challenge in achieving a sustainable treatment success rate.

Sustainability of the practice

The practice will definitely be sustainable and maintained by expanding the scope of new drugs in all the correctional facilities, as well as ensuring the continued care of TB patients released from correctional facilities to the civil system and support for patients to facilitate adherence to treatment.

Hungary. Screening and treatment of TB in correctional facilities in collaboration with the national TB network

Submitted by: Szilvia Szalay,[1] Ágnes Bakos[2]

[1]Central Hospital of the Hungarian Prison Service; [2]National Korányi Institute for Pulmonology, Hungary

Background

The incidence of TB in Hungary is showing a continuous decrease: in 2013 it had fallen to under 10 per 100 000 population. An online notification system was introduced in 2010, and by 2017 a total of 62 TB cases had been detected in correctional facilities at an annual rate varying between two and 14. The physical structure (mass accommodation) and requirements (sessions and work in groups) of the Prison Service, as well as the composition of the prison population (who are generally not health-conscious) make it difficult to prevent TB infection.

Description of the good practice

The organizational structure of the Prison Service and its close cooperation with the key partners in the fight against TB (the National Tuberculosis Surveillance and the pulmonary dispensaries) fosters screening, diagnostics and treatment of TB cases in correctional facilities.

Screening for active TB must take place within 15 days of a prisoner's admission to a correctional facility, followed by annual screening according to relevant legislation (Regulation No. 18/1998 (VI.3.) NM on the epidemiological measures required for the prevention of infectious diseases and epidemics). The same regulation applies to the staff. Screening is by X-ray either in the Prison Service or in the national network of pulmonary dispensaries. If no X-ray facilities are available, regular screening is provided by mobile screening stations equipped with chest X-ray run by an external government service provider.

Prisoners with presumptive TB are referred to the central hospital of the Prison Service. Only patients with smear-negative status are returned to their correctional facility for further anti-TB treatment, with regular check-ups in the central hospital.

While implementation of directly observed treatment is challenging in most of the TB treatment facilities in Hungary, it is practised strictly both in the central hospital of the Prison Service and in the correctional facilities. Prisoners take their medication under strict control, in the presence of medical staff.

There is an effective data exchange between the players. In cases where TB treatment started before imprisonment, the related data are sent to the central hospital of the Prison Service. The treatment outcomes of such patients treated at the hospital are reported by pulmonary dispensaries. If detention ends before treatment is completed, the local pulmonary dispensaries ensure continuation of TB therapy.

Evidence of impact/efficacy

No case of acquired MDR-TB has been found among the 62 TB cases discovered since 2010 and only one new MDR-TB case has been diagnosed in the correctional facilities during the last seven years.

The key elements in the successful treatment of inmates with TB are strict compliance with the directly observed treatment strategy and effective communication between the pulmonary dispensaries and the central hospital of the Prison Service, supported by the National Tuberculosis Surveillance.

Sustainability of the practice

The practice is sustainable and does not require any additional resources.

Portugal. TB screening programme targeting the homeless population in an urban centre

Submitted by: Ana Luísa Vieira,[1] Eduarda Ferreira,[2] Lurdes Maio,[2] Carlos Matos,[2] Jorge Gonçalves,[2] Olena Oliveira,[3] Carlos Carvalho,[4] Ricardo Reis,[5] Eduardo Coutinho,[5] Rita Gaio,[6] Raquel Duarte[3,7,8]

[1]Hospital de Braga, Braga, Portugal; [2]ACES Porto Oriental, Porto, Portugal; [3]EPI Unit, Instituto de Saúde Pública, Universidade do Porto, Porto, Portugal; [4]Northern Region Health Administration, Porto, Portugal; [5]Porto Tuberculosis Outpatient Centre, Porto, Portugal; Department of Mathematics, Faculty of Sciences, University of Porto, Porto, Portugal; [6]Centre of Mathematics, University of Porto, Porto, Portugal; [7]Departamento de Ciências da Saúde Pública e Forenses e Educação, Faculdade de Medicina, Universidade do Porto, Porto, Portugal; [8]Pulmonology Department, Centro Hospitalar de Vila Nova de Gaia/Espinho, Vila Nova de Gaia, Portugal

Background

Portugal has one of the highest TB burdens in the European Union, mainly due to highly incident urban centres. The city of Porto is the most worrying such centre, with an annual incidence rate of 46/100 000. Several risk factors classically associated with TB are particularly significant in Porto compared to other urban centres: a higher unemployment rate and fewer people from qualified socioeconomic groups with a higher education, the greater prevalence of TB among intravenous drug users and individuals infected with HIV, and homelessness, with 34% of TB cases occurring in homeless people. Besides being a hard-to-reach population, homeless people are considered vulnerable for TB because of several risk factors that affect the transmission, diagnosis, treatment and respective outcome of the disease.

In 2011, the national census identified 92 053 homeless people. In that year, there were 112 notifications of TB among homeless people, a TB incidence rate of 122/100 000 for homeless people compared to 23/100 000 for the general population. Another major concern in respect to this population relates to the link between homelessness, housing insecurity and incarceration. Although there are no national data, international research suggests that homelessness is a substantial problem for released prisoners. Many of them face difficulties with social reintegration into the community, which may increase the risk of homelessness, which may in turn increase the risk for imprisonment. Approximately 5% of all homeless people diagnosed with TB were former prisoners.

There is no established active screening programme regarding homeless people. The existing strategies are based on passive screening and TB screening prior to admission to a homeless shelter. The latter is based on referral of the homeless individual by a homeless shelter to a TB outpatient centre and attendance at an appointment. Despite being recommended, neither is mandatory nor routinely carried out. Thus, TB cases tend to be detected long after the onset of disease, which increases the chances of transmission and a poorer prognosis.

Against this background, an attempt was made to improve the existing suboptimal strategies through the use of a multidisciplinary approach to screen actively for TB in the homeless population of Porto. The main objective was to analyse the effect of implementing a TB screening programme for homeless people, including those recently discharged from prison.

Description of the good practice

The screening programme was developed with local public health services, the TB outpatient centre and institutions dedicated to care of the homeless population. These institutions support people in their facilities such as shelters, social canteens and day care centres as well as on the streets, with the highly important role of supporting the health care of these individuals. The screening programme included several strategies: formal education and awareness campaigns, voluntary mobile X-ray unit screening during the implementation period, subsequent screening upon admission to a shelter and periodic screening of homeless residents of shelters (the last two mandatory).

Formal education and awareness campaigns

The research team developed several educational workshops for people working in organizations caring for the homeless, in which the basic approach to caring for TB patients was presented. This included education regarding the risks in different social groups, clinical symptoms that should prompt referral to the TB outpatient centre,

diagnosis and treatment. Infection prevention measures, with adequate facemasks and procedures for the transport of homeless individuals with presumptive TB, were also explained. The screening programme was presented in detail. During the implementation of the programme, those attending were accompanied by a team member so that they could continue the screening procedures after completion of the implementation period. Several training sessions were scheduled afterwards to promote the long-term maintenance of the programme. These workers were also trained in coping with TB adherence to treatment and possible adverse events, in order to promote case-holding and successful TB treatment.

In close cooperation with the above-mentioned institutions, direct activities were also carried out to increase awareness of the programme among homeless people and to improve their compliance. These included the distribution of leaflets that explained the advantages of a targeted TB screening programme and gave information on scheduled screenings.

To raise awareness among the general population, a website and Facebook page were created with periodic posts, newsletters and updates about the project. This information was also distributed via local newspapers and social media websites.

Mobile X-ray screening

Participation in the screening was voluntary, so to achieve the highest possible coverage rate, the locations, dates and times for screening were selected on the basis of information provided by organizations caring for the homeless regarding locations of the facilities, areas where homeless people were to be found and their daily routines. These screening details were publicized in advance among homeless persons by workers from the organizations and other project partners. Screening was performed in a mobile X-ray unit; homeless individuals were observed by a nurse experienced in TB, they completed a questionnaire and underwent a chest X-ray. The questionnaire collected information on demographics, previous TB history (personal history and history of close relatives), risky behaviour and five main symptoms (persistent cough that lasted at least three weeks; fever, usually slight and mostly at nights; weight loss resulting in changing sizes of clothes; night sweats; and bloody sputum). All chest X-rays were immediately reviewed by the radiology technician and then by a medical radiologist. Individuals with clinical suspicion of TB (two or more symptoms in the questionnaire) or radiological suspicion of TB were asked to provide two sputum samples for fluorescence smear microscopy and mycobacterial culture, which were collected in a nearby outdoor place. All presumptive TB cases were referred to the TB outpatient centre with an appointment scheduled to which they were accompanied by a social worker who had been trained by the research team.

Screening in shelters

After the implementation period and the mobile X-ray screening, screening was carried out in shelters. The person in charge of the shelter applied the questionnaire prior to admission of a resident. A chest X-ray was performed in the mobile unit during the following four weeks, according to schedule. For every resident in these shelters, the questionnaire was completed twice a year and the chest X-ray once a year.

Homeless people, specifically those released from prison, often experience barriers and delays in access to health care and may even refuse medical assistance, all of which might increase transmission of TB into the community. This screening programme allows for systematic screening and early diagnosis of TB and facilitates access to health-care services. It also allows for integrated communication between prison and ambulatory health services for homeless persons who were former prisoners, thus facilitating the follow-up of these individuals.

The association of homelessness with other risk factors, such as alcohol and drug abuse, can increase the risk of poor treatment compliance, with the accompanying risks of drug resistance development and transmission. Moreover, TB/HIV coinfection implies the presence of drug interactions and higher mortality rates and may also lead to toxicity development. It is also known that TB outcomes tend to be worse in the homeless. The established partnerships with organizations caring for the homeless were essential to promote coping with possible adverse events and adherence to treatment.

For the success of the screening programme, a joint effort from several stakeholders was essential, including political commitment to allocate the necessary resources, effective alignment between the local public health department, TB outpatient centre and the prison system and overall engagement of all the organizations caring for the homeless involved.

Evidence of impact/efficacy

During the implementation period (December 2015 to March 2016), 197 homeless people were identified from 10 mobile X-ray unit screening sessions. According to unofficial data from the organizations involved, more than 90% of the homeless people in the city were reached. Most were male (69%) and the mean age was 49±12 years. Twenty-eight individuals preferred not to participate in the screening and were screened directly at the TB outpatient centre, most of them with a referral and accompanied by a staff member from one of the homeless support organizations.

Analysis of the questionnaires indicated that 15 individuals reported a previous diagnosis of TB. Twenty-three patients mentioned imprisonment and contact with a person with active TB, more than half of them within the last two years (n=16). Hepatitis C was the most common comorbidity, and illegal drug use was the most common substance abuse habit. The most frequent symptoms were cough (n=32) and weight loss (n=26). Approximately 15% of individuals (n=26) complained of two or more symptoms. The radiologist classified most chest X-rays as normal (n=151) and five of the abnormal chest X-rays as compatible with active TB. Sixteen patients were given medical appointments at the TB outpatient centre and two were found to have pulmonary TB. These two were symptomatic and had a smear-positive microscopy and an abnormal chest X-ray. They were always accompanied by staff members from the homeless support organizations to medical appointments at the TB outpatient centre. The directly observed treatment was planned by the TB outpatient centre, in close collaboration with the homeless care organization involved and the public health services. There were no recorded adverse events and the treatment was successfully completed. Pulmonary TB was not diagnosed in any of the homeless individuals who were directly screened in the TB outpatient centre. Thus, two patients were diagnosed with pulmonary TB in this screening programme, resulting in a prevalence of 1015/100 000 homeless people.

During the implementation period of the screening programme, there were no other cases of TB among homeless people registered in Porto.

The involvement of staff from social organizations was critical in building trust among homeless people, integrating released prisoners, raising awareness of TB symptoms, tracing contacts, holding cases and monitoring adherence.

The screening programme was considered a feasible strategy by all the organizations involved and is now included in the routine procedures for active screening for TB in this marginalized population.

Sustainability of the practice

Several TB screening strategies directed at homeless people, such as mobile screening services, have been described as cost-effective. For instance, the Find and Treat Programme in London (United Kingdom) has screened over 60 000 people, including homeless persons and those accessing drug and alcohol services, and both screening and case management were considered to be cost-effective. In Rotterdam (Netherlands), a mobile X-ray unit targeted illicit drug users and homeless persons (including former prisoners) twice a year in known care facilities, resulting in a decrease in notified TB cases among these risk groups. In Paris (France), similar screening in homeless shelters identified 313 TB cases during a 14-year period and recorded a decrease in case clustering.

The screening programme targeting homeless people in Porto has been integrated into the existing public health service system and coordinated with organizations caring for the homeless. The programme contributed to the early detection of TB and respective treatment compliance and improved access to public health services among the homeless population. The research team implemented and monitored the programme, and social organizations that

support this population can provide continued support over time. The established partnerships are of paramount importance for the long-term maintenance of this screening programme as well as for the promotion of adherence to treatment.

The screening programme has proved to be sustainable, effective and with no added costs. It is intended to extend these interventions to other urban areas.

