World Health Organization
REGIONAL OFFICE FOR Europe

rGLC/Europe

COUNTRY TECHNICAL SUPPORT

MISSION REPORT

Country:	Moldova
Dates of TA provision:	11-15 December 2023
Consultant(s):	Liga Kuksa Alexandra Solovyeva
Clearance of the report	The content of the report has been fully cleared by the National Tuberculosis Programme, Moldova.
Peer review of the report	1. Dr Elmira Gurbanova, WHO Consultant
TA coordination	Dr. Askar Yedilbayev, Regional Advisor, TB and DR-TB Joint Infectious Diseases Unit (JID), Division of Communicable Diseases, Environment and Health (CDE) Dr Ogtay Gozalov, Medical officer, rGLC/Europe Secretariat, Joint Tuberculosis, HIV/AIDS and Viral Hepatitis Program (JTH), WHO Regional Office for Europe
TA Scope of Work (SoW)	1. To follow up on the recommendations of the previous rGLC/GDF missions 2. To assess the progress of the implementation of the National Strategic Plan, including its DR-TB component and develop recommendations for future activities by reviewing relevant national policy documents and by organizing the relevant meetings with the key stakeholders; 3. To assess the effectiveness of implementing the current drug-resistant TB (DR-TB) control project supported by the Global Fund, including TB drug management though the reviewing relevant documentation, plans, operational documents and meeting with relevant stakeholders; **4.** To advise on estimated number of multi drug-resistant TB (MDR TB) and extensive drug resistant TB (XDR-TB) patients for the next period of treatment.

Contents

Acknowledgements

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Clearance of the report (transparency)

The following report was fully cleared by NTP of Moldova on unrestricted circulation and sharing.

Abbreviations

AE	adverse event
aDSM	active drug safety monitoring
ART	antiretroviral therapy
Bdq	bedaquiline
BPal	bedaquiline, pretomanid, linezolid
Cfz	clofazimine
CAD	computer-aided diagnostics
COVID-19	Coronavirus disease of 2019
Cs	cycloserine
Dlm	delamanid
DRC	DR-TB Committee
DST	drug susceptibility testing
FAST	finding, actively, separating, and treating (Stop TB partnership strategy related to timely TB detection and IPC)
FLD	first-line anti-TB drugs
FQ	fluoroquinolones
GLI	Global Laboratory Initiative
GDF	Global Drug Facility
HIV	human immunodeficiency virus
IPC	infection prevention and control
IDU	illicit drug users
LPA	Line Probe Assay
Lfx	levofloxacin
Lzd	linezolid
MGIT	Mycobacteria Growth Indicator Tube
Mfx	moxifloxacin
MoH	Ministry of Health
MoJ	Ministry of Justice
mSTR	modified all-oral shorter 9-month RR-TB regimen
NCAT	National Center for Addictions Treatment
NGO	non-governmental organization
NRL	National Reference Laboratory
NTP	National tuberculosis programme
NCP	National Centre for Pulmonology
PHC	primary healthcare
PIU	Programme Implementation Unit
PLHIV	People living with HIV/AIDS
PWID	Persons Who Inject Drugs
PV	pharmacovigilance
Rif	rifampicin
RR-TB	rifampicin resistant tuberculosis
SAE	serious adverse events
CSOs	civil society organizations
SLD	second-line anti-TB drugs
SNRL	Supra-National Reference Laboratory
SOP	standard operating procedure
TA	technical assistance
TAT	turn-around time
TB	tuberculosis
TBI	Tuberculosis Infection
TGF	the Global Fund against AIDS, TB and Malaria
TPT	Tuberculosis Preventive Treatment
VST	Video-supported treatment
WHO	World Health Organization

W4SS WHO-recommended four-symptom screen
XDR extensive drug resistance

Executive summary

Despite the significant progress achieved by the National Tuberculosis Programme (NTP) of the Republic of Moldova in 2019, the overall tuberculosis (TB) control system was significantly affected by the COVID-19 pandemic. As a result, the dramatic decrease in TB notification rates from 71.6 per 100 000 in 2019 to 43.9 per 100 000 in 2020 is more likely to be the result of under diagnosis rather than a real improvement of the epidemiological situation. However, in 2021 and 2022, 2306 and 2354 cases were notified respectively presenting over 13% increase compared with 2020 which indicates a tendency to recovery of the TB notification rate (Annex2, Tab.1).

TB care is provided by specialized TB units as well as by primary health care (PHC) units. Country total there are 11 facilities providing inpatient TB treatment. TB services are provided in the Institute of Phthisiopumology "Chiril Draganiuc", and six specialized TB inpatient facilities in the civilian sector, in Chisinau, Balti, Codru (phthisiopumonology department in Mental health hospital) and two TB inpatient facilities in Transnistria (Region-level hospital and Pulmonary TB department in Dubasari), with a total capacity of 944 beds (out of which 331 beds are intended for the treatment of patients with MDR- and XDR TB). The average length of hospitalization is 71 days with average bed occupancy rate 60% (Annex 2, Tab.16-17).

As of 2022, the NTP's main funding came from the National Health Insurance Company (54%), the Global Fund to fight HIV/AIDS, Tuberculosis and Malaria (TGF) (29%) and the state budget (17%). The NTP of the Republic of Moldova is at the end of a TGF grant implementation, which is active from 1 January 2021 through to 31 December 2023. The next Grant GF Allocation Period 2024-2026 - 7.268.943,39 Euro for TB.

