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COMPREHENSIVE REVIEW OF THE NATIONAL TUBERCULOSIS CONTROL PROGRAMME IN KYRGYZSTAN
1–9 JULY, 2019

Mission report

BISHKEK, 2019

Abstract

Based on the request of the Ministry of Health of Kyrgyzstan, the Comprehensive Review of the National TB Control Programme (NTP) of the Republic of Kyrgyzstan was carried out from 1 to 9 July, 2019 by the team of international experts, led by the WHO Regional Office for Europe and the WHO Country Office, accompanied by representatives of the NTP and other national and international stakeholders involved in TB prevention and control in the country.

The mission was prepared and organized with the financial support of the Global Fund to Fight AIDS, Tuberculosis and Malaria (www.theglobalfund.org) under the Memorandum of Understanding between the WHO and the GF on Regional GLC and Secretariats (April 2017) and with financial support from the United States Agency for International Development (www.USAID.gov).

KEYWORDS

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Abbreviations

ACH	Exchanges per hour
ADR	Adverse drug reaction
aDSM	Active tuberculosis drug-safety monitoring and management
AE	Adverse event
ASCM	Advocacy, communication and social mobilization
ART	Antiretroviral therapy
BDQ	Bedaquiline
BSC-2	biosafety cabinet type / level 2
BSL-3	biosafety level 3
CFM	Centres of Family Medicine
CFZ	Clofazimine
CPT	Co-trimoxazole preventive treatment
DLM	Delamanid
DOT	Directly observed treatment
DR-TB	Drug-resistant tuberculosis
DS-TB	Drug-susceptible tuberculosis
DST	Drug susceptibility testing
ELI	European Laboratory Initiative
ES/TB-KG	Electronic Surveillance and Case Management System/TB-Kyrgyzstan
EU/EEA	European Union/European Economic Area
EQA	External Quality Assessment
Emb	Ethambutol
FLD	First-line drugs
FQ	Fluoroquinolones
GDF	Global Drug Facility
GFATM	The Global Fund to Fight AIDS, Tuberculosis and Malaria
HCV	Hepatitis C
HCW	Health care workers
HIV	Human immunodeficiency virus

HRDP	Human resource development plan
IML	Institute of Microbiology and Laboratory Medicine
Inh	Isoniazid
ITR	Individualized treatment regimen
IQC	Internal quality controls
IPT	Isoniazid preventive treatment
ISO	International Organization for Standardization
LDRS	Laboratory Data Recording System
LED	Light-emitting diodes
LIMS	Laboratory information management system
LJ	Lowenstein-Jensen medium
LPA	Line probe assay
LTBI	Latent TB infection
LTFU	Lost to follow-up
LZD	Linezolid
MDR	Multidrug-resistance (resistance against Inh and Rif)
MGIT	Mycobacteria Growth Indicator Tube
MIC	Microscopy
MoH	Ministry of Health
MSF	Médecins Sans Frontières
NCF	National Centre for Phthisiatry
NGO	Nongovernmental organization
NLSP	National Laboratory Strategic Plan
NRL	National reference laboratory for TB
NTP	National TB Programme
OIRL	Osh interregional reference laboratory
OST	Opioid substitution therapy
PCR	Polymerase chain reaction
PHC	Primary health care
PLHIV	People living with HIV

PPE	Personal protective equipment
PTB	Bacteriologically confirmed pulmonary TB
QA	Quality assurance
QFTG	QuantiFERON-TB Gold *plus*
QMS	Quality management system
Rif	Rifampicin
RR	Rifampicin resistant
SAE	Serious adverse event
SES	Sanitary Epidemiological Services
SLD	Second-line drugs
SLI	Second-line injectables
Sm	Streptomycin
SOP	Standard operational procedure
STR	Shorten treatment regimen
SRL	Supranational Reference Laboratory
TAT	Turnaround time
TB	Tuberculosis
VHC	Village Health Committees
VOT	Video observed treatment
UPS	Uninterruptible power supplies
USAID	United States Agency for International Development
WHO	World Health Organization
ZN	Ziehl-Neelsen stain

Executive summary

At the beginning of 2019, Ministry of Health of Kyrgyzstan has applied to the World Health Organization to organize and conduct external review of the National Tuberculosis (TB) Control Program. The Comprehensive Review of the National TB Control Programme (NTP) of the Republic of Kyrgyzstan was carried out from 1 to 9 July, 2019 by the team of international experts, led by the WHO Regional Office for Europe and the WHO Country Office, accompanied by representatives of the NTP and other national and international stakeholders involved in TB prevention and control in the country. The mission was prepared and organized with the financial support of the Global Fund to Fight AIDS, Tuberculosis and Malaria (www.theglobalfund.org) under the Memorandum of Understanding between the WHO and the GF on Regional GLC and Secretariats (April 2017) and with financial support from the United States Agency for International Development (www.usaid.gov).

Main objective of the Review

The main objective was to evaluate the progress of TB prevention and control activities in the context of goals, objectives and targets specified in the National Programme TB V, and provide a comprehensive set of recommendations and prioritized plan of actions to the Ministry of Health (MoH) for the next few years to continue improving TB prevention, control and care in the Republic of Kyrgyzstan (See Annex 5 for the working agendas of the review mission).

This executive summary includes key findings and recommendations for action to further improve the implementation of the National TB Control Programme in Kyrgyzstan. Recommendations in the main part of the report are specified as either long-term (up to 4 years), mid-term (up to 2 years), or short-term (from 6 months to 1 year).

The full report with detailed recommendations will be submitted to the MoH by the WHO Regional Office for Europe in accordance with the timeline agreed with the Ministry of Health of Kyrgyzstan.

Overview

Kyrgyzstan remains one of the 30 countries in the world with the highest rates MDR-TB; the estimated proportion of TB cases with RR/MDR-TB is 26% (24–27%) among new and 61% (58–64%) among previously treated cases (2017, Global TB Report). A reduction in the number of notified TB new cases has been observed from 5 851 cases registered in 2012, to 5 249 in 2018 (111 cases per 100 000 population), with the average of change rate −3.0% per year. Kyrgyzstan is among the 18 high-priority countries for TB in the WHO European Region.

Kyrgyzstan has achieved significant progress in using the new TB drugs and shorten treatment regimens to cure drug-resistant TB cases. The new DR-TB regimens were first introduced in the country in January 2017. In 2018, of the 1 381 RR/MDR-TB patients, 684 (59%) were taken for treatment with the new and repurposed TB drugs and 174 patients (13%), were taken for treatment with STRs (according to the NTP, Kyrgyzstan; see Management of drug-resistant TB section).

The key findings and recommendations of the specific areas of the review are described below.

TB epidemiology and surveillance system

Key findings

- The estimated TB incidence in Kyrgyzstan in 2017 was 144 (range: 120–170) per 100 000 population, which is about five times higher than the Regional average and 2.5 times higher than the average of the 18 TB high-priority countries (HPCs) in the region.
- The TB incidence rate declined by an average of 0.3% annually from 2013 to 2017, which is quite slow compared with the annual decline of 6.3% registered during the same period in the 18 HPCs and in the non-EU/EEA countries in the WHO Region.
- TB mortality, excluding TB/HIV deaths, between 2001 and 2017 in Kyrgyzstan has declined with an average annual fall of 8.7%. Over the same period, TB/HIV mortality increased 11.5% annually.
- The proportion of bacteriologically confirmed pulmonary TB (PTB) cases among new PTB cases increased from 45.7% in 2008 to 64.0% in 2018.
- There is a wide geographical variation of the proportions of bacteriologically confirmed new PTB cases, ranging from 46 to 73% between 2008 and 2018.
- The trend in the TB notification rate is similar among males and females; however, over the last 3 years the decline among females has been much faster than for males.
- The proportion of retreated cases among all those notified varied from 12.6% in 2008 to 30.8% in 2018. About one fifth of the TB incidence is relapse cases.
- The proportion of extrapulmonary cases among new TB cases decreased from 30% to 24% between 2008 and 2018 and has been stable over the last 3 years.

Key recommendations

- Roll-out implementation of the registration module of the developed ES/TB-KZ case-based electronic database (computers at facility level, training, feedback, etc.).
- Ensure interoperability of the main digital TB register with the laboratory module (National Reference Laboratory database), HIV database, VRS database and other sister databases from the health and social care sectors using the unique civil identification number.
- Train oblast TB coordinators (NTP) and TB epidemiologists (SES) on TB data analysis and use for decision-making.
- Identify the national targets in the new National TB Strategic Plan 2025 and develop an accountability framework with its annual monitoring reflected in a regular national TB surveillance and response monitoring report.
- Develop the coverage and performance benchmarks for GeneXpert coverage, and monitor the progress of its roll-out.
- Promote patient referrals from primary health care.
- Conduct an inventory study to assess the proportion of underreporting, delays in start of treatment and validity of classification of relapsed cases.
- Conduct a TB catastrophic cost survey.

Financing and optimization of TB services

Key findings

- Government of Kyrgyzstan demonstrated high political commitment by development and approval of the Roadmap on the optimization of TB services (Plan of Actions on Optimization of

the System of TB Care Provision to the Population of the Kyrgyz Republic for 2017–2026, (Government Decree No. 9-r, 17 January 2017)).

- Optimization of TB services is at the stage of implementation and is focused on expansion of outpatient services: in Chui and Talas oblasts, and also in some rayons of Osh and Jalalabad the number of TB beds have been reduced and PHC services strengthened (motivation payments for PHC staff, implementation of TB case management and introduction of a voluntary treatment supporter's system).
- Saved funds are re-invested into TB services (purchase of TB drugs, strengthening of PHC).
- Government is financing 50% of the total TB activities budget.

Key recommendations

- Continue and speed up the optimization process of TB service provision to cover the whole country; expand the outpatient model of TB care; conduct the optimization process in parallel with the strengthening of PHC services.
- Extend the successful specimen and drug transportation system, implemented in Chui, Talas and Jalalabad oblasts throughout the country.
- Include in the list of indicators for PHC, a component for doctors' evaluations for TB detection.
- MOF and MoH to discuss and consider the German Government's proposal to increase the funding available for HIV and TB via debt conversion.
- Consider in the new TB strategic plan, a transition period from donor to domestic funding to ensure sustainability of current activities and continue the progress achieved.

Diagnosis and case detection, laboratory services

Key findings

- Notification of TB patients has much improved and reached 88% which is considered very good.
- The NTP has developed, and the MoH endorsed in 2014, a comprehensive National TB Laboratory Strategic Plan (NLSP). Since then, the plan has, however, not been updated and implementation is lagging behind. The Plan of Actions on Optimization of the System of TB Care Provision to the Population of the Kyrgyz Republic for 2017–2026, (Government Decree No. 9-r, 17 January 2017) was endorsed by the MoH in 2017. However, the lab component of this roadmap considers only a small part of the 2014 NSLP.
- The NTP and MoH endorsed a national diagnostic algorithm together with the NLSP in 2014, which has been further developed by the NRL in a diagnostic SOP. However, the algorithm is partly outdated, does not yet consider either more recent WHO recommendations regarding the use of Xpert MTB/RIF as first-line diagnostic test, or the new technologies which, meanwhile, have become available in the country.
- The TB laboratory network has been partly consolidated to better meet its tasks and responsibilities. However, the consolidation process is not yet complete. Its major challenges are weak network governance, too high numbers of laboratories, insufficient culture diagnostics particularly in the Osh oblast, and, in some places, inefficient collaboration among laboratories.
- Countrywide, the laboratory analyses for pharmacovigilance of TB treatment are performed in the clinical chemistry and haematology laboratories on Human and Mindray platforms. However, the infrastructure, work conditions, degree of standardization, and quality management in the clinical laboratories require urgent improvement.

- Equipment for TB diagnostics was adequate in all visited laboratories. Maintenance of some types of laboratory equipment is performed at the expense of the Global Fund. Maintenance of all types of key equipment is not yet centrally managed.
- Sample transportation and time from sample collection to receipt of the laboratory report have tremendously improved for most TB centres and polyclinics in Bishkek and in the Issyk-Kul Oblast as well as for Osh and Jalalabad. However, many other medical centres and geographical areas in the country are not yet connected to a fast and reliable logistics system.
- A human resources development plan has been developed, presented to and discussed with the national TB stakeholder organizations and revised according to their advice.
- A comprehensive quality management system (QMS) has been developed and implemented in the NRL and some elements of it shared with the lower level laboratories of the network. The NRL is almost ready for ISO 15189 accreditation, while other TB laboratories have just started the process of QMS implementation.
- In the NRL and most moderate-risk TB laboratories, key data are registered in electronic form in standardized Excel tables following NRL policies. Additionally, the NRL and some culture and GeneXpert laboratories are using a Laboratory Data Recording System (LDRS) which is connected to the clinical patient registration system and allows online transfer of TB laboratory results. A Laboratory Information Management System (LIMS) is not yet available.

Key recommendations

- Update the NLSP with consideration of the new technologies, standards and knowledge in TB diagnostics as well as the achievements and challenges of the NTP and TB laboratory network.
- Update the National Diagnostic Algorithm, make it universally available, train all TB medical staff on its application and implement it countrywide.
- Install a TB laboratory network manager and equip him/her with the capacity to complete the TB laboratory network consolidation, to strengthen its collaboration nationwide and to further increase its efficiency.
- Ensure the same level of analytic quality in all clinical chemistry and haematology laboratories involved in TB pharmacovigilance as is present in higher level TB diagnostic laboratories, including constant supplies of reagents, implementation of a quality management system, internal and external quality controls, and improved logistics and reporting systems.
- Ensure annual, reliable and professional maintenance of all types of key laboratory equipment.
- Roll-out the successful sample and report logistics system in the whole country, ensuring a maximal time to report of smear microscopy and Xpert MTB/RIF of 72 to 96 hours.
- Endorse and implement the human resources development plan.
- Finalize the QMS implementation process in the NRL and apply for its ISO 15189 accreditation. Proceed with and accelerate the roll-out of the QMS to all TB laboratories in the network. Develop and implement a TB Laboratory Manual with the aim to better standardize all procedures related to TB diagnostics in Kyrgyzstan.
- Roll-out the LDRS to all GeneXpert, Culture and DST laboratories and connect them to the corresponding patient registration platforms of the clinical partner sites to allow for online transfer of results. The selection and implementation of a laboratory information system should be carried out by the NTP in accordance with the requirements of the Ministry of Health, guided and technically assisted by international partners with extensive experience in configuration and use of LIMS platforms.

Management of drug-susceptible TB (DS-TB)

Key findings

- Patients with DS-TB are treated with Category I treatment, according to WHO recommendations.
- Patients with DS-TB are treated with FLD of fix-dose-combination.
- Treatment success among new and relapse TB cases is 82% and 10% lost to follow-up.
- Sixty-five per cent of new and relapse TB case were tested with rapid molecular diagnostics, at the moment of diagnosis.
- TB case managers, voluntary treatment supporters and video observed treatment (VOT) have been introduced in certain geographical administrative divisions and focused on DR-TB patients.

Key recommendations

- To improve adherence of doctors to the diagnostic algorithm, in order to improve coverage of presumptive TB cases with rapid molecular tests.
- To extend the case management and voluntary supporter approach among DS-TB patients.
- To expand VOT to DS-TB patients also.
- Expand the outpatient model of care for treatment of patients with DS-TB.

Management of drug resistant TB (DR-TB)

Key findings

- New DR-TB guidelines development and submission to MoH for approval, which are in accordance with the latest WHO recommendations, 2019.
- Improved DR-TB treatment success rates thanks to the access to new drugs and regimens.
- The introduction of the elements of a patient-oriented approach: VOT (more than 200 patients), treatment supporters.
- Diagnostic algorithm is in line with the European Laboratory Initiative ELI algorithm (including SL LPA introduced since 2017 and now available for patients from all regions), however:
    - The coverage of TB patients with first-and second-line DST in the country is insufficient;
    - Xpert is not done for all persons with presumptive TB;
    - FL LPA is often used instead of Xpert as a primary test even from smear-negative sputum samples;
    - Delayed initiation of adequate MDR-TB therapy due to inappropriate use of the diagnostic algorithm and ineffective interaction of clinical and laboratory services.
- The total number as well as the proportion of RR/MDR-TB cases are constantly increasing; the proportion of XDR-TB patients (of all RR-MDR-TB) is also high.
- There is countrywide access to the shorter treatment regimens (STR) and individualized treatment regimens (ITR) containing new and repurposed drugs; however:
    - Not all eligible patients are enrolled in treatment with regimens containing the new and repurposed TB drugs;
    - There are unjustified frequent changes in treatment regimens, which can contribute to amplification of drug resistance.
- Weak interaction of TB and infection disease specialists in the management MDR-TB/HIV/HCV coinfected patients, which can reduce the effectiveness of treatment.

Key recommendations

- Provide targeted training for pulmonary and family medicine doctors, specialists on infection diseases (involved in HIV management) on early diagnosis of TB, including symptoms of TB, diagnostic algorithm.
- Intensify work on the development and implementation of a national TB registry (including its laboratory component).
- Maximize the treatment coverage with the new and repurposed drug containing regimens for patients with DR-TB (up to 90% for the eligible patients).
- Provide joint training seminars: on the practical implementation of the diagnostic algorithm; treatment regimen design; TB/HIV/HCV coinfection management for TB doctors, laboratory specialists and infectious disease specialists. Monitor of effectiveness of joint training seminars during MDR Consilia and curator visits.
- Prepare a joint order of the Ministry of Health defining the interaction of TB and infection diseases services, introduce it into training programmes.
- Prepare an Order of the MoH and NTP with the definition of the composition of the curators, the schedule of curatorial visits and the budget.

TB contact investigation

Key findings

- Clear updated instructions (guidance) for TB contact investigation in Kyrgyzstan are provided by MoH Order # 429, June 2018.
- Sanitary Epidemiological Services (SES) have overall responsibility for TB contact investigation; shared with PHC and TB services.
- Collaboration of SES with partners is not fully responding to the needs of contact investigation**.**
- The average number of TB contacts screened per notified incident cases, in 218, is low at 1.4, taking in to the consideration that estimated average household size in Kyrgyzstan is 5.2 (WHO, Global TB Report, 2019).
- Yield of TB cases among the contacts screened varies between 2.4% (2014) to 1.0 % (2017).

Key recommendations

- Improve coordination and collaboration between SES, PHC and TB services in contact investigation activities.
- Ensure adequate budget for SES to perform activities, according to the MoH Order.
- Improve knowledge of SES staff in TB contact investigation by providing training.
- Conduct operational research to find out the reason for the low number of TB contacts screened and other gaps in contact investigation, including surveillance systems.
- Introduce 3-month preventive treatment with isoniazid and rifapentine (3RH, 12 doses) for children and adolescents (2–17 years) and medical staff, along with the existing 6-month IPT.
- Consider the introduction of preventive treatment for contacts with MDR-TB index cases in the frame of operational research.

Management of TB in children and adolescents

Key findings

- Needs for children are considered for the introduction of updated diagnostic and treatment approaches – countrywide access to the new DR-TB treatment regimens also for children; TB diagnosis and treatment in children are addressed in updated policy documents (guidelines, SOPs) and training modules (updated/developed in 2019).
- There is increasing access to diagnostics– computed tomography (CT) scan, rapid molecular tests; however, the quality of specimen collection is suboptimal as throat swab, and not induced sputum or gastric lavage, is still used in many patients.
- Disabling environment for early TB diagnosis – contact investigation mainly among household contacts, limited access to radiological examinations (poor quality, not free of charge), insufficient knowledge of radiologists on CT scan interpretation for children.
- Insufficient epidemiological investigation – source case, index case, DST data of isolates of infectious source case.
- The practice of prescribing DS-TB treatment for children with TB from DR-TB contacts still exists.
- Insufficient coverage of LTBI treatment (insufficient access to drugs or relevant formulations), lack of LTBI treatment for DR-TB contacts.
- Suboptimal management of adverse events.

Key recommendations

- Provide free of charge radiological examinations for children from TB contacts.
- Estimate and negotiate the financial needs with National Health Insurance funds and oblast/district administration. Training on interpretation of CT scans for children – collaboration with Sentinel project.
- Information about the TB source case should be a mandatory part of TB forms and should be demanded by Consilia, supervisors etc. during the treatment decision process.
- Clinical interpretation of test results should be included in training programmes and regular on-the-job training for paediatricians.
- Update the National Protocol based on LTBI guidelines 2018, including considerations of LTBI treatment for DR-TB contacts.
- Ensure LTBI treatment for all who have indications, including children <5 years of age from contact with bacteriologically confirmed TB cases.
- All children with TB from DR-TB contacts should be reviewed by DR-TB Consilium. Treatment regimens for children without their own DST should be based on DST of the source case.

Drug management

Key findings

- National TB treatment guidelines have been updated in early 2019 and await approval by the MoH. We confirm that the updated version is in line with the latest WHO recommendations including those on MDR-TB.
- The NTP aims to maintain 3 months of stock of first-line TB medicines when the newly procured annual quantities arrive. The team reported that this is done on instruction from the National Health Insurance auditors. We consider 3 months safety stock for first-line TB medicines to be low considering the many challenges in procuring TB medicines from the international market and the

enormous consequences for patients and society at large in case even one of the medicines should run out of stock.

- The domestic bidding for procuring TB medicines does not achieve genuine competition (as there is typically only one registered product and hence only one bidder), does not achieve high-quality products (no WHO prequalified medicines) and does not achieve good value for money (price for Levofloxacin is 9 times GDF price).
- We observed that patients (including those hospitalized and on drug-resistant treatment) did not receive any monitoring to ensure that they did indeed take their medicines as prescribed. We found evidence of patients discarding their TB medication. This lack of direct observed treatment may currently be the main driver of TB drug-resistance in Kyrgyzstan.
- The current approach in which ancillary medicines (financed by National Health Insurance) must be procured by each facility via micro-tender is not workable and results in the absence of these important medicines, which in turn results in patients experiencing untreated side-effects and likely contributing to the high rate of treatment interruptions and treatment failure.

Key recommendations

- Increase the safety stock of the first-line TB medicines at the national level to 6 months.
- The National Procurement Laws should be provided with stronger quality assurances for strategic medicines such as anti-TB medicines, antiretroviral and vaccines. For such medicines, options should be created to procure from reputable international mechanisms such as UNICEF (vaccines) and GDF (TB). The Procurement laws should furthermore allow preference to medicines prequalified by WHO, EU, UK, USA or Japan. This will then provide legal cover to select such prequalified products, even if their cost may be higher than lower quality alternatives.
- Improve the implementation of direct observation of patients taking their medication (direct observed treatment). Consider paying a bonus to patients and caregivers for every completed treatment under assured direct observation.
- Ancillary medicines are important but in terms of cost they are a fraction of the TB medicines expenditure. The NTP should discuss with the National Health Insurance to reach a more practical arrangement. Possible ideas to be discussed could be: medicines procured centrally and then distributed to the TB treatment sites, or: medicines negotiated/contracted centrally after which the TB treatment sites can call of the needed quantities at the negotiated price from the contracted supplier(s).

Pharmacovigilance (PV)

Key findings

- Significant work has been done by the MoH, NTP and partners to ensure the availability of proper safety monitoring of MDR-TB patients and establish an ADR reporting system.
- The current National TB Clinical Guidelines of 2016 has been updated to include the recommendations on safety monitoring and management of patients who are receiving the new anti-TB drugs.
- Safety monitoring and case safety management still has limitations in systematic performance in some health care facilities.
- Pharmacovigilance system and good pharmacovigilance practice has been implemented in national legislation and regulatory practice.

- The adverse drug reaction reporting system has limitations in terms of identifying important safety issues.

Key recommendations

- Perform additional evaluation of safety monitoring practices in hospitals and outpatients settings with mapping of the gaps and considering the optimal way for further adaptation of resources, updating of knowledge, adaptation of finance planning and procurement of laboratory reagents for sustainable implementation of safety monitoring requirements.
- Consider effective measures for further implementation of sustainable adverse drug reactions management into routine practice.
- Adapt procurement planning to include a requirement of medicines for ADR management
- Ensure regular and timely reporting of SAEs and AEs of special interest to the NPC, according to the WHO recommendations
- Establish more effective interactions with the NTP to ensure appropriate aDSM ADR data assessment, signal detection and management.

TB/HIV collaborative activities

Key findings

- Joint TB–HIV coordination bodies in place at national level (Country Coordination Committee under the Coordination Council for Public Health; MoH Coordination Committee on HIV and AIDS and Thematic Working Group on TB/HIV).
- However, there are a lack of policies and implementation procedures for improving the collaboration between National TB, HIV/AIDS Programmes, Hepatitis and Narcological services, penitentiary system and other stakeholders to ensure integrated patient-centred care.
- Collaborative activities between two services based are on the referral model; however, it is fragmented and not consistent which creates delays in timely diagnostic and early treatment of TB and HIV.
- Coverage with antiretroviral therapy (ART) among new TB/HIV coinfected patients has improved during the last decade from 21.6% to 74.5%; however, it is still below the 90–90–90 global target.

Key recommendations

- Develop a strategic policy on TB/HIV collaborative activities to develop the principles and model of collaboration, referral systems, information and data exchange between TB and HIV (and hepatitis) services providers, joint planning and regular programmatic data analysis, joint monitoring and evaluation. Ensure alignment of the National TB and HIV Strategic Plan and the National Transitioning Plan to secure sustainability.
- Strengthen the role and function of the MoH Working Group on TB/HIV collaborative activities by: 1) including representative from the hepatitis programme and civil society and community organizations; 2) defining clear terms of reference and the role of each of the programmes in the joint response; and 3) developing the plan for joint TB/HIV/viral hepatitis activities, and monitoring and evaluation of performance.
- Improve case management of patients with TB/HIV coinfection and TB and other comorbidities and integrated patient-oriented model of service delivery by: 1) implementing HIV rapid testing at TB facilities to decrease HIV detection time and early start of ART; 2) offering HIV testing to patients with presumptive TB in order to increase HIV testing coverage among key vulnerable populations and

increase survival among LTBI; 3) improving collaboration between specialists providing ART and TB treatment on treatment regimen of patients with coinfection and other comorbidities, and ensuring proper documenting in patient's medical cards; 4) ensuring availability of ART drugs, CPT, HCV and OST treatment at TB facilities, and implement ART and CPT under direct supervision (ART and IPT DOT) along with TB and DR-TB DOT at TB facilities.

TB in prisons

Key findings

- The country's penitentiary system has developed the very practical mechanism of screening inmates at entry to the system (at the stage of pre-trial isolators), inside each and every colony, after the trial and has a proactive system for cross-detection of the all three diseases: TB, HIV and viral hepatitis.
- The collaborative TB, HIV and viral hepatitis activities in prisons are properly addressed to all inmates and the treatment initiated for all diseases in full concordance with WHO recommendations.
- Treatment initiation is done in strong collaboration with the civilian sector, in which the TB Consilium of the Penitentiary has a standing member from the NTP to assign treatment in accordance to the profile of the patient.

- The observation here that treatment fully corresponds with the civilian sector, with the support of the National TB Consilium: there is countrywide access to shorter treatment regimens (STR) and individualized treatment regimens (ITR) containing the new and repurposed drugs; however:
    - not all eligible patients are enrolled in treatment with regimens containing the new and repurposed TB drugs;
    - there are unjustified frequent changes in treatment regimens, which can contribute to the amplification of drug resistance.
- The system of recording/reporting and case registration of each treatment prescription remains exemplary, including the full description of the drugs prescribed for all three diseases, with strong consideration of the side-effects and aDSM monitoring.
- The storage, registration and disbursement of all TB drugs is very strong, transparent and up to date.

Key recommendations

- To align the treatment regimens with the WHO recommendations, as the current unjustified frequency of changes in treatment regimen and changes in the drugs used for M/XDR-TB cases can lead to acquired resistance to the new and reprofiled drugs (exactly as in the civilian sector).

TB in migrants

Key findings

- The prevention of TB among migrants is separately highlighted in the National Programme Tuberculosis V for 2017–2021, adopted by the Kyrgyz Government Resolution in 2017.
- A coordination body at the national level has been established as the multidisciplinary Working Group on TB control among migrants, established by the joint directive of the Ministry of

Healthcare and State Migration Service of Kyrgyzstan in 2016, in pursuance of the Vice-Minister's mandate.

- The data for TB cases among external and internal migrants are collected and reported at national, regional and district levels.
- The percentage of TB cases in the category of "External migrant" has increased among the total TB cases notified in Kyrgyzstan, from 0.2% in 2015 to 3.3% in 2017, and 2.7% in 2018.
- The draft of the bilateral agreement on cross-border TB control between Kyrgyzstan and Kazakhstan has been developed and is expected to obtain official approval by the end of 2019.

Key recommendations

- Develop and implement an annual multidisciplinary action plan for TB prevention and treatment among migrant workers by the country Working Group on TB control among migrants.
- Ensure synergy of awareness-building efforts on migrants' rights and TB-related issues by involving every stakeholder responsible for migration and health care, local nongovernmental organizations, Rural Health Committees and others in the country and in the countries which receive migrant workers from Kyrgyzstan.
- Provide a clear definition in the national guidelines for TB cases associated with migration.
- Introduce registration of TB cases among foreigners and returned migrants-Kyrgyz citizens in the TB recording and reporting systems.
- Advocate for the development and approval of bilateral or multilateral agreements on cross-border TB control with countries receiving migrant workers from Kyrgyzstan.

Partnership and advocacy, communication and social mobilization (ACSM)

Key findings

- Great progress has been made in the area of advocacy, communication and social mobilization (ACSM), which has been integrated into the National TB Programme. The TB ACSM plan is developed on annual basis jointly with all partners, approved by the MoH and disseminated to the regional level (oblasts). There is lack of guidance on community engagement with TB detection, treatment support and prevention and no budget attached to the ACSM plan, hence, no implementation is possible except for activities planned by partners, although stakeholders have aligned their activities to the objectives and priorities of the NTP. The ACSM plan has no indicators and there is no monitoring mechanism in place to track and measure the achievement of the objectives.

- The most difficult part of the TB treatment for many patients, identified during interviews with patients, are the uncertainty of the treatment duration and the uncertainty of the likelihood of a cure. The knowledge of TB treatment, its duration and drug side-effects also are found to be lacking in TB patients. This was seen to correspond to insufficient counselling of TB patients, and suboptimal provider and patient interaction. Patient schools established in TB hospitals are held by nurse or doctors based on lesson plans with approved topics. These plans have not been updated in the past 5 years, and in the regions the plan contains more than 30 topics, of which only 5–6 concern TB. Lack of on-the-job guides or tools to be used for counselling and patient education were noted on both in inpatient and outpatient's facilities. The existing materials are

outdated and do not include information on the new TB diagnostics techniques and new treatment regimens of DR-TB.

- Kyrgyzstan has become a country with the highest NGO density in Central Asia. Regarding TB NGOs, Kyrgyzstan has not yet reached the critical mass needed to substantially contribute to TB case-finding and treatment outcomes. This may be due to a number of reasons: 1) the limited support being given by the NTP and partners to NGOs to sustain initiatives in case-finding and treatment support, and 2) many multisectoral alliances at different levels (national, regional and rayon have been formed, but without enough financial support, to be able to perform their roles and contributing to the achievement of the overall goal of the TB programme. Most of the civil society organizations have focused on TB advocacy efforts and less on service delivery support. There is no single standard package of TB services that could be provided by NGOs.

- Community engagement with TB is organized through the established Village Health Committees (VHC). The VHC members visit households in their communities, and raise awareness of TB at schools, mosques, or during weddings and ceremonies. The activities conducted by them are not regular and are limited, and do not focus enough on key and vulnerable populations. Though VHC members have been trained to screen and refer presumptive TB cases for diagnosis and treatment and provide support to TB patients, in the southern regions visited by the review team, VHC activities were limited to conduction of information campaigns, once a year, as part of World TB Day.

Key recommendations

- Develop a national community engagement strategy based on an analysis of the situation and studies conducted in the country, with the active participation of civil society and the affected communities. The strategy should include indicators, a monitoring and evaluation plan and budget for its implementation.

- To address the high default rate among MDR-TB patients, operational research is recommended to fully understand the financial, logistic, medical, social and other barriers to treatment compliance. Training on interpersonal communication/counselling skills should be conducted to health providers and on-the-job tools – counselling flipcharts, guide for treatment supports, targeted print and video materials – should be developed for TB patients.

- Advocate for the provision of social contracting to ensure meaningful NGO engagement with the TB response. NTP and partners should build the capacity to outsource some tasks to local NGOs, such as outreach and referral to TB diagnostics, provision of psychosocial support to TB patients including counselling and health education, assistance on contact tracing, and the administration of DOT/VOT. NGOs engaged in TB activity should look to improve networking, interact more effectively with the NTP, and engage in broader TB advocacy, as well as looking to improve TB service delivery.

- The NTP should encourage an approach involving VHCs and other health service stakeholders that emphasizes TB within the health education programme and encourages a more practical focus on key populations in each region.

1 TB epidemiology and surveillance system

The purpose of the epidemiological review mission to Kyrgyzstan that took place in May 2019, prior to the NTP review, was to assess the completeness and accuracy of routine tuberculosis (TB) surveillance and vital registration (VR) and to investigate the plausible drivers of the TB epidemic in the country (Annex 1).

1.1 Objectives

The objectives of the epidemiological review were:

- to describe and assess the current national TB surveillance and VR (vital registration) systems, with particular attention on their capacity to measure the level of, and trends in, the TB disease burden (incidence and mortality), using a TB surveillance checklist;
- to assess the level of, and trends in, the TB disease burden (incidence, prevalence and mortality) using available surveillance, survey, programmatic and other data;
- to assess whether recent trends in TB disease burden indicators are plausibly related to changes in TB-specific interventions, taking into account external factors such as economic or demographic trends.

1.2 Methods

The checklist and associated user guide From Standards and Benchmarks for Tuberculosis Surveillance and Vital Registration Systems[1] were applied for the assessment. Methods of data collection included: 1) a desk review of available TB control-related policy papers, manuals, guidelines and forms; 2) interviews and discussions with programme staff at national and regional and facility levels; 3) a review of TB records, laboratory registers and electronic surveillance systems; and 4) an analysis of notification/surveillance data over time and geographically to identify trends in the disease burden and programmatic efforts.

1.3 Key findings

Of the 12 standards for TB surveillance that were applied, eight were met, two were partially met, and two were not met (Table 1.1).

Table 1.1 Checklist results

STANDARD	MET	PARTIALLY MET	NOT MET
B1.1 Case definitions consistent with WHO guidelines	☒	☐	☐
B1.2 TB surveillance system captures minimum set of variables for reported TB cases	☒	☐	☐
B1.3 All scheduled periodic data received and processed at the national level	☒	☐	☐
B1.4 Data in quarterly reports are accurate, complete, and internally consistent	☒	☐	☐
B1.5 Data in national database are accurate, complete, consistent, and free of duplicates	☐	☐	☐
B1.6 TB surveillance data are externally consistent	☒		☐
B1.7 Number of reported TB cases is internally consistent	☒	☐	☐
B1.8 All diagnosed cases of TB are reported	☐	☒	☐
B1.9 Population has good access to health care	☐	☐	☒

[1] WHO. Standards and benchmarks for tuberculosis surveillance and vital registration systems: Checklist and user guide. Geneva: World Health Organization. (https://www.who.int/tb/publications/standardsandbenchmarks/en/, accessed 5 December 2019).

B1.10 Vital registration system has high national coverage and quality	☒	☐	☐
B2.1 Surveillance data provide a direct measure of drug-resistant TB in new cases	☐	☒	☐
B2.2 Surveillance data provide a direct measure of the prevalence of HIV in TB cases	☒	☐	☐
B2.3 Surveillance data for children reported with TB are reliable and accurate	☐	☐	☒

Although the TB surveillance system in Kyrgyzstan is strong enough to accurately provide a direct measure of the number of TB patients detected, notification is not a good proxy for TB incidence because of the weakness of the health system and the population's limited access to health care services. Therefore, we can assume that there might be TB cases in the population that remain undetected by the health system.