Russian Federation. Partnership between civil and penitentiary systems in the implementation of anti-TB activities in Arkhangelsk *oblast*

Submitted by: Elena I. Nikishova, Andrei O. Maryandyshev, Alexandr N. Smolensky, Valery P. Panasik, Dmitri V. Perkhin, Oksana M. Sveshnikova, Nina I. Nizovtseva, Irina V. Tarasova, Platon I. Yeliseev

State Health Care Institution of the Arkhangelsk *Oblast* Severodvinsk Hospital No. 1, Russian Federation

Background

At the beginning of this century, the incidence rate for TB in the penitentiary system was significantly higher than in the civil sector in Arkhangelsk *oblast*, as in other regions of the Russian Federation. In 2000, the incidence of TB (new cases) was 48 per 100 000 population in the civil sector, as against 3900 per 100 000 inmates in the penal system. One of the main problems at this time was overcrowding in penitentiary facilities, which contributed to the rapid spread of TB infection with varying forms of drug resistance. The situation was aggravated by inadequate funding, the lack of routine practices for identifying infectious TB patients and irregular supplies of anti-TB drugs.

Description of the good practice

Cooperation between civilian and penitentiary specialists

In 1998, with the support of the regional ministry of health, Arkhangelsk *oblast* was one of the first regions in the Russian Federation to launch the programme On Reduction of Tuberculosis Prevalence, based on WHO-recommended TB control principles. In 1999 and 2000, the leaders of the two systems of penitentiary institutions located in the *oblast* signed cooperative agreements with the civil health care system on implementation of activities under the programme. The agreements were subsequently extended to include measures aimed at reducing the incidence of MDR-TB and XDR-TB and preventing TB among penitentiary inmates. Thus, for more than 16 years in the civil and penitentiary systems there have been common approaches to identifying and diagnosing patients with TB, observing infection control measures, organizing treatment for patients with drug-sensitive and DR-TB, monitoring TB and conducting preventive activities in groups at high risk for active TB, including people infected with HIV.

Detection and diagnosis of TB

In accordance with federal regulations, fluorography screening of inmates is carried out twice a year in *oblast* penitentiary institutions to detect pulmonary pathologies, including TB. From the start of the programme to date, the priority has been the rapid detection of infectious patients and their isolation from other prisoners. The medical and nonmedical personnel in pretrial detention centres and correctional colonies receive constant training in the symptoms of TB to enable them to identify patients promptly between the fluography screening sessions. Smear microscopy is only carried out in correctional colonies. In a number of areas the material for research is sent to the laboratories in civil health institutions and to the central bacteriological laboratory of the penitentiary system of the region. Sputum collected from patients with positive smears on acid-fast mycobacteria and from patients with presumptive TB identified via X-ray screening is sent to the laboratory of the Arkhangelsk TB dispensary (the leading anti-TB institution in the civil sector) where genetic methods (GenoType, Xpert MTB/RIF) and culture methods on liquid media (BACTEC MGIT) are used for verification of the diagnosis and rapid determination of drug susceptibility of the *M. tuberculosis*.

Infection control

Following a reorganization of the anti-TB facilities in the penitentiary system of the Arkhangelsk *oblast*, separate outpatient departments were set up in the regional hospital of the penitentiary system for infectious patients with drug-susceptible TB and for DR-TB patients. Non-infectious patients are treated in an outpatient setting in

a specialized TB colony. With the support of the Norwegian organization LHL International, special modules have been built to isolate XDR-TB patients.

Organization of treatment

All cases of TB, including DR-TB cases, are recorded and chemotherapy regimens are prescribed (taking into account DSTs) at joint meetings of doctors from the civil sector and the penitentiary medical units. The meetings also decide the tactics for managing patients where treatment has been ineffective and other complex cases, and carry out intermediate and final evaluations of the results of chemotherapy. Patients with TB/HIV coinfection receive anti-TB and antiretroviral therapy. Directly observed treatment for TB is organized in all the medical facilities in the penitentiary system. The effectiveness of chemotherapy and adverse reactions to anti-TB drugs are monitored in accordance with international recommendations. First- and second-line anti-TB drugs for penitentiary institutions are purchased from the federal budget and are available in sufficient quantities.

Monitoring of TB

In accordance with the WHO guidelines, treatment cards and patient registers for patients with TB have been developed for both civil and penitentiary institutions together with monitoring cards for adverse reactions to anti-TB drugs, reports on notified cases and the results of chemotherapy.

The computer program monitoring TB in Arkhangelsk *oblast* contains data on each patient with TB, including those in the penitentiary system. These include the results of sputum smear testing (smear microscopy, molecular genetic and culture examinations, DSTs), radiological examination results, the date of TB registration, the date TB treatment started, the chemotherapy regimen and TB treatment outcomes. The electronic database enables complete data on the registration and results of chemotherapy of patients with drug-sensitive and DR-TB to be obtained, and other reports to be generated upon request.

Continuity in the management of patients in the civil and penitentiary sectors

The electronic database of TB patients enables the specialists in the penitentiary sector to have full access (through a secure communication channel) to information about patients who start treatment in the civil sector and vice versa. A month before an inmate with TB is due for release, information about him or her is sent to civil health institutions. The close cooperation between civil and penitentiary specialists has reduced the interruption of chemotherapy for TB after release to single cases.

Treatment of latent TB infection in high-risk groups

Once an infectious TB patient is identified in a correctional facility, his or her contact persons are examined and, in the absence of signs of active TB, they are prescribed preventive therapy for latent TB infection.

Individuals infected with HIV are to be found in all the correctional colonies in the *oblast*. They constitute the group at greatest risk of TB. In this regard, each of them is prescribed chemoprophylaxis courses; at a CD4 T-cell level of less than 350 cells/mm^3 they are prescribed repeated courses of treatment for latent TB.

In the Arkhangelsk *oblast* a non-profit, nongovernmental organization, the Easy Breathing Charity Fund, is active in promoting knowledge about the prevention of TB, including in penitentiary institutions. It also provides support in the form of food packages for convicted persons receiving treatment for latent TB.

Evidence of impact/efficacy

The reform of the federal penitentiary system has made it possible to reduce the number of inmates in correctional colonies significantly, including in Arkhangelsk *oblast*. The implementation of targeted activities based on international experience in the fight against TB has led to a reduction of more than four times in the incidence of TB in general, including of M/XDR-TB in *oblast* penitentiary institutions. At present, recorded deaths from TB infection are in the single figures. The professional competence of civilian and penitentiary specialists in the conduct of anti-TB activities has also improved.

The quality of medical care for patients in penitentiary institutions has been improved and digital technologies (telemedicine consultations) and innovative measures (a shorter treatment regimen for MDR-TB and treatment of XDR-TB cases with new anti-TB drugs) are now in use.

Sustainability of the practice

Over the past decade, almost all anti-TB activities in the penitentiary facilities in Arkhangelsk *oblast* have been funded from the federal budget. The long-standing, complementary and successful cooperation between the penitentiary and civil systems makes it possible to predict the continued growth of these activities in the years to come.

5. Collaborative TB/HIV activities and management of comorbidities

Republic of Moldova. Patient-centred integrated model of TB, HIV/AIDS care and opioid dependence therapy

Submitted by: Svetlana Doltu,[1] Irina Barbirosh,[2] Ana Ciobanu[3]

[1]Act for Involvement (nongovernmental organization), Republic of Moldova; [2]Ministry of Justice, Republic of Moldova; [3]Chiril Draganiuc Institute of Phthisiopneumology, Republic of Moldova;

Background

Drug use (including injecting drug use) is an important factor in the epidemiology of TB in the countries of the former Soviet Union. Recognizing the important link between HIV/AIDS, TB and drug use in penal institutions, WHO and the United Nations Office on Drugs and Crime have developed a comprehensive package of 15 interventions for HIV prevention in prisons. For the past 10 years, the number of inmates with TB, TB-HIV/AIDS coinfection and opioid dependence in the penitentiary system of the Republic of Moldova has increased, taking a heavy toll on the outcomes of TB treatment with high mortality and treatment default rates.

To ensure compliance with treatment, a reduction in the risk of drug resistance developing, good treatment outcomes and a reduction in TB transmission, special support should be provided to drug users. There is a clear need for the simultaneous enrolment of inmates for TB treatment, antiretroviral treatment and substitution therapy with methadone, as well as for strengthening psychosocial support in order to increase their adherence to a comprehensive treatment regimen.

Description of the good practice

The penitentiary system successfully implements 12 of the 15 recommended interventions for HIV prevention in correctional facilities, including treatment for TB, antiretroviral treatment and substitution therapy with methadone. MDR-TB treatment has been available in the penitentiary system since 2006, and antiretroviral treatment and methadone substitution therapy since 2005. A multidisciplinary national penitentiary hospital with 540 inpatient beds, including 170 beds for TB care and 45 beds for infectious diseases and psychiatric and narcological conditions, provides comprehensive specialized medical care to inmates, including those with TB and/or HIV/AIDS and drug users. In cases of presumptive TB or at the start of TB treatment, patients undergo voluntary HIV testing (about 96% of TB patients accept HIV testing).

In contrast to fluorography, HIV testing is not mandatory at the time of admission to the penitentiary system and every six months after the admission. HIV testing can be performed on the initiative of inmates or in the presence of medical indications. An infectious disease specialist and a narcologist, together with phthisiopulmonologists, regularly discuss the management of TB cases with relevant concomitant pathologies, including the indication for or continuation of antiretroviral treatment and substitution therapy with methadone. Integration of the HIV/AIDS services and methadone substitution therapy in the TB wards of the prison hospital enables prompt and fast consultations by the infectious disease specialist and psychiatrist, regular discussion of difficult clinical cases and exchange of information between the physicians on the Medical Consultative Board. Narcologists and infectious disease specialists from the civilian sector can also be involved in consulting the patients as needed.

Psychologists, nongovernmental organizations and peer consultants drawn from among inmates and former prisoners also assist with the psychosocial support of TB patients in order to improve their adherence to treatment. In partnership with nongovernmental organizations, medical staff are trained in TB case management combined with HIV/AIDS and drug dependence therapy. When they have completed their TB treatment, inmates can continue their antiretroviral treatment in all correctional facilities in the country. Substitution therapy with methadone, on the other hand, is only available in 13 out of the 17 institutions, including in the female prison. The introduction of integrated care has improved adherence to TB treatment among injecting drug users and people living with HIV as well as TB treatment outcomes in the penitentiary system.

Treatment of TB, HIV/AIDS and opioid dependence among inmates is provided in line with the relevant national protocols approved by the Ministry of Health. The simultaneous introduction of TB and HIV care and methadone substitution therapy in the civilian and prison sectors has ensured the provision of equal care to inmates without discrimination based on legal status.

Evidence of impact/efficacy

Between 2011 and 2015, a total of 721 inmates were enrolled for TB treatment, including 78 inmates (10.8%) with TB/HIV coinfection and 88 (12.2%) drug users. There has been a significant improvement in treatment outcomes of patients with TB/HIV coinfection who are on antiretroviral therapy (51% of HIV-positive cases) compared to the treatment outcomes among patients with TB/HIV coinfection who do not receive antiretroviral therapy: in 2011, the treatment success rate was 80% and 46%, respectively, the death rate was 15% and 48.7%, respectively, and the rate of treatment default was 5% and 7.7%, respectively. TB treatment outcomes among inmates on methadone substitution therapy (26%) have improved substantially compared to TB treatment outcomes in drug users who do not receive methadone substitution therapy: in 2015, the treatment success rate was 82.6% and 64.7%, respectively, the death rate was 4% and 20%, respectively, and the treatment default rate was 13% and 7.5%, respectively. Seven patients on triple therapy (anti-TB, antiretroviral therapy and methadone substitution therapy) had successfully completed the course of TB treatment.

The methadone substitution therapy available to TB patients has expanded access to treatment for the drug users in this group of inmates and improved the performance of the national HIV/AIDS and TB programmes. In addition, the quality of life in penitentiary facilities has improved and the number of crimes associated with the search for illegal drugs has gone down. At the hospital level, physicians have improved their practical skills and the knowledge necessary for managing patients with a triple diagnosis, and relevant monitoring and evaluation indicators have been developed.

Sustainability of the practice

The integrated treatment of TB, HIV and substitution therapy with methadone was approved by order and guidelines from the Department of Penitentiary Institutions of the Ministry of Justice, which ensures further implementation of this approach. In line with the plan for transition from external donor support to national funding, it is anticipated that this model of care in the penitentiary system will continue to be implemented with an allocation of appropriate resources from the budget of the Ministry of Justice.

BOLD POLICIES AND SUPPORTIVE SYSTEMS

6. Political commitment with adequate resources, including universal health coverage policy in correctional facilities, and health reform and penal reform aimed at improving TB control in correctional facilities

Azerbaijan. Political commitment in the management of TB control in the penitentiary system

Submitted by: Fuzuli Guseynov, Rafail Mekhtiyev, Natavan Alikhanova

Main Medical Department of the Ministry of Justice, Azerbaijan

Background

In the early 1990s, a major crisis in the health systems in the countries of the former Soviet Union led to an aggravation of the epidemiological situation, including that of TB. The conditions in the penitentiary system, weak material and technical bases, and a lack of qualified medical staff, medicines, adequate laboratory service and unified system of recording and reporting worsened the possibility of health care provision in penal institutions.

In 1993, by decree of the President, the penitentiary system was put under the Ministry of Justice. The Ministry initiated fundamental reforms in the prison sector and consistent problem-solving in penal institutions. In 1995, with the support of the ICRC, the penitentiary system launched a pilot project on implementation of the DOTS strategy, the components of which were implemented very quickly. In 1998, the implementation of the full-scale TB control programme was begun in all penal institutions. In the same year, one of the prisons was reorganized and a specialized medical facility for the treatment of TB patients established. In subsequent years, the material and technical capacities of this facility were strengthened in a targeted and step-by-step manner, various departments were equipped and the living conditions of the inmates were improved. In 2001, work on strengthening the laboratory service started, followed by an extension of the list of available laboratory examinations.