The key achievements of the NTP of Moldova include:

- ✓ National TB Program 2022-2025 is available with clear targets and good progress of implementation, including increase in sustainability in government spending.
- ✓ Strong technical capacity of National TB Coordination Unit.
- ✓ Updated National TB screening and prevention protocol, and protocol of TB management in children and adolescents in line with the latest WHO's guidelines are approved by MoH in 2023 and currently available.
- ✓ Updated National protocol of TB management in adults is in the process of MoH approval.
- ✓ Clinical protocol of HIV management in adults includes information about TB screening, prevention, diagnosis and management of coinfection HIV/TB. All mentioned parts are in a line with the latest WHO's guidelines and National protocols.
- ✓ Culture and phenotypic DST available at the NRL to all, including the new and re-purposed drugs
- ✓ Number of Xpert machines (total 57 machines, currently all 57 labs have GeneXpert) and aligned sample transportation system allows nearly universal access to rapid WRDs and laboratory monitoring, including for aDSM (LFTs, electrolytes, etc)
- ✓ Well-functioning national TB surveillance system, including consolidated with other services (HIV) and components (lab).
- ✓ All group A, B and C drugs are available for treatment (GF/MoH)

- ✓ Transition to fully oral treatment for DR-TB is complete both under programmatic and OR conditions.
- ✓ Well functional DR-TB consillium with established meeting schedule and SOP for case presentation and feedback
- ✓ Early detection and management of drug toxicities is ensured through safety monitoring schedule and trained TB doctors. Great collaboration with DRA in terms of pharmacovigilance and GVP with good reporting practice.
- ✓ Strong collaboration with CSO on TB control and their meaningful engagement. Social contracting available with funding of National Health Insurance.
- ✓ Various models of treatment adherence support are available: DOT in ambulatory, VST, home based DOT via CSOs. In frame of ORDER Ministry of Health No. 189/324/2023 of 22.12.2023 tuberculosis patients who undergo outpatient treatment will, in 2024, receive on their card the money allocated by the National Medical Insurance Company (CNAM) for food and transport. The new reimbursement method replaced the system based on food stamps and money for transportation. The card will be served free of charge, and the transfer of money to the card will be made only to patients who strictly comply with the treatment for a month. This simplified mechanism provided a faster and more convenient way to receive the financial help needed to motivate patients to undergo treatment, as well as contribute to a more efficient administration of those resources cost
- ✓ Use of mobile X-ray machines with CAD equipment for screening of TB disease, which should be maintained and expanded.

The key challenges:

- ✓ Long uptake with TPT of PLHIV.
- ✓ The long period of consideration and approval of protocols by MoH leads to delays in implementation of new approaches in TB management.
- ✓ Bacteriological confirmation among pulmonary TB, although has increased over the last few years, still is lower than the End-TB target (>90%): In 2021 and 2022 was 67%.
- ✓ Number of performed MGIT cultures reported by the NRL is quite high than it could have been performed at diagnosis and during treatment monitoring for all registered TB patients – creates room for algorithm practical implementation evaluation to find out for whom the culture is performed.
- ✓ Despite strong technical capacity on lab diagnosis (HR and skills), there is no equipment to perform New genome sequencing that is recommended by WHO and highly essential for implementation of shorter treatment regimens.
- ✓ Current diagnostic algorithm and laboratory follow-up schedule for DS-TB require revision and update in line with the latest WHO recommendations.
- ✓ In situations when it is challenging to obtain adequate respiratory specimens for the diagnosis of PTB, such as in younger children, stool examination could be a good opportunity to provide TB diagnosis outpatient for younger children. Stool as a newly recommended specimen for the diagnosis of PTB in children using Xpert MTB/RIF or Ultra is examined only inpatient for those children who has indication. However, gastric aspirate is the lead specimen in algorithm.

- ✓ In cases where obtaining sufficient respiratory specimens for diagnosing pulmonary tuberculosis (PTB) is difficult, particularly in younger children, stool examination could offer a viable alternative for outpatient TB diagnosis in this age group. Currently, stool is recommended as a specimen for PTB diagnosis in children using Xpert MTB/RIF, but it is typically examined on an inpatient basis only for those children with specific indications. However, gastric aspirate remains the primary specimen in the diagnostic algorithm.
- ✓ Despite implementation of the new and fully oral treatment regimens overall treatment outcomes for DR-TB patients remain quite low – 62% in 2020 cohort. However, if disaggregate by the regimen type, the treatment success is quite high for mSTR and low for longer treatment regimen, with majority of patients being treated with longer regimens (Annex.2, Tab.13-15).

Key recommendations

Rolling over from previous mission:

No.	Recommendation	Time frame	Responsible agency
1	To clarify the scope of the competencies of the national TB programme by clearly defining the mechanisms for their implementation, and providing the appropriate independent means for implementation.	**2024**	**MoH**
2	Incorporate TB infection control requirements into comprehensive national standards on IPC.	**2024- 2025**	**NTP, MoH**
3	Continue reducing the number of beds and re-designation of redundant hospital facilities.	**2024**	**NTP**

Recommendation of the current mission:

No.	Recommendation	Time frame	Responsible agency
1	Consider review of NTP in 2024 that will be used for development of NSP for 2025-2030.	Q3-Q4 2024	NTP, MoH, GF PIU
2	Ensure funding and procurement of NGS, followed by updating the diagnostic algorithm.	**2024**	**NTP, SNRL, NRL.**
3	Consider implementation of TB screening algorithm with the use of ultraportable X-rays at least for the contact persons from remote regions, homeless, incarcerated people and PWID with the bad access to the Health care	**2024**	**NTP, MoH**
4	Ensure implementation of TB screening and prevention in all relevant services within their programs, e.g., State Narcology Services within implementation of National TB Programme.	**2024**	NTP, MoH, GF PIU
5	Ensure that the National TB register captures information regarding all TB screening and TBI risk groups and TB screening and TPT care cascade, either by updating the existing National TB register or by elaborating a completely new dedicated application.	2024	NTP, MoH, GF PIU