Strengths

- Internal consistency for most of the TB surveillance data;
- Use of standard recording and reporting (R&R) forms and case definitions in line with WHO recommendations;
- Strong quality assurance procedures are undertaken systematically from facility to regional and from regional to national level;
- Robust VR system with high coverage and quality;
- Moderate coverage with GeneXpert testing;
- High coverage of TB/HIV surveillance.

Weaknesses/gaps

- Inappropriate storage of aggregate national TB surveillance data that make attempts to carry out time series analysis cumbersome;
- No single national database;
- Limited use of the electronic surveillance system;
- Reporting forms are redundant and incorporate a number of unnecessary disaggregations. This increases the workload of the facility providers to tally and tabulate the data;
- Probable under-diagnosis of TB in young children;
- No analysis is done at subnational levels;
- Suboptimal referrals from the primary health care level (indicated by a high rate of laboratory confirmation among suspected cases);
- Limited access to health care in the general population, as indicated by the child mortality rate and out-of-pocket expenditure on health services.

Disease burden and key drivers of the TB epidemic

The estimated TB incidence in Kyrgyzstan in 2017 was 144 (range: 120–170) per 100 000 population, which is about five times higher than the regional average and 2.5 times higher than the average of the 18 TB high-priority countries (HPCs) in the Region. The TB incidence rate declined by an average of 0.3% annually from 2013 to 2017, which is quite slow compared with the annual decline of 6.3% registered during the same period in the 18 HPCs and in non-EU/EEA countries from the WHO Region. TB mortality, excluding TB/HIV deaths, between 2001 and 2017 in Kyrgyzstan has declined with an average annual fall of 8.7%. Over the same period TB/HIV mortality increased 11.5% annually. In the last 9 years, the notification rate for new cases has been declining in all regions of the country. The proportion of bacteriologically

confirmed pulmonary TB (PTB) cases among new PTB cases increased from 45.7% in 2008 to 64.0% in 2018. There is a wide geographical variation of proportions of bacteriologically confirmed new PTB cases, ranging from 46 to 73% between 2008 and 2018. The trend in the TB notification rate is similar among males and females; however, over the last 3 years the decline among females has been much faster than for males. The proportion of retreated cases among all those notified varied from 12.6% in 2008 to 30.8% in 2018. About one fifth of the TB incidence is cases with relapses. The proportion of extrapulmonary cases among new TB cases decreased from 30% to 24% between 2008 and 2018 and has been stable over the last 3 years.

Notification rates for TB differ somewhat within Kyrgyzstan by administrative region. Notification rates are higher in older age groups, consistent with most other countries in the Region, and the age structure of the TB patient population is largely consistent from year to year. The male-to-female ratio of TB patients in Kyrgyzstan is very stable, at 1.8 men per woman.

TB programming efforts that could have contributed to a modest decline of the TB epidemic and comparatively fast decline of TB mortality are the introduction and scale-up of rapid diagnostic tests (GeneXpert); a microscopy laboratory network; introduction and high coverage of second-line TB treatment; high coverage of HIV testing; and improvement of ART coverage. These were enhanced by increased TB financing from domestic and donor sources. Additional external factors which could contribute to declines in TB incidence included modest economic growth (increase of GDP per capita); health system strengthening (as evidenced by a decrease in under-five mortality); the decline of under-nutrition; and decreased exposure to indoor solid fuel for cooking. Ageing of the population and an increase of diabetes prevalence are expected to drive the TB epidemic upwards; however, because these changes are taking place quite slowly in Kyrgyzstan their impact on the pattern of the TB epidemic is likely to be minimal. Low treatment success rates, suboptimal and inconsistent treatment coverage for latent TB infections as well as the high rate of smoking prevalence, growing prevalence of HIV in the general population combined with modest ART coverage and persistent challenges in access to affordable health care (evidenced by out-of-pocket expenditure) likely contribute to the persistence of the TB epidemic.

Recommendations

	Recommendation	**Timeline**	**Institution**
1	Roll-out implementation of the registration module of the developed ES/TB-KZ case-based electronic database (computers at facility level, training, feedback, etc.).	Mid-term	USAID project and /or GFATM
2	Ensure interoperability of the main digital TB register with the laboratory module (National Reference Laboratory database), HIV database, VRS database and other sister databases from the health and social care sectors using the unique civil identification number.	Mid-term	MoH, donors
3	Train oblast TB coordinators (NTP) and TB epidemiologists (SES) on TB data analysis and use for decision-making.	Short-term	NTP, donors

4	Identify the national targets in the new National TB strategic plan 2025 and develop an accountability framework with its annual monitoring reflected in a regular national TB surveillance and response monitoring report.	Short-term	MoH, NTP
5	Develop the coverage and performance benchmarks for GeneXpert coverage, and monitor the progress of its roll-out.	Short-term	NTP
6	Promote patient referrals from primary health care.	Short-term	NTP
7	Conduct an inventory study to assess the proportion of underreporting, delay in start of treatment and validity of classification of relapsed cases.	Mid-term	USAID project
8	Conduct a TB catastrophic cost survey.	Mid-term	WHO

2 Financing and optimization of TB services

2.1Background and findings

Kyrgyzstan has made significant achievements in establishing a people-centred model of TB care by promoting outpatient treatment, supported with a new approach to financing and optimization of service provision. High-level political commitment has been demonstrated by the Government of Kyrgyzstan, based on technical assistance from partners (USAID the funded project "Defeat TB", WHO) and close collaboration with the Ministry of Health and the Mandatory Health Insurance Fund. The first big step on the way to reform was the development of the Roadmap on the Optimization of TB Services in Kyrgyzstan, followed by several decrees and orders, a few of which are:

- Government of Kyrgyz Republic Order No. 9b, 17 January 2017: Approval of Plan of Actions (Roadmap) on the Optimization of the System of TB Care Provision to the Population of the Kyrgyz Republic, 2017–2026;
- MoH Order No. 123, February 2017: Approval of the Plan of Actions (Roadmap) on the Optimization of the System of Provision of TB Care in Health Care Organizations of the Kyrgyz Republic for a Short-Term Period, 2017–2019;
- MHIF Order No. 282, October 2017: On the Implementation of Results-Based Payment for Primary Health Care (PHC) Staff in Chui Oblast Oriented on Successful Treatment Outcomes for TB Patients;
    - In 2018, similar orders were issued for Talas oblast, several rayons of Osh and Jalalabad oblasts;
- MoH Order No. 717, 22 October, 2018: Introduction of TB Case Management Approach in Chui, Talas Oblasts, Several Rayons of Osh and Jalalabad Oblasts;
- MoH Order No. 542, June 2017: On the Status of Voluntary Assistant for Treatment Observation (DOT) for TB Outpatients.

Government approval of the Road Map was a major achievement, setting the framework for continuing reform. Full implementation of the Road Map will reduce the number of TB beds by 40% in 2020 and 60% in 2025, freeing approximately US$ 2 million for strengthening primary health care (PHC) and improving

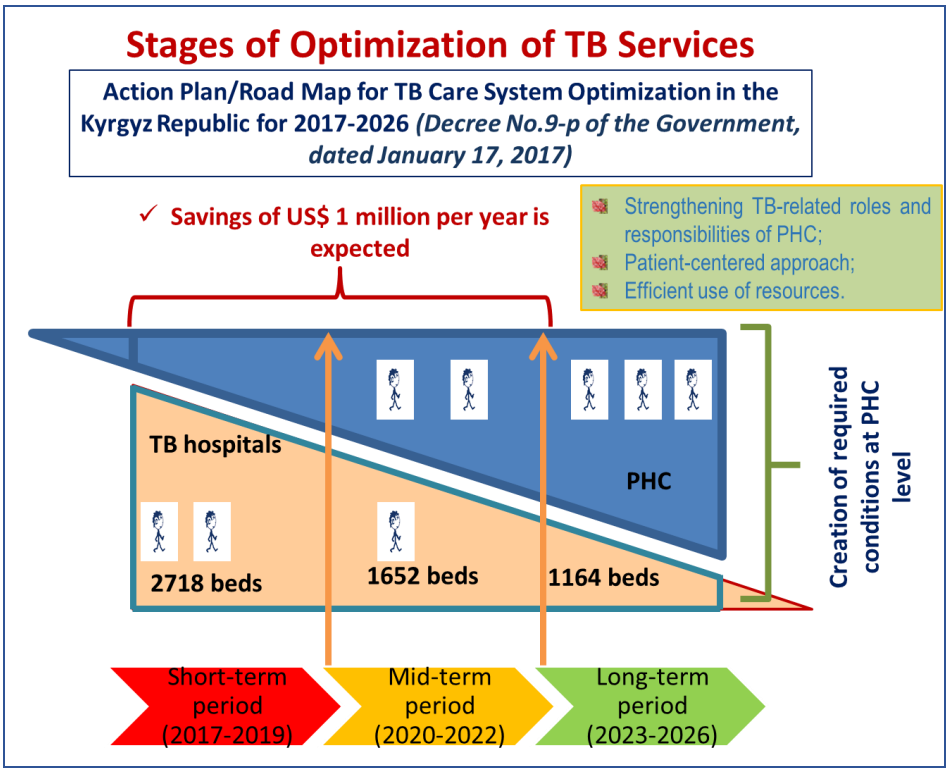
laboratory services. The number of beds has already been reduced from 2 545 in 2016 to 2 175 by end of 2018.

Since November 2017, the Mandatory Health Insurance Fund in the Chui region started piloting a new result-based payment method in addition to per capita reimbursement. The efficiency of the method is based on: 1) payments made for cure or treatment completion of TB patients; and 2) financial incentives are given only to those health care providers who are directly involved in managing TB patients.

An incentive bonus for successful treatment completion by TB patients is given to primary health care workers as a part of their monthly salary and cannot be redirected to pay for the other needs of the health care institution. The payments are 12 000 som (US$ 176) for DS-TB cases and 24 000 som (US$ 353) for DR-TB cases. Payments for the successful treatment for TB patients are made from the savings in the state budget made by restructuring TB care facilities. In 2018, a significant allocation/reinvestment of 30 million som (US$ 441 200) was made for payments for successful TB treatments in outpatient settings in the country.

The sustainability of the reform is strength of the approach, since it is ensured by using the state budget as the source of payments to primary health care providers for successful treatment completion. The Mandatory Health Insurance Fund redirects the savings made in the course of restructuring TB hospitals to the priority measures being implemented to improve TB control in the country (Figure 2.1).

Figure 2.1 TB roadmap implementation by stages and expected outcomes



Source: USAID-funded "Defeat TB Project"

Further expansion of the model of care and the piloted financial mechanism is needed throughout the country. Currently, about 30–35% of administrative entities are covered by this successful approach. This expansion will require greater involvement of health care providers at the primary care level in managing

TB patients, with the TB case management approach consisting of medical, psychological and social care provided to patients from the beginning to completion of treatment. This approach will increase the workload for health care providers in primary health care, especially nurses and feldshers, requiring them to perform new tasks and to gain new knowledge and skills in practice.

Performance of PHC doctors are evaluated by standard indicators, of which one of them was TB detection (number of presumptive TB cases referred for GeneXpert test). The composition and number of indicators are not permanent and these are updated time to time, based on feedback from the MoH monitoring unit. By end of 2018, the TB detection indicator was removed, with the explanation that it was not easy to measure and was not providing accurate information. Currently, there is no indicator for TB in the list of evaluation indicators for PHC staff.

Another important focus of optimization is the dense laboratory network. The number of laboratories is expected to gradually reduce gradually, by the consolidation of laboratories with low volume performances in bigger units, which have acceptable workloads. The process of laboratory network optimization is occurring in parallel with the implementation of a specimen transportation system. It should be mentioned that transportation of specimen is combined with TB drug delivery from region to rayon level. The total number of TB laboratories will be reduced from 133 to 40 by 2026.

The general financial landscape for TB activities remains heavily dependent on donor support. According to the WHO country profile, in 2018 the total budget for TB activities was estimated at USD$ 25 million, of which the contribution from domestic funds was 50%, 47% of funds were provided by the donors and 2% was unfunded.

United Nations Development Programme, as a principal recipient of the Global Fund grant, is implementing the project “Effective HIV and TB control project in Kyrgyzstan”. The project started in 2017, will end in 2020 and has a total budget of USD$ 21 million.

USAID funded two projects, the Defeat TB project and Challenge TB, which have both ended recently; however, USAID will launch a new project which will continue for several years and which will be focused on the current NTP needs. The International Committee of the Red Cross continue support to TB activities in the penitentiary system.

There is currently an opportunity to increase funding available for HIV and TB activities in Kyrgyzstan by € 14.9 million through a debt conversion with Germany. In 2017, the Budget Committee of the German parliament approved a debt conversion, known as debt swap, with the Kyrgyz Republic for an amount up to € 14.9 million. If implemented, the transaction would work as follows: the Kyrgyz Republic would arrange with Germany to finance development projects in its own country for an amount up to € 14.9 million and in return would receive from Germany a debt relief for the same amount. After discussions with the German Federal Ministry of Economic Cooperation and Development and the German Embassy in the Kyrgyz Republic, the German side came to the conclusion that the best possible use of the debt swap would be implementation via the Global Fund.

If this proposal is accepted by the Ministry of Finance (MoF), a total of € 14.9 million of payments owed by the Kyrgyz Republic to Germany, and originally destined to become repayments for the corresponding bilateral loans, would instead be channelled to the GFATM, which would in turn increase its support by the same amount to Kyrgyzstan’s fight against HIV and TB.

Recommendations

	Recommendation	Timescale	Responsible

1	Continue and speed up the optimization process of TB service provision to cover the whole country; expand the outpatient model of TB care.	Mid-term	MoH, NTP, Partners
2	Conduct the optimization process in parallel with the strengthening of PHC services; • Training of medical staff, TB case management; • Expansion of the approach using voluntary (community) supporters of TB treatment; • Enhancing VOT, exploring possibility of use of other digital technologies to improve treatment adherence.	Mid-term	NTP, Partners
3	Extend the successful specimen and drug transportation system, implemented in Chui, Jalalabad and Talas regions, throughout the country;	Short-term	MoH, NTP, Partners
4	Include in the list of indicators for PHC doctors' evaluations a TB detection component. For example: percentage of people referred to TB examination by the PHC doctor, whose TB diagnosis was confirmed (Nominator: Number of people referred for TB examination by the PHC doctor in the reporting period, whose TB diagnosis later had been confirmed; Denominator: Number of people referred for TB examination by PHC doctor in the reporting period).	Short-term	MoH
5	MoF and MoH to discuss and consider the German Government proposal to increase the funding available for HIV and TB through debt conversion.	Short-term	MoH, MoF
6	Consider a new TB strategic plan transition period from donor to domestic funding, to ensure the sustainability of current activities and continue the progress achieved.	Short-term	NTP, MoH, MoF, Partners

3 Case-finding and the TB laboratory network

3.1 National Laboratory Strategic Plan

Findings

A National Laboratory Strategic Plan (NLSP) has been developed and was approved by the MoH in 2014. The plan was based on an analysis of the current situation of the country's TB laboratory service. The following aspects were included:

- Description of:
    - the TB Laboratory network structure;

  - tasks and responsibilities of each TB laboratory in the network;
- Update of the national diagnostic algorithm;
- TB laboratory network consolidation plan including optimization of the number of microscopy laboratories and workload in the enlarged microscopy centres, and optimization of the GeneXpert laboratory network to improve countrywide coverage of rapid TB diagnostics;
- Calculations of the amount of Xpert MTB/RIF cartridges and other laboratory consumables required;
- Design of a country transportation system for diagnostic samples and lab reports; and
- An algorithm of optimized procurement procedures for the whole laboratory network.

NLSP components were included in an implementation roadmap which became part of the NTP Plan of Actions on Optimization of the System of TB Care Provision to the Population of the Kyrgyz Republic for 2017–2026. The implementation status of the NLSP is presented in Annex 2 (Table A2.1).

Major challenges

- The strategic plan for further development and strengthening of the TB laboratory network is not updated on regular basis.
- Some components of the NLSP are outdated and need to be revised.
- Part of the NLSP components are not included in the implementation roadmap.

Recommendations

	Recommendation	Timescale	Responsible
1	• Update a national strategy for further development of the TB laboratory network. All aspects of network management should be revised. Implement the laboratory plan within the following 3 years after official approval by the NTP and MoH.	Mid-term	NRL, NTP
2	• Develop an implementation strategy for the complete NLSP and proceed more quickly with the practical implementation.	Short-term	NRL, NTP

3.2 Laboratory network

Key recommendations given in the 2014 NTP review

In 2014, the key recommendations for the TB laboratory network were:

- to substantially consolidate the laboratory network and to enlarge the teams in the remaining laboratories to improve efficiency and the quality of diagnostics;
- to strengthen the management of the laboratory network;
- to officially define the responsibilities of the NRL;
- to define the tasks and responsibilities for each type and level of laboratory;

- to strengthen collaboration and communication between the laboratories of the network and exploit synergisms.

Findings

The TB laboratory network has been partly consolidated and its structure now largely meets the recommendations of the 2014 NTP review (Annex 2; Fig. A2.1). The number of microscopy laboratories has been reduced by two from 111 to 109 (Annex 2; Table A2.2). Xpert diagnostics has been expanded and is now offered in 24 laboratories (8 under NTP, 12 in the primary health care sector, 3 in the penitentiary sector, and 1 under Médecins Sans Frontières in KaraSuu). Of the two DST laboratories, the one in Osh has been downgraded to a culture laboratory while all the country's DSTs have been transferred to the NRL.

The NRL functions as the technical management unit of the network and oversees the functional direction of all laboratories through policies and guidelines, while each laboratory is under the administrative management of the respective medical institution and works under the disciplinary direction of the local manager. The head of the NRL is also the TB laboratory network manager.

TB laboratories are located in different administrative units (oblasts and districts) and are assigned to three different medical sectors:

1. TB sector – located in the TB centres;
2. Primary health care (PHC) sector – located in the Centres of Family Medicine (CFM);
3. Penitentiary sector – located in prisons, colonies or Tentative Detention Units (SIZO).

In the PHC sector, TB laboratories are financially and organizationally independent from the NTP but are supposed to follow technical orders (*prikaz*) from the NTP director. Penitentiary system laboratories are subordinates of the State Service of Execution of the Punishment. All TB laboratories report their statistics to the NRL quarterly.

Recently, the Osh laboratory stopped DST because of quality and sustainability issues due to high staff turnover and weak commitment from the institutional management. Currently, only the NRL performs DST. The NRL receives positive cultures from the northern oblasts via the established courier system (see the Logistics and transportation section). Cultures from the southern oblasts are first sent to the Osh oblast TB laboratory which packs them according to International Air Transport Association (IATA) rules and ships them by air to the NRL once a week.

The SRL partner (IML red, SRL Gauting, Germany) annually sends external quality controls to the NRL for smear microscopy, DST and LPA tests. The SRL is currently developing standardized external quality assessment (EQA) samples for TB culture diagnostics which will be piloted in 2020 and presumably sent

as routine controls from 2021 onwards. In-country EQA is only provided for smear microscopy laboratories. The oblast TB reference laboratories re-check smears and send out test panels to the microscopy laboratories of the region. This control, however, very much depends on the capacities of the individual oblast laboratories. In most oblasts, it seems to function well. Overall, the interaction of the different TB laboratories has greatly improved since the last NTP review, as indicated by the more active sending of samples from one lab to another and by the shortened times to obtain results in the majority of cases (for more details, see the Logistics and transportation section).

The National Reference Laboratory (see Table A2.3 for its basic characteristics) is always well managed. Its premises, installations and equipment are well maintained. An engineer regularly visits the laboratory and provides technical services when required. The NRL is linked to the SRL Gauting, Germany, by an active and intense NRL–SRL partnership which was registered by WHO in 2008 and has been reconfirmed by the MoH in 2012. The NRL performs ZN and fluorescence microscopy, culture (LJ and MGIT), DST for FLD and SLD in MGIT, molecular resistance testing for FLD and SLD, using Genotype MTBDR*plus* and MTBDR*sl* respectively (HAIN Lifescience, Germany), and Xpert MTB/RIF all in impressively high numbers (Table A2.4).

DST for the new antituberculotic drugs bedaquiline, delamanid, clofazimine and linezolid was implemented in 2019 with technical assistance from the SRL partner. The NRL has successfully passed the external quality assessments of 2014 to 2018 with no relevant deviations. The head of the NRL, Dr Gulmira Kalmambetova, has been in charge since Spring 2012. She is knowledgeable, dedicated to her work and shows very strong management skills and high level of professionalism. The staff have all passed multiple onsite training courses run by the SRL partner, are very skilful and show high levels of expertise in their work. Two larger operational research studies have been initiated by the NRL and SRL partners: 1) the implementation and use of whole genome sequencing in the NRL to investigate the transmission of TB in hospitals, and 2) the implementation and use of the interferon-gamma release assay QuantiFERON-TB Gold *plus* for screening health care workers in TB hospitals for LTBI.

Currently, six culture laboratories are functional, four (Karakol, Jalalabad, Naryn, Talas) offer smear microscopy, Xpert MTB/RIF and solid culture (on LJ medium) and two (Osh, Kara Balta) offer smear microscopy and solid culture but not Xpert MTB/RIF. Of the latter, Kara Balta will stop offering culture by the end of 2019 and will transfer the samples for culturing to the NRL. Of the other culture laboratories, only Osh and Jalalabad were visited during this mission. Both fulfilled WHO criteria for medium-risk laboratories and Jalalabad made a promising impression as a candidate for a future upgrade to a high-risk TB laboratory. Premises, installations and equipment were all in a good and well maintained condition,

the staff were well trained and the workforce was stable, and the commitment of the regional and institutional management to adequately support the laboratory seemed to be strong.

Twenty-four GeneXpert machines are installed in 23 laboratories (Table A2.5; prison colony 31 has two machines) and were used to analyse 18 661 Xpert MTB/RIF tests in 2018 (Table A2.6).

Major challenges

- The recommendations of the 2014 review have only partly been addressed.
- The consolidation of the TB laboratory network has come to halt. Instead of creating larger laboratory centres with two or more specialists, smear microscopy in particular is still performed in small lab units staffed by a single technician who carries out a few tests per day.
- The management of the network has only limited effective power over individual laboratory performance and does not have as much time and capacity for the TB laboratory network as is required.
- Interaction and collaboration between the laboratories in the network and data exchange are partly functional for some laboratories, but not for all as yet.
- Although sample transportation from the southern oblasts through Osh to the NRL, LPA and DST in the NRL with subsequent reporting back to the southern counterparts is currently functional, its sustainability is not yet proven. Interruptions of the transportation chain (e.g. caused by accidents with subsequent changes in transportation policies and rejection of samples by Kyrgyz Airlines), major problems of the NRL (e.g. due to lack of staff or any kind of cataclysm) or other challenges of such kind might cut half of the Kyrgyz TB patients off DST to FLD and SLD.
- The workload in at least a third of GeneXpert laboratories is far too low (Table A2.6). Assuming an average of 250 work days per year, eight laboratories performed less than one test per day on average. The laboratory in Kara-Kul (Jalalabad Oblast) performed only 16 tests in 2018 which is one test on every 16th work day. Another nine laboratories performed between two and six tests per day, which is the target workload for 2-module machines, and only four laboratories showed reasonable workloads of above six tests per day.
- In five (24%) of the civil service laboratories (Aksy, I-Ata, Kara-Kul, Leylek, Talas), the percentage of tests yielding no diagnostic results (due to errors, indeterminate or no results) surpassed 5%, ranging from 6.4% in Aksy to 25% in Kara-Kul. Maintenance of their machines is urgently required.

Recommendations

	Recommendation	Timescale	Responsible
1	• Issue and implement a TB laboratory network handbook as a practical operation policy subordinate to the National Laboratory Strategic Plan. Officially endorse the handbook by issuing a *prikaz* declaring the handbook as binding for the whole network including PHC laboratories and the penitentiary system. Update the handbook every second year or whenever relevant changes are made in diagnostic policies or procedures. In this handbook, describe among other items: ○ the standards of diagnostics; ○ the responsibilities and functions of each type of laboratory of the network; ○ the policies of interaction and collaboration of the laboratories; ○ the main features of network management; ○ logistics including sample transportation, transmission of data, laboratory reports, critical and uncritical test results; ○ reporting of consolidated data of TB diagnostics for surveillance and epidemiology; ○ laboratory information and data registration and management; ○ miscellaneous relevant features to strengthen the TB laboratory network.	Mid-term	NRL, NTP
2	• Install a TB laboratory network commissioner under the NTP. Confer sufficient competences and financial resources upon him/her to carry out the TB laboratory strategy plans, to develop and to implement the TB laboratory network handbook. Encourage and motivate this commissioner to pursue sufficient activities to further develop the laboratory network and increase its efficiency. Closely monitor the commissioner's activities by the use of project plans and indicators.	Short-term	NTP
3	• Further increase the efficiency of the network by: ○ consolidating laboratory diagnostics to fewer but larger diagnostic hubs and by enlarging the teams of laboratory specialists; ○ strengthening collaboration and communication between the laboratories of the network und exploiting synergisms arising from closer collaboration of the TB laboratories;	Mid-term	NRL, NTP

	○ organizing regular regional and national meetings of laboratory specialists to inform them about changes in policies, new tools or laboratory responsibilities, to exchange experiences and to continuously train the specialists in analytics and diagnostics.		
4	• Develop a plan B for back-up LPA and DST diagnostics for situations in which the NRL could not perform all required tests for major reasons, some examples of which are listed above. A promising long-term solution might be to enlarge the laboratory of Jalalabad, to install a ventilation system fulfilling WHO standards for high-risk TB laboratories, and to equip it with everything needed for LPA and DST diagnostics. DST for Jalalabad oblast could be performed there. If the NRL could not perform the required tests for the southern oblasts, for whichever reason, these tests could be transferred to Jalalabad and performed there.	Long-term	NRL, NTP
5	• Reorganize the GeneXpert TB laboratory network to reach a minimum number of four tests per laboratory and a mean number of two tests per module and day. Further, increase the accessibility of Xpert diagnostics for TB patients and increase the coverage of Xpert testing for TB suspects.	Mid-term	NRL, NTP
6	• In the short-term, organize the maintenance or replacement of the GeneXpert machines in Aksy, I-Ata, Kara-Kul, Leylek and Talas laboratories. Make sure all machines are included in the Republic's GeneXpert maintenance plan and ensure that maintenance is actually performed.	Short-term	NTP

3.3 Clinical chemistry and haematology laboratories

Clinical chemistry and haematology laboratories analyse blood cell counts, liver and kidney function tests. They are of crucial importance for pharmacovigilance, i.e. monitoring the side-effects of TB therapy. The results have direct impact on TB treatment regimens. Over the last few years, much attention has been given to the TB diagnostic laboratories and their performance has significantly improved in all areas. However, comparably little efforts and budget have been invested in the clinical chemistry and haematology laboratories, although they are of similar importance for the follow-up of TB cases.

Findings

During this mission, the experts visited the clinical chemistry laboratories in Kara Balta, Bishkek, Chui, Jalalabad, Karakol and Osh. All laboratories are equipped with centrifuges, bright-field microscopes, semi-automated clinical chemistry analysers, made by the HUMAN company (Fig. A2.2; Human Gesellschaft für Biochemica und Diagnostica mbH, Wiesbaden, Germany), and refrigerators. The required daily controls were regularly performed and documented up to December 2018. Calibrations were performed and

recorded sporadically. All available reagents and kits were fresh. Staff seemed to be skilful and dedicated to their work.

Major challenges

- Refrigerator capacities are insufficient. In the available refrigerators, reagents, patients' samples and staff foodstuffs were stored side by side (Fig. A2.3). This not only put staff at severe risk of infection, it also creates a real risk that reagents could be spoiled and false results produced.
- The daily minimum, maximum and actual refrigerator temperatures are not monitored or recorded.
- Calibration and control reagents expired in December 2018 and laboratories were stocked out of fresh reagents (Fig. A2.4 (left)). Therefore, no test controls were performed in 2019.
- The technical maintenance of laboratory equipment has not occurred for years.
- In some laboratories, staff complained that management commitment from administration of the hospitals was poor and that clinical chemistry and haematology laboratories received very little financial and technical support.
- Furniture is partly old, worn down and broken, putting staff at risk of injury (Fig. A2.4 (right)).
- No SOPs, centrally controlled forms or other quality management documents were available or used.

Recommendations

	Recommendation	**Timescale**	**Responsible**
1	Pay much more attention to the clinical chemistry and haematology laboratories and raise management commitment in hospital administration departments to provide all the support they deserve to fulfil their important tasks in TB case management.	Short-term	NTP
2	Provide sufficient intact and safe laboratory furniture and modern equipment to allow the laboratory specialists to do their work in a decent and safe environment.	Mid-term	NTP
3	Plan and allocate sufficient budget for clinical chemistry and haematology diagnostics to supply the laboratories with all reagents and consumables, maintenance, monitoring and training required for their work. Improve the procurement processes and prevent stock-outs of control and calibration reagents. They are crucial to ensure correct and trustworthy results.	Mid-term	NTP

4	Expand the quality management system that the SRL partner, together with the NRL, have developed to the clinical chemistry and haematology laboratories.	Mid-term	NTP
5	Train the staff in quality control and implement a QC system, such as exists for the TB laboratory network.	Mid-term	NTP

3.4 Infrastructure, equipment and maintenance

Findings

Laboratory equipment necessary to fulfil the designated tasks are available in all TB laboratories. All culture and DST laboratories are equipped with iLED fluorescence microscopes. Regional microscopy laboratories have at least one functioning bright-field microscope. Maintenance of some types of crucial laboratory equipment, such as BSCs, BACTEC™ MGIT™ 960 automates, or ventilation systems, is performed by local certified engineers. The NTP has a full set of measuring instruments for the certification of safety cabinets in accordance with the European Standard DIN EN 12469. All installed GeneXpert machines have been annually maintained with a calibration of the technical modules.

Major challenges

- Automatic emergency power generators and uninterrupted power supply devices (UPS) were installed only in large TB laboratories, while the majority of culture and Xpert MBT/RIF laboratories in the regions and districts are not equipped with functional UPSs, which can lead to the breakage of expensive equipment and loss of test results. Frequent interruptions of the electricity supply in the Osh TB laboratory (2–3 times per week) are regularly interfering with daily diagnostic laboratory work.
- Regional TB culture laboratories do not have constant ventilation as required by WHO TB laboratory biosafety manual recommendations.[2]
- Maintenance and certification of biosafety cabinets (BSC-2) in culture laboratories was performed in 2017 but not in 2018.
- The majority of microscopy laboratories are not equipped with fume hoods or ventilated work stations. Natural ventilation is not appropriate due to the climate conditions with extreme cold and heat in winter and summer, respectively, and poor infrastructure.

Recommendations

	Recommendation	**Timescale**	**Responsible**

[2] WHO. Tuberculosis laboratory biosafety manual (WHO/HTM/TB/2012.11). Geneva: World Health Organization, 2012. (https://apps.who.int/iris/bitstream/handle/10665/77949/9789241504638_eng.pdf?sequence=1, accessed 21 November 2019).

1	• Ensure uninterrupted power supply for all GeneXperts, BSCs, MGITs, thermal cyclers, autoclaves and incubators in all laboratories.	Short-term	NTP
2	• Finalize the central register of all equipment being used in Kyrgyz TB laboratories and update it on a regular basis (annually).	Short-term	NRL
3	• Ensure maintenance of priority laboratory equipment on an annual basis. In the short-term, order maintenance of BSCs in all laboratories. Based on the central equipment register, develop 3-year maintenance plans for key equipment and allocate according to budget. Implement this central maintenance plan starting in 2020.	Short-term	NTP
4	• Install fume hoods or ventilated work stations in microscopy centres and TB culture labs to ensure work safety conditions recommended by WHO for low risk TB laboratories.	Long-term	NTP
5	• Install adequate mechanical ventilation systems in all moderate-risk TB laboratories which can secure directional airflow with 6–12 air exchanges per hour.	Long-term	NTP

3.5 Diagnostic services, tests and procedures

Findings

The national TB laboratory network offers all the different types of procedures needed for TB diagnostics in the country. Table A2.7 gives an overview of the types and quantities of tests performed in 2018 and Table A2.8 shows the development in DST and culture laboratories from 2013 until 2018. Although numbers of analyses are approximate, and partly contradict figures provided from other statistics, Tables A2.5 and A2.6 show that the numbers of smears read by LED microscopy have increased by about 6-fold, cultures in MGIT by about 1.9-fold, DST in MGIT by about 2.6-fold, and Xpert MTB/RIF by about 43-fold.

Compliance with the diagnostic algorithm

Every TB patient in Kyrgyzstan is considered at risk of MDR-TB as the RR rate is more than 30%. Consequently, the TB diagnostics national algorithm states that every TB suspect should receive an Xpert MTB/RIF, or alternatively Genotype MTBDR*plus*, as a first-line diagnostic test (Fig. A2.5). Given that there were more than 5 800 notified pulmonary TB cases in 2017, and estimating that are seven to ten times more TB suspects, 40 000 to 58 000 Xpert MTB/RIF or Genotype MTBDR*plus* tests would be expected to be performed annually, of which a maximum of 32 to 46% have been carried out. Every pulmonary TB case with a positive culture should receive FLD DST. Estimating 80% culture positivity, 4 640 FLD DST would have been expected in 2018 of which a maximum of 66% have been performed.

Xpert MTB/RIF

In 2018, 3 422 of the 18 661 Xpert MTB/RIF tests (18.3%) performed were positive for TB; 909 (4.9% of all; 26.6% of all TB positive) indicated Rif-resistance, and 597 (3.2%) did not produce valid results as the machines indicated "errors", "indeterminate" or "no result" (Table A2.5).

DST

In 2018, the DST laboratories of Osh and the NRL together performed more than 8 000 Genotype MTBDR*plus* (FL-HAIN-Test) and more than 2 200 Genotype MTBDR*sl* (SL-HAIN-Test) LPAs, which was more than double the number carried out in 2017.

According to numbers provided by the NRL, FLD-DSTs dropped slightly, by 112, to 2 966 tests while SLD DST increased by 206 to 1 787 tests in 2018 compared with 2017 (Table A2.7). Since 2018, the NRL performs phenotypic DST only on MGIT. For 2018, 3 157 DST results were reported to WHO (Table A2.9) from NRL and Osh, which found 8% and 13% single-drug-resistance, 39% and 32% multidrug-resistance, 20% and 11% polydrug-resistance, respectively. In both laboratories, the vast majority of MDR-TB cases were resistant to all four FLDs tested, i.e. Rif, Inh, Emb and Sm. The most frequent PDR-combinations were resistances towards Inh & Sm, and Inh, Emb & Sm.

For isolates, 1 493, 1 494, and 870 were tested with both Genotype (HAIN-Test) and MGIT, and 91%, 91% and 95% of results were congruent between the HAIN-test and MGIT for Rif, Inh and levofloxacin susceptibility, respectively (Table A2.10).

An improved and more meaningful internal quality control has recently been successfully implemented. DST-EQA is provided by the SRL partner and has always been passed for all drugs.

Culture

Approximately 52 000 cultures were inoculated in 2018. The number of cultures on LJ has reduced from 52 779 in 2014 to 39 342 in 2018. In addition, laboratories have started to use liquid media more frequently for diagnostic samples. The numbers of MGIT cultures have doubled to more than 12 700 tests since 2013.

Microscopy diagnostics

Despite the successful roll-out of Xpert MTB/RIF, TB diagnostics still heavily relies on smear microscopy. Almost 140 000 smears were read in 2018, 31.5% of them for diagnostics, and 48.1% for follow-up of TB cases (Table A2.11). While in 2013, doctors requested an average of three smears per TB suspect, the mean number of smears per case are now slightly under two in all oblasts. The proportion of positive

results ranged from 3% in Talas to 16.3% in Osh in diagnostic cases, and from 1.6% in Talas to 14.1% in Naryn in follow-up cases.