In 2004, the medical department of the penitentiary system was put directly under the Ministry of Justice. In 2006, it was designated the Bureau of Medicine, its administrative and organizational structures were changed and developed and their powers and staff increased. Despite continuing efforts, however, in 2006 the incidence of TB was still 2625 per 100 000 population, prevalence was 4585 per 100 000 and mortality was 340 per 100 000.

Description of the good practice

Since 2006, the funds allocated to the TB service in the penitentiary system to address the disease have increased each year, amounting over a decade to a more than 13-fold increase.

Priority has been given to the development and motivation of staff working with TB patients. As a result, in 2006 the government adopted a decree on a 50–80% wage increase for the medical and nonmedical staff of the specialized medical facility. The policy to strengthen the human resources of the medical service in the penitentiary system is still operative: since 2009, each year the Military Medical Department of Azerbaijan Medical University has recruited 20 students interested in working in the penitentiary system.

The need to launch the project on treatment of DR-TB has led to additional resources being allocated for the repair, reconstruction and equipping of the specialized medical facility and procurement of radiology and laboratory equipment.

The Ministry of Justice has focused on improving the control of TB in penitentiary facilities, which has attracted the attention of international partners. Bilateral and multilateral agreements on cooperation have been signed with WHO (the Regional Office), the Foundation for Innovative New Diagnostics, USAID, the supranational reference laboratory in Borstel, Germany, the Expanding Access to New Diagnostics for TB project, and the Systems for Improved Access to Pharmaceuticals and Services programme (implemented by Management Sciences for Health). These agreements have resulted in the active participation of the penal medical service in a number of international projects.

In 2006, following an approach by the government, the Global Fund to Fight TB, Malaria and HIV/AIDS allocated

funds for TB control. For over 10 years, the Bureau of Medicine has acted as principal recipient (2011–2015) and subrecipient (2006–2010, 2016–2017) of the Fund's grants.

Special attention is being paid to the development of the laboratory service. With multilateral cooperation, the use of liquid cultures (BACTEC MGIT) and rapid methods for DST were begun in the penal system in 2007, and rapid molecular methods (LPA) for laboratory diagnosis were introduced into laboratory practice in 2008. The laboratory of the Ministry of Justice specialized medical facility was among six laboratories that participated in the pilot testing of the molecular genetic diagnostic system Xpert MTB/RIF. In 2014, the laboratory system started to use DNA fingerprinting.

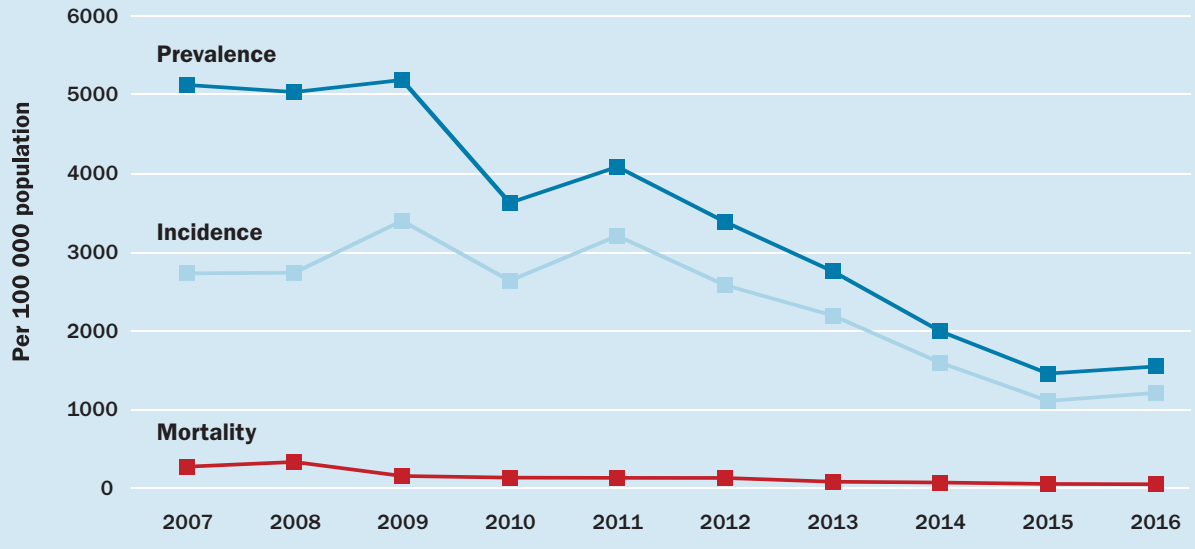
Significant efforts have been made to ensure the early detection of TB cases. Detention centres have been equipped with digital fluorography machines for screening individuals on admission. Since 2011, the purchase of high-throughput mobile fluorography equipment and the establishment of two teams specifically dedicated to the detection of individuals with TB symptoms has enabled regular screening of the prison population to take place. Specimens from individuals with TB symptoms detected at the medical units of the penal institutions are transported by a system (established in 2012) to the specialized medical facility laboratory for bacteriological examination. In 2015, four peripheral penal facilities were equipped with Xpert MTB/RIF to ensure early TB diagnosis.

This practice covers two impact areas: political will and commitment, as seen in the strengthening of the health system, targeted human resources policy and active implementation of novel technologies and innovations. These two areas have a mutually reinforcing effect and create opportunities for active screening, early diagnosis and universal access to DST and the effective treatment of drug-susceptible and drug-resistant forms of TB.

Evidence of impact/efficacy

Good performance and continuing reforms in the penitentiary system have been highly esteemed by international and national experts. As a result of consistent activities over the past 10 years, TB incidence has gone down more than twofold, TB prevalence 3.5-fold and TB mortality more than fourfold (Fig. 8).

Fig. 8. TB prevalence, incidence and mortality rates per 100 000 population, Azerbaijan penitentiary system, 2007–2016



Source: European Centre for Disease Prevention and Control and WHO *(4)*.

Since 2006, the specialized medical facility laboratory has participated annually in external quality assurance by the supranational reference laboratory. The laboratory has been granted a certificate of excellence for DST on solid and liquid media for first- and second-line drugs. Between 2013 and 2016, the average level of bacteriological confirmation among confirmed cases of pulmonary TB was 95%.

As a result of the human resources policy, 11 of the 33 graduates from the Military Medical Department of the Azerbaijan State Medical University have been recruited by various penal institutions to serve as TB specialists. On average, 98% of the total population of the penal institutions has, since 2011, undergone annual comprehensive screening for TB. Seven Xpert MTB/RIF machines are used for rapid TB diagnosis and early detection of DR-TB.

Treatment of DR-TB was initiated in 2007. Since then, 918 patients with DR-TB have started on second-line treatment. In general, treatment has been successful in 85% (82/96) of patients with DR-TB enrolled for treatment in 2014, and 77% (40/52) of rifampicin-resistant patients enrolled the same year.

In 2012, by decision of the Ministry of Justice, a training centre for TB control was established at the specialized medical facility. The centre offers training programmes to the medical, administrative, security, operational and other types of employee from penal institutions, as well as to medical workers in the civil sector. In 2014, the training centre was granted the status of WHO Collaborating Centre on Prevention and Control of Tuberculosis in Prisons. The centre has now trained approximately 1000 specialists from the penitentiary sector and 30 foreign trainees, and organized educational visits for more than 104 participants from 11 countries.

Sustainability of the practice

The successful operation of a sustainable and effective TB control programme in the penal system is directly related to strong political commitment. The Ministry of Justice, together with partners, consistently ensures the implementation of international strategies (DOTS, Stop TB, End TB) and the recommendations for TB control and prevention, as well as the necessary structural, financial and human resource reforms. Support from the Global Fund has allowed prompt implementation of new diagnostic methods and the provision of drugs for treating DR-TB. The Ministry of Justice is gradually taking over these commitments and, since 2016, national funds have covered the cost of second-line drugs. The Ministry has also funded the recent construction of new buildings for the reference bacteriological laboratory, XDR-TB treatment ward and training centre at the specialized medical facility.

The Ministry of Justice remains willing to expand international partnership and cooperation in order to achieve the goals set out in the Global Plan to End TB 2016–2020.

Brazil. The institutionalization of standard operating procedures for the control of TB in prisons in the state of Pará

Submitted by: Adriana Cristina Pereira Diniz da Silva, Sandra Maria Miranda Álvares

Superintendence of the State Penitentiary System, Brazil

Background

In 2015, no standard activities existed for the effective control of TB in the penitentiary system of the State of Pará in Brazil. An analysis revealed that there was only limited notification of TB cases in the prison system, which reflected considerable underreporting. Since prisons contribute significantly to the burden of this disease in the country, the need for strengthened TB control was clear.

Although TB control measures have always been practised in the prison system, the lack of written instructions made it difficult to identify the responsibilities of each actor in the efforts to combat the disease in prisons in the state. This led to unjustified transfers of cases with presumptive TB, failure to carry out proper case-finding activities and delays in identification of TB cases. To overcome these challenges, the Superintendence of the State Penitentiary System published Decree No. 464/2015 on 26 August 2015, establishing the standard operating procedures for TB control.

Description of the good practice

These standard procedures covered and regulated the effective prevention, diagnosis and treatment of TB cases, infection control measures and follow-up during transfers and/or release from prison to be adopted by multiprofessional health care and nonmedical administrative staff in the state correctional facilities. The document was developed in partnership with the tuberculosis control programme of Pará, the secretary of state and public health and the Committee for Metropolitan Tuberculosis Control of the State of Pará which assured inmates access to the same services as in the civil system. Collaboration among different partners active in the area of TB control improved through working in partnership.

Evidence of impact/efficacy

In 2012, the average population of the Pará state penitentiary system was 12 000, the numbers of TB cases reported were 55 in 2012 (458 per 100 000 population), 58 in 2013 (483 per 100 000) and 99 in 2014 (825 per 100 000). After implementation of the standard operating procedures for the control of TB, notifications of TB increased to 131 in 2015 (1092 per 100 000) and 219 in 2016 (1825 per 100 000). This shows that the standardization and institutionalization of procedures to combat TB in prisons has contributed effectively to improved performance by health care personnel and to the notification rate of TB in prisons. The practice has also raised awareness of TB and brought about positive behaviour changes among prison staff. It is hoped that diligent implementation of the standard operations procedures for TB control will lead to a reduction in TB morbidity and mortality in the state prison system.

Sustainability of the practice

Approval of the standard operating procedures by decree of the Superintendence of the State Penitentiary System has made the practice sustainable and feasible for implementation throughout the penitentiaries in the state of Pará.

United Kingdom (England). Collaborative and systematic approaches to TB in prisons

Submitted by: Sunita Stürup-Toft,[1] Magdalene Mbanefo-Obi,[2] Éamonn O'Moore[1,2]

[1]WHO Collaborating Centre for Health in Prisons, United Kingdom (England); [2]Public Health England, United Kingdom (England)

Background

There was a year-on-year decline in the incidence of TB in the United Kingdom (England) over the four years 2011–2015, down to 10.5 per 100 000 population (5758 cases) in 2015, a reduction of one third since the peak of 15.6 per 100 000 (8280 cases) in 2011. Despite the observed reduction in overall TB rates, the number of cases with social risk factors (such as current or former imprisonment, homelessness or drug or alcohol misuse) did not decline and the proportion of cases with at least one of these risk factors increased from 9.8% in 2014 to 11.8% in 2015 *(11)*.

In 2015, there were 40 cases of TB in places of detention, including 26 cases of pulmonary TB and 14 cases of extrapulmonary TB. The majority of these were in prisons (30/40) and the rest in immigration removal centres (10/40) *(10)*. The number of TB cases diagnosed among people in prison has shown a decline since their peak in 2011–2012. Two prison outbreaks were, however, reported in 2015 (one with three and one with six cases), more than had been reported in previous years (one outbreak each in 2010, 2011 and 2012). Further data can be found in the document *Tackling TB in under-served populations: a resource for TB control boards and their partners (12)*.

Since 2006, prison health care has been the responsibility of the Department of Health, as recommended by WHO *(13)*. Following government reforms of the health care system in April 2013, responsibility for commissioning all health care services for the 85 000 people in the 120 English prisons rests with the National Health Service. Local clinical commissioning groups commission most health care for local communities, with some services commissioned by local government offices directly. This complex health care commissioning and delivery landscape requires particular attention to ensure continuity of care between prison and the community.

Description of the good practice

Policy

Political commitment aimed at reducing TB in prisons across England is demonstrated by the *Collaborative tuberculosis strategy for England: 2015 to 2020 (14)*, which includes a specific recommendation for people in prison: to ensure the identification and management of active TB in prisons and immigration removal centres, the management of latent TB in prison populations in line with guidance from the National Institute of Clinical Excellence, and continuity of care between prisons and the community. Furthermore, the document on tackling TB in underserved populations has its own chapter on people in prisons, which is supported by a national task and finish group.

Most significantly, there is a national partnership agreement between the Ministry of Justice, the National Health Service and Public Health England to align support and resources behind key health objectives, with TB identified as a shared objective. A comprehensive suite of policies exists to support this commitment (Table 5).