5	To request technical assistance for optimizing the laboratory network in the Republic of Moldova and assessing the country's need for Xpert XDR.	Q1-Q2 2024	**NTP,WHO Euro, ELI**
6	Consider evaluation of the TB diagnostic pathway and algorithm to identify the reasons for lower than targeted bacteriological confirmation rate and overutilization of the MGIT culture testing.	2024	**NTP, SNRL, NRL**
7	Consider revision and update diagnostic algorithm and laboratory follow-up schedule for DS-TB.	2024	**NTP, NRL**
8	To explore implementing specimen collection and culture processing, as well as Xpert MTB/RIF testing in children (utilizing stool samples) at outpatient facilities, while also revising the diagnostic algorithm at the inpatient level	2024	**NTP, NRL**
9	Scale up of the shorter treatment regimens: BPaLM and mSTR regimens to bigger proportion of patients to contribute to the improvement of treatment outcomes.	2024	**NTP**
10	Ensure 7 days/week DOT(including VST) for all patients receiving MDR/RR-TB treatment at all levels in and outpatient.	2024	**NTP**
11	To strengthen IC measures in all TB facilities.	2024	**NTP**
12	Reinforce the role of TB Consilium in the review of clinically diagnosed TB cases. Encourage thorough and systematic case reviews, ensuring that all relevant clinical, epidemiological, and diagnostic information is considered.	2024	**NTP, NRL**
13	Establish separate facility or designated ward for the treatment of previously treated XDR TB patients with aim to minimize the risk of transmission to newly diagnosed patients.	2024	**NTP**
14.	Ensure the social contracting of CSO/NGOs from national and local funding sources to support continuity of TB care across the entire country	2024	**NTP, MoH**
15.	Identify potential domestic funding sources for psychosocial support and establish a cost framework akin to that utilized for active case finding.	2024	**NTP, MoH**
16.	Ensure uninterrupted coverage and consider the frequency of systematic screenings once per year to address the needs of the incarcerated population effectively.	2024	**NTP, MoH. MoJ**

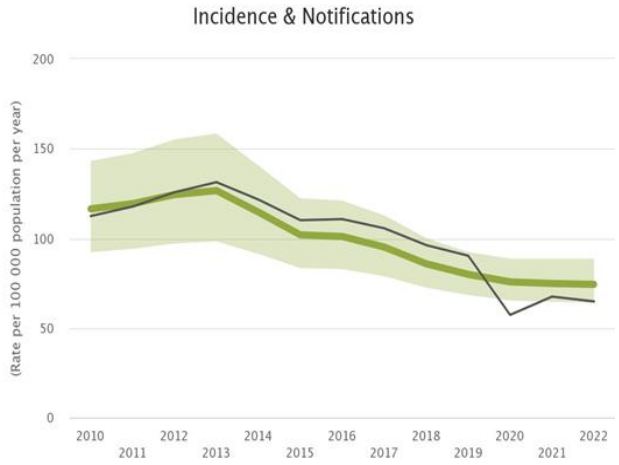
Background

Republic of Moldova is a landlocked country in Eastern Europe is divided into 32 districts, three municipalities and two autonomous regions (Gagauzia and the Left Bank of the Dniester). The population of the country is approximately 2.5 million as of January 2023 according to the official census data (2014) and the World Bank data. it is estimated that over 25% of the population work abroad. About one-third of the Moldovan population live in the capital city Chișinău's metropolitan area and 43.4% of Moldovans living in urban areas.

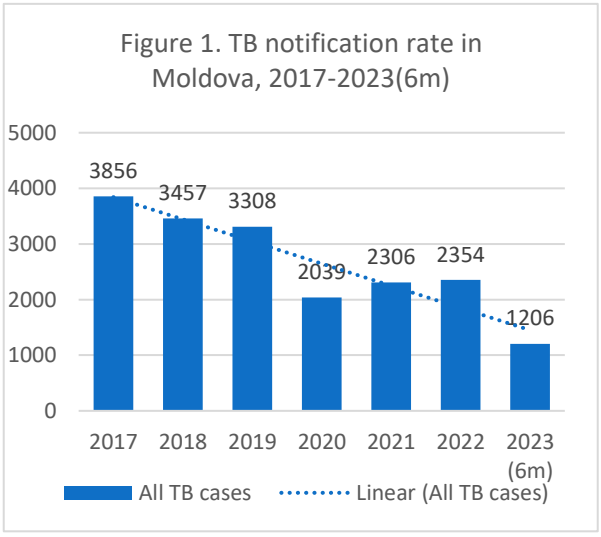
According to the World Health Organization (WHO) global list for 2021-2025, Moldova is included in the list of 30 countries with a high burden of MDR/RR-TB based on an estimated rate per 100,000 population.

During 2015 to 2019, there was a gradual decline in the notification rate of new and relapse cases, as well as the notification rate of all TB cases (Pic.1). In 2020, due to the introduction of a strict quarantine regime in the country due to the COVID-19 pandemic, people at high risk of infection, including patients with tuberculosis, had limited access to medical institutions, which led to a decrease in the detection of tuberculosis and adherence to treatment, which made it difficult to monitor patients undergoing treatment. Thus, in 2020, 2039 TB cases were notified presenting more than 38% decrease compared with 2019. However, after the significant decrease in the TB notification and TB mortality rates in 2020, which coincided with quarantine measures starting in Moldova, both of this indicator is showing a recovery trend in 2021 and 2022 (Fig.1, Fig.2). That's suggests the under detection because of the pandemic restrictions rather than positive epidemiological trends. As a result of positive TB notification trend, TB treatment coverage, which is calculated as the ratio of notified to estimated TB incidence, in 2022 was quite high (average 87%) according to the WHO country TB profile.