Major challenges

- Different and partly contradictory versions of the diagnostic algorithms are circulating in the SOPs of the NRL and the NLSP (Figs. A2.5 and A2.6). The national diagnostic algorithm does not include DST for the new anti-TB drugs (Dlm, Bdq, Lzd, Cfz), LPA for second-line drugs and infectious disease tests.
- The diagnostic algorithm is only partly followed by clinical doctors. In Kara Balta, for example, smear microscopy was still used as a first-line diagnostic test while Xpert MTB/RIF was only requested for smear-positive suspects. When interviewing doctors regarding the diagnostic algorithm, they did not know it by heart and pointed out that it would not have been distributed by the NTP to all doctors in printed form.
- The understanding of most clinical doctors of laboratory tests and their strengths and weaknesses is very poor. This repeatedly leads to orders of wrong or suboptimal tests which are then performed by the laboratories as they are supposed to follow the doctor's orders. This leads to inefficient diagnostics and a waste of resources.
- In order to test every suspect with Xpert MTB/RIF, up to 40 000 additional tests need to be performed.
- The 9% discrepancy rate between Genotype MTBDR and MGIT is too high for rifampicin.
- Internal quality controls and validation of test results are not yet sufficiently implemented. In particular, laboratories are yet taking advantage of the combination of different test results such as microscopy, molecular and phenotypic tests, for their daily, weekly and monthly internal quality controls.

Recommendations

	Recommendation	**Timescale**	**Responsible**
1	• Update and approve a single and official national diagnostic algorithm for TB with consideration of the latest WHO recommendations.	Short-term	NRL, NTP
2	• Simplify the pictogram of the diagnostic algorithm in order to make it easier to understand for untrained specialists. Print pithy and plain hand-outs displaying and explaining the diagnostic algorithm and provide to all TB-, pulmonary and family medicine doctors. Provide special training	Short-term	NTP

	sessions for its implementation. Develop indicators and monitor the compliance of doctors following the algorithm.		
3	• Reform the ordering system of laboratory tests. Issue an official order to reallocate the responsibilities of the diagnostic workflow: let the doctors only indicate on the order sheets TB and the type of case (i.e. suspect, new or retreatment case, susceptible or resistant TB) and the purpose of testing (i.e. diagnostic or follow-up). Then, allow the laboratory doctors, who know the diagnostic methods much better, choose the optimal test for the respective combination of TB, case, purpose and time-point of testing.	Short-term	NTP
4	• Intensify Xpert diagnostics of TB suspects. Make sure that every doctor knows that Xpert MTB/RIF is the first-line test for every suspect.	Short-term	NTP
5	• Investigate the causes of discrepancies of phenotypic and genetic Rif-DST. Expand this type of investigation to other drugs and tests (e.g. Xpert, Genotype MTBDR*sl*) and consult the SRL partner regarding the tolerability of discrepancies or need of intervention.	Short-term	NRL
6	• Improve, intensify and make your internal quality controls smarter. Use the statistics of combined test results for internal controls for the laboratories of your network. Consult with your SRL partner regarding reasonable controls and their limits of tolerability.	Mid-term	NRL

3.6 Logistics and transportation

Findings

Since May 2019, the NTP has initiated several pilot projects of innovative sample transportation in some of the oblasts around Bishkek, as well as in the Issikul Osh, Jalalabad and Batken oblasts. There, each oblast TB dispensary sends their samples to the NRL in Bishkek for all tests other than Xpert MTB/RIF or smear microscopy. Samples are either transported by Feldjäger (a carrier organization associated with the Kyrgyz military, which also provides services to state medical institutions and transports TB samples 2–3 times per week from regional TB dispensaries or hospitals around Bishkek to the NRL), or – in a private–public–partnership – by the logistics department of AquaLab (a private for profit laboratory service provider which transports samples from the Issikul-Oblast to the NRL). From Osh, samples are transported by the national airline to Bishkek.

The implementation of this improved transportation system has allowed for a markedly reduced time for result reporting in all involved institutions, i.e. the time from sample collection to the receipt of the full

text laboratory report by the clinical doctors. For instance, in the medical institutions visited the average times to report were:

- below 6 days for microscopy and Xpert MTB/RIF for CFM;
- below 13 days for LPA performed in the NRL;
- 53 days for negative MGIT cultures performed in the NRL;
- 34 days on average for positive MGIT cultures performed in the NRL;
- 56 days on average for MGIT culture and subsequent phenotypic DST;
- 22 days on average for phenotypic DST performed from solid cultures sent from a culture laboratory to the NRL.

Moreover, all GeneXpert and culture laboratories report critical results to the attending clinical doctor (e.g. first positive TB PCR or culture of a suspect, MDR-TB) within 16 hours upon medical validation using the institutional landline telephone, mobile applications (e.g. WhatsApp) or private mobile phones. Afterwards, hand-written reports are produced on the request forms and sent to the attending doctor with the person bringing the next samples to the lab or with an institutional car that occasionally visits the laboratory.

The NTP has a plan to implement a universal laboratory logistics system that completely covers sample and report transportation in all regions of Kyrgyzstan from August 2019 onwards. Transportation of samples, cultures and laboratory reports will be performed by professional carrier organization on a contract basis. For culture laboratories and large medical centres, the transportation service shall be provided twice a week, for other sites once weekly.

Major challenges

- Medical centres which are not yet connected to the new modes of sample transportation also need to profit from improved sample logistics.
- The verbal communication of critical results to clinical doctors has lead to misunderstandings and wrong decisions in individual cases. The communication of results was not recorded or documented so that the source of the misunderstandings could not be determined.
- Using mobile communication apps, such as WhatsApp, for reporting medical laboratory results is very risky with regards to data security. Telefax is not yet used for the transmission of lab results in Kyrgyzstan mostly due to the lack of FAX machines in the labs.

- The NTP is not yet monitoring suitable efficiency indicators for the logistics system for laboratory services, such as turnaround times, time to reports, number of lost samples or reports etc.

Recommendations

	Recommendation	Timescale	Responsible
1	• Roll-out the new and much improved transportation systems for clinical samples, laboratory materials and test reports to all regions and districts of the country.	Short-term	NTP, NRL
2	• Develop and implement a standard operational procedure (SOP) for the regional and district laboratories describing suitable ways of communicating laboratory results and personal data to doctors, nurses, and management. The SOP should include a form for recording all such communications. Plan the procurement and installation of FAX machines in each TB laboratory and each medical institution. Avoid communication of medical or personal data via WhatsApp, as risky with regards to data security. Rather, consider the installation of the much safer FAX in all CFM, TB dispensaries and labs. Report ever lab result immediately after technical and medical clearance by FAX or electronic transmission through safe interfaces.	Short-term	NRL
3	• Constantly monitor the efficiency of the TB laboratory network logistics systems by the use of SMART (Specific; Measurable; Achievable; Realistic and Time-related) indicators and adjust the system according to the findings in order to yield optimal efficiency and performance.	Mid-term	NRL

3.7 Human resources

Findings

In order to address human resource development at the TB laboratory network level, a human resource development plan (HRDP) has been drafted with the technical assistance of the SRL partner, presented and discussed in a TB stakeholder meeting in February 2019, together with the MoH, the NTP, the Mandatory Health Insurance Fund, UNDP, the KNCV Tuberculosis Foundation, and Abt Associates. In the framework of the HRDP development, a stepwise approach describing the standard education processes of laboratory specialists was elaborated. The SRL partner has developed a Time-and-Motion (T&M) tool for recording hands-on time for all TB laboratory diagnostic procedures routinely followed by the Kyrgyz TB laboratory network and applied it to during routine diagnostic work in the NRL to determine the

median hands-on times for major procedures. The report with main findings and results was signed by all Working Group participants and presented to the NTP as an aid for staff and personnel budget planning.

Major challenges

- The HRDP is still in the review and revision process and has not yet been finally approved and endorsed by the NTP. It is also not yet included in the programmes of the NTP.
- Staff turnover is constantly high in all levels of laboratories, which takes up a lot resources for staff recruiting and training. Also, onsite practical training sessions for lab specialists have not been provided for almost 2 years.

Recommendations

1	• Finalize, approve, endorse and implement the human resource development plan (HRDP).	Short-term	NRL, NTP
2	• Develop annual training plans and implement a continuous training routine for laboratory experts. Supervise the quality and performance of the training sessions and monitor their success.	Mid-term	NRL

3.8 Biosafety

Findings

The NRL, with technical assistance from the SRL partner, has developed and endorsed a general Safety Manual, including a larger section on biosafety. NRL staff seems to follow the rules and regulations set out in the manual and the corresponding SOP with reasonable accuracy. The NRL has shared the biosafety SOP with all culture laboratories in the country. PPE is available everywhere in sufficient amounts and quality. During the visit of the laboratories in Osh and Jalalabad, all staff correctly wore respirators and presented their respirator fit test upon request. In an operational research project on LTBI among health care workers, the NTP investigated hospital and laboratory staff in Kara Balta (non-lab 95; lab 5) and the NTC (non-lab 190; lab 10; NRL 17) using the interferon-gamma release assay QuantiFERON-TB Gold *plus* (Qiagen, Germany). The test indicates LTBI with much higher specificity than the tuberculin skin test. The test was positive in 20% of the lab staff in Kara Balta, in 53% of the clinical chemistry lab of the NTP and in 77% of the NRL staff (Fig. A2.7).

Major challenges

- So far, no official national biosafety policies for TB laboratories have been developed, endorsed and implemented.
- PPE is not properly used in all laboratories. During our visit we observed no use or improper use, for example, in the laboratories (and clinical departments) of Kara Balta and the Chui Oblast dispensary.
- The Biosafety SOP distributed by the NRL to the regional culture labs are not yet adjusted to the local conditions of the individual labs.
- The operational research project on LTBI among HCW revealed surprisingly high proportions of positive results among laboratory staff. Particularly in the NTC, the percentage of positive results among lab staff surpassed those of most other HCWs.

Recommendations

	Recommendation	**Timescale**	**Responsible**
1	• Develop and implement national biosafety policies for TB laboratories. Integrate SES, national and international stakeholders, including the WHO-SRL partner, in the policy development from a very early stage.	Short-term	NRL, NTP

2	• Provide regular follow-up training on biosafety for all laboratory staff. In most countries with these biosafety policies, training sessions are required at least yearly or bi-yearly.	Mid-term	NRL
3	• Update the screening and surveillance policies for HCWs and consider the use of QuantiFERON-TB Gold *plus* rather than the tuberculin skin test as it produces fewer false positive results.	Mid-term	NTP
4	• Screen the TB laboratory staff on a regular basis for LTBI.	Short-term	NTP
5	• Expand the operational research study with HCWs and investigate potential causes of the high QFTG positivity in some TB laboratories.	Long-term	NRL, NTP
6	• Define and implement appropriate interventions to prevent further infections in laboratories. Investigate the efficiency of the interventions by follow-up QFTG testing, improve the measures and role them out to all laboratories in the country.	Long-term	NRL, NTP

3.9 Quality management system

Findings

More than 100 SOPs, together with about 230 short work descriptions and forms, covering all aspects of quality management according to ISO15189 were developed and implemented in the NRL with extensive technical assistance from SRL Gauting. All QMS documents have been drafted in Russian, adjusted together with the NRL staff, and implemented in daily routine work. Additionally, three overarching Quality Handbooks and Manuals have been developed (*Laboratory Quality Manual, Laboratory Handbook for Clients – information to users; Laboratory Safety Manual*). The NRL has implemented all elements of the Quality assurance (QA) system including internal quality controls (IQC), EQA, and quality improvement (QI). The laboratory is consistently performing, analysing and documenting all required internal controls for the applied TB laboratory diagnostic procedures. Since 2013 the NRL has successfully passed all annual external quality assessments (EQA) provided by the SRL partner for smear microscopy, LPA and phenotypic DST with 95–100% correct results. In order to ensure as high-quality standards for DST for Bdq, Cfz, Lzd and Dlm, an inter-laboratory comparison (ILC) for 26 MTB strains was conducted by NRL and SRL Gauting in 2018. The tested strains were previously isolated in the frames of treatment monitoring of MDR-TB patients treated in the NTC with oral short-course regimens. The ILC evaluation showed 100% congruence of DST results for both laboratories, proving the ability of the NRL to deliver accurate DST results for the new drugs.

In order to monitor the progress of the QMS implementation, several QM audits were conducted at the NRL. In December 2018 the current status of QMS implementation was assessed with the help of the Harmonized SLIPTA/GLI checklist. The final assessment has shown an overall score of 91%. Several areas reached a 100% mark, such as Management Reviews, Process Control and Internal & External Quality Assessment, Information Management, Corrective Actions and Facilities (see Fig. A2.8). The NRL has demonstrated that its management is highly committed and it leads the QMS implementation process by spearheading the implementation of QM documents, providing direction and applying leadership skills from the start to ensure that all staff are engaged in the process. The NRL is now ready for the final phase of final optimization and fine-tuning of the QMS elements and to apply for ISO 15189 accreditation in 2019–2020.

Basic packages of SOPs for all analytic tests and procedures have already been implemented in the culture and microscopy centres of the TB laboratory network.

Major challenges

- No system of external quality control has so far been established for TB culture diagnostics in Kyrgyzstan. External quality controls are missing for Xpert MTB/RIF and the DST of the newer drugs.
- Regional TB laboratories are weakly involved and not progressing with QMS implementation.
- A national TB diagnostics policy in the form of a Mycobacteriology Laboratory Manual would tremendously help countrywide standardize diagnostic workflows and procedures but is still missing.

Recommendations

	Recommendation	**Timescale**	**Responsible**
1	• Finalize the preparation of the NRL for ISO15189 accreditation and apply for an accreditation audit by the national accreditation authority.	Mid-term	NRL
2	• Develop an operating procedure and implement external quality controls for TB culture and Xpert MTB/RIF in the regional TB laboratories as well as DST of newer drugs in the NRL.	Mid-term	NRL
3	• Plan and conduct a series of follow-up QMS training sessions for regional laboratories. Continue to develop SOPs for equipment and administrative laboratory management.	Long-term	NRL
4	• Develop, endorse and implement a Mycobacteriology Laboratory Manual for the TB laboratory network.	Mid-term	NRL

3.10 Data management

Findings

In 2014, all samples and test results were registered only in large, paper-based laboratory log books. Now, all larger laboratories also use electronic databases to register samples and results. Furthermore, the NRL has installed a newly developed electronic Laboratory Data Recording System (LDRS) which even allows real-time transmission of results to the clinical partners via an interface to the clinical TB patient recording system which is available countrywide. This is considered a tremendous achievement and step forward, not only by this review team but also by the clinicians interviewed during the review mission who are working with the system and now receive results much faster than before. Oblast laboratories report their annual cumulative surveillance statistics to the NRL. The NRL compiles the data and forwards it to the NTC which combines the laboratory data with clinical data and then reports to WHO.

Major challenges

- The LDRS is so far only installed in a small number of laboratories. During our mission we found it in the NRL, Kara Balta, Chui, Osh and Jalalabad.
- In all laboratories, a minimum of three, and in some laboratories up to seven, different data recording systems were observed, including, in different combinations, 1) the conventional laboratory logbook, 2) a separate record of resistant cases, 3) an Excel table with all samples analysed in the respective lab, 4) a special Excel table only for HAIN-test results, 5) a paper logbook, 6) an electronic record of samples shipped to higher level laboratories, and 7) the LDRS. This overcomplicated system is taking up tremendous levels of human resource which could much better be applied in diagnostic lab work.
- The LDRS is a pure data recording system and does not replace a Laboratory Information (Management) System (LIMS).
- The centrally collected and cumulated data are surprisingly incoherent. Examples:
    - The total number of smears read by Kyrgyz laboratories in 2018 was reported to the review team to be 103 919 (Table A2.7); however, summing up the figures provided by oblasts gave 139 709 including 28 545 samples from chronic patients but excluding the 22 532 samples read by the NRL in 2018 (Table A2.11).
    - The total number of FLD DST performed by the two Kyrgyz DST laboratories in 2018 was reported to the review team to be 2 966; whereas the table sent to WHO for reporting (Table A2.9) shows 3 157 DSTs.

- SLD DST is mainly performed for MDR-TB patients. The NRL performed 1 777 SLD DST in 2017 (Table A2.8) but only 705 of those were reported to WHO (WHO Tuberculosis Country Profile 2017).

Consider that a modern and fully functional LIMS has a broad spectrum of functions including:

- **Sample, and case management:**
  - Sample login and management
  - Sample tracking
  - Sample and result batching.
- **Order/entry and order management:**
  - Order definition, control and transfer.
- **Workflow and process management and control:**
  - Workflow and work-list management
  - Task and event scheduling
  - Time and user stamp recording
  - Configurable algorithms and automatisms.
- **Data management:**
  - Options for automated and manual result entry
  - Multiple data viewing methods
  - Data and trend analysis
  - Data and equipment sharing
  - Query capability and statistics features including export to MS Excel
  - Import data
  - Internal & external file or data linking
  - Data warehouse, normalization and validation.
- **Project and/or task management:**
  - Inventory management
  - Document creation and management
  - Specification management
  - Customer and supplier management
  - Billing management.
- **Quality, security and compliance:**
  - QA/QC functions

- Audit trail
- Configurable roles and security.

- **Data safety:**
  - User and access control
  - Data encryption and automatic data back-up
  - Environmental monitoring.
- **Reporting, barcoding and printing:**
  - Report printing and custom reporting
  - Label and barcode support
  - Export to PDF, MS Word, HTML or XML
  - Fax or email integration.
- **Base functionality:**
  - Administrator management
  - Instrument interfacing and management
  - Alarms and/or alerts.
  - Network-capable.

Recommendations

	Recommendation	Timescale	Responsible
1	• Roll-out the LDRS to all culture and GeneXpert laboratories. Connect all laboratories using the LDRS to the clinical partner institutions online and electronically transfer the laboratory results.	Long-term	NTP
2	• Upgrade the LDRS with features for 1) user-friendly retrospective look-up, 2) statistical analyses and export of consolidated data to Excel, and 3) printout of lab reports.	Mid-term	NTP, NRL
3	• Consolidate data recording in the NRL, culture and GeneXpert laboratories to 1) the LDRS, as soon as it is upgraded with the required look-up and statistics features; 2) a single paper-based back-up recording system in case of any crash of the online LDRS. As soon as the LDRS has proven to work stably for more than a year without a crash, consider stopping the paper-based data recording in order to save human resources for diagnostic work.	Mid-term	NTP, NRL

4	• Give high priority to selecting, installing, parameterizing and configuring a comprehensive LIMS. Consult with laboratory partners who have strong experience with both TB diagnostics and use of different LIMSs. Develop a comprehensive project plan and apply for, or allocate, the required funds for its implementation.	Mid-term	NTP

4 Drug-susceptible TB management

4.1 Background and findings

Kyrgyzstan is one of the 30 countries with the highest burden of drug-resistant TB in the world and it is also included in the list of the 18 high-priority countries for TB in the WHO European Region. In 2017, the estimated incidence of TB in Kyrgyzstan was 144 per 100 000 population. According to the NTP, the notification rate for new TB cases has decreased from 98.2 per 100 000 population in 2015 to 83.0 in 2018 (Table 4.1).

Table 4.1 New TB case notifications, 2015–2018

Category	2015	2016	2017	2018
New cases	5 853	5 680	5 616	5 249
Previously treated cases	1 964	2 293	2 065	2 326
Other TB cases	16	22	14	10
All TB cases	7 833	7 995	7 695	7 585
New cases per 100 000	98.2	93.4	90.6	83.0
All TB cases per 100 000	131.5	132.8	124.1	120.0

Source: NTP Kyrgyzstan

In general, a slight decrease and/or stabilization in the notification of new and relapse cases is observed in most of regions of the country, with an increase of cases in Issyk-Kul and Naryn regions and also in the prison system (Table 4.2).

Table 4.2 Notifications of new cases and relapses

Region/sector	2015	2016	2017	2018
Bishkek city	1 220	1 107	1 103	1 009
Osh – city	273	282	292	297
Talas	315	301	257	209
Osh	1 330	1 315	1 265	1 227
Chui	1 506	1 513	1 483	1 354
Issyk-Kul	306	325	265	272
Batken	458	487	474	424
Naryn	294	278	210	248

Jalalabad	1 061	1 180	1 125	1 067
Prison sector	248	216	199	231
Total	***7 011***	***7 004***	***6 673***	***6 338***

Source: NTP Kyrgyzstan

The epidemiological situation of TB in the country has been characterized by a trend towards a reduction in the number of new and all TB notified cases, while the number of retreatment TB cases increases. Notable increases have been observed in clinically diagnosed pulmonary TB relapses and other clinically diagnosed previously treated pulmonary TB cases (Table 4.3).

Table 4.3 TB case notifications by category, 2015–2018

	2015	**2016**	**2017**	**2018**
New cases total:	5 853	5 680	5 616	5 249
• New pulmonary laboratory confirmed	2 474	2 527	2 632	2 550
• New pulmonary clinically diagnosed	1 690	1 755	1 500	1 435
• New extrapulmonary	1 689	1 398	1 484	1 264
Previously treated cases total:	1 964	2 293	2 065	2 326
• Relapses pulmonary laboratory confirmed	698	656	539	500
• Relapses pulmonary clinically diagnosed	356	555	422	493
• Relapses extrapulmonary	104	113	96	96
• Other previously treated pulmonary laboratory confirmed	460	570	678	825
• Other previously treated clinically diagnosed	281	314	260	312
• Other previously treated extrapulmonary	65	85	70	100
Other TB cases	**16**	**22**	**14**	**10**
All TB cases	7 833	7 995	7 695	7 585

Source: NTP Kyrgyzstan

All presumptive pulmonary TB cases should be tested with X-ray, microscopy and rapid molecular tests (Xpert MTB/RIF, LPA), followed by culture on solid and liquid media. However, in 2017 64% of cases were bacteriologically confirmed among pulmonary TB patients, and only 65% of new and relapse cases were tested by rapid molecular diagnostics in the same year.[3] Given the current number of Xpert MTB RIF platforms in the country (24 machines), rapid molecular testing could be expanded to improve the treatment coverage rate (estimated/notified, 77% in 2017[1]) and to speed up the process of TB diagnosis and treatment initiation. During the field visits, mission members noticed that in the majority of cases the diagnostic algorithm is followed; for example, the experts who visited Osh reported that in the DS-TB

[3] WHO Kyrgyzstan TB country profile, 2017. (https://www.who.int/tb/country/data/profiles/en/, accessed 21 November 2019).

department in Osh TB Hospital all patients had received Xpert tests and the test results were recorded on the patient cards.

Drug-susceptible TB patients are treated with the Category I regimen, in line with WHO recommendations.[4] Treatment of drug-susceptible pulmonary TB is provided with a 6-month rifampicin-based regimen, with a 2-month intensive phase of isoniazid, rifampicin, pyrazinamide and ethambutol, followed by 4 months of isoniazid and rifampicin (2HRZE/4HR). Relapse cases are provided with a 3-month intensive phase and 5 months of a continuation phase with same combination of drugs, as Category I. Treatment is provided with fixed drug combinations and is implemented daily in both phases. First-line TB drugs are procured from state funds.

Treatment outcomes for DS-TB patients are notable stable with an 82% treatment success rate over the last few years and with high percentage of lost to follow-up (10%, Table 4.4). Hospitalization of drug DS-TB patients is widely practiced; in general, there are 2 463 TB beds in the country with 8 776 total number of discharges (NTP data, 2018). Two main reasons for ongoing hospitalization are: the previous method of financing of TB patient care in most regions/rayons of the country, and insufficient quality of patient management (especially measures to improve treatment adherence) in the outpatient facilities in these places.

Table 4.4 DS-TB treatment outcomes, new and relapse cases, 2015–2017 cohorts

Category	**2015**		**2016**		**2017**	
	N	*%*	*N*	*%*	*N*	*%*
New and relapse cohort size	**6 123**		**6 050**		**5 752**	
Treatment success	5 064	82.7	4 968	82.1	4 728	82.2
Treatment failed	138	2.3	112	1.9	109	1.9
Died	348	5.7	338	5.6	302	5.3
Lost to follow-up (LTFU)	563	9.2	609	10.1	590	10.3
Not evaluated	10	0.2	23	0.4	23	0.4

Source: NTP Kyrgyzstan

Kyrgyzstan has developed a roadmap for the optimization of TB services with a focus on TB bed reduction and expanding the ambulatory model of care. Along with implementation of roadmap, the role of PHC has been increased. Results-based-payment for PHC and TB staff for the treatment of outpatients is being piloted with the introduction of the case management approach. TB case management aims to create a team, consisting of a TB doctor, family doctor and a PHC nurse, to ensure treatment adherence and patient support during the treatment (MoH Order No. 717, 22 October 2018).

[4]WHO. Guidelines for treatment of drug-susceptible tuberculosis and patient care (2017 update). Geneva: World Health Organization; 2017. (https://www.who.int/tb/publications/2017/dstb_guidance_2017/en/, accessed 21 November 2019).

Along with the case management, the practice of involving voluntary treatment supporters is also being introduced in pilot sites in the country (MoH Order No. 514, June 2017). The main function of the treatment supporter is to ensure daily administration of medicines through directly observed treatment (DOT). Voluntary treatment supporters are selected from the patients' surrounding society (family member, relative, neighbour), and provided with the necessary information and instructions.

Video observed treatment (VOT) is also being introduced and implemented by the partners in pilot sites. These approaches are significant achievements for the country; however, they all are only being introduced in pilot sites in Bishkek city, Chui, Osh and Jalalabad (partly) oblasts. It should also be mentioned that focus of the pilots is drug-resistant TB patients. An extension of this people-centred approach to DS-TB patients will support the improvement of treatment outcomes in this category of patients.

Recommendations

	Recommendations	**Timeline**	**Responsible**
1	To improve the adherence of doctors to the diagnostic algorithm, in order to improve coverage of presumptive TB cases with rapid molecular tests	Short-term	NTP
2	To extend the case management and voluntary supporter approach among DS-TB patients	Mid-term	NTP, USAID project
3	To expand VOT to DS-TB patients	Short-term	NTP, USAID project, TGF

5 Management of drug resistant TB (DR-TB)

5.1 DR-TB case-finding and diagnosis

In Kyrgyzstan, coverage with first- and second-line DST in the country has been gradually increasing since 2016 (Tables 5.1 and 5.2); however, it has not yet reached WHO target levels. In 2018 the proportion of TB patients with FLD DST results was only 38.1% for new cases and 59% for previously treated cases; the proportion of RR/MDR-TB patients with FLD DST results who received SLD DST results was 62.6% for new cases and only 30.5% for previously treated cases.

The total number of DR-TB cases, as well as the proportion of RR/MDR-TB cases, has been constantly increasing since 2016 and in 2018 reached 663 patients (33.2%) among new cases and 581 patients (79.6%) among previously treated cases. Although there has been a slight decrease in the numbers of notified TB cases in 2018 (6 486) compared with 2016 (6 649), the total number of RR/MDR-TB cases, as well the proportion of XDR-TB cases (of all RR-MDR-TB), increased in 2018 and reached 1 244 RR/MDR-TB cases, 27 XDR-TB cases (6.5%) among new cases and 80 XDR-TB cases (21.2%) among previously treated patients (Tables 5.1 and 5.2).

Table 5.1 FLD and SLD resistance profile among new TB cases, 2016–2018

Type of resistance	2016		2017		2018	
	N	*%*	*N*	*%*	*N*	*%*
Total number of new cases notified	5680		5616		5249	
Number of cases with FLD DST results	2011	35.4	2034	36.2	1997	38.1
No resistance to H or R	429	21.3	445	21.9	463	23.2
H ± other resistance (PDR-TB)	500	24.9	557	27.4	501	25.1
R ± other resistance (RR/MDR-TB)	473	23.5	506	24.9	663	33.2
Number of RR-TB cases with SLD DST results	173	36.6	274	54.2	415	62.6
Susceptible to FQ and SLI	141	81.5	182	66.4	303	73.0
Susceptible to FQ and resistant to SLI	12	6.9	37	13.5	42	10.1
Susceptible to SLI and resistant to FQ	11	6.4	29	10.6	43	10.4
Resistant to FQ and SLI	9	5.2	26	9.5	27	6.5

Source: NTP Kyrgyzstan

Table 5.2. FLD and SLD resistance profile among previously treated TB cases, 2015–2018

Type of resistance	2015		2016		2017		2018	
	N	*N*	*%*	*%*	*N*	*%*	*N*	*%*
Total number of previously treated cases notified	806		969		1008		1237	
Number of cases with FLD DST results	336	41.7	428	44.2	542	53.8	730	59
No resistance to H or R	49	14.6	63	14.7	72	13.3	67	9.2
H ± other resistance (PDR-TB)	60	17.9	68	15.9	87	16.1	73	10
R ± other resistance (RR/MDR-TB)	219	65.2	281	65.7	385	71	581	79.6
Number of RR-TB cases with SLD DST results	78	9.7	158	16.3	296	29.4	377	30.5
Susceptible to FQ and SLI	40	51.3	70	44.3	123	41.6	181	48
Susceptible to FQ and resistant to SLI	8	10.3	18	11.4	33	11.2	57	15.1
Susceptible to SLI and resistant to FQ	1	1.3	21	13.3	48	16.2	59	15.7
Resistant to FQ and SLI	29	37.2	49	31	92	31.1	80	21.2

Source: NTP Kyrgyzstan

Currently, only the NRL performs geno- and phenotypic DST. The NRL performs DST of FLD and SLD in MGIT, molecular resistance testing of FLD and SLD using Genotype MTBDRplus and MTBDRsl, respectively (HAIN Lifescience, Germany), and Xpert MTB/RIF (see Table A1.4).

MTBDRsl was introduced in June 2017 in the NRL. Testing is also available in the Osh Regional laboratory, but due to technical issues in the Osh laboratory, SL LPA tests are only performed in the NRL. Despite these difficulties with the partners' support, access to SL LPA is ensured for all regions, including the southern oblasts.

DST of the new and repurposed TB drugs bedaquiline, delamanid, clofazimine and linezolid was implemented in 2019 with technical assistance from the SRL partner. An operational research study has been initiated by the NRL and SRL on the implementation and use of whole genome sequencing in the NRL for the investigation of TB transmission in hospitals.

The NRL successfully passed the 2014–2018 external quality assessments with no relevant deviation.

Coverage of presumptive TB cases with Xpert has been improved from 10 917 tests performed in 2016 (of which 2 763 (25%) were MTB positive), to 18 661 tests performed in 2018, (of which 3 422 (18.3%) were MTB positive). However, in order to provide tests for all presumptive TB cases with Xpert MTB/RIF, up to 40 000 additional tests need to be performed.

The total number of geno- and phenotypic DST for first- and second-line TB drugs has increased since 2013 (Table A1.8), and this has occurred despite the fact that the number of DST performed on solid media has been constantly decreasing since 2013 and reached 0 tests in 2018. However, since all DST is currently performed only in the NRL, to provide every TB case with DST the NRL laboratory capacity needs to be increased, but the sample transportation system should be improved.

Although delays in access to laboratory test results have substantially reduced, frequent delays in clinicians obtaining the results of laboratory tests were observed during the mission visits. Delays in

obtaining results could also be ascribed to the absence of an electronic TB register with a laboratory module.

Test results, especially SL LPA and follow-up culture results, are much more accurately recorded in patient cards than was previously the case. This is very much thanks to the Challenge TB project, in which laboratory experts were hired in the NRL and Osh labs and Challenge TB's regional MDR-TB coordinators facilitated timely collection and recording of test results. However, there is a risk that after the discontinuation of Challenge TB this improvement may not be sustainable. Consequently, the development and implementation of a laboratory module for the electronic TB register should be one of the priority measures.

The currently used diagnostic algorithm, approved in 2017, corresponds to the algorithm recommended by the European Tuberculosis Laboratory Initiative (ELI).[5] The new Clinical Guidelines for the Management of Drug Resistant Tuberculosis (currently submitted for MoH approval) contain chapters on the diagnosis of MDR-TB. In general, diagnostics are performed in accordance with ELI recommendations; however, the compliance with the algorithm is low, especially with regard to coverage of patients by DST to first- and second-line drugs.

Key findings

Progress to date

- Diagnostic algorithm is in line with the ELI algorithm.
- SL LPA testing has been introduced from June 2017 and is provided for patients from all regions (currently by the NRL, also for southern oblasts).
- Delays in access to test results are substantially reduced.
- Test results, especially rapid molecular tests and follow-up cultures, are much more accurately recorded in patient files and used for clinical decision-making.

Findings during field visits

(See Annex 3)

- Xpert testing is not carried out for all persons with presumptive TB.
- LPA (Genotype MTB DR-plus, HAIN Lifescience, Germany) is often used instead of Xpert as a primary test even from smear-negative sputum samples.
- Delayed final drug-resistance diagnosis (full drug-resistance/susceptibility profile).
- Frequent use of a throat swab in children and at the same time not using gastric lavage in children, and induced sputum in patients without normal sputum.
- In some districts/facilities, clinicians do not follow-up test results (especially genotypic DST) and thus delay initiation of an adequate DR-TB treatment regimen.

[5] WHO. Algorithm for laboratory diagnosis and treatment-monitoring of pulmonary tuberculosis and drug-resistant tuberculosis using state-of-the-art rapid molecular diagnostic technologies. Copenhagen: WHO Regional Office for Europe; 2017. (http://www.euro.who.int/__data/assets/pdf_file/0006/333960/ELI-Algorithm.pdf?ua=1, accessed 26 November 2019).

Challenges

- The total number and proportion of RR/MDR-TB cases are constantly increasing; the proportion of XDR-TB patients (of all RR-MDR-TB) is also high.
- The coverage of TB patients with first- and second-line DST is low.
- 18 661 Xpert MTB/RIF tests were performed in 2018 (almost double the number compared with 2016); however, in order to ensure access to tests for every person with presumptive TB, up to 40 000 tests need to be performed annually.
- Noncompliance with the diagnostic algorithm and clinicians experiencing delays in receiving laboratory tests is also a concern.

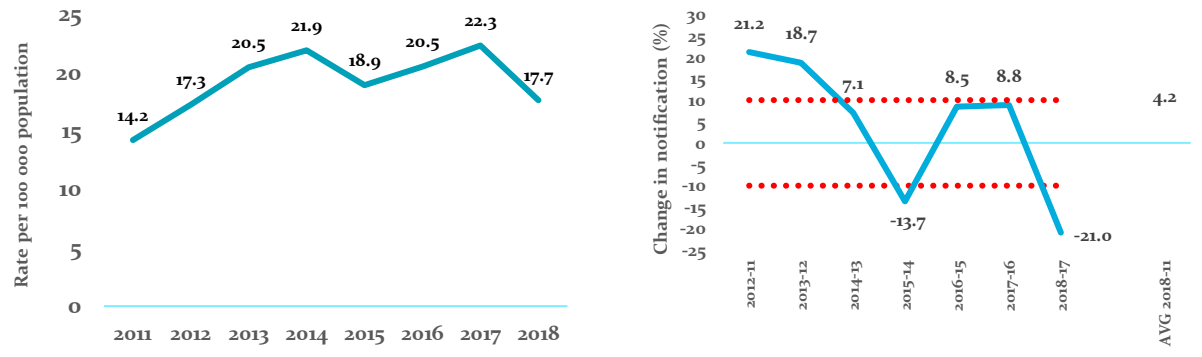
Recommendations

	Recommendation	Timescale	Responsible
1	Provide targeted training for pulmonary and family medicine doctors, and infectious disease specialists (involved in HIV management) on early diagnosis of TB, including symptoms of TB, and the diagnostic algorithm	Short-term	MoH, NCP, USAID
2	Intensify work on the development and implementation of a national TB registry (including its laboratory component)	Short-term	MoH, NCP, USAID

5.2 DR-TB treatment and case management

In Kyrgyzstan, the RR/MDR-TB incidence rate increased by 27% from 2011 to 2018 (from 806 cases or 14.2 per 100 000 population to 1 025 cases 17.7 per 100 000 population, respectively); the average annual increase for this period was 4.2% (Fig. 5.1).