Data and surveillance

Prisons and other prescribed places of detention in the United Kingdom (England) are required to report cases of TB to the National Health and Justice Team of Public Health England. In 2016, Public Health England's National Tuberculosis Surveillance Unit and the Health and Justice Team undertook work to improve data quality, involving a review of TB cases reported in places of detention during 2010–2015. The data reported to the Health and Justice Team by health care teams in prisons, immigration removal centres and other detention facilities (including high-security hospitals based in England) were matched to notified TB cases in the enhanced TB surveillance database to ensure consistency of reporting. The enhanced TB surveillance system in England provides a regulatory framework for case-based surveillance, strengthening vital registration, the quality and rational use of medicines and pharmacovigilance.

Table 5. Policies for key health objectives, with TB as a shared objective, United Kingdom (England)

Source	Policy title	Description and relevance to TB
Her Majesty's Prison and Probation Service, National Health Service England and Public Health England	*National partnership agreement*[a]	Sets out how the three key stakeholders align, enable and support health services in prisons. Tuberculosis (NG33 guideline)[b]
National Institute for Health and Care Excellence	*Tuberculosis (NG33 guideline)*[b]	National guideline covering the preventon, identification and management of latent and active TB in children, young people and adults. It includes specific information for people in prison and other detention settings who are defined as underserved groups or populations.
Public Health England, Tuberculosis Alert and National Health Service	*Tackling TB in under-served populations: a resource for tuberculosis control boards and their partners*[c]	Developed to improve understanding of the health needs of underserved populations with TB and reduce inequalities associated with TB. Supports the design and delivery of multiagency programmes and services the better to meet the needs of underserved populations.
Public Health England	*Management of tuberculosis in prisons: guidance for prison health care teams*[d]	This guidance covers: • TB screening of people entering prison • handling people who develop symptoms in prison • isolation • reporting cases of TB • managing people with existing conditions • treating people with confirmed pulmonary TB • treating people with extrapulmonary TB or with latent TB infection • discharging or transferring people with TB.

[a] Her Majesty's Prison and Probation Service *(15)*.
[b] National Institute for Health and Care Excellence *(16)*.
[c] Public Health England *(12)*.
[d] Public Health England *(17)*.

Resources

Public Health England has a network of health and justice public health specialists based in nine of the local Public Health England centres across England. These specialists support local health systems and lead on public health for people who come into contact with the justice system. The scope of their work includes driving improvement in TB prevention, identification and management. In addition, one of the specialists is designated a lead national strategic role in supporting improvements in TB control in health and justice settings, particularly prisons.

Systematic screening for TB

Every individual entering prison is routinely screened for TB using a health questionnaire based on the Grubin tool *(18)*. Eight prisons are equipped with digital X-ray machines funded by the Department of Health which allow for enhanced screening for pulmonary TB. Currently, these machines are being used to varying effect. There is continuing work to develop latent TB screening in prisons, with a plan to pilot it in a select few prisons. The project aims to support the National Health Service and Public Health England standard on ensuring equivalence of care for patients in prisons, to reduce the burden of both latent and active TB in the prison system and thereby to reduce the potential operational impact and expenditure related to active TB outbreaks resulting from undiagnosed TB. The project will contribute to the key programme of the wider TB strategy for England on latent TB testing for new entrants aged 16–35 years from high-burden countries who have arrived in the United Kingdom in the previous five years. Ultimately it aims to lower the morbidity and mortality associated with TB among people in prisons and in the wider community.

Public Health England is leading the development of a standard TB screening protocol for use when individuals arrive in prisons and immigration removal centres, which will support prisons with the detection of both active disease and latent TB infection. This protocol will also consider prisons both with and without digital X-ray machines.

Evaluation

Public Health England is currently undertaking a national audit in prisons and immigration removal centres in England focused on TB. This is the first national overview of the prevention, identification, diagnosis and management of TB in English places of detention, and is focused on establishing whether national guidance for TB in prisons and immigration removal centres is being met. The objectives include: auditing the services and structures in place to tackle TB across all prisons and immigration removal centres, identifying gaps in the implementation of national guidelines and providing recommendations to improve TB services in these settings.

The audit has achieved 83% coverage of prisons and immigration removal centres and the findings are expected to inform local and national TB plans.

Directly observed treatment

Throughout the United Kingdom, directly observed treatment is recommended for the treatment of patients with MDR-TB, patients who have been previously treated for TB and patients in unfavourable social circumstances. In prisons and immigration detention centres, it is recommended that directly observed treatment is implemented for all TB cases. Enhanced TB surveillance data for prisons between 2010 and 2015 shows that 79.4% (200/252) received treatment under direct observation. Continuity of care throughout the prison estate and from prison to detention is supported by the health informatics system SystemOne, which supports all health care provision in prisons across England. Once people leave prison, care becomes more fractured and follow-up and continuity of care may be lost and treatment completion rates decline. Further improvements in supporting care pathways are envisaged by the development of a new health informatics system by the National Health Service England (Health and Justice Information Service), especially in relation to the transition from custody to community, by supporting the registration of patients with family doctors. This will not, however, have an impact until well into 2017–2018. Alternatives to directly observed treatment are being explored. Telephone and video communication, for example, enables health professionals to watch patients take their medication, address their concerns and provide advice and support. Video (or virtually) observed therapy has been successfully used with TB patients in the wider community in London since 2007, with findings from a trial in London of virtually observed therapy compared with traditional directly observed treatment showing a huge potential to improve adherence. This is an area of technology that could be explored in the prison environment and on release from prison.

The foregoing description of practice in the United Kingdom (England) relating to TB in prisons shows how a systems approach can enable a more coordinated response and align governmental engagement, policy levers, data and surveillance, screening, audit and treatment delivery alternatives. The collaboration that this requires is strongly supported by national agreements between the health and justice teams, reflecting the whole-prison approach recommended by WHO.

Evidence of impact/efficacy

The key impacts of this work are as follows.

The quality of data and surveillance has been improved through cross-referencing between Public Health England's health and justice TB surveillance database with the national enhanced TB surveillance database and understanding the differences. This has enabled a more robust assessment of the prevalence of TB in prisons and across England to be established. This more complete baseline enables more accurate measurements of the efficacy of intervention.

The application of a community practice model to a prison setting has improved access to active screening for TB through the use of mobile X-ray units in the community. This in turn has led to a successful business case for investment in digital X-ray machines in prisons. Although the full benefit of this investment is still to be felt, the principle of using community-based interventions in prisons and learning from good practice has been positive and a good benchmark for addressing other health needs.

The high level of adherence to directly observed treatment in prisons compared to the community highlights the prison setting as an important public health setting. By successfully treating people in prison, the onward transmission of communicable diseases in the community and the overall burden of disease can be reduced. Prisons need to be viewed as part of a wider public health strategy.

Current work has highlighted the need to improve data collection and continuity of care from prison to community; plans are in place to address this. Working in a complex commissioning environment, with localized structures, has meant that there has been a need for clarity on the source of funding for various parts of TB screening and management.

Sustainability of the practice

The practice described above is part of the core health care offer for people in prison and is, therefore, not dependent on specific grants or project monies. Public Health England's role is to protect the public and reduce health inequalities, for which it uses the evidence to carry out advocacy at the highest governmental levels. TB remains a priority, particularly for those in underserved populations such as in prisons.

Georgia. Prevention and care of TB and DR-TB in prisons

Submitted by: Sofio Morgoshia, Otar Abuladze, Nana Deisadze

Ministry of Corrections, Georgia

Background

The DOTS strategy for the treatment/elimination of TB recommended by WHO was introduced in Georgia in 1995. In 1998, with the support of the ICRC and in close cooperation between the Ministry of Labour, Health and Social Affairs, the Ministry of Justice (supervising ministry of the penitentiary department at that time) and the National Centre for Tuberculosis and Lung Diseases, the prompt identification of TB cases among inmates and proper treatment for them were developed and launched in penitentiary establishments. By 2005, the DOTS strategy had fully covered the penitentiary system. In 1998, 6% of inmates in penitentiary facilities had pulmonary TB (total number of inmates at that period – 10 000); by 2009, as a result of the measures implemented, the proportion of TB cases among inmates had fallen to 2.8%.

Treatment of patients with DR-TB has been implemented in the penitentiary system since 2009. Management of DR-TB cases is carried out by the National Centre for Tuberculosis and Lung Diseases, in compliance with individually tailored treatment schemes. The End TB Strategy was introduced in 2016 with the support of Médecins Sans Frontières France.

Description of the good practice

The practices implemented in an effort to ensure effective and secure control of TB in prisons are outlined below.

Screening

All accused people/prisoners are clinically screened using a special questionnaire to identify cases with presumptive TB when they arrive in the penitentiary system and at least quarterly thereafter. The clinical screening is performed by nurses who are specially trained by the National Centre for Tuberculosis and Lung Diseases. All HIV-infected detainees are also systematically screened for TB. When a TB case is identified, all contacts of the index case are also screened. Routine screening is also carried out once a year among medical staff involved in treating TB and the penitentiary staff who are in close contact with infected inmates.

Diagnosis

As soon as the nurse identifies a case of presumptive TB, she informs the appropriate medical personnel of the prison, who request further diagnostic examinations including smear microscopy and/or culture with following DST. In 2013, Xpert MTB/RIF diagnostic technology was introduced in the prison general hospital and the TB treatment and rehabilitation centre.

Treatment

Confirmed TB cases are immediately isolated from the general prison population and transferred to the specialized penitentiary facility for TB treatment. The penitentiary system, as an independent structural unit, is integrated into the electronic database of the National Centre for Tuberculosis and Lung Diseases. When a patient is released from the correctional facility during treatment, the health care provider at the place of residence is notified in order to ensure proper follow-up and continuity of treatment. Follow-up activities after release are supervised by the focal point of the National Centre for Tuberculosis and Lung Diseases. Since September 2016 new and repurposed TB drugs have been introduced in the penitentiary system. Treatment of latent TB infection is only done among HIV-infected people.

Evidence of impact/efficacy

There have been no deaths from TB in the penitentiary system since 2013. A total of 57 658 screenings were carried out at the penitentiary establishments in 2016. By April 2017 (with approximately 10 000 prison inmates),

37 drug-susceptible patients were on first-line treatment in the prison system and 35 DR-TB patients were on second-line treatment, of whom seven had XDR-TB. During the first four months of 2017, only 19 new TB cases were identified, including a case with MDR-TB.

Sustainability of the practice

The control of TB in the country overall and in the penitentiary system specifically is regulated by various legislative frameworks: legislation on TB control, the state programme on TB, and the joint decree of the Ministry of Labour, Health and Social Affairs and the Ministry of Corrections about the control of TB activities in correctional facilities. The headquarters facility for TB control is the National Centre for Tuberculosis and Lung Diseases. The state programme on TB is fully funded by the government. Continuous treatment of TB patients who are released from the penitentiary system is ensured by the involvement of the Ministry of Labour, Health and Social Affairs as well as public health and other medical establishments, and fully coordinated by the National Centre for Tuberculosis and Lung Diseases.

7. Strengthening of all functions of health systems, including well-aligned financing mechanisms for TB and human resources

Azerbaijan. Experience in strengthening human resource policy in penal institutions

Submitted by: Rafail Mekhtiev, Irada Mamedova, Natavan Alikhanova

Main Medical Department, Ministry of Justice, Azerbaijan

Background

The Main Medical Department of the Ministry of Justice provides medical services to the employees of the Ministry as well as to inmates in the penal institutions. The medical service of the penitentiary system has 25 subordinate institutions.

The TB control programme in the penitentiary system originated in 1995 from the implementation of the DOTS strategy in close cooperation with the ICRC in Baku. One of the main challenges faced by the TB control programme at that time was the lack of and turnover in personnel due to the difficulties of working in penitentiary facilities, including low wages.

In 2006, the average age of the personnel was 40–45 years. The ICRC provided training (including on-site training) to the staff of the TB service.

Description of the good practice

To resolve problems related to human resources, an agreement was signed with the Azerbaijan Medical University in 2006 enabling its graduates to do a one-year internship in the medical service of the penal institutions. During 2006–2009, more than 80 interns completed an internship in the medical service, of whom about 30 were employed in the penitentiary sector. Since 2009, the Military Medical Department of Azerbaijan State Medical University has recruited 20 students annually for training targeted at working in the penal system. The first group of students graduated from this course in 2015. During 2015–2016, 35 graduates were employed by the medical service of the penitentiary sector.

In 2007, by decree of the Cabinet of Ministers, staff pay in the TB service of the penitentiary facilities was increased by 50–80%.

In 2012, in the framework of the TB control programme for 2010–2015, a TB training centre was established at the specialized medical facility with a faculty including specialized medical facility physicians, leading public health managers and WHO experts. This carries out about 16 training courses annually for medical staff and employees in the penitentiary sector on topics covering the basic challenges of TB and DR-TB case management, management of coinfection and infection control in penitentiary facilities. The training programmes are based on current recommendations and approaches for control of TB and evidence-based medicine. The courses consist of lectures and hands-on sessions in TB and DR-TB case management. The target audience includes physicians and nurses from primary health care facilities, general hospitals and the specialized treatment facilities in the penitentiary sector.

Since 2012, the activities of the training centre have been financed by the Bureau of Medicine and the Global Fund project.

Evidence of impact/efficacy

The reforms had a positive impact on the number of employees (numbering 482 at present), their performance and staff turnover. During 2012–2016, the training centre held 78 courses for 373 physicians, 183 nurses, 85 laboratory technicians, 359 nonmedical staff of the penal system and 42 employees from other departments.

In 2014, the training centre was granted the status of the WHO Collaborating Centre on Prevention and Control of Tuberculosis in Prisons. In 2015–2017, together with WHO, it held four international training courses in Baku

for health care managers and providers involved in the planning and provision of TB care in the penal institutions of eastern Europe and central Asia. Feedback from the participants and their appreciation of the training courses run by WHO experts demonstrated a high level of organization and good understanding of the course material.