Picture 1. *TB incidence and notification per 100 000 population per year in Moldova, 2010-2022*



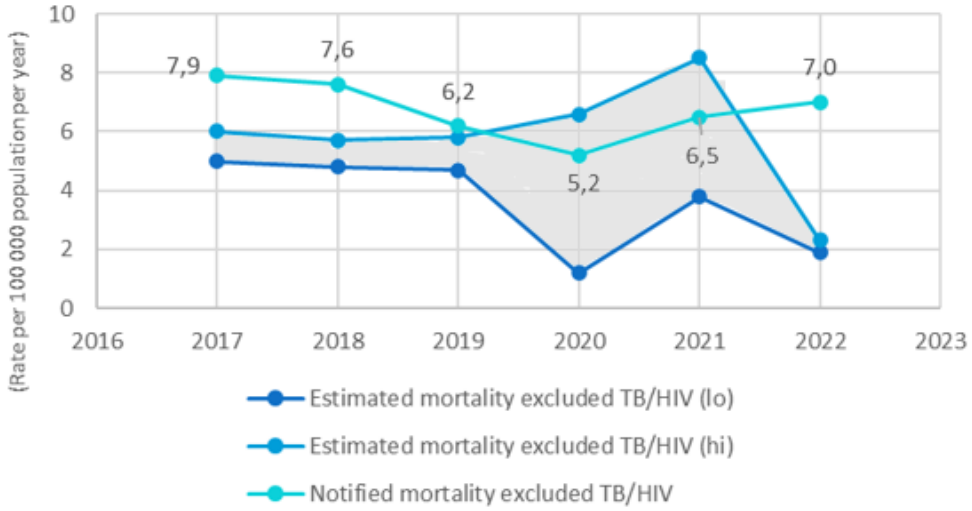
Source(s): WHO Country TB profile



Source(s): NTP

The notified mortality rate is consistently high (7.0 in 2022) compared to the European Region as a whole (1.9 (1.8-2) in 2022). As of 2022 notified mortality rate (TB/HIV excluded) was three times higher than estimated numbers (Fig.2).

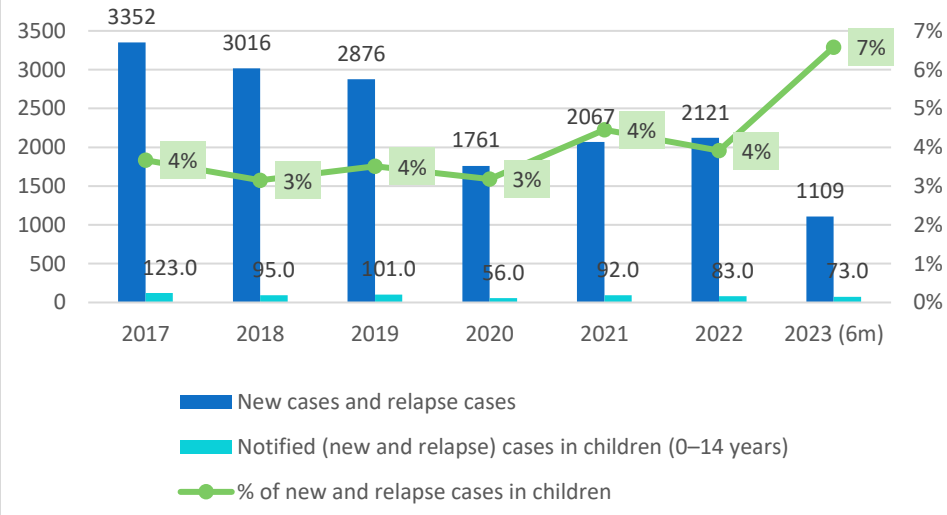
Figure 2. Notified and estimated TB mortality in Moldova, 2016 - 2022



Source(s): NTP data

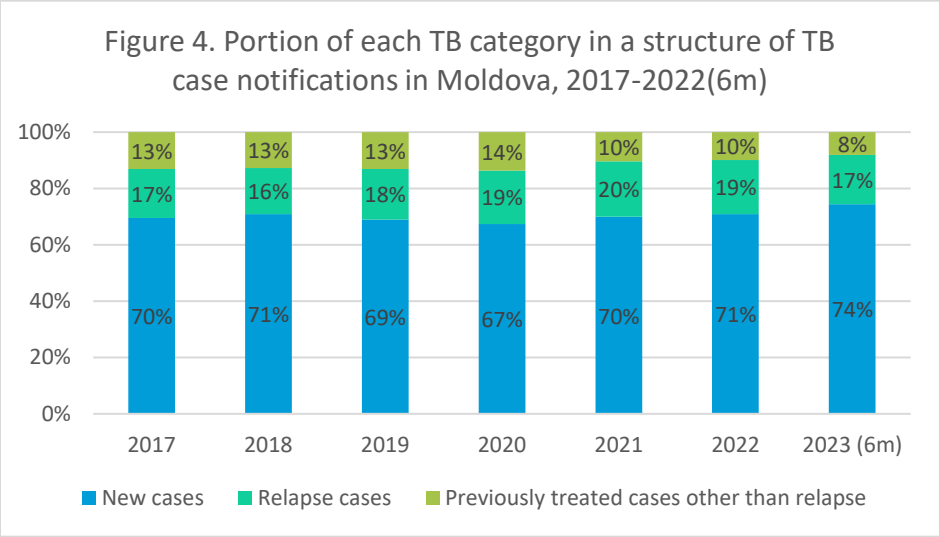
Notification rate of new and relapse TB cases in children (0-14) during 2017 – 2022 period corresponds to trends in notification rate of all TB cases with consistently low ratio of child TB (3-4%) in a structure of TB notification (Fig.3).

Figure 3. Notification rate of new and relapse TB cases in children (0-14), 2017-2023 (6m)