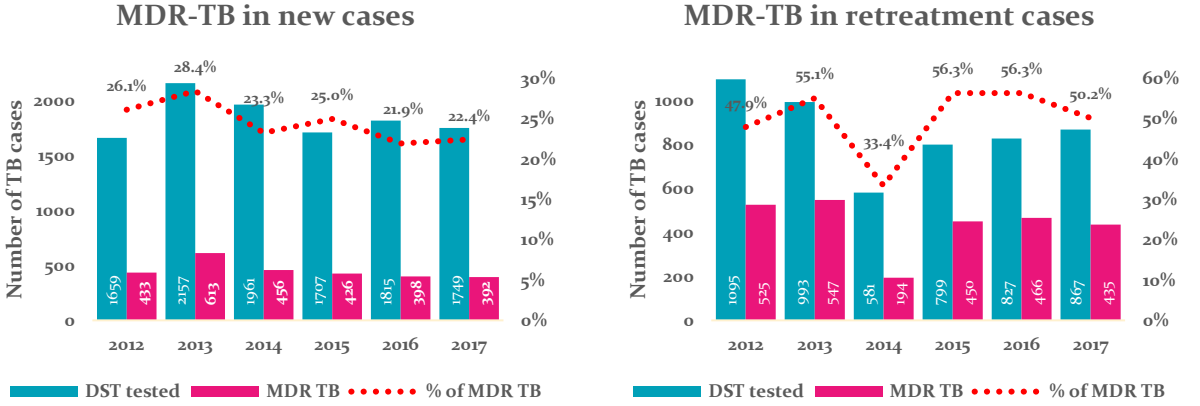
Figure 5.1 Trends and annual change in case notification rate for RR/MDR-TB, 2011–2018



Source: WHO global TB database 2011–2018

According to the latest WHO data,[6] in 2018 the estimated proportion of TB cases with RR/MDR-TB was 29% (27–31%) among new cases and 68% (66–71%) among previously treated cases. Between 2013 and 2017, the proportion of MDR-TB patients among new and retreated cases decreased from 26% to 22% and 55% to 50%, respectively. There was a significant reduction (up to 33%) in the proportion of MDR-TB among those previously treated, possibly due to some errors in data reporting for the WHO Global Report, 2014 (Fig. 5.2).

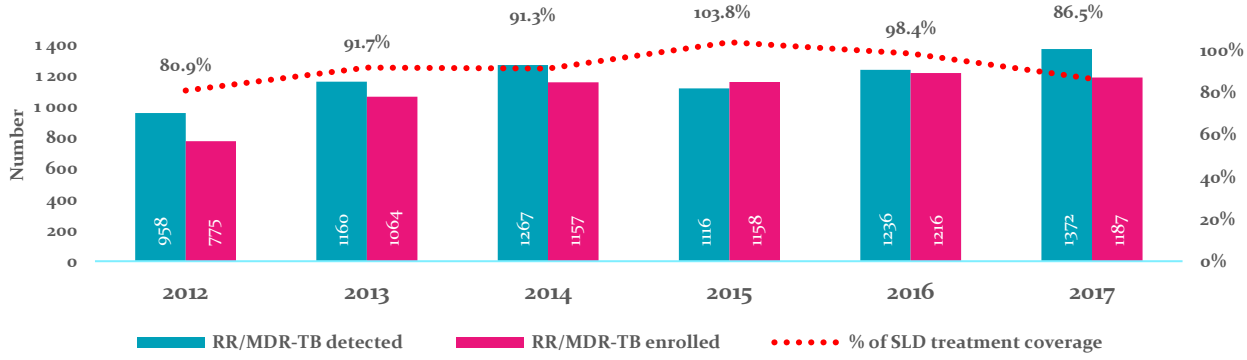
Figure 5.2 Percentage of MDR-TB in new and retreatment patients with DST results, 2012–2017



Source: WHO global TB database 2012–2017

In Kyrgyzstan, the coverage of SLD treatment among RR/MDR-TB patients is high; between 2012 and 2017, it ranged from 81% to more than 100% (Fig. 5.3).

Figure 5.3 Number of RR/MDR-TB cases detected and number and proportion enrolled in second-line treatment, 2012–2017



Source: WHO global TB database 2012–2017

[6] WHO Regional Office for Europe/European Centre for Disease Prevention and Control. Tuberculosis surveillance and monitoring in Europe 2019 – 2017 data. Copenhagen: WHO Regional Office for Europe; 2019. (https://ecdc.europa.eu/sites/portal/files/documents/tuberculosis-surveillance-monitoring-Europe-2019-18_Mar_2019.pdf, accessed 20 November 2019).

In 2016, inpatient TB treatment was carried out in 31 medical institutions in Kyrgyzstan. At that time there were 2 573 beds for the treatment of active TB (including 455 for DR-TB) in the country and the bed occupancy rate did not exceed 63%. A policy of reducing the number of beds in the country has been implemented since 2015 (Table 5.4). Therefore, a further reduction in the number of beds is planned. There are currently 21 TB facilities in Kyrgyzstan for inpatient TB care, and although the total number of beds for TB patients has decreased from 2573 to 2403, the number of beds for MDR-TB has increased from 455 to 490 (Table 5.3). Therefore, additional efforts to switch to predominantly outpatient management of MDR-TB patients are not expected.

Table 5.3 Number of TB inpatient facilities, number and profile of TB hospital beds, by sector and level of care

Type of institutions and beds	Country total 2016/2018	Breakdown by sector		Breakdown by level of care (civilian sector)		
		Civilian sector 2016/2018	*Penitentiary sector 2016/2018*	*Central level 2016/2018*	*Regional level 2016/2018*	*District level 2016/2018*
Number of facilities providing hospital treatment of patients with active TB	31/21	31/21	–	8/1	11/15	12/5
Total number of beds for treatment of active TB	2573/2403	2573/2403	–	500/350	1295/1635	778/418
• out of which, for DR-TB patients	455/490	455/490	–	190/50	265/400	–/40
• out of which, for children	380/380	380/380	–	140/40	240/340	–/–
• out of which, for extrapulmonary TB	190/165	190/165	–	90/90	80/75	20/–
• out of which, for surgery	200/225	200/225	–	130/130	50/95	20/–
Number of facilities providing palliative care for TB patients	2/1	2/1	–	2/–	1	–/–
Number of beds for palliative care	120/60	120/60	–	240/–	–/60	–/–
Number of facilities providing involuntary isolation of TB patients	–	–	–	–	–	–/–
Number of beds for involuntary isolation	–	–	–	–	–	–/–

Source: NTP

Table 5.4 Main activity indicators for institutions providing inpatient treatment of active TB cases, countrywide, 2013–2018

	2015	2016	2017	2018
Total number of beds for treatment of active TB	2 738	2 678	2 573	2 463
Total number of hospitalizations (discharges)	11 871	9 795	9 011	8 776
Total number of patient-days (“bed-days”)	703 927	612 065	600 861	544 809
Average length of stay, days	59.3	62.5	67	62.4
Number of surgical interventions, all types	777	921	865	909

Source: NTP

The RR/MDR-TB treatment guidelines that are currently used were developed with USAID-funded Challenge TB support and were based on the WHO treatment guidelines for drug-resistant tuberculosis, 2016 update.[7] At the time of the mission, the revised Clinical Guidelines for the Management of Drug Resistant Tuberculosis 2019 are being submitted for MoH approval. It should be noted that it is a great achievement for the country that the new Clinical Guidelines for the Management of Drug Resistant Tuberculosis, 2019 are actually a national adaptation of the latest WHO recommendations for the management of DR-TB published in March 2019.[8]

The existing regulatory mechanisms in the country (including the DR-TB Consilium) make it possible to use the new WHO consolidated guidelines on drug-resistant tuberculosis treatment (2019)[4] without the final approval of the MoH. Therefore, it is another great achievement of this country that the countrywide introduction of new anti-TB drugs and treatment regimens for DR-TB is very successful. The old, standard MDR-TB treatment regimen is no longer prescribed to patients, and the new and repurposed TB drugs and shorter treatment regimens (STR) are widely used to treat patients with DR-TB. The new DR-TB regimens were first introduced in the country in January 2017. In 2018, of the 1 381 RR/MDR-TB patients, 684 (including 26 children) were taken for treatment with the new and repurposed TB drugs (Bdq, Dlm, Lzd, Cfz) and 174 patients (including seven children) were taken for treatment with STRs in 2018 (Table 5.5)

To ensure full coverage with the new TB drugs and treatment regimens, the Challenge TB project has been negotiating to provide access to the new TB drugs and treatment regimens for the penitentiary sector (prisoners). This process was postponed due to an international law prohibiting the use of drugs during trials in the penitentiary system. However, thanks to the assistance of the Challenge TB project in discussing the needs of patients and human rights with the NTP, MoH and partners, it was clarified that the new TB drugs can also be used in the penitentiary system, as they are already being implemented in programmes throughout Kyrgyzstan.

Table 5.5 Number of RR/MDR-TB patients enrolled in treatment, 2013–2018

	2016	2017	2018
Total number of RR/MDR-TB patients enrolled in treatment	1 144	1 344	1 382
• out of which, in penitentiary sector	68	51	79
• out of which, children (0–14 years)	32	38	44
• out of which, on shorter treatment regimens (STRs) • out of which: - standard short regimen - incl. children(0–14 years)	– – –	– – –	174 – 7

[7] WHO. WHO treatment guidelines for drug-resistant tuberculosis 2016 update. October 2016 Revision. Geneva: World Health Organization; 2016. (https://apps.who.int/iris/bitstream/handle/10665/250125/9789241549639-eng.pdf?sequence=1, accessed 26 November 2019).

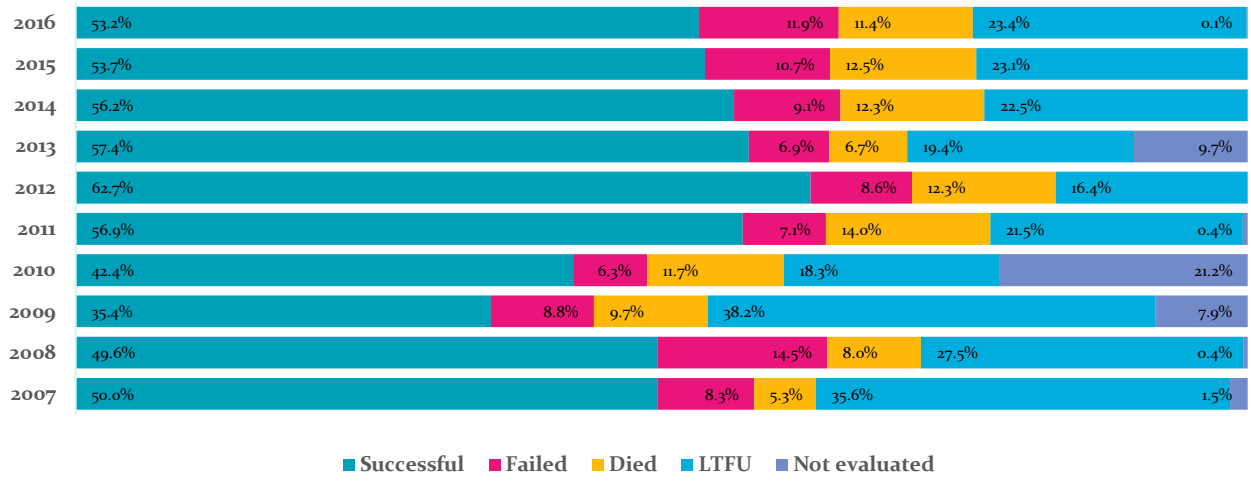
[8] WHO. WHO consolidated guidelines on drug-resistant tuberculosis treatment. Geneva: World Health Organization; 2019. (https://apps.who.int/iris/bitstream/handle/10665/311389/9789241550529-eng.pdf, accessed 20 November 2019).

- incl. prisoners - modified all oral short regimen (operational research) • - incl. children	–		–
• out of which, on regimens containing new and repurposed drugs (Bdq, Dlm, Lzd, Cfz, Imp) - incl. children (0–14 years) - incl. prisoners	– – –	– – –	684 – 26

Source(s):NTP Kyrgyzstan

Over the last 10 years, the treatment success rate among MDR-TB patients has not reached WHO's target of 75%. RR-TB treatment success rates in the 2014–2016 cohorts are low and decreased from 62.7% in 2012 to 53.2% in 2016. The proportion of patients lost to follow-up (LTFU) is high, at 23.4% in 2016 (Fig. 5.4). One of the reasons for high levels of LTFU is labour migration, which is probably related, among other factors, to the difficult social and economic situations of patients during long-term treatment.

Figure 5.4 Treatment outcomes of confirmed RR/MDR-TB patients enrolled into second-line treatment, 2007–2016



Source: WHO global TB database 2008–2018

RR/MDR-TB treatment outcomes were better in prisons than in the civilian sector, but the phenomena of high LTFU (up to 30.9% in 2015) in prisons should be further investigated and explained (Table 5.6). It is possible that patients who did not complete long-term MDR-TB treatment were lost after their release from prison, and the problem lies in the weak collaboration between prison and civilian TB services.

Table 5.6 TB treatment outcomes, RR/MDR-TB cases in prisons, 2011–2018 cohorts

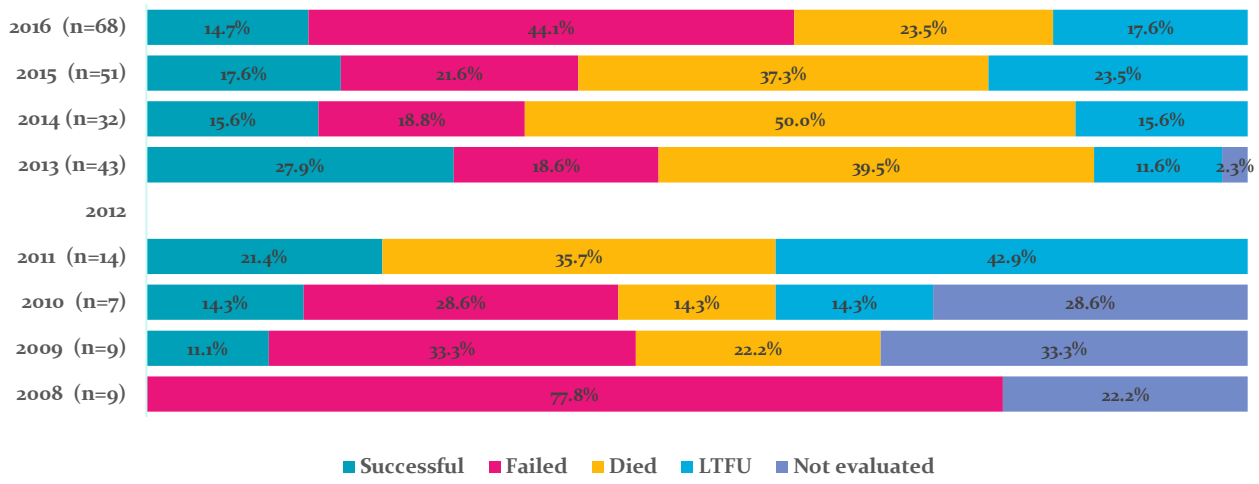
	2014		2015		2016	
	N	*%*	*N*	*%*	*N*	*%*
RR/MDR-TB cohort size	**48**		**84**		**69**	

Treatment success	31	64.6	47	56.0	44	63.8
Treatment failed	4	8.3	6	7.1	6	8.7
Died	5	10.4	5	6.0	9	13.0
Lost to follow-up	8	16.6	26	30.9	10	14.5
Still on treatment	0		0		0	

Source: **NTP Kyrgyzstan**

The past experience of treating XDR-TB patients was particularly concerning: the treatment success rate in the 2016 cohort was only 14.7% (Fig. 5.5). This was the reality before the introduction of the new and repurposed drugs in the country. Due to the small numbers of patients, it is not possible to adequately assess XDR-TB treatment outcomes in prisons (Table 5.7)

Figure 5.5 Treatment outcomes of XDR-TB patients enrolled in treatment, 2008–2016



Source: WHO global TB database 2008–2018

Table 5.7 TB treatment outcomes, XDR-TB cases in prisons, 2011–2018 cohorts

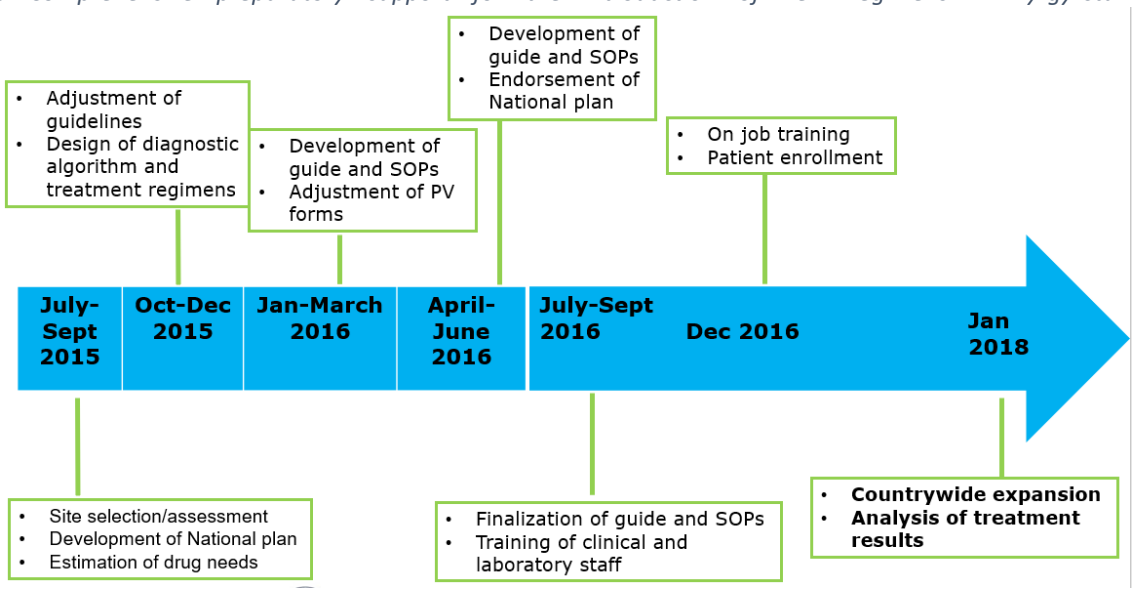
	2015		2016	
	N	*%*	*N*	*%*
RR/XDR-TB cohort size	**6**		**2**	
Treatment success	1	17	–	–
Treatment failed	1	17	1	50

Died	2	33	–	–
Lost to follow-up	2	33	1	50
Still on treatment	0	–	–	–

Source(s): NTP Kyrgyzstan

After significant input from the Challenge TB project), patient enrolment (including children and adolescents) in the shorter DR-TB treatment regimens (STR) and individualized treatment regimens (ITR) containing the new and repurposed drugs was initiated in two pilot sites in 2016: Bishkek city and Chui oblast. By the end of 2017, access to the new regimens was expanded countrywide.

Figure 5.6 Comprehensive preparatory support for the introduction of new regimens in Kyrgyzstan



According to the NTP, the preliminary treatment results for the cohort of 96 patients (including 10 children and adolescents) treated with the STRs showed a treatment success rate of 79.8%, treatment failure, 5.9% and LTFU, 14.3% (compared with 24.2% in the 2016 cohort). This is really a great achievement. The high level of adherence to treatment is the result of the dedicated work of nurses, DOT voluntary supporters for TB outpatients (treatment supporters in short), NGOs and partners to inform, educate and support patients throughout the treatment.

Although the number of patients is very small, the preliminary outcome for patients enrolled in ITR (Jan–March 2018) also shows a treatment success rate of over 80%.

Initially, due to insufficient capacity in the regional consilia, only the Central Consilium enrolled patient onto the new treatment regimens. After capacity-building activities (mentoring, on-the-job training, supervision) provided by the NTP and Challenge TB teams, also oblast level consilium are now allowed to enrol patients onto the new regimens (NTP order, January 2019).

In accordance with the transition plan to the new regimen, only STR and ITR should have been used for MDR-TB treatment since March 2018; however, in some cases the currently prescribed treatment regimens are outdated and are not optimal to ensure success.

Although the SL DSTs are performed for majority of MDR-TB patients, in many cases the test results are delayed or are negative due to a low bacillary burden. It is usual practice for consilia to prescribe empirical treatment regimens, including STR for patients with STR eligibility criteria, without having SL DST results.

Those regimens are not always revised quickly following the availability of further phenotypic SL DST results.

The quality of regimen design and patient management has substantially improved since the previous NTP review. For example, in Osh oblast all RR-TB patients are registered and their treatment status is known, the regimens in most cases are adequate, safety monitoring tests (including colour vision, audiometry etc.) are available and the results are properly recorded. In contrast, there were some oblasts/sites where, despite training and support provided by partners, local MDR experts did not use the new drug groupings, did not follow-up DST results, and used inadequate regimens etc.; for example, the audiometer was broken, ECGs have not been carried out since April, diagnostic and follow-up test results were not recorded and not used for clinical decision-making, a patient with H monoresistance was placed in the same room asa newly diagnosed smear-positive MDR-TB patient.

In some treatment sites, clinicians were not confident in the interpretation of FL and SL LPA test results. The reporting form does not provide a simple interpretation of the results.

During the preparation for the introduction of new drugs and regimens, the USAID-financed projects (Challenge TB, Defeat TB) and the Global Fund supported regular supportive supervision and monitoring visits. In all oblasts there were MDR-TB coordinators, hired by Challenge TB project, to support NTP regional teams on daily basis. Unfortunately, the NTP does not have the well established systems, staff and financing for regular supportive supervision visits.

The Challenge TB project issued a guidebook for patients with DR-TB in Russian and the Kyrgyz language and distributed it among patients across the country as part of the effort to increase treatment adherence among DR-TB patients. The document contains comprehensive information on the diagnosis, treatment, infection control and monitoring of TB and DR-TB in nonmedical language. It also includes advice from TB patients and survivors. Additionally, more than 130 patients with DR-TB used the services of treatment supporters and were able to receive treatment at home, avoiding daily trips to a medical facility.

According to the Order No. 626 of the Ministry of Health of 4 September 2018, the Challenge TB project is supporting the introduction of the video observed/assisted TB treatment (VOT) pilot project in Bishkek and Chui Oblast. This innovation reduces the burden of treatment for both patients and nurses for outpatients: patients are given their medication for one week, and they can take their daily dose without leaving home by recording and sending off the video of themselves taking the drugs, which most patients find very convenient. This saves time and also reduces stigma and discrimination. In addition, VOT allows patients to work or study during treatment.

Currently, at the time of mission, there are dozens of TB patients on VOT for whom the Challenge TB project has provided smartphones and a 4G Internet connection.

The practice of conducting field consultations by members of the Central Consilium, together with the coordinators of KNCV/Challenge TB, to provide local assistance and monitor the management of patients undergoing treatment with the new and repurposed TB drugs and on STRs, has been implemented in the country.

A report on the timeliness and results of the tests of DR-TB patients being treated with the new and repurposed TB drugs and STR is submitted monthly by the regional coordinators for DR-TB in the National Centre for Phthisiatry (NCP). Currently, in each region where such patients are available, assistance in their management is provided by the staff of the Challenge TB project. At the end of the project, it is expected that district phthisiologists (TB-physicians) will assist in collecting data.

With regard to training and education on DR-TB, the Challenge TB project has conducted cascading training sessions for more than 1 100 health care workers across the country on the new TB drugs and

treatment regimens, and on contact investigations to ensure the continuity of this activity by the NTP and to find lost patients. The Challenge TB project has successfully transferred all training materials that are currently included in the curriculum for health care professionals to the Kyrgyz State Medical Institute of Re-training and Advanced Training for Medical Specialists, also called the Chubakov Centre, and these have been used regularly from January 2019. This ensures that all health care professionals either are ready, or will soon be ready, to use the new TB drugs and treatment regimens in accordance with the latest WHO recommendations.

Key findings

Progress to date

- Countrywide access to STR and ITR containing the new and repurposed drugs.
- Development and submission for approval by the MoH of the new DR-TB guidelines, which are in accordance with the latest WHO 2019recommendations.
- Decentralization of the DR consilium.
- Improved DR-TB treatment success rates thanks to the access to the new drugs and regimens. According to the NTP, the preliminary treatment results for the cohort of 96 patients (including 10 children and adolescents) with STR showed a treatment success of 79.8%.
- Introduction of elements of a patient-oriented approach: VOT (more than 200 patients), treatment assistants (helpers), etc.

Challenges

- More patients are eligible to be enrolled in treatment with new and repurposed TB drugs than are currently enrolled.
- Delayed initiation of adequate MDR-TB therapy due to inappropriate use of the diagnostic algorithm and ineffective interactions of the clinical and laboratory services.
- Unjustified frequent changes in treatment regimens, which can contribute to amplification of drug resistance.
- Weak interactions between TB and infection disease specialists for the management MDR-TB/HIV/HCV coinfected patients, which can reduce the effectiveness of treatment.
- Ineffective supervision of regional and district medical organizations due to lack of qualified personnel and lack state financing.

Recommendations

	Recommendation	**Timescale**	**Responsible**
1	Maximize the treatment coverage with new and repurposed drug containing regimens for patients with DR-TB (up to 90% for eligible patients).	Short-term	MoH, NCP, USAID
2	Urgently provide joint training seminars on: practical implementation of the diagnostic algorithm; treatment regimen design; TB/HIV/HCV coinfection management for TB doctors, laboratory specialists and infectious	Short-term	MoH, NCP, USAID

	disease specialists. MDR *Consilia* and curator visits to monitor of effectiveness of joint training seminars.		
3	Prepare a joint order of the Ministry of Health defining the interaction of TB and infection diseases services, and introduce it into training programmes.	Short-term	MoH, NCP
4	Prepare an Order of the MoH and NTP with the definition of the composition of the curators, the schedule of curatorial visits and the budget.	Short-term	MoH, NCP

6 TB contact investigation

6.1 Background and findings

Instructions (guidance) for TB contact investigation in Kyrgyzstan is provided by MoH Order No. 429, June 2018. The purpose of this guide is to prevent the spread of TB among the population by identifying people who have had contact with TB patients using new approaches. The main objectives of TB contact investigation are defined as identification, examination, implementation of preventive measures and follow-up.

Contacts of the following index cases should be monitored and investigated:

- sputum smear-positive cases (new and previously treated);
- DR-TB cases, regardless of microscopy results;
- pulmonary TB cases with cavity in lungs shown by radiography, regardless of bacteriological confirmation;
- special (decreed contingent[9]) population with pulmonary TB, regardless of bacterial confirmation;
- children with TB under 5 years; and
- TB/HIV coinfection cases.

According to the MoH Order, responsibility for contact investigation is shared between Sanitary Epidemiological Service (SES) and its offices in the rayons, PHC/Family medicine centres and TB services. Information on TB cases notified/diagnosed is sent to SES. In the next 3 days, Epidemiological Services are responsible for visiting the place of residence and employment/education of the index case, defining a list of persons from household members and other close contacts, completing standard epidemiological card and delivering information on contacts to PHC (Family medicine centres, Centres of General Practitioners, Group of Family Doctors).

Doctors from PHC are responsible for the examination of the contacts by X-ray and skin test (for children). In case of symptoms, abnormalities on X-ray, or positive tuberculin skin test, TB contacts are examined additionally by lab tests (microscopy, GeneXpert). Results of the test are shared and discussed jointly by PHC and TB doctors. Monitoring of contact investigation activities is also the responsibility of the SES. During the field visit, it was noticed that for people with presumptive TB, X-ray examinations are not free of charge, and in many cases the quality of radiological examinations is unacceptable.

[9] This population includes officials and employees of organizations whose activities are associated with the production, storage, transportation and sale of food and drinking water, education of children, and public and domestic services for the population.

After discussions with PHC and TB doctors, with representative from SES, the reality looks different. The current practice is that SES often shifts responsibility for its tasks to PHC and TB services; in addition, monitoring visits, which are not regularly conducted by the SES, often lead to penalties for the PHC and/or TB facilities. Therefore, SES is not considered as a partner and a leading agency by the PHC and TB service providers. From the other side, representative of SES mentioned the insufficient budget for contact investigation activities, including monitoring visits. There is also need for training of SES staff.

According to the WHO global TB database, during the last 11 years the number of TB contacts screened for TB in Kyrgyzstan increased from 5 708 (in 2012) to 9 084 (in 2017). The average number of contacts screened per notified incident cases between 2009 and 2018 varied from 0.9 to 1.4, while, according to the same WHO global TB database, the estimated average household size for Kyrgyzstan is 4.2 persons. These figures show that, over the past few years, insufficient number of contacts are being screened in the country. The yield of TB cases among the contacts screened is quite high – varying between 1.0 (2017) to 2.4% (2014). A small increase in the TB cases detected among contacts was observed between 2012 (1.9%) and 2014 (2.4%), followed by a decrease to 1.0% in 2017 (Table 6.1). The number and percentage of contacts with isoniazid preventive therapy (IPT) varies widely from year to year. The low number of contacts screened registered, and the significant difference in the number of contacts on IPT, may be indication of a poor surveillance system. Currently, 6-month IPT is used in the country; however, the coverage of children (<5) of household contacts of bacteriologically confirmed TB cases with IPT is poor (see Childhood TB section). WHO recommendations on LTBI treatment (2018) have not yet been adopted in the country. There is also no LTBI treatment provided for DR-TB contacts.

Table 6.1 Number of TB contacts screened and yield of TB cases among contacts, 2008–2018

Year	Laboratory confirmed TB cases in civilian population			Contacts screened	Contacts screened/ case; mean	TB cases detected among contacts		Contacts who received IPT	
	New	Relapse	N & R	n	n	n	%	n	%
2008	6 230	398	6 628	6 462	1.0	79	1.2		n/a
2009	5 434	331	5 765	6 595	1.1	100	1.5	100	1.5
2010	5 308	344	5 652	6 424	1.1	86	1.3	4 641	72.2
2011	5 180	349	5 529	n/a	n/a	n/a	n/a	n/a	n/a
2012	5 851	344	6 195	5 708	0.9	108	1.9	1 073	18.8
2013	5 859	415	6 274	8 673	1.4	146	1.7	4 256	49.1
2014	5 880	510	6 390	5 900	0.9	139	2.4	3 719	63.0
2015	5 869	1 158	7 027	7 804	1.1	110	1.4	1 689	21.6
2016	5 702	1 324	7 026	8 921	1.3	86	1.0	1 480	16.6
2017	5 630	1 057	6 687	9 084	1.4	91	1.0	795	8.8
2018	5 249	1 089	6 338	8 830	1.4	129	1.5	574	6.5

n/a, not available

Source: WHO global TB database 2008–2018

Recommendations

	Recommendations	Timeline	Responsible
1	Improve coordination and collaboration between SES, PHC and TB services in contact investigation activities	Short-term	MoH, SES

2	Ensure adequate budget for SES to perform activities, according to the MoH Order	Mid-term	MoH, MOF
3	Improve knowledge of SES staff in TB contact investigation by providing training	Mid-term	TGF, NTP
4	Discuss at MoH and seek possibility of contact investigation activities being monitoring by an organization other than the SES agency	Mid-term	MoH
5	Conduct operational research to find out the reason for the low number of TB contacts screened and other gaps in contact investigation, including the surveillance system	Mid-term	NTP, USAID project
6	Introduce 3-month preventive treatment with isoniazid and rifapentine (3RH, 12 doses) for children and adolescents (2–17 years) and medical staff, along with the existing 6-month IPT	Short-term	NTP, MoH, TGF
7	Consider the introduction of preventive treatment for contacts of MDR-TB index cases in the framework of operational research	Mid-term	NTP, USAID project

7 Management of TB in children and adolescents

In general, the country has made substantial progress in the management of childhood TB. All the new approaches in TB diagnosis and treatment have also been introduced for children and adolescents, and the specific requirements of these populations have been considered. For example, rapid genotypic TB/DST tests, shorter DR-TB treatment regimens and regimens containing the new drugs bedaquiline and/or delamanid, as well as paediatric formulations for second-line drugs are available for TB diagnosis and treatment in children. It is also remarkable that the new MoH Order (No. 429, from 2018) on contact investigation has been endorsed and distributed, which will contribute to the early detection of TB and diagnosis of LTBI.

7.1 Diagnosis of TB and LTBI among children

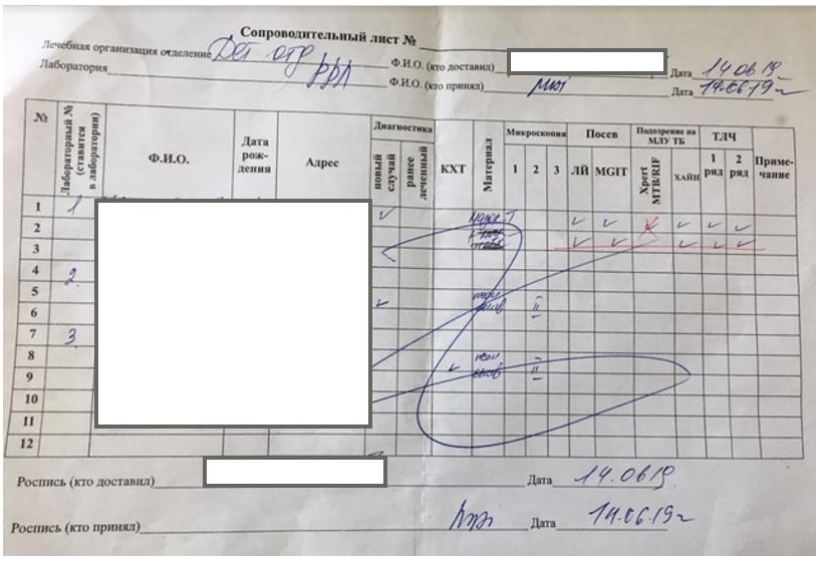
TB detection is initiated with contact investigations and annual screening in TB risk groups. Historically, contact tracing mainly focused on household contacts. Contact tracing was not carried out to the highest quality, due to the high stigmatization of TB, insufficient policies and lack of clear instructions. Insufficient contact tracing has also meant that the source case has not always been identified. In December 2017, an Order was released on the management of epi-surveillance and TB infection control. In addition, the above-mentioned MoH Order (No. 429), released in June 2018, includes clear practical steps and a clear division of tasks among SES, PHC and NTP staff (a more detailed description is found in the Diagnosis and case detection, laboratory services section). In some of the outpatient facilities visited, the Order was available and had already been applied, which included closer collaborations with local SES experts. In the district TB cabinets visited, there were good quality registries of TB contacts. Unfortunately, that was not the case in all facilities visited. In some facilities, collaboration with the SES is not well established (see the TB contact investigation section).