A combination of excellent performance demonstrated by the medical service of the penal system in the fields of case detection, treatment and compliance with infection control measures and the presence of the training centre is attracting representatives of penitentiary systems in neighbouring countries. During 2012–2016, representatives of all the central Asian countries, as well as Belarus, Georgia, Iraq, Italy, Republic of Moldova, the Philippines and Ukraine participated in study tours, workshops and training courses organized in Baku.

Since 2017, in the framework of the current Global Fund project, the staff of the WHO collaborating centre have been giving training sessions on topical issues in TB control for physicians from other ministries and departments. Continuity of training and level of knowledge of the personnel are key to the successful implementation of the TB control programme in penitentiary facilities.

The courses on case detection, prompt diagnosis, adequate chemotherapy and infection control, which are based on the WHO standards and recommendations, have had an indirect impact on the performance of the TB control programme in the penitentiary system in Azerbaijan.

Progress achieved in the past decade includes:

- 72% reduction in TB incidence compared to 2000
- 95-fold reduction in TB mortality compared to 1995
- 92–93% treatment success rate in drug-susceptible TB patients from the cohorts of 2014 and 2015
- 82% and 85% treatment success rate in MDR-TB patients from the cohorts of 2013 and 2014.

As a result of the successful implementation of the WHO strategy for TB control in the penitentiary system, in 2013 the International Corrections and Prisons Association made an award to the Bureau of Medicine for innovative best practices in the field of TB and MDR-TB diagnostics, treatment and care.

Sustainability of the practice

One of the essential prerequisites for the effective implementation of TB control programmes is the availability of a sound system for human resource management which ensures a balanced number of staff with proper training, education and continuing professional development. The availability of the training centre at the specialized medical facility and its status as WHO collaborating centre is contributing to the present and future successful human resources policy in the penal system of Azerbaijan.

Denmark. TB services in prisons

Submitted by: Lise Nordskov Nielsen

Danish Prison and Probation Service

Background

The prevalence of TB in Denmark is low. In 2016 the disease was diagnosed in only 334 individuals out of the entire Danish population. Of these, only very few are resistant to one or more anti-TB drugs and all these cases originate from other countries. This prevalence corresponds to seven new cases a year per 100 000 population. They are not, however, evenly distributed across the population: 44 cases were diagnosed for each 100 000 immigrants as against only three cases for each 100 000 citizens born in Denmark. In most cases TB is transmitted between people who live together. The majority of inmates in Danish prisons are held in one-person cells, though many share shower facilities.

The Danish Prison and Probation Service observes the national guidelines for prevention and treatment of TB (Fig. 9). The national health authorities are responsible for treatment, including for people deprived of their freedom. There is no specific strategy for prisons.

Fig. 9. Dispensing medicine in a Danish prison

Description of the good practice

Inmates are offered free medical examinations, treatment and care on equal terms with the rest of the population. If a person is suspected of suffering from TB (latent or active), he or she is offered examination involving X-ray, blood test (quantiFERON® test) and sputum test.

The treatment of individuals suffering from TB as well as of individuals in close contact with them is carried out in special wards in regional hospitals, and is free for all patients, including inmates remanded in custody or serving a sentence in the Danish Prison and Probation Service.

In most cases, the general practitioner will report cases of TB to the national health authority, which is responsible for tracking the infection (backtracking from the person who has infected the index patient). Once the source of the infection has been identified, an environmental examination is conducted around both the index patient and the person who is the source of the infection in order to identify any other persons infected with the disease and to offer contact treatment to people living together with the infected person, even if they are not diagnosed with the disease.

Evidence of impact/efficacy

The impact of the effort is evident from a reduction by more than a third in the annual number of cases and from the fact that more than half of all new cases discovered in Denmark are found among immigrants from other countries.

Sustainability of the practice

All examinations, tracking and treatment are part of a longstanding national strategy against TB. There are no plans to reduce the effort.

8. Regulatory frameworks for case-based surveillance, strengthening of vital registration, quality and rational use of medicines and pharmacovigilance

Brazil. A surveillance system to address transfers and releases in the prison system

Submitted by: Laedi Alves Rodrigues dos Santos, Vera Maria Neder Galesi

São Paulo State Secretariat of Health, Brazil

Background

In the state of São Paulo, Brazil, the number of detention and correctional facilities has been increasing steadily for the last decade. The Penitentiary Administration Department is responsible for the care of 215 000 inmates in 168 prisons. From 2006 to 2014, the number of TB cases diagnosed among inmates more than doubled, from 1151 to 2433. At the same time, the close partnership between the tuberculosis control programme and the Penitentiary Administration Department resulted in an increase in the treatment success rate from 73% to 89%. Although this is a remarkable improvement, some patients still interrupt their treatment. Analysis of such cases revealed that most of the cases lost to follow-up were related to transfers within the prison system or releases. There is a high turnover in the prison population, with prisoners frequently being transferred between correctional facilities for security reasons. At the same time, many inmates are released from temporary detention centres or prisons. Ensuring continuity of care for patients receiving TB treatment on transfer or release is a significant challenge.

In 2006, the state of São Paulo established an internet-based TB surveillance system (TBweb) for all TB cases in the state. Municipal surveillance teams are responsible for filling in the Tbweb database. An update in 2007 ensured a mechanism for the automatic communication of selected events in TB cases. Each time a patient is recorded as being transferred, discharged from hospital, resistant to drugs or other important event, an email is sent to those involved, thus keeping everyone with any responsibility for TB control informed. When a transfer or release from a prison is recorded, an automatic email is generated to the responsible team in the civil sector. Municipal surveillance teams register TB cases in the Tbweb and send routine monthly reports to the health facilities that register and treat them. Although this mechanism is usually sufficient for non-detained patients, the lag time between a patient's release from prison and the municipal team being informed so as to record the event in Tbweb and release the email notification has varied a lot and frequently resulted in the patient being lost to follow-up. To address this problem, the São Paulo State Secretariat of Health has developed a specific strategy for TB surveillance in the state correctional system.

Description of the good practice

Since 2008, a number of health care workers from each prison have been trained and encouraged to participate in filling in the TB database. They are encouraged to record every transfer or release as soon as they are told that a TB patient is leaving the facility. In addition, the Tbweb email notification mechanism has been improved by asking for the patient's address on transfer or release. Intensive contact between the Tbweb central staff and penitentiary teams has been established to achieve the desired results. Obviously, the interventions had to address the most important stakeholders in TB care in the correctional system: the Penitentiary Administration Department, the state and municipal health secretariats, the prison system health teams and surveillance and hospital staff at various levels. Everyone involved is instructed about the consequences of delays in sending/receiving information and motivated to search actively for patients leaving a prison.

Evidence of impact/efficacy

In 2015, 2198 prisoners began TB treatment. Of these, 519 (24%) were transferred to another prison at least once and some were transferred many times during their treatment period; 493 (94%) of them continued their treatment without interruption and only 11 (2%) were lost to follow-up. Two hundred and eighteen prisoners were released while in treatment, 135 (63%) of whom continued treatment in the civil facilities. There is no information about the treatment outcome of four of them, who were probably lost to follow-up.

Detainees who were transferred accounted for 2% of the 110 cases lost to follow-up, while those released accounted for 69% of them. The involvement of prison teams in the TB surveillance information system resulted in an increase in their commitment when they saw that TB is not an event circumscribed to prison and that their actions were part of a greater effort in controlling the disease in the country overall.

Sustainability of the practice

This intervention has been maintained for 10 years without any additional resource other than the maintenance of the state TB surveillance system. Prison health workers are trained in the same way as any other TB control staff.

9. Airborne infection control, including regulated administrative, engineering and personal protection measures in all relevant health care facilities and congregate settings

Brazil. Sustainable architectural programme for TB control in prisons

Submitted by: Alexandra Sánchez,[1] Mauro Santos,[2] Bernard Larouze[3]

[1]CRPHF/Escola Nacional de Saúde Pública, FIOCRUZ, Brazil; [2]Faculdade de Arquitetura e Urbanismo, Universidade Federal do Rio de Janeiro, Brazil; [3]Sorbonne Universities, France

Background

Worldwide, TB is a public health problem among persons deprived of their liberty, particularly in developing and emerging countries such as Brazil where 650 956 such individuals (0.3% of the national population) contribute 8.9% of TB cases. Most of the 1426 Brazilian prisons were built without taking into account the impact on health of a style of architecture conceived to comply with security necessities. Prisons are overcrowded (occupation rate: 164%) and most cells are shared, with limited ventilation and sunlight illumination, a situation which obviously contributes to the spread of TB. Meanwhile, most TB control programmes in prisons are limited to biomedical and educational strategies. However, given the massive circulation of strains of *M. tuberculosis*, the efficacy of any TB control programme is likely to be limited if it is not associated with improvements in the environment and a reduction in overcrowding.

Description of the good practice

In the framework of a partnership between the National Penitentiary Department of the Ministry of Justice, the Ministry of Health and the Global Fund, in 2010–2011 a group of specialists and architects developed a nationwide programme aimed at improving the ventilation and sunlight illumination in prisons.

Three regional meetings were organized with representatives of the Ministry of Justice, Ministry of Health, public prosecutors, the penitentiary administration, state prison architects and engineers involved in the construction and reform of prisons, health and prison security professionals, sentencing judges and civil society organizations involved in the social monitoring of prisons from each of the 27 states. The participation of security professionals was of major importance to ensure that the architectural solutions proposed were compatible with security requirements.

Activities during these meetings included interactive sessions on TB transmission and architectural solutions for ensuring adequate ventilation and sunlight illumination, analysis of the plans of existing prisons by the participants to propose appropriate environmental interventions, and discussions of the potential technical, financial and administrative difficulties in implementing such interventions.

During these meetings, environmental guidelines were drawn up regarding the adaptation/rebuilding of existing prisons, the construction of new prisons and the feasibility of proposed solutions which should be adapted to the bioclimatic zone where the prison is located. Taking into account the budgetary limits of the penitentiary administration, priority was given to simple and low-cost architectural solutions that would ensure sunlight illumination and air renewal with no or minimal maintenance, such as natural cross-ventilation, that should not be limited to the incarceration area (cells, corridors) but extended to all areas of the prisons.

Based on the consensus reached during these meetings, the Ministry of Justice and the Global Fund have published the *Manual of environmental interventions for the control of TB in prisons* (see the Ministry of Justice website) *(19)*. This manual, written in simple language so as to be understood by nonspecialists, includes the following chapters: information on TB transmission in prisons; current national architectural guidelines for the construction and adaptation/rebuilding of prisons; basic technical principles for ventilation and sunlight illumination in buildings; a large chapter of case studies dedicated to the critical and pedagogic architectural analysis of seven prisons located in various climatic regions with proposals for solutions; a chapter of good practices presenting 10 examples of natural ventilation and sunlight illumination identified in prisons; a checklist enabling a simplified assessment

of the environmental quality of prisons by the penitentiary administration and those in charge of sentence enforcement and social monitoring; a bibliography, glossary and list of consultant experts.

The measures derived from this project were formally presented to federal and state health and justice authorities and civil society organizations at a national meeting, with specific discussions of their feasibility and funding. The manual was launched by the Ministry of Health during the formal inaugural session of the 2012 World Tuberculosis Day and sent to prison architects, penitentiary administrations and public prosecutors' offices in each state and to all prison directors in the country, among many others.

Evidence of impact/efficacy

Of major significance in terms of impact was the integration of the recommendations generated by this architectural programme into the national guidelines *Diretrizes básicas para arquitetura penal (20)*, which include recommendations on environmental interventions that were lacking in the previous edition. States must follow these national guidelines in order to receive federal funds for the construction and adaptation/rebuilding of prisons. Since their publication at the end of 2011 and up to 2016, 90 prison units, representing a total of 41 859 places, had been built or were under construction in 21 of the 27 states, following verification by the Ministry of Justice that the plans conformed with the guidelines. National guidelines also serve as a reference for the prisons rebuilt or built with funding from the states.

TB control in prisons relies on a set of measures: passive and active case detection, supervised treatment, education of people deprived of their liberty and prison staff, organization of the flux of patients and biological samples, epidemiological surveillance, monitoring and reduction in overcrowding. Together with these measures, environmental interventions should be an integral component of TB control programmes in prisons.

The programme has additional positive impacts, including the prevention of other airborne infections among inmates, the prison staff (especially guards and health workers) and visitors as well as improvements in the living conditions in prisons. Another highly relevant impact of the programme is the change in the logic of planning and design of prison units, which until now have been oriented exclusively towards security requirements. This environmental approach should be of interest for countries whose prisons have similar characteristics.

Sustainability of the practice

The sustainability of the practice is ensured through the development of a low-cost architectural programme that can be implemented without extra resources. The support of the justice and health authorities, the participation of all actors involved in the enforcement and supervision of relevant measures and the formal inclusion of the recommended actions in the national guidelines are important in the sustainability of the practice.