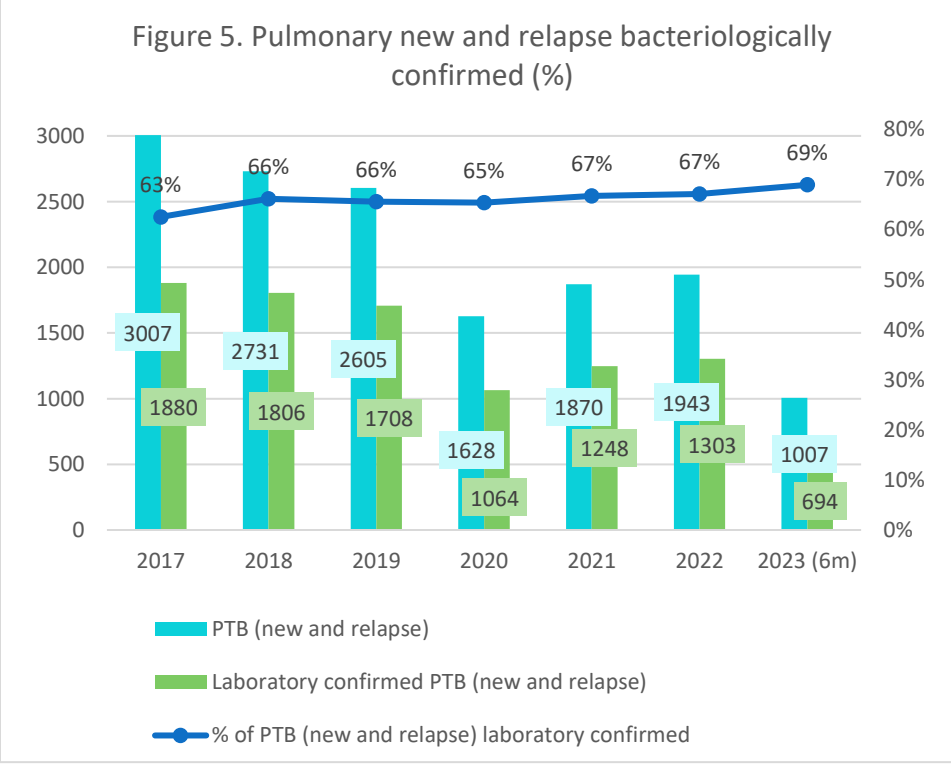
Source(s): NTP data

The ratio of previously treated cases among all registered TB cases since 2017 has fluctuated around 30% (Fig. 4).



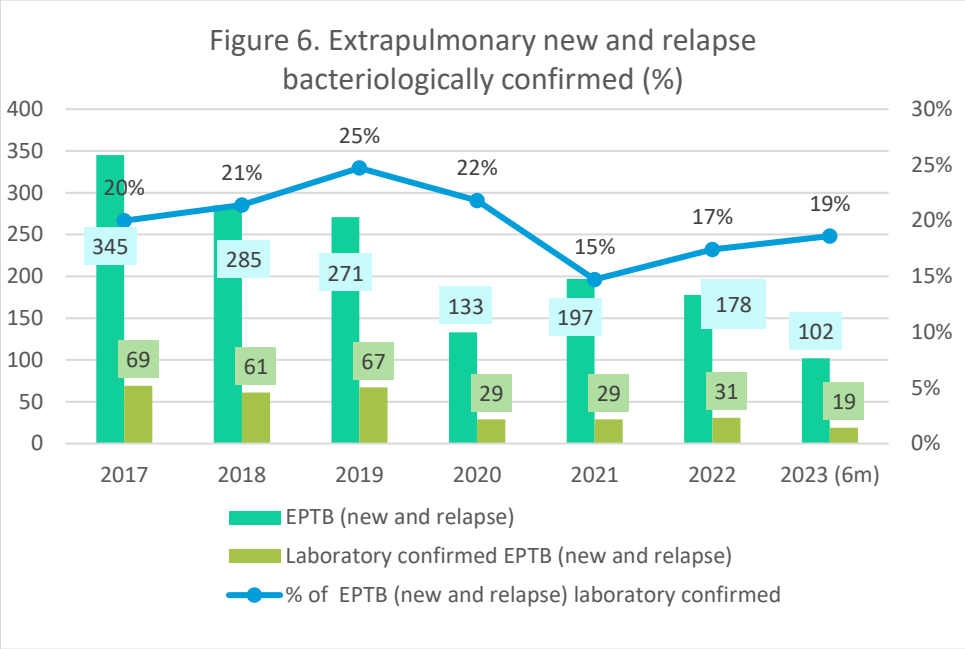
Source(s): NTP data

Bacteriological confirmation among pulmonary TB, has increased over the last few years, still is lower than the End-TB target (>90%): In 2021 and 2022 was 67% (Fig.5).



Source(s): NTP data

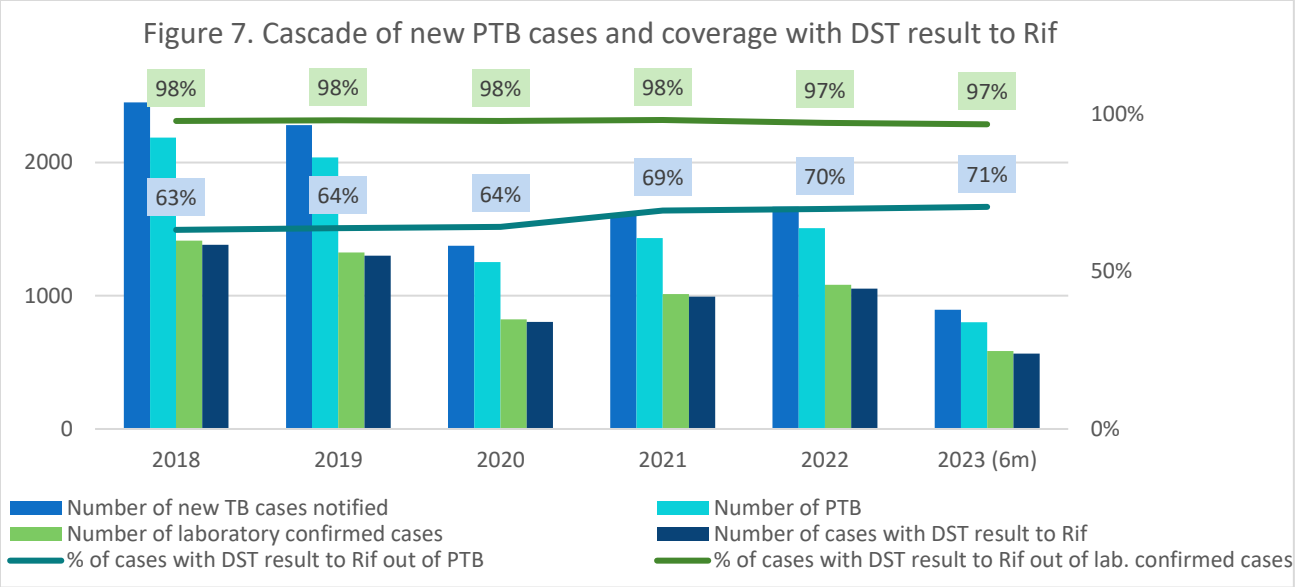
Bacteriological confirmation among extrapulmonary TB, has decreased over the last few years: In 2021 and 2022 was 15% and 17% respectively (Fig.6).