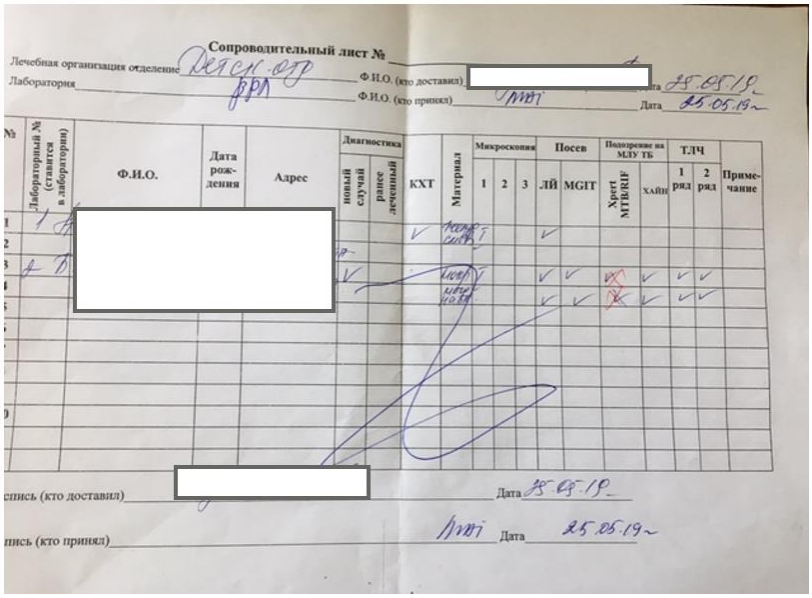
The main methods for TB diagnosis are assessment of symptoms, tuberculin skin test (TST) and chest X-ray. Unfortunately, in many cases the quality of the X-ray is very poor or even unacceptable. X-ray examinations are not free of charge for people with presumptive TB, and families with limited resources, especially those with several children, cannot afford it. For selected young children, based on a

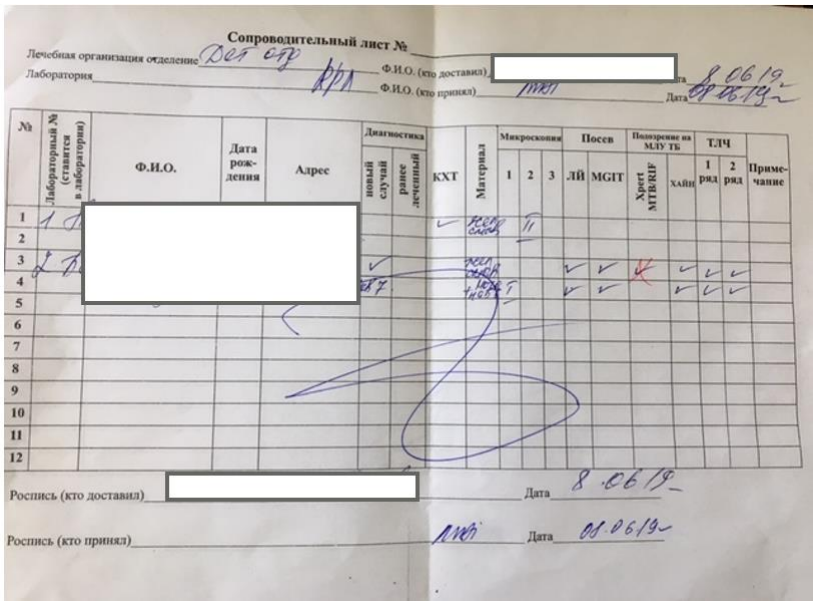
recommendation by childhood TB expert, a CT scan can be provided thanks to GFATM support. CT scanning (supported by GFATM funding) is not maximally utilized. The reasons for this could be insufficient awareness among medical staff. CD (compact disc) recorder(s) to evaluate CT investigations are not available.

The laboratory diagnostic algorithm is the same as for adults (for more details see the Diagnosis and case detection, laboratory services) and Management of drug-resistant TB (DR-TB)sections). In the majority of cases, the diagnostic algorithm is followed; however, during the field visit it was noticed that several children in the Childhood TB department in National Centre of Phthisiology (NCP) did not have Xpert test results. Although requested by clinicians, the testing was rejected by laboratory staff without explaining the justification for the rejection (Fig. 7.1).

Figure 7.1 Lists of requested tests for patients







Сопроводительный лист №

Лечебная организация отделение Дет сар

Лаборатория КРЛ

Ф.И.О. (кто доставил) [redacted]

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Дата 8.06.19

Дата 8.06.19

№	Лабораторный № (ставится в лаборатории)	Ф.И.О.	Дата рождения	Адрес	Диагностика: новый случай	Диагностика: ранее леченный	КХТ	Материал	Микроскопия: 1	2	3	Посев: ЛЙ	Посев: MGIT	Подозрение на МЛУ ТБ: Хрест МТБ/RIF	Подозрение на МЛУ ТБ: хайн	ТЛЧ: 1 ряд	ТЛЧ: 2 ряд	Примечание
1	1	[redacted]					✓	Моча Слюна	11							✓	✓	✓
2																		
3	2				✓			Моча				✓	✓	✗		✓	✓	✓
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Note: The red pen marks indicate tests that were rejected by NRL staff.

During 6 months of 2019, 143 diagnostic samples from Childhood TB department were submitted to the NRL: 50 tested by Xpert, 105 by FL LPA. For some patients, the lack of the Xpert test was explained by the fact that Xpert was done in the region before the hospitalization in NCP or that another test (such as FL LPA) had already been performed; however, clinicians did not have these test results and the reasoning for the absence of Xpert test for a number of children on the Childhood TB ward was not fully clear. Consultants suggested that this issue should be discussed with the chief of the NRL, the chief of the Childhood TB department and the MDR-TB coordinator.

Another issue is the collection of specimens for testing. Nebulizers for each oblast childhood TB facility were procured with Challenge TB project (CTB) support, and implemented by KNCV. However, in practice they are not yet fully used, instead throat swabs are used. Gastric aspirate/lavage had been collected in children younger than 10 years (but not in all cases).

7.2 TB prevention/management of LTBI

The national policy is to vaccinate all neonates with BCG and this is well followed in practice (see TB epidemiology and surveillance system section). As mentioned above, the main method of LTBI diagnosis is the tuberculin skin test. In some cases, the Diaskin test (produced in Russia, and not endorsed by WHO) is also used. For the LTBI treatment, isoniazid (H) for 6 months is used. However, based on the WHO report,[10] only 33% of children <5 years of age who have been in contact with bacteriological confirmed cases are enrolled in preventive treatment. This was also noticed during the field visits: IPT is not prescribed in all cases when indicated. One of the reasons was the shortage of H, or shortage of the relevant formulation for small children, but the most likely main reason is insufficient contact follow-up. To explore the reasons and address the gaps, it was suggested that an operational study should be

[10] WHO. Global tuberculosis report 2019. Geneva: World Health Organization; 2019. (https://apps.who.int/iris/bitstream/handle/10665/329368/9789241565714-eng.pdf?ua=1, accessed 27 November 2019).

conducted (see TB contact investigation section). New LTBI treatment regimen,s as per WHO LTBI recommendations from 2018,[11] have not yet been included in national policy and practice.

LTBI treatment for DR-TB contacts has not been introduced.

7.3 TB treatment (including drug management)

Each oblast TB dispensary (TD), except Batken, has childhood TB department, where TB treatment is initiated. Adolescents are hospitalized in the hospital in Archali. Conditions in this hospital are very poor (see Annex 3).

All drugs (including new and repurposed, first- and second-line drugs) for the treatment of TB in children are available and have been used. The new WHO recommended fixed drug combinations for the treatment of DS-TB are available and have been used. Paediatric formulations of SLDs have been procured and are available in the country thanks to support by GDF, UNDP, Sentinel and CTB projects.

With the CTB/KNCV support, shorter DR-TB treatment regimen (STR) and individualized treatment regimens (ITR) containing the new and repurposed drugs are used also for children and adolescents. Patient enrolment was started in January 2017 in the Childhood TB department in the NCP; by the end of 2017 it had been expanded to all regions.

STR outcomes are very promising: 26 (96%) children successfully completed STR; only one child (4%) discontinued treatment (parents refused to continue treatment due to religious reasons), but was followed up and, so far, is doing fine.

Figure 7.2

[11] WHO. Latent tuberculosis infection. Updated and consolidated guidelines for programmatic management. Geneva: World Health Organization; 2018. (https://apps.who.int/iris/bitstream/handle/10665/260233/9789241550239-eng.pdf;jsessionid=E7C6963C2CF833B465425DB14B45BF62?sequence=1, accessed 22 November 2019).

Little Somaya (2 yrs) and Ilyas (4 yrs) were among the first DR-TB patients who successfully completed STR in Kyrgyzstan.

Photo: Marion Biremon, KNCV Kyrgyzstan

Regimen selection and design is provided by the MDR-TB consiliums with involvement of local childhood TB experts. Although the quality of regimen design (analysis of DR-TB risk factors, interpretation of test results etc.) has very much improved since the last WHO review visit, there still are some gaps. One of the main gaps is insufficient analysis of potential source cases – in many situations the source case's DST pattern is not obtained and is not presented during the consilium. Additionally, in several cases, DS-TB treatment was prescribed for children with TB (diagnosed clinically/radiologically, but without bacteriological confirmation) despite the fact that they were from MDR-TB contacts. It was also noticed during the field visit that there is insufficient understanding of the clinical interpretation of genotypic DST results (LPA test in particular). The lab report form for LPA is complicated and confusing. Revision of this form is ongoing.

Although, since March 2018, only STR or ITR should be prescribed for MDR-TB patients, there were several patients for whom the "old" regimen was still used. For example, for an 8-year-old child with TB spondylitis (DR-TB confirmed from surgical material).

There were issues with the quality of regimens prescribed – sometimes they were not STR and were no ITR. On some occasions regimens were designed only by the paediatrician without discussing in consilium.

Although all safety monitoring tests are available, they are not always performed; for example, in several cases electrolytes, creatinine clearance and some other tests were missing. Unfortunately, there were several patients with abnormal test results, that were not subsequently monitored. For example, one child had QTc prolongation (511 msec), but the electrocardiogram (ECG) was not repeated, the QT interval was not double checked, the electrolytes were not checked and TB treatment was not adjusted.

7.4 Key findings, progress to date

- Very dedicated and highly motivated staff in dispensaries and childhood TB facilities.
- Needs for children are considered for the introduction of updated diagnostic and treatment approaches.
- Countrywide access to new drugs and regimens, including paediatric formulations of SLDs.
- TB diagnosis and treatment in children are addressed in updated policy documents (guidelines, SOPs) and training modules (updated/developed in 2019).
- Increasing access to diagnostics – induced sputum, rapid molecular tests, CT scans.

7.5 Room for improvement, challenges

- Disabling environment for early TB diagnosis – contact investigation mainly among household contacts, limited access to radiological examinations (poor quality, not free of charge), insufficient knowledge of radiologists on CT scan interpretation for children.
- Insufficient epidemiological investigation – source case, index case, DST data of isolates of infectious source case.
- Insufficient knowledge and improper clinical "translation" of molecular test results.
- Insufficient coverage of LTBI treatment (insufficient access to drugs or relevant formulations), lack of LTBI treatment for DR-TB contacts.

- The practice of prescribing DS-TB treatment for children with TB from DR-TB contacts still exists.
- Suboptimal management of adverse events.

Recommendations

	Recommendation	**Term; Q/Year**	**Responsible body**
1	Provide free of charge radiological examinations for children from TB contacts. Estimate and negotiate the financial needs with National Health Insurance funds and oblast/district administration. Training on interpretation of CT scan for children – collaboration with Sentinel project.	Short-term	M&E coordinator, Health insurance fund
2	Information about the TB source case should be a mandatory part of TB forms and should be demanded by consilia, supervisors etc. during the treatment decision process.	Short-term	MDR-TB coordinator
3	Clinical interpretation of test results should be included in training programme and regular on-the-job training for paediatricians.	Short-term	Chief of NRL and MDR-TB coordinator
4	Update the National Protocol based on the LTBI guidelines 2018, including considerations of LTBI treatment for DR-TB contacts.	Short-term	NTP, NCP
5	Ensure LTBI treatment for all who have indications, including children <5 years of age with contact with bacteriologically confirmed TB cases.	Short-term	NTP manager
6	All children with TB from DR-TB contacts should be reviewed by DR-TB Consilium. Treatment regimens for children without their own DST should be based on DST of the source case.	Short-term	MDR-TB coordinator, chief TB paediatrician

8 Pharmaceutical management

8.1 National TB Guidelines

The national TB treatment guidelines were updated in early 2019 and await approval by the MoH. We confirm that the updated version is in line with the latest WHO recommendations including those on MDR-TB.

8.2 Regulation of medicines

Kyrgyzstan's Department of Drug Supply and Medical Equipment is responsible for the registration of medicines that may be imported and circulated in the country. Manufacturers which currently have anti-TB medicines registered in Kyrgyzstan are mostly from India, Russia and Belarus.

Government Regulation 405/2019 (which was issued in March 2019) provides the basis for an accelerated registration process. This regulation specifies that products that have already been prequalified by WHO or which have been registered in the EU, UK, USA or Japan can enter an accelerated registration procedure. This shortened registration route (it can be completed within 45 days) does not require new

analytical tests as the manufacturer's test certificates will be accepted. We were furthermore informed that there is collaboration with WHO to achieve accelerated registration of TB medicines by making use of the Collaborative Registration Procedure (CRP) for WHO Prequalified Medicines.

The aim of Regulation 405/2019 is to attract more product registrations for medicines to treat TB, malaria and HIV. WHO and partners (especially the USAID-funded Challenge TB project which is implemented by KNCV) have prepared a list of 16 key medicines needed to treat DR-TB. For these medicines, it is particularly important to have access to quality-assured formulations. Therefore, the project aims to achieve registration from WHO prequalified manufacturers. To speed up this process, KNCV has contracted the RIAAN TECH company (www.riaantech.com) to collaborate with the selected manufacturers and help facilitate the preparation, submission and approval of the registration dossier. At the time of this visit, applications had been submitted for five of these medicines. It would be good if this project could be expanded to include the fixed-dose combination formulations (FDCs) needed to treat drug susceptible forms of TB.

	Recommendation	**Term/Quarter-year**	**Responsible for implementation**
	Add TB medicines for drug-susceptible TB (in particular the fixed-dose formulations RHZE (4FDC) and RH (2FDC)) to the list of 16 DR-TB medicines for which efforts are being made to have accelerated registration of WHO prequalified formulations.	Short-term	WHO and KNCV

8.3 Supply management

Selection

The medicines procured are in line with the National TB Guidelines which is in adherence with WHO guidelines and the WHO Model Essential Medicines list. The country has started using WHO recommended fixed-dose combination tablets (FDCs) for drug-susceptible TB in adults and children.

Quantification

The drug management team at NTP is dedicated and has good skills, for example, in the use of QuanTB. The team aims at maintaining 3 months of stock when the newly procured annual quantities arrive. The team reported that this is done on instruction from the National Health Insurance auditors. We consider 3 months of safety stock for first-line TB medicines to be low considering the many challenges in procuring TB medicines from the international market and the enormous consequences for patients and society at large in case if even one of these medicines should run out of stock.

Since 2018, the drug management team keeps track of the prescribed regimen for each individual on drug resistant TB treatment. This is aggregated quarterly in collaboration with the Global Fund Principal Recipient, UNDP, and as a result the programme can now estimate the approximate monthly usage of each second-line drug (SLD). As there are many individualized regimens, direct data entry in QuanTB is rather difficult. To overcome this, the team uses an Excel Pivot table which calculates the percentages of patients on a particular medicine per month and this is entered into QuanTB. The team furthermore

receives information about regional SLD stock levels via the TB09 form. SLDs are thus managed and distributed using QuanTB, based on individual patient data with exact treatment regimens and remaining stock levels.

Although the team is alert for products at risk of expiry or stock out, there is no formal Early Warning System (EWS) in place.

Recommendations

	Recommendation	**Term/Quarter-year**	**Responsible for implementation**
1	Increase the safety stock of first-line TB medicines at the national level to 6 months.	Mid-Term	NTP
2	Implement an Early Warning System for stock out/expiry risks of TB medicines. This can be achieved by running QuanTB on a monthly basis and summarizing the conclusions in a brief report to be shared monthly within NTP and with MoH and the partners.	Short-Term	NTP

8.4 Financing

The Government of Kyrgyzstan finances the drug-susceptible and poly-drug resistant TB medicines (via the National Health Insurance scheme); medicines for DR-TB, as well as child-friendly first-line formulations, are financed by the Global Fund grant.

Procurement

The TB medicines funded by the Global Fund to AIDS, Tuberculosis and Malaria (GFATM) are procured by UNDP who places the orders with the Global Drug Facility (GDF). These medicines are from WHO prequalified manufacturers and procured via a transparent process resulting in competitive prices due to GDF's economies of scale and not-for-profit principle.

However, TB medicines financed with domestic funds must comply with National Procurement Laws which do not include strong quality assurances, give no preference to WHO prequalified TB medicines and do not support the option of buying from an international organization such as GDF. These medicines are procured by the NTP via national competitive bidding (tendering). The lots are announced on the Public Procurement Portal (www.zakupki.gov.kg/popp/). This is usually done in Q4 of the year. Suppliers are given around 3 weeks to submit their bids. For each medicine, a maximum price has been determined based on market surveillance. This price is known to the bidders. The contracts are usually signed and paid for by Q2 of the next year and the FLD are delivered to the NTP in Q4. Tender evaluation is based on a single envelope approach in which it is first checked whether the price is below the maximum ceiling after which the lowest priced, technically compliant bid is selected.

Over the last few years the Russian manufacturer Pharmasyntez has been the only bidder for TB medicines. In the past, that meant the tender had to be re-advertised in order to achieve genuine competition between companies. However, even then, there would often be just one bidder.[12]

At present, all FLD formulations procured are manufactured by Pharmasyntez. This range consists of 4FDC, 2FDC and the mono formulations R, H, Z and E. Table 8.1 provides a comparison of the prices paid in 2018 and 2019 versus the GDF price (including an estimated 15% for pharmaceutical supply management (PSM) costs such as freight and insurance).

Table 8.1 Comparison of prices paid for FLD formulations in 2018 and 2019 by the Government of Kyrgyzstan (GoK) versus the GDF price

2018	GoK Som/tab	GoK $/tab	GDF pack size	GDF pack Price ($)	GDF price/tab ($)	GDF incl 15% PSM	Ratio GoK/GDF
4FDC	5.89	0.08	672	42	0.06	0.07	1.17
2FDC	2.42	0.03	672	21	0.03	0.04	0.96
Z500	1.7	0.02	672	17.5	0.03	0.03	0.81
R150	3.225	0.05	100	10	0.10	0.12	0.40
E400	2.59	0.04	672	22	0.03	0.04	0.98
Lfx250	24.4	0.35	100	3.2	0.03	0.04	9.47
2019	GoK Som/tab	GoK $/tab	GDF pack size	GDF pack Price ($)	GDF price/tab ($)	GDF incl 15% PSM	Ratio GoK/GDF
4FDC	6.3	0.09	672	50	0.07	0.09	1.05
2FDC	3.2	0.05	672	24	0.04	0.04	1.11
E400	2.8	0.04	672	22.5	0.03	0.04	1.04
H300	1.15	0.02	672	13.5	0.02	0.02	0.71
H100	1.15	0.02	100	4	0.04	0.05	0.36
Lfx250	21	0.30	100	2.85	0.03	0.03	9.15

Source: Table prepared by the review team, based on data collected during the mission.

Based on this comparison, we conclude that the prices achieved for FLDs were equal or slightly below GDF's prices. However, levofloxacin, procured for poly-resistant TB, was procured at more than 9 times the GDF price. In 2020, Kyrgyzstan will start self-financing and buying SLDs and we foresee that the country will face similar issues with other SLDs.

In summary, the current approach to domestic bidding for procuring TB medicines:

- does not achieve genuine competition (as there is typically only one bidder);
- does not achieve high-quality products (no WHO prequalified medicines);
- does not achieve good value for money (price for levofloxacin is 9 times the GDF price).

[12] In 2018, the procurement law was changed with the aim of simplifying the tender process and it now does not specify that there should be a certain minimum number of bids.

Although the accelerated registration of WHO, EU, UK, USA or Japan prequalified formulations is a welcome development, there is, as of now, no way such additional quality standards can be taken into account during the procurement evaluation. In practice, it would thus mean that a registered WHO prequalified product would not be selected for procurement when another bidder offered a slightly lower priced product without such quality assurances. In effect, there are thus two quality levels to be considered:

- products registered through the regular process in the country (which can be achieved even on the basis of a Good Manufacturing Practice (GMP) certificate from a non-stringent authority);
- products registered on the basis of their prequalification by WHO, EU, UK, USA or Japan.

Recommendations

	Recommendation	**Term/Quarter-year**	**Responsible for implementation**
1	The National Procurement Laws should be provided with stronger quality assurances for strategic medicines such as anti-TB medicines, antiretrovirals and vaccines. For such medicines, options should be created to procure from reputable international mechanisms such as UNICEF (vaccines) and GDF (TB). The Procurement laws should furthermore allow preference to medicines prequalified by WHO, EU, UK, USA or Japan. This will then provide legal cover to select such prequalified products, even if their cost may be higher than lower quality alternatives.	Mid-Term	NTP MoH

8.5 Storage and distribution

We observed good storage conditions and excellent medicine-record keeping at every facility visited.

8.6 Utilization and pharmacovigilance

Adherence to National TB Guidelines

We observed that current guidelines are not always fully adhered to. For example, regimens are adjusted one medicine at a time while the guidelines recommend that at least two medicines should be changed simultaneously.

Direct observed treatment (DOT)

In terms of pharmaceutical management, this is probably the most important finding of this review. We observed that patients (including those hospitalized and on drug-resistant treatment) did not receive any monitoring of whether they did indeed take their medicines as prescribed. The pictures in Annex 4 show the TB medicines that we found beneath the windows of the Poly-resistant TB ward of the National TB Hospital in Bishkek. This lack of direct observed treatment may currently be the main driver of TB drug-resistance in Kyrgyzstan.

Recommendations

	Recommendation	**Term/Quarter-year**	**Responsible for implementation**

1	Make direct observed treatment obligatory and consider paying a bonus to patients and caregivers for every completed treatment under assured direct observation	Short-Term	NTP Will require donor funding

8.7 Availability of ancillary medicines

These medicines are of vital importance to the programme, both as a means to reduce the side-effects suffered by patients but also to increase the likelihood of completing the entire regimen as prescribed.

In the past, ancillary medicines were covered by the GFATM grant and provided to the facilities by UNDP. They are now included in the National Health Insurance package which means that the Insurance company will provide a budget to facilities with which they can buy the ancillary medicines. However, in practice this proves to be a very difficult arrangement because the quantities needed by each facility are rather small and, as a result, suppliers are not interested in participating in the micro-tenders for these medicines. The consequence is that many facilities do not have the ancillary medicines needed and that patients suffer from the (at times severe) side-effects while having to buy the needed ancillary medicines out of pocket.

The current approach in which ancillary medicines (financed by National Health Insurance) must be procured by each facility via a micro-tender is not workable and results in the absence of these important medicines which in turn results in patients experiencing untreated side-effects and likely contributing to the high rate of treatment interruptions and treatment failure.

Recommendations

	Recommendation	**Term/Quarter-year**	**Responsible for implementation**
1	Ancillary medicines are important but in terms of cost they are a fraction of the TB medicines expenditure. The NTP should undertake discussions with National Health Insurance to reach a more practical arrangement. Ancillary medicines should either be: • procured centrally and then distributed to the TB treatment sites; or • negotiated/contracted centrally after which the TB treatment sites can call on the quantities needed at the negotiated price from the contracted supplier(s)	Short-Term	NTP National Health Insurance

9 Pharmacovigilance (PV) and active TB drugs safety monitoring and management (aDSM)

9.1 Current status of the implementation of active drug-safety monitoring (aDSM) and pharmacovigilance in the National Tuberculosis Programme

The Ministry of Health and the NTP are committed to continuously improving the performance of the TB Control Programme through changes in policy, structure and care, including the initiation of the programmatic use of the new and repurposed anti-TB drugs. Since 2017, the NTP with the support of the

main partners in the country (Global Fund, KNCV, MSF) has started the implementation of the new TB drugs into the (pre)XDR-TB treatment regimens with adaptation of routine practice to comply with WHO requirements for the use of the new anti-TB drugs, such as bedaquiline and delamanid. Significant work has been done by the MoH, NTP and partners to ensure the availability of proper safety monitoring of MDR-TB patients; the National TB Clinical Guidelines have been updated to include WHO aDSM recommendations; countrywide training sessions for health care providers (HCPs) in safety monitoring, management and adverse events (AE) reporting have been performed; additional required safety laboratory and functional parameters were implemented; and special legislation has been approved to ensure the provision of laboratory diagnostics by private diagnostic laboratories in the absence of the appropriate laboratory capacities in public health care facilities. However, for different reasons, treatment safety monitoring, clinical management and AE reporting still have limitations in their systematic performance in some health care facilities, and this requires further efforts to assure the sustainable performance of all components of aDSM.

9.2 Current policy and practice

The current National TB Clinical Guidelines have been updated to include the recommendations for safety monitoring of the new anti-TB drugs, patient management and AE reporting as per WHO requirements, providing by this the legal and reference basis for the safety monitoring of the new and repurposed anti-TB drugs. However, there are several discrepancies in the safety monitoring recommendations compared with the WHO minimum essential requirements for appropriate safety monitoring parameters of the new TB drugs (in part serum potassium, platelet count, albumin, lipase) that should be addressed in the next clinical guidelines review. AE management recommendations specific for the new and repurposed TB drugs are not included in the current National TB Clinical Guidelines, and HCPs in their practical activities use clinical recommendations provided by the partners and harmonized with WHO recommendations. The updated version of the National TB Clinical Guidelines are based on the WHO DR-TB consolidated guidelines, 2019,[13] and are at the final stage of development (review by the MoH). The full scope of the current recommendations for the treatment of patients with MDR-TB are planned to be included, including the specific requirements for aDSM. Statutory provision for PV and aDSM activity is implemented in the country: ADR reporting policy and requirements are stipulated in the PV national legislation at country level and addressed in part of aDSM obligatory requirements in the National TB Clinical Guidelines. Indicators of AE reporting activities are included in the number of NTP programme indicators; this could be considered as an additional supportive tool for implementation of a sustainable reporting system in the NTP.

9.3 Systematic clinical and laboratory assessment, safety monitoring and management, available facilities and practice

Clinical, diagnostic and laboratory facilities were mostly available at the visited hospital settings (National TB Centre, Kara Balta TB Hospital, Osh oblast TB Hospital, Jalalabad oblast TB hospital, several districts) for regular monitoring of patient safety in line with current WHO recommendations; however, some

[13] WHO. WHO consolidated guidelines on DR-TB treatment. Geneva: World Health Organization; 2019. (https://apps.who.int/iris/bitstream/handle/10665/311389/9789241550529-eng.pdf, accessed 26 November 2019).

clinical settings still have complications in availability and/or performance of some of the required tests/examinations (e.g. hospital in Archaly, Jalalabad oblast TB Hospital MDR ward). For example, in Jalalabad TD the audiometer was broken and had not been repaired, some tests were available but were not done, etc. In some facilities, substantial progress had been made compared with previous visits by international partners; for example, in Osh oblast almost all necessary tests and examinations were available, were performed as per SOP and the results were considered for clinical management. TB cabinets in Family medicine centres that are responsible for the management of patients at the outpatient stage have different levels of equipment and resource availability for meeting the specific requirements of patient safety monitoring, with the most common limitations related to serum electrolytes and albumin monitoring. TB cabinets located in Bishkek and the regional Family medicine centres have the capacity to monitor cardiological and biochemical safety parameters. It is noteworthy that since January 2019, all safety monitoring examinations are being financed from the Mandatory Health Insurance Fund. To ensure essential laboratory testing, including serum electrolytes and albumin, a Special Order was approved by the MoH in 2018 and the Mandatory Health Insurance Fund (No. 626 of 30 August 2018) for the provision of laboratory diagnostics by private diagnostic laboratories in the absence of appropriate laboratory capacities in the health care facilities. The introduction of this mechanism has allowed a significant increase in patient access to essential safety monitoring. For further improvement of the safety monitoring system, several limitations of this mechanism should be addressed: the periodicity of albumin monitoring does not meet the WHO recommendation (4 times per year); the fixed number of laboratory tests for all other parameters makes it impossible to perform monitoring when the use of new TB drugs is extended, or unscheduled monitoring is required when adverse changes in the patient's condition has been detected. The capacity or available mechanisms in outpatient settings to provide patients with the appropriate laboratory and diagnostic safety monitoring according to WHO requirements for the management of patients treated with new anti-TB drugs (Companion handbook to WHO guidelines for the programmatic management of drug-resistant tuberculosis; 2015[14]) should additionally be re-assessed with involvement of the Family Medicines Groups and Feldsher Obstetric Centres. For patients who continue to receive anti-TB therapy with injectables, in most facilities there is virtually no possibility of having audiometry, which continues to be a significant limitation in providing patients with the proper conditions for monitoring the safety of treatment in respect of disabling adverse effects, such as ototoxicity.

Significant work has been done by NTP and partner organizations for the implementation of the new essential safety monitoring and management element in routine clinical and outpatient practice. HCPs in the National TB Control Centre and regional TB cabinets are aware of the recommendations for the additional elements of safety monitoring for DR-TB treatment safety. The practice of members of the Central Consilium, together with the coordinators of KNCV, conducting field consultations to provide local assistance, and to monitor the management of patients undergoing treatment with the new and repurposed TB drugs and on STRs, has been implemented in the country.

[14] WHO. Companion handbook to the WHO guidelines for the programmatic management of drug-resistant tuberculosis. Geneva: World Health Organization; 2014. (https://apps.who.int/iris/bitstream/handle/10665/130918/9789241548809_eng.pdf?sequence=1, accessed 26 November 2019).

In order to optimize the monitoring, individualized and adapted to the treatment regimen safety monitoring sheets have been developed and introduced in the practice; these individualized monitoring sheets are included in the patient's medical records. These monitoring sheets allow clinicians to have an overview of trends in time; for example, QTcF intervals, haemoglobin levels etc. The recording and clinical management based on test results has substantially improved. A report on the timeliness and results of the tests of patients with DR-TB, who are being treated with the new and repurposed TB drugs and STR, is submitted monthly by the regional coordinators for DR-TB in the NCP. Currently, in each region where such patients are available, assistance in their management is provided by the staff of the Challenge TB project. At the end of the project, it is expected that district phthisiatricians (TB-physicians) will assist in collecting data.

However, since these monitoring sheets are not filled out routinely in some cases (some facilities or some clinicians are not fully following the protocol), or contain different data, further efforts are required to introduce this tool into routine clinical practice, including in outpatients. The monitoring tool should also be updated based on changes in treatment regimens, as per the WHO DR-TB 2019 guidelines, and should include space for additional monitoring test; for example, test for polyneuropathy, as Lzd will be used for the majority of patients. Deviations from the monitoring periodicity were mostly associated with access restrictions (lack of reagents, breakdown of equipment, inability to transport samples and other), so responsibilities and management at the local level should be strengthened to prevent and eliminate risk factors for safety management systems. Primary care specialists (HCPs in Family medicine centres and Family Medicines Groups) are aware of the mandatory referral of patients to a responsible TB specialist if there is any suspicion of an adverse reaction. Additional training for HCPs in Family medicine centres and Family Medicines Groups on recommendations for essential safety monitoring of MDR-TB patients could be considered.

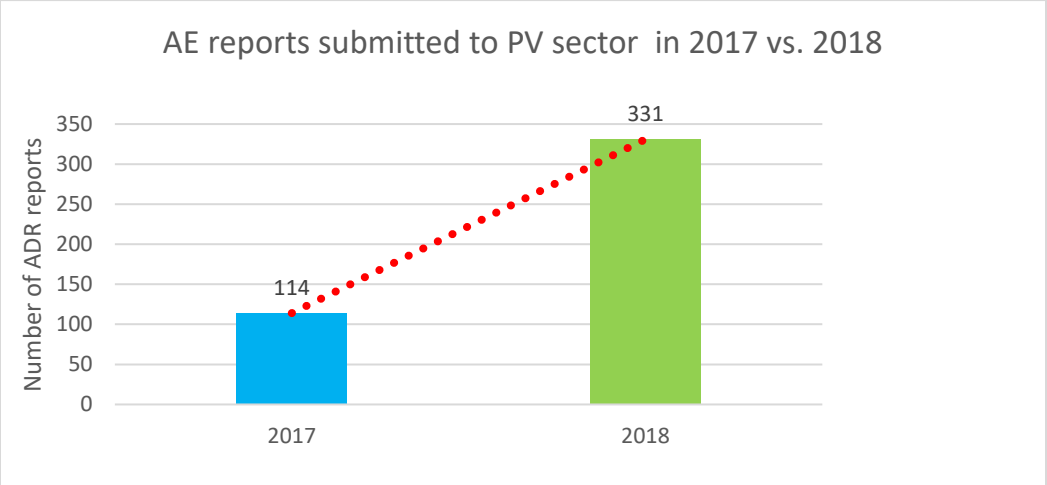
An intensive training campaign for HCPs was held in the country, with the support of the partners, for safety monitoring and management of AEs in DR-TB patients. HCPs are aware of the risk of AEs and AEs management recommendations. However, in some cases systematic performance of safety management in practice has limitations in aspects of safety monitoring data analysis, deviations detection and performance of the recommended AE management. During the visits to clinical facilities, it was noticed that abnormal test results are frequently either not followed up, not properly managed or are not managed at all. For example, there were patients, including children with QTcF prolongation >500 mc, for whom there were no relevant actions taken by clinicians.

9.4 ADR reporting practice

Significant work has been done by the NTP, the National Pharmacovigilance Centre (NPC) and partners to implement pharmacovigilance and AE reporting into routine practice. AE reporting practice has been introduced in the NTP starting from the implementation of the new drugs and regimens for DR-TB treatment. An intensive training programme for AE reporting and assessment methodology has been conducted countrywide; specialists responsible for PV from the NTP have been appointed in every region; and SOPs for AE reporting have been developed and implemented. The National TB Clinical Guidelines contain a strategy for defining an intermediate package as a target monitoring and AE reporting model within aDSM activity. Medical records of MDR-TB patients (TB01) include a section designed to record adverse drug reactions experienced by patients; however, recording is not performed systematically.

HCPs are aware of AE reporting requirements and trained in methodology. AE are collected by the responsible person for PV in the National Centre of Phthisiology, evaluated and submitted to the NPC. According to the NTP ADR monitoring database for the period from 2017 to 2018, the total number of ADRs reported has increased almost three times (see Fig. 9.1).

Figure 9.1 AE reporting dynamics



Source: NTP ADR database

About 65% of the AEs collected by the NPC annually are submitted by the NTP, which is a significant achievement for a newly implemented system. However, the quality of some from AE reports submitted is suboptimal, not all essential information is included, which requires intensive follow-up activity from the PV responsible NTP person. AE reporting practice within the aDSM framework should be further developed to be more effective in collecting important safety data, SAEs and AEs of special interest, that are currently insufficiently reported – more than half of submitted AEs represent mild gastrointestinal disorders.

ADR reporting forms, including the online ADR reporting form, are available on the official website of the Department for Drug Provision and Medical Devices (DDPMD), and paper forms are available in health care facilities. A special interactive programme for patient online ADR reporting has been introduced by the NPC in cooperation with Uppsala Monitoring Centre.

NPC systematically submit ADR information in VigiBase (WHO's global ICSR database); in recent years there has been a positive trend in the country's ADR reporting rate. Submitting ADR data received from implemented aDSM in the NTP to the specialized WHO aDSM global database could be considered.

9.5 National Pharmacovigilance Centre's structure, statutory provision and pharmacovigilance legislation

The National Pharmacovigilance Centre (NPC) was re-established as a separate department in the DDPMD in 2015. Since its establishment, the Centre's management and PV specialists have actively worked on the

introduction and development of the national PV and ADR reporting system. The NPC unit employs three full-time specialists with medical education, and the required level of competence and technical expertise. The PV system has a statutory provision stipulated in the Law on Medicines of the Republic of Kyrgyzstan No. 165 (adopted 2 August 2017) and in by-law regulation. Legislation on good pharmacovigilance practices (GVP) came into force in December of 2018 as part of Eurasian Economic Union regulation ("Good Pharmacovigilance Practices in the Eurasian Economic Union" approved by the Board of the Eurasian Economic Union Commission Decree No. 87, issued 3 November 2016).

9.6 Safety data monitoring/analysis and signal management

Continuous drug-safety profile monitoring, including signal management, and benefit–risk evaluation of authorized medicinal products are implemented into routine practice according to the requirements of GVP. Annually, about four signals are generated based on local ADR data submitted to the NPC. Since the introduction of the new anti-TB drugs into treatment regimens, the data received on safety concerns have been consistent with the expected safety profiles of the monitored anti-TB drugs: one suspected signal in form of tachycardia associated with bedaquiline was detected by the NPC based on locally submitted ADR within the aDSM framework. Establishing more effective interaction with the NTP to ensure appropriate aDSM ADR data evaluation, causality assessment, signal detection and management is recommended.