10. Engagement of ministries, communities, civil society organizations and public and private care providers to ensure the uninterrupted treatment of TB patients released from penitentiaries to the civil system

Azerbaijan. The successful ensuring of adherence to treatment among TB patients after discharge from prison by making use of added values of civil society organizations

Submitted by: Elchin Mukhtarli, Chingiz Ramazanli, Khayala Shahvaliyeva, Parvana Valiyeva, Hamid Babayev, Elnur Mikayilov

Saglamliga Khidmat Public Union, Azerbaijan

Background

TB is a major public health problem in many prisons, with infection rates often more than 10 times higher than in the general population. Every year, 100–120 TB patients are released from prisons in Azerbaijan, of whom 20–30% have DR-TB. Historically, only 10–15% of prisoners with TB continued their treatment after release. There was a huge need for follow-up care for prisoners leaving prison with incomplete TB treatment. This problem remained unsolved until March 2009 with these patients joining the civilian population without any measures taken to ensure they continued their treatment. As a result, the majority of discharged TB patients were lost to follow-up, a challenge to the health system which can lead to treatment failure, acquired MDR-TB and the transmission of TB and MDR-TB to the general population.

Description of the good practice

In March 2008, the Ministry of Justice, Ministry of Health and ICRC signed a tripartite memorandum of understanding to ensure the follow-up of DR-TB treatment for patients released from prison. The project was implemented as a pilot, comprising only DR-TB patients; the results showed that the initiative was fruitful and reasonable, although it needed some fine-tuning. The lesson learnt from the pilot was that activities in prison before the patient is discharged are essential to guarantee the smooth transfer of TB patients from prison to the civil TB services and to prevent interruptions in treatment.

Taking into account the lessons learned from the two-year pilot project, the Saglamliga Khidmat [Services for Health] Public Union (a national nongovernmental organization) collaborated with the Main Medical Department of the Ministry of Justice to launch, in 2011, an initiative to assist prisoners with TB to adhere to treatment after their release from prison. This patient-centred initiative was funded by the Global Fund.

The project started by identifying the barriers to people completing their treatment. The assessment showed that the majority of former prisoners stop their treatment because they do not know where and how to continue it and because of social problems and difficulties in making their living. As a result, a component was added covering TB control activities in prison prior to a prisoner's release.

The initiative has two phases. Phase I of the project takes place in prison. Patients are thoroughly briefed about their treatment and options for continued treatment by an adherence counsellor assigned by the Saglamliga Khidmat Public Union. TB education and counselling sessions are carried out twice a week, during which patients are explicitly informed about the importance of completing treatment. All relevant information about patients and their treatment is collected, including address, telephone numbers of relatives and family members, treatment cards, transfer forms and other medical and personal documents. This information is passed to the civilian directly observed treatment centres that will receive the patients after their release.

Phase II of the project takes place after release. When a patient arrives at the TB dispensary, project coordinators and a nurse assigned to provide directly observed treatment from the Saglamliga Khidmat Public Union ensure that the treatment is well organized and that the patient adheres to it. The coordinators make monthly visits to all former prisoners with TB to increase their awareness through health education sessions as well as to provide

social support. Patients can also air their grievances: former prisoners often face many social and legal barriers, such as the lack of valid identity documents, difficulty in getting pension payments and finding a new place to live and work. The Union helps former prisoners to overcome these obstacles, in collaboration with other local nongovernmental organizations specialized in the relevant fields.

Once a month, the Union delivers food parcels as an incentive for patients to keep up their daily visits to the directly observed treatment centre. A monthly stock of second-line TB medicines is also delivered to the centre and the sputum specimens collected are taken to the laboratory.

The Union has a regularly updated web-based database containing medical and nonmedical information about TB patients discharged from prison before completion of treatment.

Evidence of impact/efficacy

The project was able to follow up 98% of patients released with TB and 96% of those released with DR-TB through intensive patient-centred care with psychosocial and counselling sessions and by providing incentives for patients to attend directly observed treatment centres every day. As a result, the rate of loss to follow-up fell dramatically and thus the treatment success rate among TB and MDR-TB patients increased by up to 85% and 75%, respectively, over the period 2011–2016.

This project demonstrates that through effective involvement by nongovernmental organizations, patient support programmes can significantly improve adherence to treatment and the success rates for TB among released prisoners.

The success of this initiative hinged on the collaboration between the health and legal sectors. By working together, with coordination through the Saglamliga Khidmat Public Union, the transfer of former prisoners into civilian life has run smoothly, with limited interruptions to their TB treatment and with respect for equity, human rights and patient–health staff relations.

Sustainability of the practice

The NTP has highly commended the project and, since January 2017, the approach has been applied in the civil sector. The Saglamliga Khidmat Public Union's good practices have been extended to the entire country and are being successfully implemented not only among former prisoners but among all TB patients enrolled in treatment in the civil TB services. Advocates working with TB will promote to high-level decision-makers the inclusion of the project in legislative documents related to TB.

Tajikistan. START Plus – social support for prisoners in the transition period

Submitted by: Rustam Baibalayev,[1] Saidkul Sharipov,[1] Ikram Ibragimov,[2] Tamara Tonkel,[3] Zumrad Maksumova[3]

[1]Main Directorate of Corrections, Ministry of Justice, Tajikistan; [2]AIDS Foundation East West –Tajikistan; [3]USAID Program for TB control

Background

According to WHO, Tajikistan is one of 22 countries in the Region with a high burden of MDR-TB. Every year, more than 6000 cases of drug-susceptible TB and over 700 cases of DR-TB are detected and notified in the country. According to the Republican Centre for Protection of the Population, the TB incidence rates in 2014 and 2015 were 62.1 and 60 per 100 000 population, respectively, while the TB mortality rates were 4 and 4.5 per 100 000 of population, respectively. Based on international estimates, the incidence of TB in penal institutions is 100 times higher than in the civil population. Overcrowded prison facilities, poor living conditions, noncompliance with infection control measures, limited capacity for TB diagnosis, poor compliance with treatment regimens and interruptions in treatment all contribute to the spread of TB.

The increase in the number of DR-TB cases and transmission of drug-resistant forms among the inmates and staff of penal institutions have aggravated the epidemiological situation both in the penitentiary sector and in those members of the civil population who come into contact with former prisoners with TB after their release. TB in penitentiary facilities is, therefore, a major concern in countries with a high burden of TB, including Tajikistan.

The penitentiary system of Tajikistan consists of 19 penal institutions: five detention centres, 11 correctional colonies of different types and levels of security (including the central prison hospital) and three penal settlements.

Acording to the Medical Department of the Main Directorate of Corrections of the Ministry of Justice, although the absolute number of registered TB cases in the penitentiary system more than halved from 327 in 2006 to 108 in 2016, TB incidence remains high at 1100 cases per 100 000 prison population.

The incidence of DR-TB and TB/HIV in penal institutions continues to increase. In 2010, at the launch of the programme for treatment of DR-TB, MDR-TB was confirmed in 21 (13.6%) out of 154 notified TB cases in penal institutions; by 2016 this number had risen to 32 (29.6%) of 108 cases. In 2010, seven (4.5%) of 154 notified TB cases in the penitentiary system had TB/HIV coinfection; in 2016 this number was 30 (27.7%) out of 108 notified TB cases. The proportion of extrapulmonary forms of TB in the penitentiary sector in 2010 was 9.7% (15 of 154 TB cases); by 2016 this had fallen slightly to 9.2% (10 of 108 TB cases).

A combination of active and passive case detection has been used for diagnosing TB. The penitentiary system has two microscopy laboratories (some facilities use laboratories in the civil sector). TB treatment is provided at the central prison hospital and its branch in the Sughd region. In addition, special isolation units in seven other correctional facilities (including the largest detention centre, in the capital city, Dushanbe) can be used for the same purpose. In total, there are 190 inpatient beds for TB patients, of which 45 are dedicated to treating patients with MDR-TB.

Description of the good practice

Close collaboration between the penal institutions, civil service and public organizations is required to ensure equal and continuous access to medical, psychological, social, legal, domestic and other services for soon-to-be-released inmates and former convicts during the transition period.

The experience of cooperation demonstrated by the Main Directorate of Corrections of the Ministry of Justice, national health services and community-based organizations in the implementation of modern evidence-based approaches to the prevention of socially significant diseases and treatment of patients with HIV, TB and addictions

contributes considerably to the improvement of quality of life in penal institutions and to the successful treatment of prisoners during their imprisonment and after release.

For these purposes, the AIDS Foundation East West in Tajikistan has piloted the USAID START Plus programme assuring the continuum of care for ex-prisoners with TB or HIV in six institutions in the Main Directorate of Corrections and three public organizations in Dushanbe and the Khatlon and Sughd regions.

The main criteria for the success of the START Plus programme include early case detection, prompt treatment, promotion of adherence to treatment and assistance in addressing the social, psychological and legal issues facing prisoners during their transition period. The programme aims to reduce the prevalence of socially significant diseases in penal institutions and to improve the quality of life for soon-to-be released inmates.

The goals of the programme include:

- raising the awareness of prisoners about TB prevention measures and the importance of adherence to TB treatment
- reducing risk among prisoners prior to release
- ensuring continuity of services during the transition and social reintegration period of prisoners after release
- reducing stigma and discrimination against people living with HIV and TB.

The programme is based on the principles of: (i) voluntariness: services are only provided with the consent of the inmates; and (ii) confidentiality: a participant and the START Plus programme officer agree not to disclose any confidential information.

The target groups of the programme include prisoners and individuals about to be released during the two months before and four months after release. The duration of the programme depends on the length of cooperation with a client, as specified in the service plan. In some cases, it may end during the first month after a prisoner's release, depending on the implementation of the key activities. If a client is a TB patient in treatment or a person living with HIV on antiretroviral therapy, the programme can be continued beyond the four months following release.

The START Plus programme has clear algorithms for work with current and former prisoners, as well as standard documents for managing the work process and recording and reporting forms for performance analysis. Social support follows six key steps with clients of the programme. Typically, these are divided into the following sessions:

- selection and enrolment
- planning and preparation for release
- early diagnosis, registration with the medical and social services and support for adherence to treatment
- adjustment and implementation of the plan for social reintegration, promotion of adherence to treatment
- assistance with social reintegration and adherence to treatment
- completion of the social reintegration plan and support for adherence to treatment; completion of the programme.

Systematic TB screening in penal institutions is carried out by the staff of the Main Directorate of Corrections, in close coordination with the NTP and community organizations. In the Khatlon region (the cities of Yovon and Norak), the USAID TB control programme provides technical support in the implementation of this initiative in penal institutions with:

- small group activities (miniature training) on TB prevention designed for prisoners;
- health education events aimed at raising the awareness of prisoners about preventive measures and the prospects for a cure; consultations by TB specialists and TB diagnostic services; provision of information handouts on TB;
- 100% coverage by START Plus social support of TB patients in treatment at the time of release;
- TB consultations and diagnostic services (if necessary, followed by referral to TB treatment), with support and care provided to 100% of prisoners about to be released.

Screening in the penitentiary sector combines three key activities followed by counselling and testing for TB, if necessary:

- TB prevention in the form of miniature training sessions with assessment of participants' knowledge and distribution to them of the information and educational material;
- health education activities among prisoners with the distribution of information and educational material;
- social support for TB patients who are preparing for release.

The aim of prompt detection of TB cases with the use of rapid diagnostic methods (such as Xpert MTB/RIF and LPA) is to improve the situation regarding TB in penal institutions. The action algorithm requires clinical screening for 100% of prisoners in penal institutions, with collection of sputum specimens from cases with presumptive TB and transport of the specimens to civilian laboratories for further examination.

Evidence of impact/efficacy

The START Plus programme is being implemented in two areas: work with prisoners and social support for inmates preparing for release. The first *(21)* covers:

- TB-related health education for 1060 prisoners with the aim of increasing the uptake of TB diagnosis: the level of knowledge about TB prevention among the inmates has increased by 47%, from 40.5% in 2015 to 87.5% in 2017;
- TB screening of 1686 prisoners for early detection and prompt initiation of adequate treatment; this resulted in the detection of one new TB case;
- pre-test counselling and HIV-testing among 100% of TB patients aimed at the detection of HIV infection and prompt initiation of antiretroviral therapy; five new cases of TB/HIV coinfection were detected this way.

The second area includes:

- preparation and planning for the release of nine TB patients to ensure their prompt registration with the civil health services and provision of TB drugs during the first days after release;
- assistance in travel home and registration at the TB and AIDS centres of all the released TB patients, aimed at ensuring continuity of treatment;
- successful completion of TB therapy upon release: this was reported for 77% of patients who had started treatment in penal institutions, with the remaining 23% of TB patients still in treatment with good adherence.

This initiative promotes improvement in the coordination between the Medical Department of the Main Directorate of Corrections and the NTP. Close collaboration and integration between the penitentiary and civil sectors is an important factor contributing to the successful treatment of TB patients.

Sustainability of the practice

The START Plus programme was approved by the Main Directorate of Corrections for implementation in nine penal institutions. The staff of the partner organizations have access to these institutions to introduce the practices described above. To avoid duplication of resources, the project plans are agreed with the Main Directorate of Corrections and discussed with the partners. The experience of the programme will be used for planning national activities after the withdrawal of donor support.