Source(s): NTP data

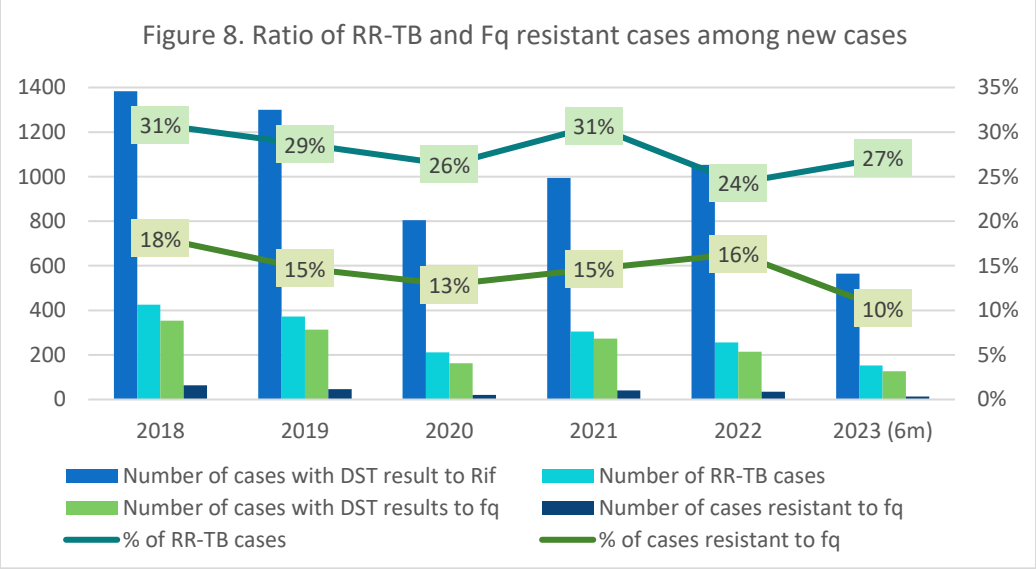
The percentage of cases with rifampicin (Rif) DST results among bacteriologically confirmed cases quite high: In 2022 and 2023(6m) was 97%. However, coverage with DST result to Rif among all pulmonary bacteriologically confirmed TB cases was 70% and 71% in 2022 and 2023(6m) respectively, indicating possible under-detection of RIF-resistant cases. Possible reasons for low bacteriological confirmation among pulmonary TB may be an increase in clinically diagnosed TB due to TB over diagnosis, as well as insufficient coverage of all cases of pulmonary tuberculosis with rapid molecular tests (Fig.7) and poor quality of collected specimen, as well as insufficient use of other specimens (stool) for diagnosis of TB. The issue of bacteriological confirmation was discussed during the visiting TB treatment facilities, during TB Consilium work and also visiting the NRL. As decision the program was recommended and agree introduce in the National TB Clinical Protocol for adults: In patients with a diagnosis of tuberculosis (both pulmonary and extrapulmonary) diagnosed clinically (without microbiological confirmation), the antituberculosis treatment will be initiated after the mandatory discussion of the case within a medical council in IMSP IFP "Chiril Draganiuc". It also refers to children.

The program has two expert consillium one for all sensitive TB cases dealing with difficult to treat sensitive cases and all cases diagnosed for H resistance to start treatment regimen with Levofloxacin. The second consillium is only for all MDR TB cases.



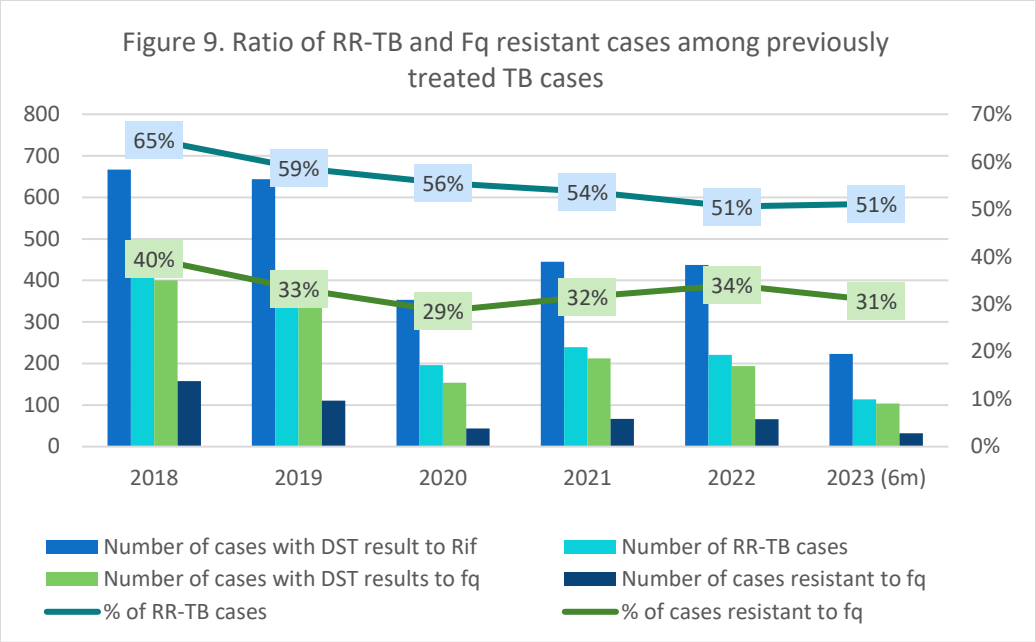
Source(s): NTP data

It should be noted that the ratio of RR-TB among notified new TB cases over the past five years ranges from 24% to 31% and in 2022 reached 24%, which is 3% below of the WHO estimates. At the same time, in 2022, only 69% of new TB cases were laboratory confirmed, of which 97% of cases had DST to Rifampicin and 84% out of RR-TB cases was with DST to FQ (Fig. 8).