9.7 Key findings

- The NTP, the Ministry of Health and partners have made significant efforts to introduce new anti-TB drugs into the MDR-TB treatment regimens.
- Significant work has been done by the MoH, NTP and partners to ensure the availability of proper safety monitoring of MDR-TB patients: countrywide training sessions for HCPs in safety monitoring, management and ADR reporting have been performed; work for the adaptation of laboratories and functional facilities for safety monitoring requirements has been conducted; special legislation has been approved in 2018 by the MoH and the Mandatory Health Insurance Fund (MHIF) to ensure the providing of laboratory diagnostics by private diagnostic laboratories in the absence of the appropriate laboratory capacities in health care facilities; the NTP monitoring system for fulfilment of safety management requirements has been implemented.
- Governance and political commitment at government and MoH level has been provided for the implementation of PV and GVP in national legislation and regulatory practice, which is a significant achievement in the development of PV system in the country.
- The current National TB Clinical Guidelines of 2016 have been updated to include the recommendations on safety monitoring and management of the patients who receive the new anti-TB drugs; however, there are several discrepancies in safety monitoring recommendations compared with the WHO minimum essential requirements for the appropriate safety monitoring of the new TB drugs.
- HCPs are trained and aware of the recommendations for safety monitoring of new and repurposed anti-TB drugs; however, treatment safety monitoring still has limitations in some health care facilities for different reasons: unavailability of diagnostic equipment (e.g. audiometry), interruptions in the supply of diagnostic reagents, dependence on transport or part-time specialists, lack of knowledge, and others.
- Case safety management still has limitations in systematic performance: a significant part of HCPs are trained and aware of the recommendations for risk management in cases of ADR; however, in many cases the results of the investigations performed are not evaluated, or the appropriate measures for

ADR management are not taken, or the measures taken are not correct, including for cases of serious ADR. There are interruptions in the availability of some medicines for the management of ADRs.

- ADR reporting practice has been introduced at the level of medical and ambulatory care in the NTP at the country level; the NTP makes the greatest contribution to the total number of ADRs provided to the national database in the country. However, the current NTP ADR reporting system has limitations in terms of meeting WHO requirements for active safety monitoring of the new anti-TB drugs and identifying related important safety issues.

Recommendations

	Recommendation	**Term**	**Responsible body**
1	Update the National TB Clinical Guidelines on DR-TB treatment for further harmonization with the latest WHO recommendations on essential safety monitoring requirements and AE management for the new and repurposed anti-TB drugs	Short-term	NTP, MoH
2	Perform additional evaluation of the safety monitoring practice in hospital and outpatient settings, map the gaps and consider the optimal way for further adaptation of resources, updating of knowledge, adaptation of finance planning and procurement of laboratory reagents for the sustainable implementation of safety monitoring requirements. Consider the option of addressing the limitations of Order No. 626 of 30 August 2018 of the MoH and MHIF with regard to the limited number of tests that are able to be performed annually	Short-term	NTP, MoH, MHIF
3	Consider effective measures for further implementation of sustainable safety monitoring and management into the routine practice with the involvement and supportive supervision of MDR-TB and PV local coordinators, systematic monitoring of treatment safety management practice on clinical and outpatient settings, additional local training sessions	Short-term	NTP, Partners
4	Consider further adaptation of the medicines procurement planning for the requirement of medicines for ADR management: detect gaps, re-evaluate requirements and available resources, and correct an application when necessary	Short-term	NTP, MoH
5	Ensure regular and timely reporting of SAEs and AEs of special interest experienced by the NTP to the NPC, according to WHO recommendations. Consider the option of supporting specialists at the MoH level to eliminate the risk of punishment for SAE reporting	Short-term	NTP, MoH, NPC
6	Establish more effective interactions with the NTP to ensure appropriate aDSM ADR data assessment, signal detection and management by forming a NTP–NPC safety surveillance Committee	Short-term	NPC
7	Consider incorporating an ADR recording module in the e-TB manager to optimize safety data recording, evaluation and clinical management	Mid-term	NTP, Partners

8	Consider establishing compatibility between the e-TB manager and the national ADR database to optimize ADR reporting	Mid-term	NTP, NPC, Partners
9	Update the monitoring schedule and data collection forms to reflect changes in the WHO DR-TB guidelines, 2019	Short-term	NTP
10	Ensure HCPs have access to the updated ADR reporting form	Short-term	NPC
11	Ensure submission of the AE data received by the NPC within the implemented aDSM in the NTP to the specialized WHO aDSM global database	Short-term	NPC

10 TB/HIV collaborative activities

10.1 Epidemiological situation

The prevalence of HIV among TB patients in Kyrgyzstan is lower than the WHO European Regional average (12%); however, an increasing trend of TB/HIV coinfection has been observed over the last decade from 1.8% in 2008 to 3.5% in 2018. In contrast to TB mortality, TB/HIV mortality in Kyrgyzstan is on the rise: TB/HIV mortality increased 10 fold: between 2001 and 2017 mortality rates rose from 0.12 to 1.1 per 100 000 population (11.5% annually).[15]

HIV testing coverage for all TB patients and TB screening coverage for HIV patients are both high (88.1% and 90% in 2018, respectively).[16]

Coverage with antiretroviral therapy (ART) for new TB/HIV coinfected patients has improved during the last decade from 21.6% to 74.5%; however, it is still below the 90–90–90 global target.[17] Additionally, despite the gradual increase, the coverage with ART among PLHIV still remains low at 6% in 2010 to 39% in 2017. Improvements in ART coverage would reduce AIDS-related deaths, improve HIV survival and moderate the increase in TB.

The percentage of HIV-positive people that are newly enrolled in HIV care and receiving isoniazid preventive therapy (IPT) is 94%,[18] and the percentage of HIV-positive TB patients receiving co-trimoxazole preventive therapy (CPT) is 86.3%.[19] The treatment success rate for HIV-positive patients with TB has increased from 57% in 2016 to 74.5% in 2018.

10.2 Mechanisms for delivering integrated TB and HIV services

TB/HIV policy and guidelines

A national response to TB and HIV/AIDS in the Republic if Kyrgyzstan is guided by the National Programme Tuberculosis V (NTP V) and the state programme on HIV/AIDS and its Action Plan

[15] WHO. Tuberculosis epidemiological impact analysis and assessment of TB surveillance system standards and benchmarks of Kyrgyzstan. Copenhagen: WHO Regional Office for Europe; 2019.
[16] Data from the National HIV Centre.
[17] UNAIDS. 90–90–90 - An ambitious treatment target to help end the AIDS epidemic. Geneva: UNAIDS; 2017. (https://www.unaids.org/en/resources/documents/2017/90-90-90, accessed 10 December 2019).
[18] WHO. TB country profile Kyrgyzstan, 2017. (https://extranet.who.int/sree/Reports?op=Replet&name=%2FWHO_HQ_Reports%2FG2%2FPROD%2FEXT%2FTBCountryProfile&ISO2=KG&outtype=pdf, accessed 25 November 2019).
[19] Data from the National HIV Centre.

(NAP), respectively. Although some elements of the TB/HIV response have been included into both the NTP V and the NAP, a comprehensive policy or roadmap which clearly describe the model of care for TB and HIV collaboration and the roles and responsibilities of all parties involved in a collaborative response to the TB/HIV epidemic is not yet available.

The NAP describes some interventions on organizing timely prevention, detection and treatment of TB and Hep B and C for people living with HIV according to the National Protocols, and includes the following outcomes indicators:

- 95% of PLHIV screened for TB in HIV care or treatment settings;
- 90% of PLHIV receiving TB preventive therapy based on the National Clinical Protocol;
- 90% of PLHIV screened for Hep B and C; 50% (4 100) receive Hep B vaccination;
- 100% of patients with Hep C having access to Hep C treatment;
- 90% of people who inject drugs (PWID) attending preventive programmes covered by TB screening (fluorography and GeneXpert) and Hep B and C;
- 80% of estimated PWID covered by outreach work and increasing their knowledge on TB and Hep B and C.

The revised 2017 National Clinical Protocol (MoH Order No. 903, 2017) for the management of patients with HIV associated TB is a key document for TB/HIV collaborative activities, as it provides the national standards of care for clinicians and is aligned with WHO recommendations. The key interventions included in the National Protocol are: 1) testing all TB patients for HIV; 2) screening all HIV-infected persons for TB; 3) all HIV-positive patients with TB receiving early ART regardless of their CD4 count and within 2–4 weeks of starting TB treatment; 4) IPT offered to PLHIV after active TB disease has been ruled out.

Recently (May 2018), the heads of the National TB and HIV programmes approved the Joint Plan of Collaborative Actions on TB and HIV which encompasses action points in the areas of joint collaboration; diagnostics, detection, treatment and prevention; strengthening the monitoring and evaluation system; capacity-building and training; work with civil society and religious leaders, and infection control. However, the document is designed in a form of bullet points, and is not supported with clear descriptions of collaboration mechanisms; no clear models of care or referral mechanisms are provided, and there is no clear division of responsibilities for each of the service providers. As such, the document does not cover the needs of a comprehensive plan, because it does not have any legal status. Therefore, the document needs considerable revision and the legal status (approved by the MoH) for better operationalization.

TB/HIV coordinating body

There is a high-level platform for the coordination of the TB and HIV response in the country which is led by the Country Coordination Committee (CCC), established by the Government of Kyrgyzstan to coordinate the implementation of the Global Fund grants. In 2017, the Committee's activities were integrated under the Coordination Council for Public Health under

the Government of the Kyrgyz Republic chaired by the Vice President, which ensures its sustainability after phasing out of the GFATM. However, such mechanisms do not exist at subnational level.

The MoH has its own Coordination Committee on HIV and TB represented by the National Centres for TB and HIV and the National Centre for Sanitary and Epidemiological surveillance. Furthermore, a technical working group on TB/HIV collaborative activities has been established. However, the main role of this Committee is limited to discussion of the progress made by the two programmes every 6 months, including reports on the monitoring visits. The Committee does not include civil society and community organizations who can represent the interests of the affected communities. The hepatitis programme is also not represented in the Working Group, despite the hepatitis prevalence being high among PLHIV and TB patients.

The main existing model of collaboration between the TB and HIV services is the referral system, with very little interaction with the hepatitis programme. The model of communication and coordination between the two services, and the model of case management of TB/HIV patients is not well defined and documented; it is sporadic and varies between institutions depending on service providers' responsibilities and the capacity of the institutions.

The TB and HIV services do not have a formally responsible focal person for collaborative activities at the national level (National TB and HIV Centres), or at subnational and facility levels (oblast TB centres, family medicine centres, TB cabinets). There are only focal points in Bishkek city TB dispensary and HIV centre, which have a good model of collaboration.

TB/HIV collaborative monitoring, evaluation and reporting system

The HIV system of electronic surveillance established in the country is coordinated by the National HIV/AIDS Centre. It is a life and case-based electronic database which contains epidemiological and clinical information on HIV-infected people and has three main modules: 1) ART; 2) epidemiology; and (3) laboratory. Access to the HIV electronic surveillance system is available for 38 sites, including the National HIV/AIDS Centre, 8 oblast HIV/AIDS Centres, 22 Family medicine centres, Bishkek city HIV/AIDS Centre and a prison hospital. Data from the rest of the FMCs which do not have access to the database is entered by the responsible oblast HIV/AIDS centre, based on the reports provided by the FMCs on paper forms. The HIV programme has selected the following six indicators to monitor and evaluate TB/HIV activities:

- The percentage of deaths due to TB among in HIV-positive people.
- The percentage of PLHIV adults and children on a dispensary follow-up, in whom TB status was assessed in the current year.
- The percentage of PLHIV with newly detected TB, who are receiving ARV and TB treatment.
- The percentage of who are receiving CPT.

- The percentage of people with TB, registered within one reporting period among followed-up PLHIV.
- The percentage of adults and children, who are newly enrolled to the HIV care programme, who started IPT.

Once a year, both programmes conduct verifications of their data.

Routine monitoring and evaluation visits to evaluate NTP performance are conducted independently by ICAP (Columbia University Mailman School of Public Health) and the GF Project Implementation Unit (UNDP) with their own checklists to access their project's progress. Each group includes representatives from the National HIV/AIDS Centre, but this approach is not effective and efficient and causes an extra burden for the ART clinics. The checklists do not contain indicators on the monitoring of the collaborative activities on TB/HIV and/or TB and other comorbidities. The newly approved Plan for TB/HIV collaborative activities includes a chapter on strengthening the system of joint monitoring and evaluation by revising the National Monitoring and Evaluation Guidelines on TB and HIV, and including the TB/HIV part in it; developing the joint monitoring and evaluation plan, and unified checklists and indicators for TB/HIV collaborative activities; and revision of the TB/HIV recording and reporting forms.

10.3 Review of TB/HIV activities at health facilities providing TB services

Based on the national policy and protocols, all health facilities providing TB services should provide HIV testing services. While the HIV testing coverage is high (88.1% in 2018), the model of providing HIV testing services for TB patients is fragmented with a complicated referral system and the quality of HIV testing services is not satisfactory.

Pre- and post-test counselling are provided by different doctors, in spite of the HIV protocol which suggests that this should be provided by the same care provider. Pretest counselling is provided by the TB doctor and post-test counselling by the infectious disease (ID) doctor providing ART. The TB patient establishes a relationship and trust with the TB doctor first, and it is better if the patient get the post-test counselling from the trusted doctor to increase the likelihood of better adherence to the treatment. To accomplish the task, TB doctors should be well trained on post-test counselling. In general, TB doctors' knowledge on pre- and post- HIV counselling is very weak. Pretest counselling is limited to the TB patients discussing and signing the consent form for HIV testing. Information on the benefits of testing, the implications of a positive test in terms of care options, quality of life and life expectancy is not properly communicated. The National HIV Clinical Protocol suggests offering HIV testing for presumptive TB patients as well, but in practice this only happens occasionally and there is no data on the number of patients with presumptive TB who are offered HIV testing.

The National HIV testing algorithm, which also applies to TB patients, consists first of an ELISA test (fourth generation test – available at 37 provincial laboratories, including eight oblast laboratories and the National AIDS laboratory where confirmation is done), confirmed by a

second ELISA test, if the first one is positive, and the third confirmatory test done by the fourth generation of rapid test. At the peripheral level, the first blood sample for HIV testing is collected in the TB cabinets located at the FMCs and sent to the nearest peripheral HIV laboratory providing ELISA tests. The blood sample is accompanied by the special referral form with the patient information. Transportation of the blood sample and getting a result is carried out by the nurse, and sometimes the fee for blood sample transportation is also paid for by the nurse. The collection of the second blood sample is requested from the TB cabinets if the first sample is positive. Then, either the blood sample is sent to the second-level laboratory, or the patient is requested to attend in person, for further confirmation. The result feedback is communicated to the TB doctor only for cases of negative results. The confirmed positive results are communicated by the laboratory to the HIV service epidemiologist, who notifies (by telephone call) the TB doctor.

The country uses the HIV rapid tests procured by donor funds, and performed by NGOs, for testing of pregnant women and key vulnerable populations. However, the rapid test is not available at the TB institutions. This may cause problems with the delivery of blood samples to the laboratories and with receiving the test results, since transportation is not well organized, not financially secured and not safe. In addition, it is an additional burden to the patient who should visit the FMC/ART clinics for the second and confirmatory tests if the first test is positive. Blood sample transfer and getting confirmation for HIV-positive status requires from 2 weeks to 2 months, which may cause delay in start ART and affect the TB treatment results, especially in MDR-TB case when starting ART early, within 2 weeks after initiating TB treatment, is strongly recommended. ART and CPT for HIV-positive TB patients is decentralized and initiated by infectious disease doctors providing ART at FMCs and ART clinics. The quality of collaboration between infectious disease and TB doctors on ART and TB treatment, and possible drug interaction, varies from facility to facility, and from very good arrangements to arrangements which are not satisfactory. Monitoring of ART in hospitalized HIV-positive TB patients is not properly recorded, and therefore, it is not clear whether it has been done on a regular basis or not. ARV drugs and co-trimoxazole are not available in TB facilities and are supplied by the facilities providing ART (FMC or HIV centres). All information on a patient's HIV status, start of ART and CPT and IPT are recorded in the TB treatment register and on the patient's TB treatment card.

10.4 Review TB/HIV activities at facilities providing HIV services

According to the National HIV Protocols, HIV-positive people are routinely screened for TB at every visit to the HIV facilities, including the National and Regional HIV Centres, Bishkek HIV city centre and FMCs. TB screening is done based on the clinical TB symptoms, and if a minimum of one symptom is positive the patient with presumptive TB is referred to the TB service for further investigation and confirmation. If the patient with HIV has good adherence to ART or are in a

good health, the patient is invited to the facilities providing HIV services for routine TB screening minimum once every quarter. When a TB diagnosis is confirmed, the TB doctor prescribes TB treatment. In contrast with ART, the TB services is very centralized; only TB doctors can confirm TB diagnosis and prescribe TB treatment. Thus, the National HIV Centre cannot use two the Gene-Xpert machines (4 module) for TB testing, and instead PLHIV with presumptive TB are referred to the TB service for TB confirmation. This approach demonstrates an ineffective use of human and financial resources and should be revised in the light of the transition to a people-centred model of service provision. IPT is provided to HIV-positive patients after active TB has been excluded. The National Protocols suggest IPT for 6 months for both adults and children enrolled to HIV care, and every 2 years for TB patients who were successfully treated. Isoniazid is procured by the MoH and provided by the ART institutions for free. CPT is administered to PLHIV with active TB and to PLHIV with CD4 counts less than 200. Both the results of the TB screening and the administration of IPT and CPT to PLHIV are recorded in the ART Register (National Electronic Life Case-Based Database).

Recommendations

	Recommendation	Term, Q/Year	Responsible institutions
I Mechanisms for delivering integrated TB and HIV services			
1	Develop a strategic policy on TB/HIV collaborative activities (such as a roadmap) to develop the principles and model of collaboration, referral system, information and data exchange between the health care facilities providing TB and HIV (and hepatitis) services, including joint planning and regular programmatic data analysis, monitoring and evaluation. Ensure alignment with the National Transitioning Plan to secure sustainability.	Short to mid-term	MoH, National TB and HIV programmes, National Hep programme. WHO support will be provided if needed.
2	Consider TB/HIV and viral hepatitis collaborative interventions as an integral part of the next national strategic plans on TB, HIV/AIDS and hepatitis with clear objectives, action plan, budget and a monitoring and evaluation plan.	Mid- to long-term	MoH, National TB and HIV programmes, National Hep programme. WHO support will be provided if needed.
3	Consider including representatives from the hepatitis programmes in the Country Coordination Mechanism (CCM).	Short-term	MoH
4	Strengthen the role and function of the MoH Working Group on TB/HIV collaborative activities: (1) include representative from the hepatitis programme and civil society and community organizations; (2) define clear terms of reference and the role of each of the programmes in the joint response; (3) arrange joint	Short-term	TB/HIV Working Group

	TB/HIV/viral hepatitis planning, and monitoring and evaluation plan.		
5	Strengthen the coordination of subnational TB/HIV collaborative activities, by establishing regional/oblast level working groups.	Short-term	MoH and the national TB/HIV Working Group
6	Appoint a focal point/responsible person for TB/HIV/viral hepatitis coinfections and other comorbidities at all facilities providing TB and HIV services.	Short-term	Head of the TB and HIV facilities in coordination with the National TB and HIV Centres
7	Implement the newly approved joint Plan of action and provide WHO technical assistance if needed.	Short-mid- and long-term	Joint TB/HIV Working Group in coordination with National TB and HIV Centres
8	Develop a joint monitoring and evaluation plan, joint checklists and organize the joint TB/HIV monitoring visits with representatives from related programmes.	Short to mid-term	Joint TB/HIV Working Group in coordination with National TB and HIV Centres
9	In the HIV electronic database system, include the TB treatment regimen and in the TB register include the ART regimen.	Mid-term	National TB and HIV Centres
II Review of TB/HIV activities at health facilities providing TB services			
10	Improve the case management of patients with TB/HIV coinfection and TB and other comorbidities, and integrate a patient-oriented model of service delivery by: • implementing HIV rapid testing at TB facilities to decrease HIV detection time and allow early start of ART; • offer HIV testing to patients with presumptive TB in order to increase HIV testing coverage among key vulnerable populations and increase survival among LTBI; • involving infectious disease doctors providing ART on the MDR-TB council when discussing MDR-TB/HIV coinfected patients' treatment for TB and HIV to adjust drug interaction; • improve collaboration between TB doctors and infectious disease doctors providing ART by discussing treatment regimens for patients with coinfection and comorbidities; documenting on patient's medical cards TB and ARV treatment regimens and treatment monitoring for patients with coinfections;	Mid-term Mid-term Short-term Short-term	MoH and National TB and HIV Centres MoH and National TB Centre in coordination with National HIV Centre National TB Centre in coordination with National HIV Centre MoH and National TB and HIV Centres to provide guideline and MoH Order. Tb and HIV health providers to follow

	• with regard to the availability of ART drugs, CPT, HCV and OST treatment at the TB facilities: implement ART and CPT under direct supervision (ART and IPT DOT) along with TB and DR-TB DOT at the TB facilities.	Mod term	MoH and National TB and HIV Centres
11	With regard to the efficient use of the GeneXpert platform available in the HIV and TB programmes for joint use: consider using the GeneXpert of the National HIV Centre for TB detection; using the GeneXperts of the TB programme (24 units) for HIV viral load tests and HCV tests, including at TB hospitals (Kara Balta). Ensure training for laboratory personnel.	Mid-term	MoH to issue the order and National TB and HIV Centres to follow-up

11 TB in prisons

The prison system in Kyrgyzstan includes 16 facilities (including five pre-trial facilities) with a total population of approximately 9 000. Health care services for inmates of the penitentiary system are provided by the Medical Department of the State Service for Punishment Execution (SSPE). This department is subordinate to the Security Department. Health care staff working at the SSPE have a military rank; hence, the average salary is 2.5 times higher compared with staff working in the civilian sector. Currently, there is a shortage of doctors due to certain requirements needed for candidates to be be able to pass the Military Medical Commission examination under the Ministry of Internal Affairs (for example, specific requirements for height and weight are applied to military servants), and the Medical Department is looking for a way to address this issue.

An action plan for strengthening interdepartmental cooperation on TB control between the MoH and the SSPE has been approved.

TB screening in prison facilities is ensured through entry screening via questionnaire (plus chest X-rays in the biggest pre-trial detention centre, SIZO No. 1) and annual mass screening via questionnaire, sputum smear testing and Xpert MTB/RIF testing, which was introduced in 2016. Prisoners with presumed TB are transferred to the Prison TB Hospital based at Colony No. 31; patients identified in pre-trial detention centres are treated in situ. TB patients are mainly treated in the Prison TB Hospital, where the International Committee of the Red Cross (ICRC) has provided the appropriate infrastructure with regard to infection control measures.

The prison system follows the same diagnostic algorithm as the rest of the country. The laboratory network in the prison system performs smear microscopy and Xpert MTB/RIF testing. The prison system has three Xpert MTB/RIF instruments: one was provided by MSF and two were provided by the Global Fund. Reagents are provided by the Global Fund and quality control is performed by the NRL. Regular transportation of sputum samples from the Prison TB Hospital is carried out by vehicles, provided by the ICRC. Fuel for transportation is provided by ICRC and cars are served/run by the prison authorities. The NRL has three laboratory specialists funded by the SSPE.

A review of treatment cards from patients referred from pre-trial detention centres revealed low quality monitoring of MDR-TB treatment at SIZO No. 1. It is recommended that either 1) the capacity and quality of sputum testing, and the quality of sample transportation, to be improved at pre-trial detention centres, or 2) MDR-TB treatment is provided only at the Prison TB Hospital.

TB drugs are provided by the NCPP (National Centre of Phthisiology and Pulmonology): FLDs are purchased from the MoH budget and SLDs from the Global Fund project. The prison system has a consilium for enrolment to FLD treatment and a consilium for patient selection for SLD treatment. Enrolment to SLD treatment is done by the NCPP consilium. Reagents for clinical and biochemical analysis, and support with drugs for managing SLD adverse events, are provided by the ICRC.

SLD treatment in the prison system started in 2007. On average, two thirds of eligible patients are enrolled to SLD treatment; treatment outcomes had been successful for approximately one third of these by 2013. In 2012, ICRC introduced a comprehensive project to support TB control in the prison system through improved sputum transportation from the Prison TB Hospital to the NRL and ensuring the provision of some reagents and drugs, capacity-building and routine advisory support to health care personnel. As a result, the enrolment and treatment success rates for RR-TB patients have improved significantly.

Treatment with new and repurposed TB drugs had been initiated in the prison system. At the time of the site visit to the Prison TB Hospital, the observed patients would have benefited from strengthened treatment, according to the initial DST profile, including the patients with M/XDR-TB.

Methadone and syringe exchange services are available at the Prison TB Hospital and clearly reflected in the case history of the patients.

The Prison TB Hospital has good administrative infection control involving the segregation of patients into separate departments. There are 20 beds in the department for smear-positive DS-TB; 20 beds in the department for smear-negative DS-TB; 20 beds each for smear-positive and smear-negative patients in the department for patients who have refused treatment (40 beds in total); 55 beds in the department for TB patients with life sentences; 24 beds for vulnerable groups; 66 beds in the department for RR-TB cases (sub-departments: XDR-TB, 18 beds; smear/culture-positive RR-TB, 18 beds; smear-negative/culture-positive RR-TB, 18 beds; smear/culture-negative RR-TB, 18 beds); 20 beds in the department for polydrug-resistant TB; and 180 beds in the ambulatory department.

All departments housing smear-positive patients are equipped with UVG-devices. Natural ventilation is employed throughout this facility.

Recommendation

Recommendation	**Timeline**	**Responsible institution**
• To align the treatment regimens with WHO recommendations, as the current unjustified frequency of changes in treatment regimen and changes in the drugs used for M/XDR-TB cases can lead to acquired resistance to the new and reprofiled drugs (exactly as in the civilian sector).	Short-term	Medical Department of SSPE

12 TB and migration

12.1 Migration hotspots

Currently, the largest and most noticeable migration trend in Kyrgyzstan is labour migration. The main labour migration flows from Kyrgyzstan are mainly directed to two countries of the Customs Union – Russia and Kazakhstan. However, the Russian Federation's migration policy plays a very crucial role in shaping the external labour migration flows of the Kyrgyz population due to significant economic opportunities, powerful political influence, impact of cultural and historical factors and demand for labour resources.

The State Migration Service (SMS) under the Kyrgyz Government is an independent authority implementing national migration-related policies, enforcing the migration laws and regulations of Kyrgyzstan, and providing public services in the field of migration. Throughout the country, there are over 100 private employment agencies that contribute to the labour migration of Kyrgyz citizens. The State Migration Service's Hotline Centre (Information–Consultative Centre) provides employment services to citizens in three stages: 1) information, 2) domestic employment, 3) overseas employment. Also, the SMS communicates extensively with Kyrgyz citizens based in the Russian Federation via diasporas and its representation offices. The number of Kyrgyz citizens registered with the migration authorities by host countries in 2018 was: Russian Federation, 640 000; Kazakhstan, 35 000; Turkey, 30 000; USA, about 15 000; Italy, 5 500; Korea, 5 000; Germany,5 000; UAE,3 000; and Great Britain, 2 000.

The International Organization for Migration (IOM) actively works in Kyrgyzstan through its Country Office in Bishkek and its branch office in Osh region. IOM's activities are mainly aimed at providing legal support to migrant workers during their pre-departure period, with numerous awareness raising campaigns on countering human trafficking, employment consultancy, migrants' rights and more. Over 30 local NGOs are involved in IOM events. There were no specific information sharing activities for TB, except for the dissemination of a brochure on TB among migrant workers shipped as part of the Global Fund project being implemented in Kazakhstan.

The flows of external labour migration mainly originates from three provinces (oblasts) in the south of Kyrgyzstan: Osh, Jalalabad and Batken. These are predominantly agrarian regions, with the rural population making up 65–70% of the entire three provinces.

12.2 Policy

The National Programme Tuberculosis V for 2017–2021 adopted by Government Resolution No. 448 of 3 October 2017 highlights the need for prevention of TB among migrants. The strategy is concerned with the high TB incidence rate among external migrants and notes the need to develop and implement cross-border mechanisms for identification and treatment. Migrants are included as the high-risk priority group in the strategy to be dealt with through various interventions.

TB diagnostics and treatment in Kyrgyzstan are based on clinical protocols approved by the Order of the Kyrgyz Ministry of Healthcare No. 675, 13 December 2012. When a foreigner is diagnosed with TB, he/she may have access to treatment which is not free of charge. TB treatment will be provided when foreigner purchases a health insurance certificate with the General Medical Insurance Fund, at a rate of ~US$ 15 per month. With this policy, foreigners diagnosed with TB are hospitalized and treated in accordance with

the national TB treatment standards, including DR-TB. It should be noted that Kyrgyzstan is supplied with TB drugs at the expense of external donors (the Global Fund to Fight AIDS, Tuberculosis and Malaria).

Citizens of Kyrgyzstan who are returned from migration, and who have TB diagnosed upon their arrival back home, receive treatment in accordance with the national standards. If a Kyrgyz citizen, while outside their home country, has been diagnosed with TB and started treatment, his/her treatment regimen should be adjusted when returning to Kyrgyzstan for follow-up purposes according to the national standards, including DR-TB.

During the mission interviews carried out with returned five migrants with MDR-TB revealed that:

- when symptoms of disease manifested, four out five of the Kyrgyzstan citizens went to private clinics in the host country;
- in cases of suspicion of TB, the private clinics recommended that the person should leave the country immediately and start/continue treatment in Kyrgyzstan. Only in one case, a patient was offered to receive treatment at a TB hospital, but returned to Kyrgyzstan for family reasons and started treatment there;
- usually, migrant patients with TB symptoms could not immediately leave the receiving country, and stayed there for 3 to 20 days, living in the same room with 3 to 11 people, including children. Only one patient noted that the individuals residing together with him were examined for TB. In four out five cases, the patients did not know whether or not the individuals who had been living with them in the destination country were examined for TB;
- when travelling from the country of destination to the country of residence, the patients were not informed about the cough etiquette, and did not wear masks in the public transport etc.;
- three out of five respondents had contact with a TB patient in their families before leaving for labour migration.

12.3 Recording and reporting

TB cases among external and internal migrants are registered and recorded. There is a section in TB01 (the TB patient's medical record) where the patient's status as and internal or external migrant should be marked. These data are also filed to the national electronic TB register–electronic Internet-based system (ES/TB-KG).

Table 11.1 TB cases registered among external migrants (without prison sector data)

	2015	2016	2017	2018
Russia	4	58	199	176
Unknown	10	28	40	14
Kazakhstan	2	8	7	2
Tajikistan	2	2	5	6
Uzbekistan	0	2	1	3
Total	18	98	252	201

Source: Data provided by the National Centre of Phthisiology of Kyrgyzstan

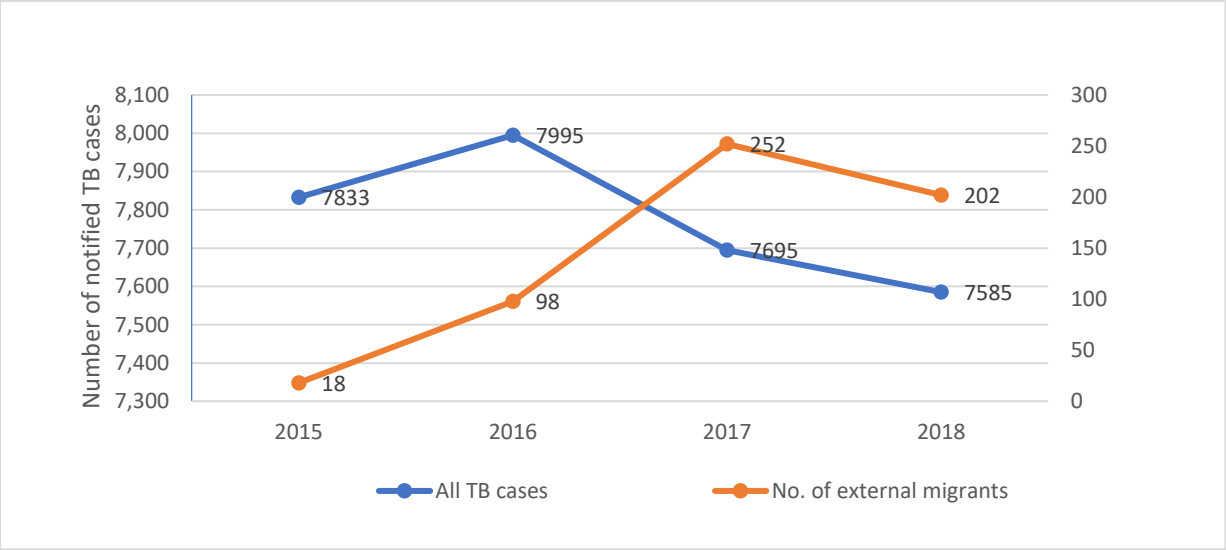
"Russian Federation" and "Unknown" are indicated as the country of origin in 94.5% of cases in the "External migrant" category in 2014–2019 (Table 11.1); of the 569 external migrants who were registered as TB patients in 2015–2018, 57 were identified as MDR/XDR-TB cases, or 10% of the total.

As per the guidelines to the TB01 form, "External migrant" is defined as "a patient who has arrived from a near or remote country". It should be noted that during the registration of TB cases, the external migrant is used to refer to foreigners with TB who have been diagnosed in Kyrgyzstan, as well as to Kyrgyz citizens returned from migration. This approach prevents from proper counting (burden) of TB cases among the returned Kyrgyz citizens and foreign citizens in Kyrgyzstan.

The link between the length of the migration period and the risk of developing TB has not been determined; therefore, health professionals have arbitrarily determined this time frame. In some cases, a minimum 6-month period outside Kyrgyzstan is taken as reference for a TB case with external migration. In other cases, the time range to be taken as a basis for TB cases associated with external migration cannot be specified.

It is not mandatory to tick the "External migrant" box when transferring data from TB01 to the e-TB register. Therefore, there is a risk that the operator may skip the "External migrant" box in the electronic form despite the mark in printed medical records.

Figure 11.1 Share of TB cases notified among the Kyrgyz citizens and external migrants



The share of TB cases in the External migrant category is growing among all TB cases notified in Kyrgyzstan, from 0.2% in 2015 to 3.3% in 2017, and 2.7% in 2018 (Figure 11.1).

12.4 Informational education activities for potential and returned migrants

Citizens of Kyrgyzstan are provided information about symptoms, access to TB diagnostics and treatment through Health Promotion Committees, Rural Health Committees, Family medicine centres, from the engaged NGOs, including the National Red Crescent Society. These awareness-building efforts are largely carried out during a 1-month campaign before and after World Tuberculosis Day. The informational education resources on TB, developed under the USAID "Defeat TB" and other projects implemented by

partners, are used for this purpose. No TB-related informational educational materials for migrants were available in the places visited during the mission.

Rural Health Committees and NGOs are also involved in awareness raising on labour migration. The information shared with the public is related to the legal aspects of migration, such as countering human trafficking, formalizing labour relations in receiving countries, and other topics.

Any and all social support to TB patients is funded by the Global Fund projects. In 2015–2017, the National Red Crescent Society implemented a social assistance programme for TB patients, with financial support from USAID. However, this assistance was provided to a selected and approved category of patients only, and was not available to everyone. According to the staff of the National Red Crescent Society of Jalalabad oblast, around 50% of TB patients who were recipients of social assistance, used to be migrant workers.

12.5 Cooperation with the receiving countries of labour migrants

The development and conclusion of a bilateral agreement between Kazakhstan and Kyrgyzstan on cross-border TB control is ongoing. In 2016, in pursuance of the Vice-Minister's mandate (No. 20–535, as of 15 February 2016), the Ministry of Healthcare and State Migration Service of Kyrgyzstan issued a joint directive on 18 March 2016 regarding the establishment of a multidisciplinary Working Group on TB control among migrants. The Working Group was responsible for drafting the bilateral agreement between Kazakhstan and Kyrgyzstan on cross-border TB control. To date, the text of the agreement has been endorsed, and the approval is pending with the ministries of healthcare of the two countries.