11. Universal health coverage policy and regulatory framework

Pioneering implementation of innovations in prisons: experience of the WHO Collaborating Centre on Prevention and Control of Tuberculosis in Prisons

Submitted by: Elmira Gurbanova,[1] Ogtay Gozalov,[2] Andrei Dadu,[3] Masoud Dara[4]

[1]Director, WHO Collaborating Centre on Prevention and Control of Tuberculosis in Prisons, Azerbaijan; [2]Medical Officer, WHO Regional Office for Europe; [3]Technical Officer, WHO Regional Office for Europe; [4]Coordinator, WHO Regional Office for Europe

Background

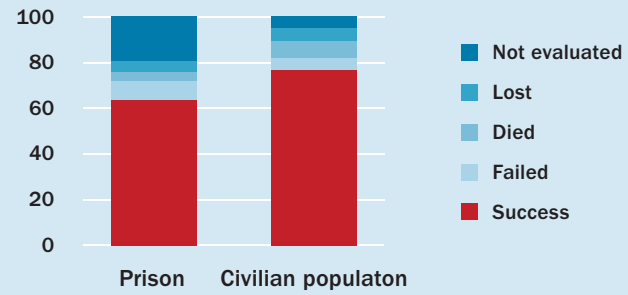
Recent decades have been remarkable for the treatment of TB in the community due to the rapid development of new diagnostic tools, drugs and treatment options. Whenever necessary, WHO has issued updates to its guidelines with recommendations for interventions. TB control programmes are, however, innovating far faster than the expected rate of implementation and introduction of the new tools and new drugs in day-to-day practice. This poses particular problems in prisons in view of often inadequate political commitment and a consequent lack of human, financial and technical resources *(22)*.

In Azerbaijan, the Main Medical Department of the Ministry of Justice has provided health care to inmates for many years and is an internationally recognized centre for TB and MDR-TB control. Designated the WHO Collaborating Centre on Prevention and Control of Tuberculosis in Prisons, it has served as a demonstration site for representatives of many countries in and beyond the Region. In 2013, it received the Correctional Health Care Award from the International Corrections and Prisons Association for its innovation and implementation of best practices in the diagnosis, treatment and care of TB and MDR-TB in prisons *(23–25)*.

Description of the good practice

Over the years, TB in prisons has been a serious challenge to public health, contributing to excessive levels of mortality in penitentiaries (Fig. 10).

Fig. 10. Treatment outcomes in prison and civilian populations, WHO European Region, 2015



The prisons in Azerbaijan were some of the first sites to pilot and implement WHO-recommended TB control strategies in penitentiaries. In 1995, the first cohort of TB patients started standardized treatment with first-line drugs under direct observation in prisons with the support of the Regional Office, the ICRC and other international stakeholders *(26)*. Although this intervention led to improved survival rates among inmates with TB, there remained an urgent need to address drug-resistant cases. Based on the results of the first drug resistance study, which revealed a dramatic level of drug resistance among inmates, the authorities decided to introduce treatment with second-line TB drugs in the prison system in 2007 with considerable support from the WHO Green Light

Committee and the Global Fund *(27)*. This treatment with second-line TB drugs began in prisons earlier than in the civilian sector in Azerbaijan and earlier than in many other countries in the Region.

Strong political leadership and support from international partners meant that all diagnostic innovations were introduced promptly in the penitentiary system. For example, the implementation of liquid culture and DST, Xpert MTB/RIF and LPA for first- and second-line drugs was introduced in the year that WHO recommended it for routine use. The penitentiary system was one of five sites in the world that performed field evaluation of Xpert MTB/RIF *(28)*. In 2012, rapid tests were included in routine TB screening among the prison population.

The data accumulated by the programme have been used for various studies and research with the main purpose of guaranteeing inmates quality and evidence-based TB services. To ensure that the knowledge and capacities of medical and nonmedical staff involved in TB services in prisons are up to date, a training centre was established in the penitentiary TB hospital in 2012. The core mentors are active experienced clinicians, TB managers and international experts. The target groups include physicians and nurses in primary, secondary and tertiary health care prison facilities, laboratory technicians at all levels and nonmedical prison personnel.

Evidence of impact/efficacy

During the decade 2007–2017, the rate of notification of new and relapse TB cases in Azerbaijani prisons decreased more than four times, the rate of the most infectious smear-positive cases decreased about 10 times, and the rate of patients diagnosed with MDR-TB decreased approximately 10 times (for those with a body mass index lower than 18.5 kg/m^2 it decreased more than three times). A recent analysis has shown significant linear trends towards a decrease in the annual rates of notified (p=0.009), smear-positive (p=0.011) and MDR-TB cases (p=0.02), with annual rates of decrease (95% confidence intervals) of -435 (range -614 to -255), -356 (range -517 to -195) and -99 (range -160 to -38), respectively. The success of treatment with first- and second-line drugs in recent cohorts available for evaluation is 91% and 77%, respectively.

One of the keys to the success of this practice is the openness of the prison system to collaboration with national and international partners, its readiness to innovate and its willingness to share experience gained and lessons learned. WHO has provided strong technical support to the programme to control TB in prisons since it started, helping to strengthen the programmatic management of DR-TB, improve TB drug management, expand access to rapid diagnostics and further develop the laboratory network. WHO has acknowledged the successful implementation of the most up-to-date TB care in prisons in Azerbaijan and recommended it as a model for other countries with similar backgrounds. In 2015, WHO officially recognized the training centre as the WHO Collaborating Centre on Prevention and Control of Tuberculosis in Prisons, which provides trainees from all over the world with first-hand practical experience and theoretical knowledge based on modern WHO TB strategies and guidelines *(29)*. Since this designation, the training centre has carried out around 50 local training courses for 600 medical and nonmedical participants as well as six international training courses with over 100 participants from all over the world. Together with training, it promotes the implementation of WHO's guidelines through technical assistance to the NTP in Azerbaijan and far beyond. One of its main activities is dissemination of experience with the implementation of TB control in prisons through: the development and organization of study tours for delegates from regional and worldwide TB control programmes; input to annual WHO events; contributions to WHO newsletters and the wider community media; regular updates of the Ministry of Justice website *(30)* regarding WHO Collaborating Centre activities and provision of appropriate information (articles, health education materials, photographs and training plans); and cooperation with other WHO collaborating centres.

Sustainability of the practice

The practice has been fully endorsed through strong commitments, both political and of resources, from the government and the Regional Office and has proved its sustainability throughout the years.

INTENSIFIED RESEARCH AND INNOVATION

12. Research to optimize the implementation and impact of the End TB Strategy and to promote innovations

Brazil. TB-free prisons in southern Brazil

Submitted by: Karine Zennati Ely,[1] Manuela Filter Algayer,[1] Júlia Leão,[1] Andréia Rosane de Moura Valim,[1] Vanda Beatriz Hermes,[2] Daniela Becker,[3] Renata Maria Dotta Panichi,[4,5] Ana Carolina Rios Simoni,[4] Rarianne Carvalho Peruhype,[5] Edson Romeu Farias,[5] Maurício Vieira Rodrigues,[6] Carla Adriani Jarczewski,[7] Daniele Chaves Kuhleis[8]

[1]Santa Cruz do Sul, Brazil; [2]Tuberculosis control programme in Santa Cruz do Sul, Brazil; [3]13ª Regional Health Coordination of Rio Grande do Sul, Brazil; [4]National Policy on Integral Health Care in the Prison System, Brazil; [5]Department of Health Actions, Brazil; [6]Health Surveillance Centre of SES/Rio Grande do Sul, Brazil; [7]State Tuberculosis Control Programme and Parthenon Sanatorium Hospital, Brazil; [8]National Tuberculosis Control Programme/Ministry of Health, Brazil

Background

In Brazil, 67 000 new TB cases were diagnosed in 2015 and 2016, resulting in the country being in twentieth place on the list of the 30 priority countries for TB control.

Brazilian prisons currently have approximately 622 000 inmates, a rate of more than 300 per 100 000 population. The country has the fourth largest number of prisoners globally, after the United States of America, the Russian Federation and China. Unlike these countries, which are lowering their incarceration rates, the incarceration rate in Brazil is rising by 7% a year and the country is short 200 000 places. The state of Rio Grande do Sul had more than 30 000 prisoners in 2016. In 2014, Brazilian data indicated a 121% occupancy rate in state prisons, with overcrowding being one of the worst problems together with vulnerabilities to which prisoners are exposed and which contribute directly to the high rate of infectious TB. In general, the TB incidence rate in prisons is 50 to 70 times higher than in the general population: in 2012, the prevalence of TB in the world's penitentiary systems was 169/100 000 population. In Brazil, 5292 cases of TB were registered among inmates in 2015, with a treatment success rate of only 72%. Rio Grande do Sul is now in the sixth place in Brazil with the largest reported number of TB cases in its prison system.

Inmates' access to the health services is legally defined by Criminal Enforcement Law No. 7.210 of 1984 which aims, through provisions relating to sentencing or decisions regarding criminal matters, to keep prisoners part of society. Article 41 of this Law refers to the right to material, legal, social, religious and health care assistance, with prison basic health teams and community councils to uphold prisoners' rights. Rio Grande do Sul was the first state to introduce prison basic health teams, which are based on and cofinanced by the local municipality; the first such team was established in 2007 in the prison complex in Charqueadas municipality. This experience has been a model for implementation of the national policy for comprehensive health care in the prison system. All primary health services can be organized and carried out in prisons by interdisciplinary teams consisting of a physician, a nurse, a nurse technician, a dentist and a dental assistant. These teams work together to control TB in prisons through activities such as active searches for inmates with respiratory symptoms and the contacts of TB cases, and awareness-raising among the entire prison population (including the staff) about the importance of early diagnosis, screening for TB/HIV coinfection and uninterrupted treatment. These activities highlight the association between health surveillance and primary health care.

The community councils include representatives of several social sectors (community, courts, security and health) with one general aim: to represent the community in the implementation of penal and penitentiary policies at national level. In addition, they serve as forums for discussion between the health, legal and security sectors regarding activities aimed at promoting the health of inmates, especially relating to TB. Intersectoral cooperation is essential to increase the detection of TB cases and to improve treatment follow-up strategies, which lead to a reduction in the incidence of TB among prison inmates. In this context, and in view of the overcrowding and vulnerabilities to which prisoners are exposed in Rio Grande do Sul, relevant and efficient activities have been developed and the network strengthened between the health, justice, security and educational sectors. The participation of prison health teams, community councils and universities in these activities is a key element to achieve TB control, a pillar of the End TB Strategy.

Description of the good practice

The practice includes provision of technical support for the prison health teams in routine active case-finding in the form of diagnosis of symptomatic cases with respiratory symptoms and the collection of sputum from cases with presumptive TB and their weekly transport for smear microscopy and culture, DSTs and, consequently, disease control in the prison system. The practice also includes community councils' activities carried out together with prison health teams on various aspects of TB control.

The integration of education agencies was an important step in generating knowledge in the area of TB in prisons and in developing joint strategies with public institutions for disease control.

The good practice developed with the Prisons Free of TB in Southern Brazil project involved the following three specific areas of the End TB Strategy.

- Integrated patient-centred care and prevention has included systematic screening, with weekly sputum sampling for sputum smear, culture and susceptibility test so as to ensure early diagnosis and appropriate treatment to interrupt the disease transmission chain. Generally, treatment of TB cases has been carried out in a supervised manner in prisons through prison basic health teams.
- Bold policies and support systems are seen through the provision of additional financial resources for prisoners' health care since 2014, allowing health management to organize specific teams operating in prisons. Moreover, the Prisons Free of TB in Southern Brazil project has received technical support from state and federal health authorities to carry out its activities. Another highly relevant activity has been cooperation with the community councils. Discussions between managers, researchers and representatives of civil society have resulted in proposals for the collaborative production of scientific knowledge to clarify problems, the structuring of options according to health policy priorities in the state, informed decision-making based on scientific evidence and the planning and performance of activities.
- Intensification of research and innovation is seen in the dedication of the University of Santa Cruz do Sul to research and innovations regarding the TB control programme and the health care of the prison population. The University is a community-based, humanistic and democratic educational institution with approximately 10 000 students which develops learning, research and continuing education activities. The work of the University is geared towards meeting the aspirations of the regional community through its commitment to public policies and constant search for partnerships to improve the quality of life of the population in different areas. The University has been working on projects funded by federal and state authorities, with an emphasis on the vocational training reorientation programme and integration of education/service/community bodies. The activities developed in the local penitentiary system began in the course of these projects and, based on this experience, several researchers at the University have worked in partnership with the public services at municipal and state level, supported by state and federal authorities.

Evidence of impact/efficacy

Rio Grande do Sul currently has 36 prison basic health teams in 29 penitentiaries in 25 municipalities, providing 70% coverage of basic care to the prison population. Production of scientific information after the integration of services led to specific decisions regarding TB control in prisons where the pilot study took place. As a result, the municipality of Santa Cruz do Sul, which has more than 120 000 inhabitants, has shown significant declines in TB incidence rates. Deaths from TB are no longer part of everyday life. In 2013, the municipality had 32 cases of TB in the prison population, which fell to one case in 2015. Since the results have been positive, the practice is being extended to the entire state of Rio Grande do Sul.

Sustainability of the practice

The prison basic health teams will continue their work, as they have the support of state and federal authorities and do not require additional financial resources for their development. Negotiations with municipalities continue with the aim of expanding coverage. Discussions about TB in the community councils will continue and be broadened through routine intersectoral meetings, the interest of the local health authorities and the commitment

of prison health professionals who attend meetings, know about the prison environment and discuss this subject on a daily basis. Resources are, however, needed for the continuing education of regional coordinators, which has been financially supported by the government of Rio Grande do Sul as a state responsibility. Routine systematic monitoring and evaluation are carried out by the prison basic health teams so as to produce epidemiological information more quickly and efficiently to support the coordination of health surveillance with primary care.