Source(s): NTP data

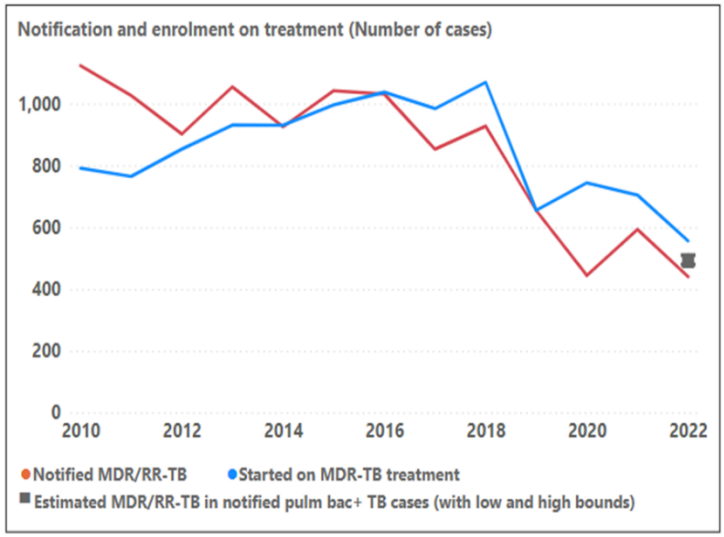
Taking in account 68% of the bacteriological confirmation among previously treated TB cases and 90% coverage with DST to Rif the ratio of RR-TB among previously treated cases reached 51% in 2022, which is 3% below of the WHO estimates. The coverage with DST to FQ out of RR-TB cases reached 88% in 2022 (Fig. 9).



Source(s): NTP data

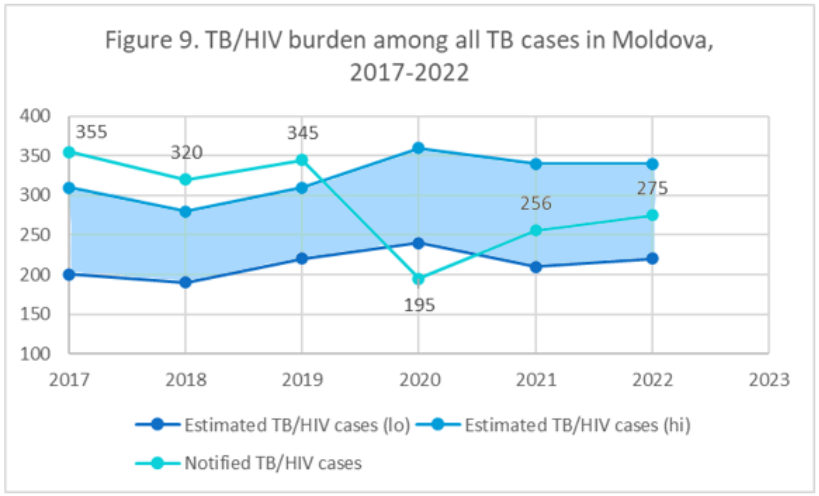
According to the WHO country TB profile the enrolment on MDR/RR-TB treatment high and cover all notified MDR/RR-TB cases since 2016 (Pic.2)

Picture 2. *Notification and enrolment on treatment of MDR/RR-TB in Moldova, 2010-2022.*