Recommendations

	Recommendation	Term	Responsible body for implementation
1	Resume activities of the Working Group on Migration established in Kyrgyzstan, with a focus on TB prevention, diagnostics and treatment among potential migrants, foreigners and repatriates.	Short-term	MoH
2	The Working Group should develop and implement an annual multidisciplinary action plan for TB prevention and treatment among migrant workers.	Short-term	Working group members
3	Develop information materials on TB, taking into account the characteristics of the potential migrants.	Short-term	National Centre of Phthisiology, Health Promotion Committees
4	Raise awareness of the potential migrants on TB symptoms, cough etiquette, access to TB diagnostics and treatment in their countries of destination.	Short-term	National Centre of Phthisiology, Health Promotion Committees, Rural Health Committees, local NGOs, State Migration Service of Kyrgyzstan
5	Ensure synergy of awareness-building efforts on migrants' rights and TB-related issues by involving every stakeholder responsible for migration and health care, local NGOs, and Rural Health Committees.	Short-term	National Centre of Phthisiology, MoH, Health Promotion Committees, Rural Health Committees,

			local NGOs, State Migration Service of Kyrgyzstan, IOM
6	Raise awareness of migrant workers on TB, access to TB diagnostics and treatment via the SMS Representation Offices and diaspora in Russian Federation and Kazakhstan.	Mid-term	MoH, State Migration Service of Kyrgyzstan, IOM,
7	Advocate the uploading of information on TB prevention, diagnostics and treatment on mobile applications, such as "MigAsia+" app https://play.google.com/store/apps/details?id=kg.rce), and "M-help" (https://mi-help.ru/), and use social media to disseminate the above information.	Short-term	MoH, State Migration Service of Kyrgyzstan, IOM,
8	Advocate a free preventive screening for TB after returning home from labour migration.	Short-term	MoH, Family medicine centres,
9	Register, file and examine individuals who have been in contact with TB patients returned from migration, especially the patient's family members.	Short-term	MoH, National Centre of Phthisiology, Family medicine centres, Sanitary epidemiology centre
10	Provide clear definitions in the national guidelines for TB cases associated with migration (e.g. length of stay, diagnosis and initiation of treatment abroad, etc.).	Short-term	MoH, National Centre of Phthisiology,
11	Introduce the registration of TB cases among foreigners and returned migrants-Kyrgyz citizens in the TB recording and reporting systems.	Short-term	National Centre of Phthisiology
12	Make marking the Migration box in e-TB register obligatory (i.e. the electronic system should not allow to the next section to be entered without the patient's migration status having been entered).	Short-term	National Centre of Phthisiology
13	Develop and approve bilateral or multilateral agreements on cross-border TB control with countries receiving migrant workers from Kyrgyzstan.	Mid-term	MoH, National Centre of Phthisiology
14	Exchange electronic data on TB cases among migrant workers in receiving countries, corresponding with the authorities on a regular basis to ensure timely examination and treatment of contacted individuals.	Mid-term	MoH, National Centre of Phthisiology
15	For follow-up purposes, exchange data on a regular basis for patients who travel from one country to another without having completed their treatment regimen.	Mid-term	MoH, National Centre of Phthisiology

13 Partnership and advocacy, communication and social mobilization (ACSM)

13.1 Advocacy, communication and social mobilization (ACSM)

Great progress has been made in the area of advocacy, communication and social mobilization (ACSM), which has been integrated into the National TB Programme. ACSM activities have been implemented to address four key challenges: 1) raising community awareness on TB, 2) mobilizing local administration and NGOs towards a TB response, 3) expanding the number of partners involved with ACSM through its institutionalization, and 4) combating stigma and discrimination.

An ACSM focal person has been appointed within NTP, and responsible persons for ACSM activities have been appointed at all regional levels. The TB ACSM plan is developed on an annual basis jointly with all partners, approved by the MoH and disseminated to the regional (oblasts) level. Based on the approved ACSM plan, the regional TB centres develop their annual ACSM plans and report on their implementation on a quarterly basis. The ACSM plan mainly includes activities implemented by partners.

There is no budget attached to the ACSM plan, hence, no implementation is possible except for activities planned by partners, although stakeholders have aligned their activities to the objectives and priorities of the NTP. The activities included in the TB ACSM plan do not always address the existing problems and not all activities included in the plan are implemented countrywide. In the regions, the implementation of this plan mainly includes Information, Education Communication (IEC) campaigns devoted to World TB Day (WTBD) and the dissemination of IEC materials. Other activities targeting vulnerable populations, patient support, NGO involvement, etc. are carried out only in the pilot regions of the projects implemented by partners.

The ACSM plan has no indicators and there is no monitoring mechanism in place to track and measure the achievement of the objectives.

ACSM Thematic Working Group

An ACSM Thematic Working Group (TWG) is actively functioning with involvement of all stakeholders. The TWG has 23 members from government institutions as well as international donors and NGOs. The TWG meets on a quarterly basis. Most members come together and participate in the work of the TWG to plan World TB Day activities and campaign. The main function of the TWG is to approve all IEC material developed by partners.

A standardized approach is used to develop IEC materials for TB to ensure dissemination of reliable and accurate TB information. Any material that is to be disseminated in the country needs to be reviewed by the TWG and approved by the special commission under the MoH. Twelve key messages on TB for the general population were developed by TWG and approved by Order of

the MoH. A large number of leaflets on TB were available in many of the health facilities visited by the team.

Although the NTP's programme Tuberculosis V for 2017–2021 includes a short section on interaction with civil society, there is lack of guidance on community engagement with TB detection, treatment support and prevention. The budget for ACSM activities is inadequate, or unavailable, at different levels. Monitoring and evaluation of the impact of ongoing ACSM activities has been limited, which constrains the implementation of evidence-based approaches. The emphasis of current activities at the oblast level is limited to the IEC campaign devoted to World TB Day, with lower priority being given to addressing the existing problems with late case detection and poor treatment outcomes.

Recommendations

	Recommendation	**Term (short, mid, long)/Q, Year**	**Responsible institution**
1	Develop a national ACSM/community engagement strategy based on an analysis of the situation and studies conducted in the country,[20] with the active participation of civil society and the affected communities. The strategy should include indicators, a monitoring and evaluation plan, and a budget for its implementation.	Short-term	NTP, ACSM TWG and partners
2	Strengthen implementation of the ACSM plan, where results are measured. Advocate for provision of funds and appropriate financial mechanisms for civil society/community engagement, including monitoring and evaluation of their contribution to achievement of National TB Programme goals.	Mid-term	NTP and partners
3	Involve representatives of TB affected communities in the ACSM Thematic Working Group; ensure their participation in planning, implementation and evaluation of ACSM activities.	Short-term	NTP and partners

[20] 1) Baseline assessment Kyrgyzstan: APMG Health, Global Fund. Scale up programmes to reduce human rights barriers to HIV and tuberculosis services. Geneva: The Global Fund; 2018. (https://www.theglobalfund.org/media/8145/crg_humanrightsbaselineassessmentkyrgyzstan_report_en.pdf?u=637066568320000000, accessed 26 November 2019).; 2) Assessment of the socio-economic factors, including gender-specific, influencing access to health services by patients with tuberculosis in the Kyrgyz Republic, USAID Defeat TB project, May 2018; 3) Assessment of public awareness on tuberculosis, attitude towards ambulatory TB treatment, including stigma and discrimination towards TB patients' in Jalalabad region of Kyrgyzstan, USAID Defeat TB project, 2017; 4) Assessment of public awareness on tuberculosis, attitude towards ambulatory TB treatment, including stigma and discrimination towards TB patients' in Talass region of Kyrgyzstan, USAID Defeat TB project, 2018.

13.2 Access to services and patient support

Early diagnosis and prompt initiation of treatment is essential for an effective TB control programme. Delay in TB diagnosis and treatment plays a major role in increasing the size of the infectious pool of TB. Along with problems associated with the late diagnostics of TB, there is a low treatment success rate and a high LTFU rate among RR/MDR-TB patients in Kyrgyzstan (23.4% in the 2016 cohort).

According to the baseline assessment "Scale up programmes to reduce human rights barriers to HIV and tuberculosis services" conducted in Kyrgyzstan in 2018, stigma, the perceived high cost of TB care, and lack of proximity to a health centre remain as an identified major barrier to timely health care seeking, treatment initiation and treatment completion. People with TB living in rural areas often end up in clinics and diagnostic centres at a very late stage of the disease due to high level of stigma and discrimination and lack of access to information on TB transmission and its curability, and diagnostic services.[21]

Results of interviews with TB patients

Interviews conducted by the review team with patients show that, along with the stigma from society, TB patients often feel self-stigmatization. People with TB symptoms tend to delay seeking treatment due to fear and shame of having others know of their condition. Especially for young people diagnosed with TB, patients expressed the desire to hide the disease as it impacts their future marriage and livelihoods. Some acknowledged that they would not attend health facilities to take drugs, as others may learn that they have TB. In such cases, preference given to involvement of public/treatment supporters (family DOT), volunteers and other innovation methods, such as VDOT, which are being introduced into the country by various of the partners (USAID Defeat TB programme, USAID Challenge TB programme, MSF, UNDP/GF grant, Red Crescent Society). Strong involvement of family and community members providing treatment support was observed in the USAID Defeat TB and Challenge TB programme pilot sites visited.

TB stigma and discrimination (study results and observation)

Stigma and discrimination related to TB are experienced by both men and women in Kyrgyzstan. According to the study conducted by USAID Defeat TB programme for the young man, TB is associated with a risk of losing the status of a breadwinner, the head of the family, and feelings of guilt. If a young woman, a daughter-in-law, becomes ill, the family environment may not be loyal to her and may even carry out violence after the diagnosis of the disease, or she may

[21] Baseline assessment Kyrgyzstan "Scale up programmes to reduce human rights barriers to HIV and tuberculosis services", May 2018, APMG Health, Global Fund (https://www.theglobalfund.org/media/8145/crg_humanrightsbaselineassessmentkyrgyzstan_report_en.pdf?u=637066568320000000).

experience increasing discrimination and violence during treatment, including a ban on reproduction, economic violence (refusal to give money for travel), and physical violence.

For a young woman, her family role especially affects the timeliness of access to medical services and treatment. The presence of young children becomes a critical factor for some young woman: some women were not able go for examinations, subsequent hospitalization or full outpatient treatment because they had no one in the family to take care of their young children.

The results of the study show that the causes of the treatment interruption are distrust in the competence of doctors for a whole list of reasons (distrust of drugs effectiveness, the occurrence of adverse reactions and, in fact, distrust of doctors). The next reason is low patient awareness of the consequences of treatment interruption. And, finally, stigma is also mentioned as one of the reasons for treatment interruption: sometimes a break occurs due to the fact that the patient, in an effort to avoid stigma, "demonstrates" to his relatives and friends the absence of the disease by stopping the medication.[22]

Calculations of standardized stigma indicators used at the same study – "indices" for TB patients –show stigmatization levels above the average and achieved 30.9 (out of 50) points for "Community attitude to tuberculosis patients", and 29.9 points for "Attitude of patients to tuberculosis patients".[23]

Patient education and counselling

The most difficult part of the TB treatment for many patients is the uncertainty of the treatment duration and the uncertainty of the likelihood of a cure. Knowledge of TB treatment, its duration and the possible side-effects of drugs was found to be lacking in the TB patients interviewed by the review team. Another significant finding from the interview shows that some providers are actually afraid to manage TB cases, particularly MDR-TB. This was seen to correspond to insufficient counselling of TB patients, and suboptimal provider and patient interaction.

In order to ensure regular patient education and counselling, patient's schools were established in TB hospitals in 2012. Patient's schools are functioning, but nurses who are responsible for conducting the information sessions for the patients need to be trained as the last training on communication/counselling were conducted in 2012; it is also necessary to revise existing topics for information sessions, including the counselling flipchart and materials.

The review team noted a lack of on-the-job guides or tools to be used for counselling and patient education in both inpatient and outpatient's facilities. The existing materials are outdated and

[22] Assessment of the socio-economic factors, including gender-specific, influencing access to health services by patients with tuberculosis in the Kyrgyz Republic, USAID Defeat TB project, May 2018.
[23] Standardized stigma rates range from 0 to 50. High rates correspond to a high level of stigma.

do not include information on the new TB diagnostics techniques and the new treatment regimens for DR-TB.

Recommendations

	Recommendation	**Term (short, mid, long)/Q, Year**	**Responsible institution**
1	Address the high default rate among MDR-TB patients. Operational research is recommended to fully understand the financial, logistic, medical, social and other barriers to treatment compliance. The review team recommends that all modalities to address patient barriers be considered during the introduction/expansion of the new DR-TB treatment regimens, including the evidence-based use of incentives.	Short-term	NTP and partners
2	Implement an injection-free regimen to treat people with DR-TB, according to WHO recommendations.	Mid-term	NTP and partners
3	Expansion of the best innovative practices introduced in the country to support adherence to TB /MDR-TB treatment, with involvement of public supporters (family DOT) and case managers, use of video DOT (VOT).	Short-term	NTP and partners
4	Outsourcing: Some of the administrative and non-specialist tasks can efficiently be outsourced to the NGO sector. The review team recommends that the NTP and partners build capacity to outsource some tasks to local NGOs, such as outreach and referral to TB diagnostics, provision of psychosocial support to TB patients including counselling and health education, assistance on contact tracing, and the administration of DOT/VOT.	Mid-term	NTP, MoH and partners
5	Creation of on-the-job tools: counselling flipchart, guide for treatment supports.	Short-term	NTP, Health Promotion Centre, partners
6	Conduct refresh training sessions on interpersonal communication/counselling skills for health providers.	Short-term	NTP and partners

13.3 Partnership and civil society involvement

Village health committees

TB health promotion in Kyrgyzstan is conducted by the Health Promotional Centres as part of their mission and function. Village Health Committees (VHC) were established in 2010 under the coordination and supervision of Health promotion centres. VHCs function with a few administrative staff and a variable number of volunteers who are carefully selected from community leaders (teachers, woman leaders, religion leaders etc.) and who are well trained. These volunteers visit households in their communities, and raise awareness of TB at schools, mosques, or during weddings and ceremonies. The activities conducted by them are regular, but limited and do not focus enough on key and vulnerable populations. The NTP should encourage an approach involving VHCs and other health service stakeholders that emphasizes TB within the health education programme and encourages a more practical focus on key populations in each region. Considering the high level of stigma related to TB, the affected population tends to hide, for fear of arousing suspicion within the community. In this regard, community leaders have a better access to communities and households than health workers, whose presence can increase stigma.

VHC members have been trained to educate the population, screen and refer presumptive TB cases for diagnosis and treatment, and to encourage positive health seeking behaviours in their communities. However, in the southern regions visited by the review team, VHC activities were limited to conducting information campaign once a year, as part of World TB Day. VHCs are well-placed to develop comprehensive approaches to all the challenges faced by the population to access TB services and to incorporate TB activities as part of a broad spectrum of health and social interventions.

Collaboration and advocacy among NGOs

Kyrgyzstan has become the country with the highest NGO density in Central Asia.[24] As for TB NGOs, Kyrgyzstan has not yet reached a critical mass to substantially contribute to TB case-finding and treatment outcomes. This may be due to a number of reasons: 1) the limited support being given by the NTP and partners to NGOs to sustain initiatives in case-finding and treatment support, and 2) many multisectoral alliances at different levels (national, regional and rayon) have been formed, but without enough financial support to be able to perform their roles and contribute to the achievement of the overall goal of the TB programme.

[24] Garbutt A, Heap S (eds). Growing civil society in Central Asia, Occasional Papers Series no. 39, INTRAC's First Central Asia Regional Conference, Almaty, Kazakhstan, June 2002. INTRAC (https://www.intrac.org/wpcms/wp-content/uploads/2018/11/OPS39final.pdf, accessed 26 November 2019).

The review team met representatives of six NGOs: five in Bishkek were met at the same time, and one NGO was met separately, during the visits in the regions. The picture described by these agencies was consistent, except for one NGO. The NGOs spoke about good working relations with both the NTP and local health services. NGOs have clear understanding of their roles in increasing awareness of TB among key population, screening for TB, widening access to populations at risk, and assisting individual patients in treatment compliance.

Most of the civil society organizations have focused more on TB advocacy efforts and less on service delivery support. There is no single standard package of TB services that could be provided by NGOs.

One NGO representative shared their concern about the unwillingness of the NTP to cooperate with NGOs on issues related to the lack of country funding for the procurement of second-line drugs, problems with the registration of these drugs in the country and the lack of NGO involvement in the development of the Road Map on transition from donor to country funding.

NGOs have some informal interactions among each other, but these are not regular organized. As a result, their abilities to share experiences, to interact with the NTP, and to engage in any broader advocacy, are limited. NGOs engaged in TB activities should look to improve these areas by improving networking among themselves and the NTP should encourage this initiative. Support should also be given to the establishment/expansion of TB patient group/coalition(s) and their participation in advocacy and awareness rising activities.

The review team observed a good practice of support and capacity-building provided by the NTP and partners to the local community organization “TB people”, created by former TB patients.

There is a network of NGOs for TB and migration, which do not have financial support and are currently involved in advocacy activities and provision of support to migrants. Some of the NGOs meet in the context of other networks, such as those engaged in HIV activity.

The NTP is currently engaged in the preparation of a package of social contracts with the NGOs, to be submitted to the government. If successful, NGO TB activity will be funded by the state budget. NGOs expect to be consulted by the NTP, once a tentative draft is available. Long-term sustainability of the NGO role in support of the NTP is dependent on the funding of their activities.

The GF support to TB activities is expected to be available for 3 more years, after the end of current grant, sufficient domestic funding should be ensured for the effective operation of NGOs.

Recommendations

	Recommendation	**Term (short, mid, long)/Q, Year**	**Responsible institution**

1	Intensify TB communications activity of Health Promotion Centres and VHCs, focusing on key and vulnerable populations.	Short-term	NTP, Health Promotion Centres
2	Involve VHC members in assisting with contact tracing and provision of treatment support.	Short-term	NTP, partners
3	Continue/expand training and involvement of religious and community leaders in TB prevention and control efforts.	Mid-term	NTP and partners
4	Contract NGOs, to facilitate access to at-risk and vulnerable population including screening, referral and treatment adherence support.	Short-term	NTP, partners and donors
5	Establish and strengthen the link of NGOs and NTP at national and regional levels.	Mid-term	NTP and NGOs
6	Improve networking of NGOs engaged in TB activity to share experiences, interact more effectively with the NTP, and engage in broader TB advocacy, as well as service delivery.	Short-term	NGOs, partners
7	Advocate for the provision of social contracting to ensure NGO's activities in the TB field.	Short-term	NTP, MoH and partners
8	Engage individuals, current or recent TB patients, who are willing to join NGOs and be drawn into TB field activities. Should national or local patient groups emerge, they should be encouraged and supported.	Short-term	NTP and partners
9	One of the main challenges of monitoring and implementation of community-based TB activities has been the lack of standardized indicators. The core indicators to measure the implementation of community-based activities recommended by WHO ENGAGE–TB should be introduced by the NTP. The suggested approach needs to be included in the TB monitoring system of all stakeholders and linked with the national monitoring and evaluation system of the NTP.	Mid-term	NTP and partners

Annex 1

The report on Epidemiology review in Kyrgyzstan is available at National TB Control Program (NTP of Kyrgyzstan up on request.

Annex 2

Case-finding and the TB laboratory network data

Table A2.1 Implementation status of the National Laboratory Strategic Plan

№	Activity	**Status** *(fulfilment –Yes, No, Partly)*
	1. TB laboratory network	
1.1	Approve the updated structure of the TB laboratory network	Yes
1.2	Conduct a phased reorganization of TB laboratory services:	
1.2.1	Change the number and function of existing TB culture and microscopy laboratories	Partly
1.2.2	Reallocate existing GeneXpert platform in accordance with the proposed plan	Partly
	2. Human recourses	
2.1	Finalize and approve a detailed human resource requirement plan for all TB laboratories of the network	Partly
2.2	Develop a human resource plan for TB laboratory services	
2.2.1	Analyse an actual situation of workload and staff in the TB laboratory network of Kyrgyzstan	Yes
2.2.2	Develop a detailed plan of education and training system for personnel	Partly
2.2.3	Develop and implement an employee motivation system	Partly
	3. Infrastructure	
3.1	Generate applications for the repair of all TB laboratories that have identified critical infrastructure problems	No
3.2	Plan and carry out reconstruction and/or repair of TB laboratories with problem infrastructure	Partly
3.3	Purchase and install the missing electricity generators for TB culture laboratories. Provide them with fuel	Partly
3.4	Negotiate with regional representatives of the Ministry of Energy and Industry on the issue of providing electricity to TB laboratories on an ongoing basis	No
	4. Laboratory equipment	
4.1	Create a general register of all laboratory equipment	Partly

4.2	Develop specifications for all types of specialized laboratory equipment	Partly
4.3	Equip all TB labs with fluorescent microscopes	Yes
4.4	Plan and purchase the missing equipment in the laboratories of the network	Partly
4.5	Plan to purchase uninterruptible power supplies (UPS) in the TB laboratories for crucial laboratory equipment	Partly
	5. Maintenance	
5.1	Approve the national guidelines for management and maintenance of laboratory equipment	No
5.2	Develop and implement a programme for maintenance of laboratory equipment and engineering systems	Partly
5.3	Create a team of qualified engineers for maintenance of crucial lab equipment	Partly
5.4	Train local specialized engineers for certified procedures of laboratory equipment maintenance	No
	6. Procurement	
6.1	Develop and implement a unified procurement documentation system	Partly
6.2	Develop a complete register of consumables and reagents with appropriate of technical specifications for tender procedures	Yes
6.3	Unify and centralize the process of requesting and purchasing equipment, reagents, consumables	Partly
6.4	Implement a functional mechanism for customs clearance of laboratory goods	Yes
	7. Transportation and logistic	
7.1	Implementation of transportation system in TB laboratory network	Partly
7.2	Install and connect telephone lines in all TB laboratories and microscopic centres in the country	Partly
7.3	Procure and install fax machines in each TB laboratory and in each medical institution that sends samples to the TB laboratory. Develop a standard for the transfer of laboratory results	No
7.4	Connect all TB culture and DST laboratories to the Internet	Partly
	8. Laboratory information and data management	
8.1	Develop updated laboratory registration and reporting forms	Yes
8.2	Finalize and implement unified system of electronic registration of laboratory tests in accordance with the developed documentation system	Partly
8.3	Develop and implement a lab module of electronic TB register for registration of laboratory results	Partly
8.4	Develop and implement uniform detailed forms of reports for each level of TB laboratories	Yes

8.5	Approve the plan for external quality assessment (EQA):	
8.5.1	Extend the TB microscopy EQA for all planned microscopy labs	Yes
8.5.2	Develop and implement EQA procedures for TB culture and molecular tests	No
8.5.3	International EQA for DST: NRL and OIRL	Yes
9. Financing		
9.1	Create a working group to analyse the financing and definition of the laboratory network budget	Yes
9.2	Calculate full costs of TB laboratory services in the country	Partly
9.3	Approve funding for TB laboratory service in framework of NTP as an independent item in the state budget	No
10. Quality management system		
10.1	Approve the developed project of the laboratory TB diagnostic algorithm	Yes
10.2	Develop and approve the national guidelines for laboratory diagnostic of TB	No
10.3	Finalize and approve the quality management handbook	Yes
10.4	Organize a working group on implementation of the QMS in the TB lab network	Partly
10.5	Develop a comprehensive strategic plan for the TB laboratory network	No
10.6	Develop a package of unified SOPs for TB culture and microscopy laboratories	Yes

Source: National Laboratory Strategic Plan, 2013

Table A2.2 Laboratories of the Kyrgyz TB laboratory network[25]

Type	Sector	Number	EQA	Supervision & Training
Microscopy		**109**	100% blind re-checking	Sporadically by Oblast Reference Labs
	TB	20		
	PHC	87		
	Penitentiary	2		By ICRC until end 2019
Xpert MTB / RIF & Microscopy		**24**		
	TB	9	Calibration kits of manufacturer.	
	PHC	12	No EQA	
	Penitentiary (Sizo No 1)	3		
Culture	& microscopy (Osh, [Kara Balta])			(Kara Balta stops end of 2019)
	& Xpert (Issyk-Kul, Jalalabad, Naryn, Talas)	**5**	No EQA	Plan to provide future training & supervision by KNCV
DST	NRL & Xpert MTB/RIF	1	Panel tests from SRL	Yearly by SRL

[25] Data for Tables A2.2–A2.11 is taken from reports provided by the NRL.

Table A2.3 Basic characteristics of the National Reference Laboratory

Location	NTBC, National Tuberculosis Centre, Bishkek
Culture	solid (LJ), fluid (MGIT)
DST	FLD (MGIT), SLD (MGIT) New antituberculotic drugs (Bdq, Cfz, Dlm, Lzd)
EQAs 2014–2018	Passed with 100% correct results
Molecular diagnostics	Genotype MTBDR*plus* (HAIN) Xpert MTB/RIF **NEW:** Whole genome sequencing
Infrastructure	Constructed and commissioned in 2013; Still in a very good condition
Equipment	2x BSC 2A 3x functional autoclaves regular maintenance
Biosafety	Technically meeting WHO standards of medium and high risk TB laboratories
Supervision	Regular supervision, trainings and EQA by SRL
QMS	>80% on SLMTA scale; ISO 15189 accreditation planned for 2020 strong support from SRL partner
Operational research	Use of whole genome sequencing for TB outbreak and transmission management Latent TB infection among health care workers diagnosed by QuantiFERON-TB Gold *plus*

Table A2.4 Workload (number of analyses) of the National Reference Laboratory in 2018

Test	Number of analyses
Smear microscopy	
• bright field, Ziehl-Neelsen	4 540
• fluorescence, Auramin O	20 349
PCR-based analyses	
• Xpert MTB/RIF	2 061
• Genotype MTBDR*plus*	8 706
• Genotype MTBDR*sl*	3 428
Culture	
• solid on Loewenstein-Jensen	20 349
• fluid in MGIT	10 018
DST	
• FLD-DST	2 461
• SLD-DST	1 759

Table A2.5

GeneXpert laboratories of the public health system and TB laboratory network with numbers of tests performed and their results.

Xpert MTB/RIF test result	Total number of Xpert MTB/RIF tests	Number of MTB negative results	Number of MTB positive results	Number of MTB positive RIFs results	Number of MTB positive RIFr results	Number of MTB positive RIF indeterminate results	Number of errors	Number of invalid results	No result
Bishkek City TBC	1 846	1 279	492	360	123	9	56	18	1
%		*69.3*	*26.7*	*73.2*	*25.0*	*1.8*	*3.0*	*1.0*	*0.1*
NRL, Bishkek	2 040	1 483	552	385	159	8	9	3	2
%		*72.7*	*27.1*	*69.7*	*28.8*	*1.4*	*0.4*	*0.1*	*0.1*
Jalal-Abad TBC	2 443	1 956	426	286	136	4	48	2	11
%		*80.1*	*17.4*	*67.1*	*31.9*	*0.9*	*2.0*	*0.1*	*0.5*
Suzak CFM	697	607	81	53	27	1	8	0	1
%		*87.1*	*11.6*	*65.4*	*33.3*	*1.2*	*1.1*	*0.0*	*0.1*
Kara-Kul CFM	16	10	2	2	0	0	2	0	2
%		*62.5*	*12.5*	*100.0*	*0.0*	*0.0*	*12.5*	*0.0*	*12.5*
OIRL, Osh	2 223	1 619	520	416	100	4	45	8	31
%		*72.8*	*23.4*	*80.0*	*19.2*	*0.8*	*2.0*	*0.4*	*1.4*
Uzgen CFM	951	753	165	141	24	0	22	5	6
%		*79.2*	*17.4*	*85.5*	*14.5*	*0.0*	*2.3*	*0.5*	*0.6*
Nookat CFM	307	237	60	43	16	1	11	1	1
%		*77.2*	*19.5*	*71.7*	*26.7*	*1.7*	*3.6*	*0.3*	*0.3*
Batken TBC	812	676	113	90	22	1	18	0	14
%		*83.3*	*13.9*	*79.6*	*19.5*	*0.9*	*2.2*	*0.0*	*1.7*
Kysyl-Kiya CFM	256	192	55	43	11	1	5	2	1
%		*75.0*	*21.5*	*78.2*	*20.0*	*1.8*	*2.0*	*0.8*	*0.4*

Talas TBC	224	95	96	53	40	3	5	23	5
%		*42.4*	*42.9*	*55.2*	*41.7*	*3.1*	*2.2*	*10.3*	*2.2*
Naryn TBC	168	133	30	20	8	2	5	0	0
%		*79.2*	*17.9*	*66.7*	*26.7*	*6.7*	*3.0*	*0.0*	*0.0*
Issyk-Kul Balykchy	267	228	29	21	8	0	3	6	1
%		*85.4*	*10.9*	*72.4*	*27.6*	*0.0*	*1.1*	*2.2*	*0.4*
Issyk-Kul TBC	614	523	82	53	29	0	9	0	0
%		*85.2*	*13.4*	*64.6*	*35.4*	*0.0*	*1.5*	*0.0*	*0.0*
Sokuluk	833	596	196	137	58	1	35	0	6
%		*71.5*	*23.5*	*69.9*	*29.6*	*0.5*	*4.2*	*0.0*	*0.7*
Tokmok	767	649	105	68	35	2	27	0	0
%		*84.6*	*13.7*	*64.8*	*33.3*	*1.9*	*3.5*	*0.0*	*0.0*
RPTB Kara Balta	1 287	1 171	149	103	45	1	24	0	5
%		*91.0*	*11.6*	*69.1*	*30.2*	*0.7*	*1.9*	*0.0*	*0.4*
Aksy CFM	485	400	54	47	7	0	18	1	12
%		*82.5*	*11.1*	*87.0*	*13.0*	*0.0*	*3.7*	*0.2*	*2.5*
Leylek CFM	169	125	20	12	7	1	19	2	2
%		*74.0*	*11.8*	*60.0*	*35.0*	*5.0*	*11.2*	*1.2*	*1.2*
I-Ata	832	579	195	139	54	2	31	0	25
%		*69.6*	*23.4*	*71.3*	*27.7*	*1.0*	*3.7*	*0.0*	*3.0*

24 GeneXpert machines are installed in the country: two in prison colony 31, and one each in the other laboratories. Laboratories of the prison sector and of Kara Suu (MsF) are not presented in this table as detailed figures were not shared with the review team.

Table A2.6 Workload of GeneXpert laboratories

GeneXpert lab	tests/year	mean/year	min, max, mean per day
Kara-Kul CFM	16		
Naryn TBC	168		
Leylek CFM	169		
Talas TBC	224	236.5	min/d 0.1 max/d 2.0 mean/d 0.9
Kysyl-Kiya CFM	256		
Issyk-Kul Balykchy	267		
Nookat CFM	307		
Aksy CFM	485		
Issyk-Kul TBC	614		
Suzak CFM	697		
Tokmok	767		
Batken TBC	812		min/d 2.0
I-Ata	832	1 023.2	max/d 6.0
Sokuluk	833		mean/d 4.1
Uzgen CFM	951		
RPTB Kara Balta	1 287		
Kara Suu	1 424		
Bishkek City TBC	1 846		
NRL, Bishkek	2 040	2 138.0	min/d 6.0 max/d 10.0 mean/d 8.6
OIRL, Osh	2 223		
Jalal-Abad TBC	2 443		
TOTAL	**18 661**		

Table A2.7 Diagnostic tests performed in 2018

Test	Total
Smear microscopy	103 919
Xpert MTB/RIF	18 661
Genotype MTBDR*plus*	8 074
Genotype MTBDRs*l*	2 289
FLD – DST	2 966
SLD – DST	1 787

FLD, first line drugs; SLD, second line drugs; DST, drug susceptibility testing

Table A2.8 Overview of TB diagnostic tests performed in culture and DST laboratories per year from 2013 to 2018

Methods		2013	2014	2015	2016	2017	2018
LPA	**GenoTypeMTBDR*plus***	4 483	3 100	5 334	4 460	4 684	8 074
	GenoTypeMTBDR*sl*	–	–	–	–	917	2 289
Culture	**LJ culture**	24 831	52 779	54 240	58 593	43 667	39 342
	MGIT liquid culture	6 542	8 477	8 374	10 557	11 762	12 725
DST	**LJ – DST FL**	2 503	2 003	2 892	1 659	303	–
	LJ – DST SL	1 966	2 257	2 672	1 536	296	–
	MGIT – DST FL	1 714	2 669	2 612	2 594	3 054	2 716
	MGIT – DST SL	–	494	74	1 264	1 581	1 777

Table A2.9 DST results in NRL and Osh oblast TB laboratory 2018

	National Reference Laboratory						Osh Oblast TB Laboratory					
	Never treated		Prev. Treated		Total		Never treated		Prev. Treated		Total	
	N	%	N	%	N	%	N	%	N	%	N	%
Sensitive	**548**	*40.0%*	**128**	*19.0%*	**676**	***33.1%***	**383**	*48.7%*	**97**	*30.2%*	**480**	***43.3%***
Resistance to H only	44	*3.2%*	16	*2.4%*	60	*2.9%*	63	*8.0%*	20	*6.2%*	83	*7.5%*
Resistance to R only	11	*0.8%*	3	*0.4%*	14	*0.7%*	13	*1.7%*	4	*1.2%*	17	*1.5%*
Resistance to E only	25	*1.8%*	8	*1.2%*	33	*1.6%*	18	*2.3%*	3	*0.9%*	21	*1.9%*
Resistance to S only	53	*3.9%*	12	*1.8%*	65	*3.2%*	26	*3.3%*	1	*0.3%*	27	*2.4%*
Total mono resistance	**133**	*9.7%*	**39**	*5.8%*	**172**	*8.4%*	**120**	*15.2%*	**28**	*8.7%*	**148**	*13.4%*
H + R	11	*0.8%*	9	*1.3%*	20	*1.0%*	14	*1.8%*	8	*2.5%*	22	*2.0%*
H + R + E	9	*0.7%*	4	*0.6%*	13	*0.6%*	22	*2.8%*	8	*2.5%*	30	*2.7%*
H + R + S	105	*7.7%*	57	*8.5%*	162	*7.9%*	36	*4.6%*	25	*7.8%*	61	*5.5%*
H + R + E + S	291	*21.2%*	315	*46.9%*	606	*29.7%*	125	*15.9%*	121	*37.7%*	246	*22.2%*
Total MDR	**416**	***30.4%***	**385**	***57.3%***	**801**	***39.2%***	**197**	*25.0%*	**162**	*50.5%*	**359**	*32.4%*
H + E	9	*0.7%*	3	*0.4%*	12	*0.6%*	18	*2.3%*	5	*1.6%*	23	*2.1%*
H + S	154	*11.2%*	59	*8.8%*	213	*10.4%*	30	*3.8%*	13	*4.0%*	43	*3.9%*
H + E + S	89	*6.5%*	37	*5.5%*	126	*6.2%*	20	*2.5%*	11	*3.4%*	31	*2.8%*
R + E	11	*0.8%*	3	*0.4%*	14	*0.7%*	3	*0.4%*	0	*0.0%*	3	*0.3%*
R + S	1	*0.1%*	4	*0.6%*	5	*0.2%*	0	*0.0%*	0	*0.0%*	0	*0.0%*
R + E + S	10	*0.7%*	11	*1.6%*	21	*1.0%*	7	*0.9%*	1	*0.3%*	8	*0.7%*
E + S	6	*0.4%*	3	*0.4%*	9	*0.4%*	9	*1.1%*	5	*1.6%*	14	*1.3%*
Total PDR	**280**	*20.4%*	**120**	*17.9%*	**400**	*19.6%*	**87**	*11.1%*	**35**	*10.9%*	**122**	*11.0%*
Total patients with DST	**1 377**	*100%*	**672**	*100%*	**2 049**	*100%*	**787**	*100%*	**321**	*100%*	**1 108**	*100%*