India. Active TB case-finding in prisons

Submitted by: Banuru Muralidhara Prasad, Sarabjit S. Chadha, Subrat Mohanty, Sripriya Pandurangan, Sudhi Nath, Vaibahv H. Ghule, Jamhoih Tonsing

The International Union Against Tuberculosis and Lung Disease

Background

Prisons are known to be a high-risk environment for TB due to overcrowding, low levels of nutrition, poor infection control and lack of accessible health care services. In India, prisons or jails are classified in eight types, with a majority of prisons under central, district and subdistrict control. Inmates in central prisons have usually been sentenced in a court of law for periods of six months up to two years or more; district prisons hold inmates who have been sentenced for six months; and subdistrict prisons have inmates who have been sentenced to over six months. There are 1401 prisons altogether, with a capacity (in 2015) for 0.37 million inmates; the central, district and subdistrict prisons house >90% of the total with the rest in police stations. The availability of health services for inmates is equated to the availability of medical staff, theoretically one medical staff member for 225 inmates. There is no information on the number of inmates accessing health services or about the health condition of inmates.

A large-scale cross-sectional survey was conducted under Project Axshya, which is supported through the Global Fund grant to India. Data from 157 prisons visited revealed 504 TB patients (including MDR-TB patients). This could be an underestimate as estimates from independent studies show the proportion of TB among inmates ranging from 7% to 20%. In addition, routine surveillance data lack information about the number of TB patients in prison settings. The aim was to develop a system where the national programme is involved in the screening of all prison inmates and the results are reported in the surveillance data.

Description of the good practice

Project Axshya is implemented across 285 districts with support from the Catholic Bishops' Conference of India-Coalition for AIDS and Related Diseases, Catholic Health Association of India, Emmanuel Hospital Association, MAMTA Health Institute for Mother and Child, Population Service International, Resource Group For Education and Advocacy for Community Health and Voluntary Health Association of India. In consultation with the partners, a formal approach was made to prison authorities for active TB case-finding to be conducted among inmates, using the following strategies.

- A mass awareness campaign was conducted in prisons from January to September 2016. During the campaign, any inmate found to have symptoms of TB was requested to approach an identified volunteer from the prison or nongovernmental organization. After the campaign, inmates were asked to contact a volunteer identified in the prison if they had any symptoms of TB. The prison volunteer would then contact a volunteer from the nongovernmental organization for the collection and transport of sputum. The samples collected were examined at the nearest public health centres with microscopy facilities. The results were then passed to the prison volunteer and the authorities.
- The mass awareness campaign was followed from October 2016 to March 2017 by a medical camp approach involving a medical doctor and a paramedical staff member from the general health system.
- The camp was organized by district-level project staff in coordination with the prison authorities and NTP managers. The cross-sectional approach to active case-finding is as follows.
  - All prison inmates were auscultated by a medical doctor, in groups of 50 per day. Their body mass index and blood pressure were measured and diabetes tests were conducted by paramedical staff. During the consultation with the medical doctor, any prison inmate identified as symptomatic was referred for sputum examination. A volunteer noted the information and sputum samples were collected for examination at a public health facility. The sputum results and the results from the diabetes screening and high blood pressure (where applicable) were communicated to the inmates and prison authorities. Medicines were supplied through the general health system. As a result, 26 TB patients were identified from sputum samples from 510 cases identified with presumptive TB.

– In addition, sputum samples were tested using cartridge-based nucleic acid amplification test services available at district hospitals. This was done in three districts of Maharashtra state on a pilot basis. A total of 38 samples were tested directly through this test and two rifampicin-sensitive TB patients were identified (Table 6).

Table 6. Preliminary results from prison intervention, India, January–March 2017

Indicator	Number January–March 2017	Additional information
Number of prisons where the intervention was conducted	104	
Number of inmates screened	11 087	Camp approach followed
Number of presumptive TB cases identified	688	
Number of presumptive TB cases whose sputum was examined	547	38 sputum samples were tested by cartridge-based nucleic acid amplification test
Number of sputum smear-positive TB patients diagnosed	28	

A new database allows for the monitoring of notifications of TB among prison inmates and their reporting within routine national programme surveillance.

Evidence of impact/efficacy

Early identification followed by the isolation and treatment of TB patients have led to decreased transmission of infection among inmates. The inclusion of screening for both TB and diabetes in this practice has also allowed for the determination of diabetes among inmates. Advocacy has been undertaken with programme managers in other states in India.

Sustainability of the practice

This practice is considered sustainable, since the medical camp approach has used available medical doctors and paramedical staff for screening inmates, and the diagnostic and treatment services were provided by the general health system. The costs of organizing a camp (including incentives for volunteers) have been calculated and it is proposed that they should be incorporated into a related TB programme implementation plan in prisons across the state. It is planned that the revised TB programme guideline should include prison inmates as one of the key populations for molecular testing for TB.

References

1. Global tuberculosis report 2016. Geneva: World Health Organization; 2016 (http://www.who.int/tb/publications/global_report/en/, accessed 16 October 2017).

2. Abubakar I, Zignol M, Falzon D, Raviglione M, Ditiu L, Masham S et al. Drug-resistant tuberculosis: time for visionary political leadership. Lancet Infect Dis. 2013;13:529–39.

3. Murray CJL, Ortblad KF, Guinovart C, Lim SS, Wolock TM, Roberts DA et al. Global, regional, and national incidence and mortality for HIV, tuberculosis, and malaria during 1990–2013: a systematic analysis for the Global Burden of Disease Study 2013. Lancet. 2014;384:1005–70.

4. European Centre for Disease Prevention and Control and WHO Regional Office for Europe. Tuberculosis surveillance and monitoring in Europe 2017. Stockholm: European Centre for Disease Prevention and Control; 2017 (http://www.euro.who.int/en/health-topics/communicable-diseases/tuberculosis/publications/2017/tuberculosis-surveillance-and-monitoring-report-in-europe-2017, accessed 15 November 2017).

5. Kruijshaar ME, Abubakar I, Dedicoat M, Bothamley GH, Maguire H, Moore J et al. Evidence for a national problem: continued rise in tuberculosis case numbers in urban areas outside London. Thorax. 2012;67:275–7.

6. European Centre for Disease Prevention and Control and WHO Regional Office for Europe. Tuberculosis surveillance and monitoring in Europe 2015. Stockholm: European Centre for Disease Prevention and Control; 2015 (http://ecdc.europa.eu/en/publications/Publications/tuberculosis-surveillance-monitoring-Europe–2015.pdf, accessed 16 October 2017).

7. Health through Walls. Sustainable Prison Healthcare in Developing Countries [website]. North Miami (FL): Health through Walls; 2017 (http://www.healththroughwalls.org, accessed 17 November 2017).

8. Tuberculosis in England: 2015 report version 1.1. London: Public Health England; 2015 (https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/492431/TB_Annual_Report_v2.6_07012016.pdf, accessed 2 November 2017).

9. Gov.UK. Prison health: health and justice annual report [website]. London: Public Health England; 2017 (https://www.gov.uk/government/publications/prison-health-health-and-justice-annual-report, accessed 2 November 2017).

10. Gov. UK. Health protection report volume 10 (2016) [website]. London: Public Health England; 2016 (https://www.gov.uk/government/publications/health-protection-report-volume-10-2016, accessed 16 November 2017).

11. Tuberculosis in England: 2016 report (presenting data to end of 2015). London: Public Health England; 2016 (http://www.tbalert.org/wp-content/uploads/2016/09/PHE_TB_Annual_Report_2016.pdf, accessed 9 November 2017).

12. Tackling tuberculosis in under-served populations: a resource for TB control boards and their partners. London: Public Health England; 2017 (https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/592274/Tackling_TB_in_Under-Served_Populations_-_A_Resource_for_TBCBs_and_partners.pdf, accessed 9 November 2017).

13. Good governance for prison health in the 21st century. A policy brief on the organization of prison health. Copenhagen: WHO Regional Office for Europe; 2013 (http://www.unodc.org/documents/hiv-aids/publications/Prisons_and_other_closed_settings/Good-governance -for-prison-health-in-the-21st-century.pdf, accessed 9 November 2017).

14. Collaborative tuberculosis strategy for England 2015 to 2020. London: Public Health England; 2013 (https://www.gov.uk/government/ uploads/system/uploads/attachment_data/file/403231/Collaborative_TB_Strategy_for_England_2015_2020_.pdf, accessed 9 November 2017).

15. Guidance. Healthcare for offenders. London: National Offender Management Service and Her Majesty's Prison and Probation Service; 2014 (https://www.gov.uk/guidance/healthcare-for-offenders#eel-decline, accessed 9 November 2017).

16. Tuberculosis. NICE guideline [NG33]. London: National Institute for Health and Care Excellence; 2016 (https://www.nice.org.uk/guidance/ng33, accessed 9 November 2017).

17. Management of tuberculosis in prisons: Guidance for prison health care teams. London: Public Health England; 2013 (https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/323325/TB_guidance_for_prison_healthcare.pdf, accessed 9 November 2017).

18. Hassan L. Health screening upon reception into prison: past, present and future [website]. London: Offender Health Research Network; undated (http://www.ohrn.nhs.uk/conferences/past/24Sept09LamieceHassan.pdf, accessed 16 November 2017).

19. Manual of environmental interventions for the control of TB in prisons. Rio de Janeiro: National Penitentiary Department; 2012 (https://docs.google.com/file/d/0B0CE2wqdEaR-bU1LVkVNaFhVZ0k/edit?pli=1, accessed 11 November 2017).

20. Diretrizes básicas para arquitetura penal [Basic directions for penal architecture]. Brasilia: Ministry of Justice; 2011 (2011Diretrizes_ArquiteturaPenal_resolucao_09_11_CNPCP.pdf, accessed 11 November 2017).

21. Mid-term evaluation of the DIALOGUE Project Central Asian Republics. Washington: United States Agency for International Development; 2012 (http://pdf.usaid.gov/pdf_docs/pa00jr54.pdf, page 7, accessed 20 November 2017).

22. Dara M, Chadha SS, Vinkeles Melchers NV, van den Hombergh J, Gurbanova E, Al-Darraji H et al. Time to act to prevent and control tuberculosis among inmates. Int J Tuberc Lung Dis. 2013;17(1):4–5. doi: 10.5588/ijtld.12.0909.

23. Gurbanova E, Mehdiyev R, Blondal K, Altraja A. Predictors of cure in rifampicin-resistant tuberculosis in prison settings with low loss to follow-up. Int J Tuberc Lung Dis. 2016;20(5):645–51.

24. Handbook on best practices for clinical and program management of drug-resistant tuberculosis: Lessons learned from the Global Fund to Fight AIDS, Tuberculosis, and Malaria TB grants in Eastern Europe and Central Asia. Boston (MA): Partners in Health, Department of Global Health and Social Medicine, Harvard Medical School; 2016 (http://ghd-dubai.hms.harvard.edu/files/ghd_dubai/files/stemmingthetide.pdf, accessed 11 November 2017).

25. Best practices in prevention, control and care for drug-resistant tuberculosis. Copenhagen: WHO Regional Office for Europe; 2013 (http://www.euro.who.int/__data/assets/pdf_file/0020/216650/Best-practices-in-prevention,control-and-care-for-drugresistant-tuberculosis-Eng.pdf?ua=1, accessed 11 November 2017).

26. Gurbanova E, Mehdiyev R, Huseynov F. Experience of Azerbaijan with TB control in penitentiary institutions through successful partnership. Int J Tuberc Lung Dis. 2011;15(11 Suppl 3):S4.

27. Pfyffer GE, Strässle A, van Gorkum T, Portaels F, Rigouts L, Mathieu C et al. Multidrug-resistant tuberculosis in prison inmates, Azerbaijan. Emerg Infect Dis. 2001;7(5):855–61.

28. Boehme CC, Nabeta P, Hillemann D, Nicol MP, Shenai S, Krapp F et al. Rapid molecular detection of tuberculosis and rifampin resistance. New Engl J Med. 2010;363(11):1005–15. doi:10.1056/NEJMoa0907847.

29. Gurbanova E, Mekhdiyev R, Ismayilov A, Mammadova I, Huseynov F, Dara M et al. A new way to advance STOP TB strategy in prisons. Int J Tuberc Lung Dis. 2014;18(11 Suppl 1):S539.

30. Ministry of Justice of the Azerbaijan Republic [website]. Baku: Ministry of Justice; 2017 (www.prisonhealth.az, accessed 12 November 2017).

The WHO Regional Office for Europe

The World Health Organization (WHO) is a specialized agency of the United Nations created in 1948 with the primary responsibility for international health matters and public health. The WHO Regional Office for Europe is one of six regional offices throughout the world, each with its own programme geared to the particular health conditions of the countries it serves.

Member States

Albania
Andorra
Armenia
Austria
Azerbaijan
Belarus
Belgium
Bosnia and Herzegovina
Bulgaria
Croatia
Cyprus
Czechia
Denmark
Estonia
Finland
France
Georgia
Germany
Greece
Hungary
Iceland
Ireland
Israel
Italy
Kazakhstan
Kyrgyzstan
Latvia
Lithuania
Luxembourg
Malta
Monaco
Montenegro
Netherlands
Norway
Poland
Portugal
Republic of Moldova
Romania
Russian Federation
San Marino
Serbia
Slovakia
Slovenia
Spain
Sweden
Switzerland
Tajikistan
The former Yugoslav Republic of Macedonia
Turkey
Turkmenistan
Ukraine
United Kingdom
Uzbekistan

ISBN 9789289052917

World Health Organization Regional Office for Europe
UN City, Marmorvej 51, DK-2100 Copenhagen Ø, Denmark
Tel.: +45 45 33 70 00 Fax: +45 45 33 70 01
Email: euwhocontact@who.int