Table A2.10 Samples with results of both, HAIN-test and MGIT DST

MGIT	**Genotype MTBDR plus / sl**			Total
Rifampicin	resistant	sensitive	indet.	**TOTAL**
resistant	494	68		562
	33%	*5%*		
sensitive	63	868		931
	4%	*58%*		
no MGIT	388	646	2	1 036
TOTAL	**945**	**1 582**	**2**	**2 529**
Isoniazid	**R**	**S**	**indet.**	**TOTAL**
resistant	814	70		884
	55%	*5%*		
sensitive	71	538	1	610
	5%	*36%*		
no MGIT	672	361	1	1 034
TOTAL	**1 557**	**969**	**2**	**2 528**
Levofloxacin				**TOTAL**
resistant	94	32	1	127
	11%	*4%*		
sensitive	13	730		743
	1%	*84%*		
no MGIT	75	373	4	456
TOTAL	**182**	**1 135**	**5**	**1 322**

Table A2.11 Smear microscopy of diagnostic, follow-up and chronic cases

Region	Diagnostic							Follow-up						
	Specimens			Patients			AM No smears	Specimens			Patients			AM No smears
	Total	ss+	%	Total	ss+	%		Total	ss+	%	Total	ss+	%	
Bishkek City	9 853	885	9.0	5 093	486	9.5	1.9	14 976	1 052	7.0	7 538	852	11.3	2.0
Chui oblast	8 923	696	7.8	4 656	488	10.5	1.9	11 353	931	8.2	5 705	469	8.2	2.0
Talas oblast	1 410	42	3	715	22	3.1	2.0	2 528	41	1.6	1 264	22	1.7	2.0
Naryn oblast	2 255	102	5	879	51	6	2.6	2 152	306	14.2	1 076	154	14.3	2.0
Issyk-Kul oblast	3 443	173	5.0	2 016	94	4.7	1.7	4 747	170	3.6	2 364	97	4.1	2.0
Batken oblast	2 634	295	11.2	1 315	155	11.8	2.0	2 517	181	7.2	1 279	99	7.7	2.0
Osh oblast	7 918	1 289	16.3	9 956	1 145	11.5	0.8	17 483	1 363	7.8	10 719	991	9.2	1.6
Jalalabad oblast	7 517	785	10.4	3 887	567	14.6	1.9	11 455	974	8.5	6 572	532	8.1	1.7
Total	**43 953**	**4 267**	**9.7**	**28 517**	**3 008**	**10.5**	**1.5**	**67 211**	**5 018**	**7.5**	**36 517**	**3 216**	**8.8**	**1.8**

Region	Chronics							Total						
	Specimens			Patients				Specimens			Patients			
	Total	ss+	%	Total	ss+	%		Total	ss+	%	Total	ss+	%	
Bishkek City	8 972	692	7.7	5 893	521	8.8		33 801	1 937	5.7	18 524	1 338	7.2	
Chui oblast	3 032	544	17.9	1 607	285	17.7		23 308	1 594	6.8	11 968	802	6.7	
Talas oblast	891	58	7	891	58	15.0		4 829	44	0.9	2 870	44	1.5	
Naryn oblast	458	35	8	243	18	7		4 865	394	8.1	2 198	198	9.0	
Issyk-Kul oblast	178	55	30.9	93	26	28.0		8 368	193	2.3	4 473	191	4.3	
Batken oblast	1 922	120	6.2	1 098	68	6.2		7 073	482	6.8	3 692	252	6.8	
Osh oblast	4 310	928	21.5	2 360	527	22.3		29 711	2 279	7.7	23 035	2 136	9.3	
Jalalabad oblast	8 782	1 026	11.7	4 928	513	10.4		27 754	113	0.4	15 387	1 099	7.1	
Total	**28 545**	**3 458**	**12.1**	**17 113**	**2 016**	**11.8**		**139 709**	**7 036**	**5.0**	**82 147**	**6 060**	**7.4**	

Figure A2.1 Planned organogram of the laboratory network structure at the end of 2019

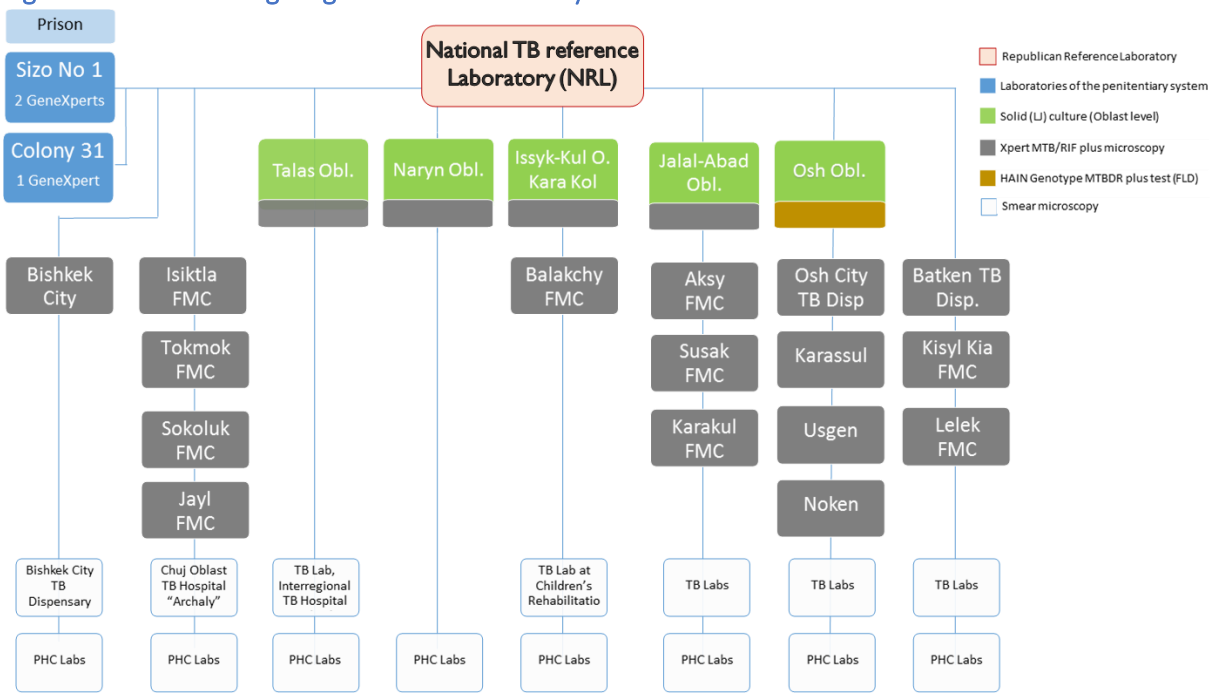
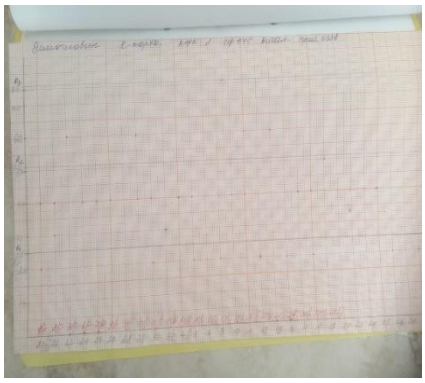


Figure A2.2 HumaLyzer primus; semiautomated photometer for clinical chemistry

Figure A2.3 Refrigerator in a clinical chemistry lab

Reagents and patient samples are mixed. Food which was stored in the upper shelf and has been taken out before the picture was taken.

Figure A2.4 Clinical chemistry lab equipment



Recording of quality controls until December 2018 (left); Storage cabinet with broken glass screen in a clinical chemistry laboratory (right).

Figure A2.5 National TB diagnostic algorithm according to the NLSP 2014

Figure A2.6 TB diagnostic algorithm according to an SOP of the NRL

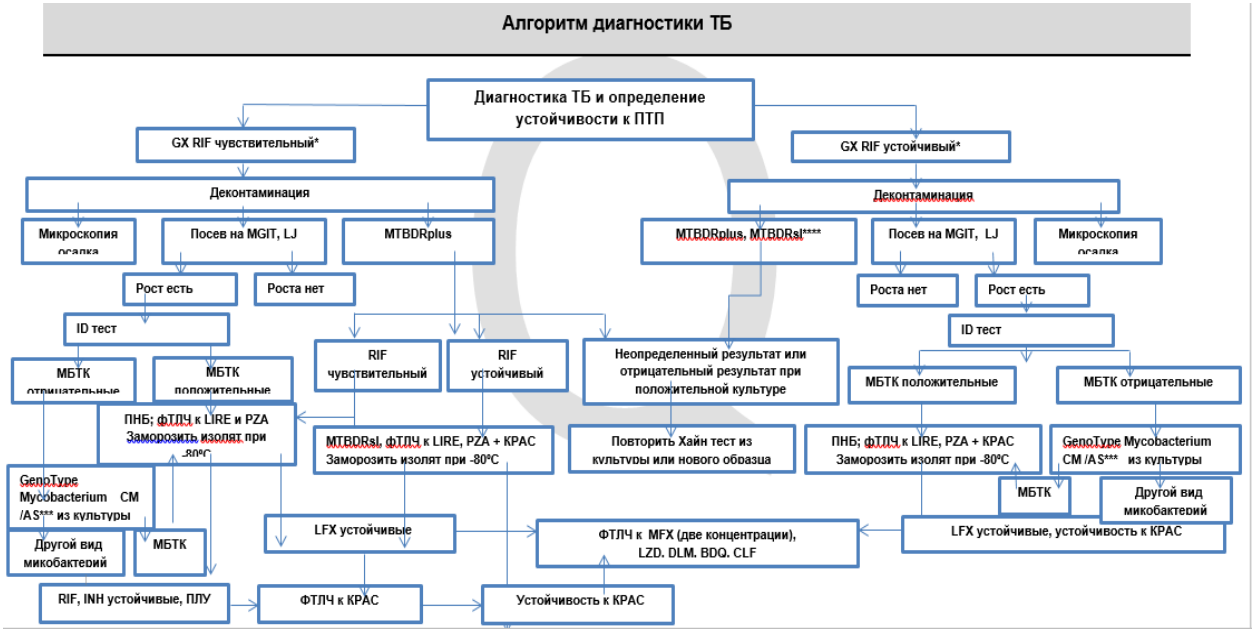


Figure A2.7 Proportion of positive QuantiFERON-TB Gold *plus* results for staff of the mixed laboratory in Kara Balta, the NTC clinical chemistry lab and the NRL

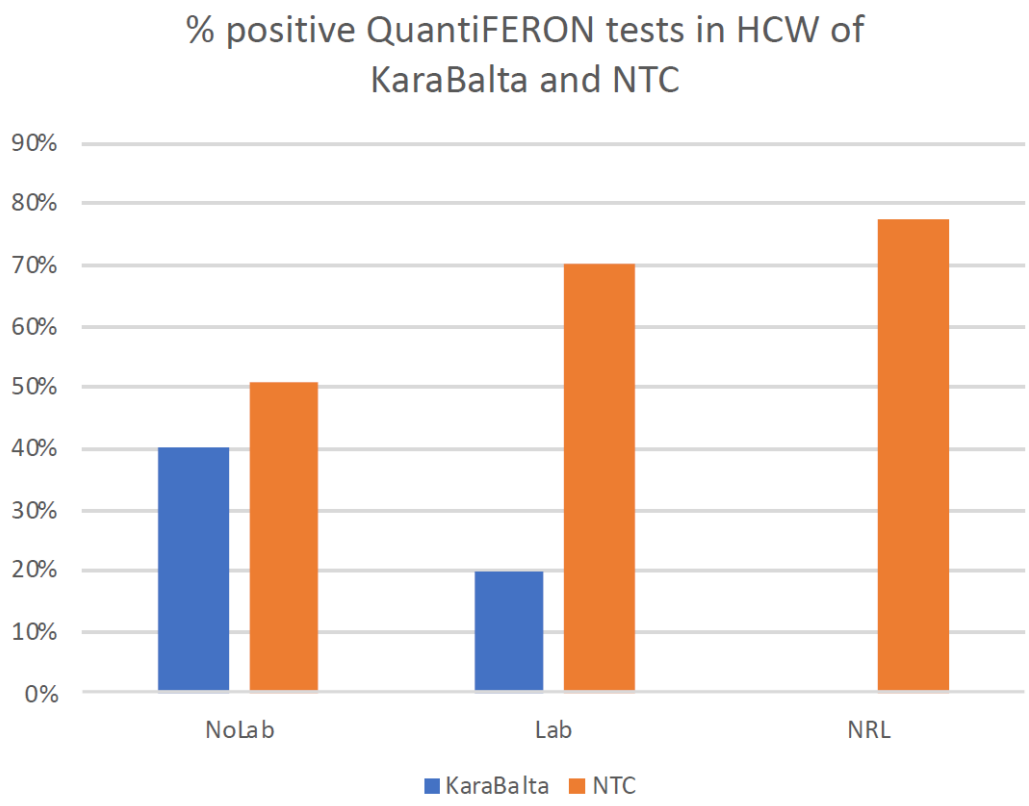
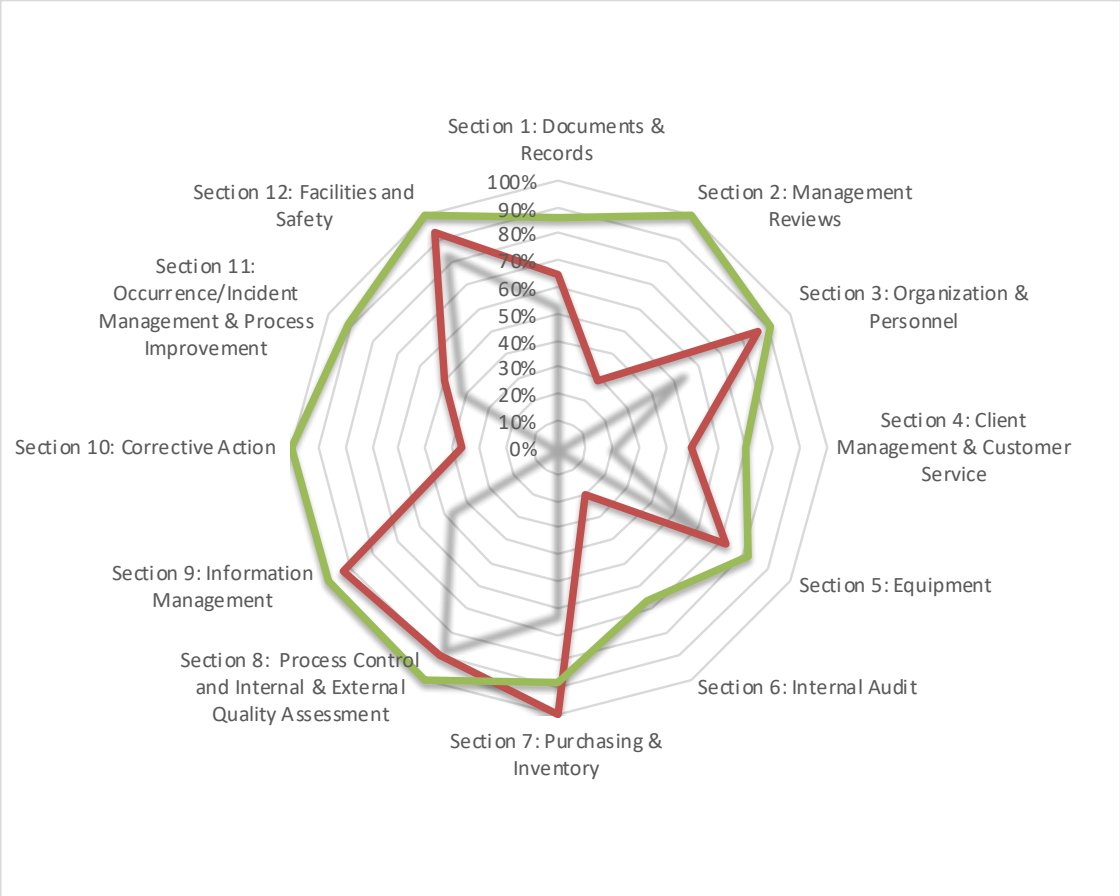


Figure A2.8 Diagram of QMS assessments at the NRL



Annex 3

Field visits findings

NB Comments in this Annex focus on the drawbacks identified by the field visits; this should not detract from the many achievements that were noted by the team and outlined elsewhere.

During the field visits, four departments for MDR-TB, one Center of family medicine and MDR-TB *Consilium* were visited. In total, the medical files of 54 random MDR-TB patients were reviewed

Diagnosis

- A long period from TB diagnosis to the start of treatment, up to 2 months (e.g. Xpert MTB/RIF +/+ from 31 October 2018, the start of treatment to 28 December 2018).
- A throat swab is often used, despite this type of biologic material is not recommended for Xpert MTB/RIF, for a primary TB diagnostic test. Such methods as induced sputum, gastric wash are not used in cases when they are indicated.
- Xpert MTB/RIF is not always performed as primary TB diagnostic test or its result is not always included in the patient files.
- LPA (Genotype MTBDRplus) was performed in many patients as a primary TB diagnostics test (instead of Xpert), including in those with smear negative samples.
- Results of liquid culture and phenotypic DST (on BACTEC MGIT) were often delayed, in some cases up to 2 months.
- Until the end of 2018, the results of laboratory studies were reported to clinicians by two employees who were financed by the Challenge TB project, which made acquisition of DST results in a timely manner possible, but that project has ended and the NTP has not yet found the opportunity to continue this activity due to a lack of staff and funds.

Regimen design

- Due to the lack of bacteriological confirmation, and the long time to receive DST results, many child and adolescent patients who have had close contact with RR/MDR-TB are first assigned DS-TB treatment regimen.
- Injectable drugs (Km, Cm) are used in the treatment of the majority of patients with RR/MDR-TB.
- An empirical regimen E Z Km/Cm Lfx/Mfx Pto Cfz is prescribed for almost all RR/MDR-TB patients who are not eligible for STR, often completely independent of the history of previous treatment. In some cases, after a few days (weeks) this regimen changes to another regimen, and then it can be changed again several times by the MDR-TB Consilium during the total treatment period. The regimen changes cannot be always explained by receiving new DST results or the development of AEs. So, changes in treatment regimens are too frequent and not always reasonable (for example, a patient was assigned H E Z Cm Mfx Pto Cfz for a few days; H E Z Cm Cfz Lnz for another few days; then Cm Cs Bdq Cfz Lnz and in 3 months Cm Lfx Bdq Cfz Lnz).

aDSM

- Albumin levels are not regularly tested in patients on Dlm-containing regimens.
- Widespread use of various so-called hepatoprotectors (e.g. Vingis) that have no evidence-based recommendations for use and are quite expensive.
- Audiograms in patients on SLI drugs are not performed regularly.

- Creatinine clearance is not calculated in cases with plasma creatinine elevation. K^+ and other electrolytes are almost always investigated, but in cases when it is most indicated, data on them are absent. For example:
    - in a patient with increased QTcF (511 ms), electrolytes were not been tested. In addition, no action was taken to treat this life-threatening AE;
    - in patient with increased QTcF up to 550 ms (baseline was 380 ms), electrolytes were not tested. In addition, the ECG was not recorded regularly and no action was taken to treat this life-threatening AE.
- Some patients did not have appropriate treatment for revealed AEs (e.g. nephrotoxicity, neuropathy) due to carelessness of staff or the lack of necessary medications.

Co-morbidity

- Co-morbidity is almost always reflected in the patient files (in contrast to AEs), but accompanying/supportive treatment is never reflected in patient files.
- Weak collaboration between TB and HIV services, which can be explained by existing legislation. The TB doctor has no right to know, and in most cases does not know, the TB patient's HIV status, CD4 cell count, viral load and ART. This greatly complicates both TB and HIV management and generally worsens treatment outcomes.
- However, there are good clinical practice examples in the prisons of the simultaneous, optimal and effective treatment of MDR-TB/HIV/HCV and opioid substitute therapy.

Other

- Some units are located in a new separate building, and in these cases infection control (IC) meets contemporary requirements: clearly separated areas for staff (there are rooms for rest and meals in clean areas) and patients, patient flows are separated. The medical staff and patients are trained on a regular basis; they correctly use respirators and masks, which are available in sufficient quantities.
- However, in some units it is extremely difficult to organize proper IC due to inappropriate rooms and the presence of completely different categories of patients in terms of DR profile.

Annex 4

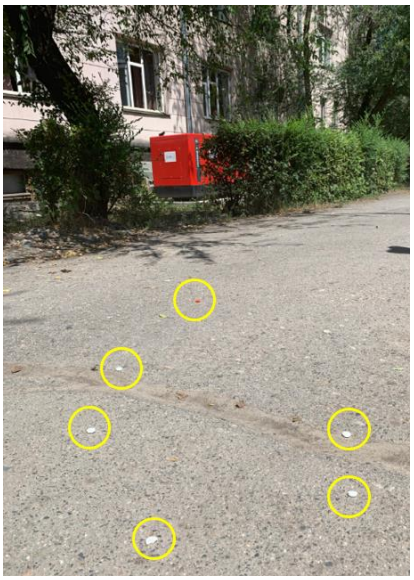
Pharmaceutical management

Above: Discarded TB medicines (including rifampicin and levofloxacin) found beneath the windows of the Poly-resistant tuberculosis (PDR-TB) TB ward of the National TB hospital in Bishkek.

Above: an entire dispensing cup with TB medicines discarded outside the PDR-TB ward.

Above: levofloxacin and ethambutol tablets discarded outside the PDR-TB ward.

Above: Pyrazinamide and ethambutol tablets discarded outside the PDR-TB ward.



Above: TB medicines discarded in plain sight on the road in the hospital's compound.

Annex 5

Programme of visits and events: Kyrgyz Republic NTP review, July 1–9

Chui region programme

Программа визитов и мероприятий
Обзор НПТ в Кыргызской Республике (1-10 июля 2019 г.)

02.07.2019				
Север- Чуйская область (2-я группа разделена на группы)				
9.30-10.00 посещения 2-й группы	Выезд в Чуйскую область / центр борьбы с туберкулезом	Эксперты 2-й группы Абдачманова, Кырбашов Болот (НЦФ)	Чуйский областной центр борьбы с туберкулезом (ЧОЦБТ)	Автобус /сотрудники ВОЗ
10.00- 12.00	ЧОЦБТ, посещение отделений	Эксперты 2-й группы Сотрудники НЦФ		Автомашина
12.00-13.0 0	Обед			
13.00-18.00	Посещение отделений и лаборатории ЧОЦБТ, встреча с	Эксперты 2-й группы (по направлениям)		

	координатором по ЛУ ТБ доктором Кызалаковой Жаныл	Абдахманова, Кырбашов Болот (НЦФ)		
15.00-18.00	посещение Чуйского областного центра ВИЧ	Сайохат Хасанова		Автомашина
18.00-18.30	Возвращение в гостиницу	Эксперты 2-й группы		
03.07.2019				
Север- Чуйская область (2-я группа разделена на 2 команды - туберкулезная больница и ФОМС)				
9.30-12.00	Посещение Бишкекской городской туберкулезной больницы	Эксперты 2-й группы, доктор Елена Вовк, доктор Сайохат Хасанова	Аламудунский район	Автобус /сотрудники ВОЗ.
9.30-12.00	Фонд обязательного медицинского страхования	Николаз Насидзе		
12.00-13.00	Обед	Эксперты 2 группы, доктор Сайохат Хасанова		

13.00-17.30	Посещение Бишкекского городского центра борьбы с туберкулезом/ Бишкекского городского противотуберкулезного диспансера	Эксперты 2-й группы, д-р Елена Вовк, д-р Сайохат Хасанова	Бишкекский городской центр борьбы с туберкулезом	
12.00-17.00	Встреча с рабочей группой по протоколам лечения ВИЧ	Д-р Елена Вовк	Ул. Логвиненко, 8	Автомашина
17.00-18.00	Отправление из Бишкека в СрН	Д-р Елена Вовк	Бишкек - аэропорт	Самолет, автомашина
13.00-17.00	Чуйский областной фонд медицинского страхования	Николаз Насидзе		
04.07.2019				
Бишкек -2-я группа разделена по направлениям (Кара-Балта и Иссык-Ата)				
8.30-10.00	Поездка из Бишкека в Кара-Балта	2-я группа экспертов (направления Кара-Балта)		

10.00-15.00	Посещение Республиканской противотуберкулезной больницы (РПБ) «Кара-Балта». Встреча с главным врачом Карасартовой З.Р.	2-я группа экспертов (направление Кара-Балта)	Ул. Космонавтов, 10
15.00-17.00	Посещение ЦСМ в Жайильском районе, директором Имашевой Айнурой	2-я группа экспертов (направление Кара-Балта)	Ул. Космонавтов, 10
17.00-18.00	Поездка из г. Кара-Балта в г. Бишкек	2-я группа экспертов (направление Кара-Балта)	
9.30-12.00	Посещение Иссыкатинского ЦСМ и лаборатории Gen Expert, директор Мукаева Роза	2-я группа экспертов (направления Иссык-ата)	
13.30-17.30	Чуйский областной центр семейной медицины.	2-я группа экспертов (направление Иссык-ата)	
17.30-18.00	Поездка из Иссык-ата в г. Бишкек		

05.07.2019				
Север- Чуйская область (2-я группа разделена на 3 направления - Молдовановка, Чуйская область и ФОМС, встреча с гражданским обществом)				
8.00- 9.00	Поездка в село Молдовановка (тюрьма)	Эксперты доктор Огтай Гозалов, Алена Скрахина Е.В. Жданова МККК	Колония № 31	Автомашина
9.00-17.00	Посещение противотуберкулезного учреждения в колонии № 31	Эксперты доктор Огтай Гозалов, Алена Скрахина,	Колония № 31	Автомашина
13.30 - 18.00	Встреча с 1-2 организациями гражданского общества, работающими по туберкулезу и ВИЧ	Д-р Сайохат Хасанова		2-я автомашина
8.30-9.30	Выезд из гостиницы в Чуйскую область / Областной центр семейной медицины (ЧОЦСМ).	2-я команда группы		
9.30-17.30	Чуйский областной центр семейной медицины. Встреча с директором д-ром Мамытовой Б.К.	2-я команда группы		

1 и 2 группы работают над обобщением документов

6.07.2019 -7.07.2019
1 и 2 группы работают над обобщением документов
Обе группы работают над обобщением документов
8.07.2019

	9.00-12.00	Индивидуальные встречи	Эксперты в ВОЗ
	13.30-17.00	2-я встреча с партнерами / заинтересованными сторонами / гражданским обществом	Сотрудники НЦФ
9 июля 2019 г. Подведение итогов миссии			
	9.00-10.00	Встреча в СО ВОЗ, подведение итогов	Все эксперты
	10.30-12.00	Встреча с начальником Департамента МЗ Эшходжаевой, подведение итогов	Представитель ВОЗ, Огтай, Кадыров
	13.30-17.00	Работа над отчетами и комментариями	Все эксперты

1. Программное управление новым режимом лечения, новыми лекарственными средствами, включая детский туберкулез, и	Алена Скрахина, Николоз Насидзе, Гунта Дравнис, Огтай Гозалов

Группа по югу (02-05.07.2019) Кроме Евгения Сахальчика	**Группа по северу**
Д-р Кадыров, Калмамбетова, Губанкова, Тункатарова (НЦФ)	Абдачманова, Кырбашов Болот (НЦФ)

амбулаторную модель оказания помощи		Д-р Елена Вовк (2.07.2019)	Д-р Хасанова Сайохат (01.07-09.07.2019), д-р Елена Вовк (3.07.2019)
2. Финансирование здравоохранения и оптимизация систем здравоохранения	Николаз Насидзе	Гунта Дравнис Евгений Сахальчик (9-12.07.2019)	Едильбаев Аскар (1-2.07.2019), доктор Огтай Гозалов (01.07-10.07.2019) Николоз Насидзе (1-10.07.2019)
3. ТБ/ВИЧ	Елена Вовк, Сайохат Хасанова	Джамиля Исмаилова (02.07.-09.07.2019) Бахтияр Бабамурадов Светлана Сеткина	Алена Скрахина (01.09.2019) Рон Веренс; Натаван Алиханова; (30.06-09.07.2019)
4. Лабораторные аспекты и инфекционный контроль	Харальд Хоффманн, Евгений Сахальчик	Калия Касымбекова	Нагира Уметалиева, Харальд Хоффман
5. Туберкулез в тюрьмах	Огтай Гозалов, Алена Скрахина		

1. Участие гражданского общества в DOT, инновациях и снижении стигмы и дискриминации	

Osh region programme

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ВСЕМИРНАЯ ОРГАНИЗАЦИЯ ЗДРАВООХРАНЕНИЯ

ЕВРОПЕЙСКОЕ РЕГИОНАЛЬНОЕ БЮРО

Кыргызстан

1-9 Июля 2019 года (Юг)

Дата	Время	Мероприятие	Участники	Место проведения
30.06		Прибытие в Бишкек	Все эксперты	Гостиница
01 .07.	10.00-10.30	Встреча с зам. Министра здравоохранения, брифинг		МЗ, ул. Московская, 8

			СО ВОЗ в Кыргызстане - доктор Артыкова Назира, доктор Едильбаев Аскар, директор НЦФ проф. Кадыров А.С.	
	11.00-14.00	Встреча миссии с представителями НЦФ,Минздрава КР, международными партнерами и гражданским сообществом : 1) Презентация результатов миссии обзора Национальной программы туберкулеза по эпиднадзору 20 мин (ЕРБ ВОЗ) 2) Презентация ситуации с туберкулезом в Кыргызской Республике, электронная база данных (директор НЦФ Кадыров А.С.) 20 мин. 3) Обсуждение с партнерами (50 мин.)	Представители НЦФ,Минздрава КР, международные партнеры и гражданское сообщество, миссия по оценке Национальной программы туберкулеза	Офис ВОЗ Ул.орозбекова 52

14.00-14.30	Выезд в НЦФ	Все эксперты, сотрудники НЦФ	НЦФ, Ахунбаева-Советская
14.00-18.00	Встречи миссии с директором НЦФ д-ром Кадыровым А.С., обсуждение программы Посещение отделений и лаборатории НЦФ; работа с персоналом	Работа в технических рабочих группах;	НЦФ, Национальная референс-лаборатория
14.00-18.00	Посещение центра СПИД и Республиканской инфекционной больницы	Доктор Хасанова Сайохат, доктор Елена Вовк	Ул. Логвиненко, 8
2 июля 2018 года (1 группа, Ош, южное направление)			
7.30-8.30	Отправление в г. Ош	1-я группа экспертов ЕРБ ВОЗ Д-р Кадыров А.С., Калмамбетова Г, Губанкова И.А., Тункатарова (НЦФ) Касымбекова К.Т. (СО ВОЗ)	Аэропорт Манас

8.30-9.00	Аэропорт г. Ош - г. Ош	1-я группа экспертов Сотрудники НЦФ Сотрудник ВОЗ	Аэропорт г. Ош
9.30-13.00	Ошский областной центр борьбы с туберкулезом (ООЦБТ) Посещение отделений и лабораторий ОЦБТ	1я группа экспертов делится на команды по направлениям.	Ошский центр борьбы с ТБ, ул. Чкалова, 3
9.30-13.00	Посещение Ошского областного центра СПИД, встреча с директором д-ром Нарматовой Эльмирой	Д-р Елена Вовк (ЕРБ ВОЗ)	г. Ош, Ул. Маманова, 10
13.00-14.00	Обед	1-я группа экспертов Сотрудники НЦФ Сотрудники ВОЗ	
14.00-18.00	Посещение отделений НЦФ и лабораторий	1-я группа экспертов Сотрудники НЦФ и республиканского центра СПИД Сотрудники ВОЗ (	ОЦБТ

14.00-17.30	Ошский областной центр СПИДа	Д-р Елена Вовк, д-р Касымбекова	г. Ош
17.30-20.00	Отправление из Оша в Бишкек	Д-р Елена Вовк	Ош-Бишкек
18.00-18.30	Возвращение в гостиницу		
3 июля 2019 г			
8.30-9.00	Отправление из гостиницы	1-я группа экспертов Сотрудники НЦФ и республиканского центра СПИД Сотрудник ВОЗ (Д-р Касымбекова)	
09.00- 13.00	Встреча с директором и посещение Ошской детской туберкулезной больницы (директор Шекеев Зулпукар)	1-я группа экспертов по направлениям Сотрудник ВОЗ	Ошская детская туберкулезная больница, г. Ош, ул. Ленина, 1
14.00-18.00	Посещение отделений Ошской детской туберкулезной больницы	1-я группа экспертов Сотрудники НЦФ	Ошская детская туберкулезная больница

	18.00-20.00	Поездка в Джалал-Абад	1-я группа экспертов Сотрудники НЦФ Сотрудник ВОЗ	Гостиница Тяншань
	4 июля 2019 г.			
	9.00-12.00	Джалал-Абадская область / областной противотуберкулезный центр. Встреча с директором Кадыровой Бурул Курманбаевной . Посещение отделений и лабораторий ДОЦБТ	1-я группа экспертов разделена по направлениям Сотрудники НЦФ Сотрудники ВОЗ	ДОЦБТ Ул. Железнодорожная, 24
	12.00-13.00	Обед	1-я группа экспертов .Сотрудники НЦФ	
	13.30-17.00	Джалал-Абадский областной центр СПИДа	1-я группа экспертов разделена по направлениям. Сотрудники НЦФ, сотрудник ВОЗ	

	13.30-17.30	Посещение районного ЦСМ (директор Орунбаева Замира Чойбековна), посещение лаборатории Gen Expert, туберкулезного кабинета ЦСМ, кабинета DoT	1-я группа экспертов разделена по направлениям. Сотрудники НЦФ	ЦСМ Ул. Курортная, 37
	13.30-17.00	Посещение Сузакского районного туберкулезного кабинета и Центра семейной медицины	1-я группа экспертов разделена по направлениям. Сотрудники НЦФ	Сузакская районная больница, ЦСМ

	17.30-18.30	Отъезд из Жалалабада в г.Ош	1-я группа экспертов Сотрудники НЦФ, сотрудник ВОЗ	
	5 июля 2019 г.			
	9.30-13.00	Посещение объединенной ЦСМ №1 г. Ош	1-я группа экспертов разделена по направлениям. Сотрудники НЦФ Сотрудник ВОЗ	
		Обед		
	13.00-16.00	Посещение ЦСМ в Карасуйском районе	1-я группа экспертов Сотрудники НЦФ, сотрудник ВОЗ	г. Кара-Суу, ул. Ленина, 5
	16.00-17.00	Отправление из Кара-суу в аэропорт г. Ош	1я группа экспертов, Сотрудники НЦФ, Сотрудник ВОЗ	

	18.00-20.00	Вылет в Бишкек	1-я группа экспертов Сотрудники НЦФ Сотрудник ВОЗ Переводчик	
6 июля -7 июля 2019 г.				
	9.00-18.00	Работа над отчетами	Все эксперты миссии	6 июля в офисе ВОЗ Орозбекова 52
8 июля 2019 г.				
	9.00-13.00	Индивидуальные встречи	Все эксперты миссии	В офисе ВОЗ Ул.Орозбекова 52
	14.00-17.00	2-я встреча с партнерами / заинтересованными сторонами / гражданским обществом	Сотрудники НЦФ	
9 июля 2019				
	10.30-12.00	Встреча с замминистра Каратаевым М.М., начальником Управления МЗ КР Эшходжаевой А.С., глав.специалистом МЗ КР	Представитель ЕРБ ВОЗ д-р Огтай Гузалов, директор НЦФ Кадыров А.С., представитель странового офиса ВОЗ в КР	МЗ КР Ул. Московская, 148

		Ибраевой А.А. Подведение итогов миссии		
	13.30-17.00	Работа над отчетами и комментариями, дебрифинг в страновом офисе ВОЗ	Эксперты миссии	Страновой офис ВОЗ Ул. Орозбекова, 52-54