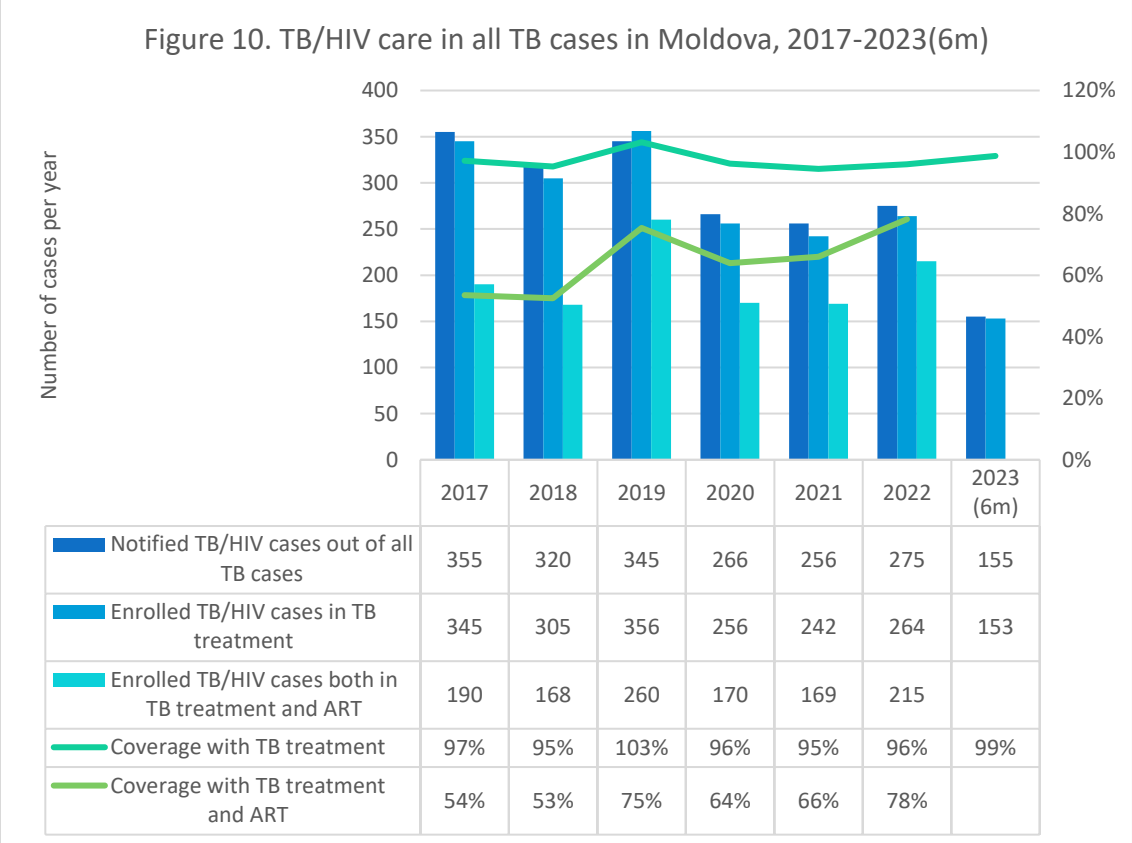
Source(s): WHO TB country data profile

As well as TB notification rate TB/HIV coinfection cases after significant decline in the notification rate in 2020, which coincided with quarantine measures starting in Moldova, is showing a recovery trend in 2021 and 2022, which corresponds to the WHO estimate (Fig.9).



Source(s): WHO Global TB data base, NTP data

The coverage of TB/HIV coinfection cases with TB treatment over the past five years steadily increased and in 2022 reached 96%. The coverage with both TB treatment and ART also raised and in 2022 was 78% (Fig.10).



	2017	2018	2019	2020	2021	2022	2023 (6m)
Notified TB/HIV cases out of all TB cases	355	320	345	266	256	275	155
Enrolled TB/HIV cases in TB treatment	345	305	356	256	242	264	153
Enrolled TB/HIV cases both in TB treatment and ART	190	168	260	170	169	215	
Coverage with TB treatment	97%	95%	103%	96%	95%	96%	99%
Coverage with TB treatment and ART	54%	53%	75%	64%	66%	78%	

Source(s): NTP data

Assessment the progress of the implementation of the National Strategic Plan

National TB Program is available for 2022-2025. This Program contributes to the implementation and achievement of the Sustainable Development Goals until 2030 and is based on the principle: leaving no one behind and ensuring the observance, protection, and implementation of human rights, in particular the right to the highest standard of health and its main elements: availability, accessibility non-discriminatory, physical accessibility, economic accessibility, information availability), acceptability and quality.

This Program aims to expand participation of civil society in decision-making and implementation of TB/HIV programs, as well as strengthening public-private partnerships between government agencies, NGOs, and the private sector.

The development of this Program is based on the basic elements and components of the "End TB" Strategy:

1) comprehensive person-centered care and prevention:

a) early diagnosis of tuberculosis, including universal drug susceptibility testing and systematic screening of contacts and high-risk groups;
b) treatment of all patients with tuberculosis, including patients with drug-resistant forms of tuberculosis, and ongoing support for patients;
c) joint activities to combat TB/HIV and treat related diseases;
d) preventive treatment of high-risk individuals and vaccination against tuberculosis;

2) strong policies and support systems:

a) political support, backed by sufficient resources for the prevention and treatment of tuberculosis;
b) involvement of communities, public organizations and health care providers, both public and private;
c) universal health coverage policy, legal framework for recording cases, registration of basic civil status documents, ensuring quality control and rational use of drugs, as well as implementing infection control;
d) providing social protection, fighting poverty, and addressing other determinants of tuberculosis.

3) intensification of work in the field of scientific research and innovation - invention, development and rapid implementation of new tools, techniques, and strategies: research, aimed at optimizing adoption and impact, and promoting innovation.

The National TB program goal is to reduce the burden of tuberculosis as a public health problem in the Republic of Moldova.

The main objective of the Program is to reduce the burden of tuberculosis in the Republic of Moldova by reducing mortality by 75% and morbidity by 50%.

Specific objectives:

1st Systematic screening for active tuberculosis of at least 90% of contacts and at least 90% of groups at high risk for tuberculosis by the end of 2025 by ensuring universal access to systematic screening of contacts and groups at high risk of tuberculosis, including children.

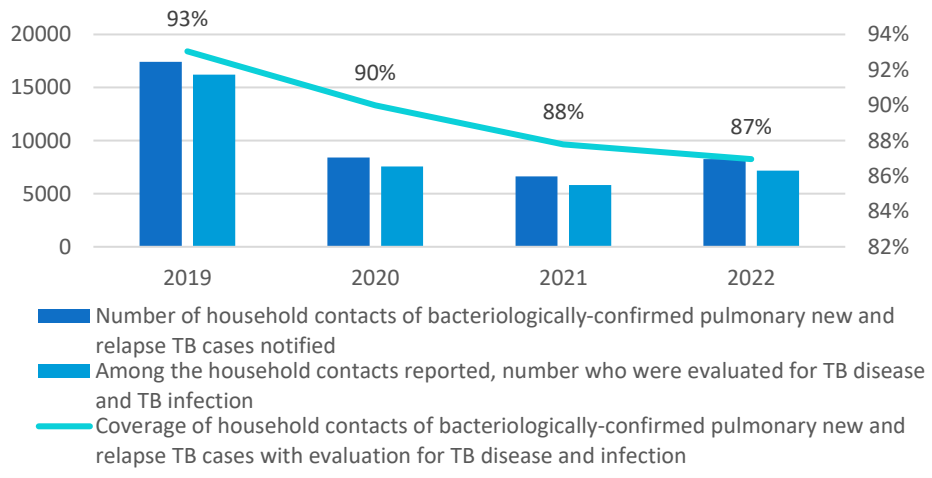
National TB screening and prevention protocol was developed in the line with the latest WHO recommendations and approved by MoH in 2023 and currently available. Risk groups and screening algorithms were re-prioritized within the new protocol. Series of trainings according to the new protocol implementation were provided for medical personnel of TB services and primary health care facilities in civilian sector. And additional training was provided for the medical staff in the penitentiary sector.

There were prioritized 18 risk groups for the TB systematic screening in Moldova according to the new protocol. Considering that the implementation of the new protocol with the new report form began in 2023 there is no data by risk groups available.

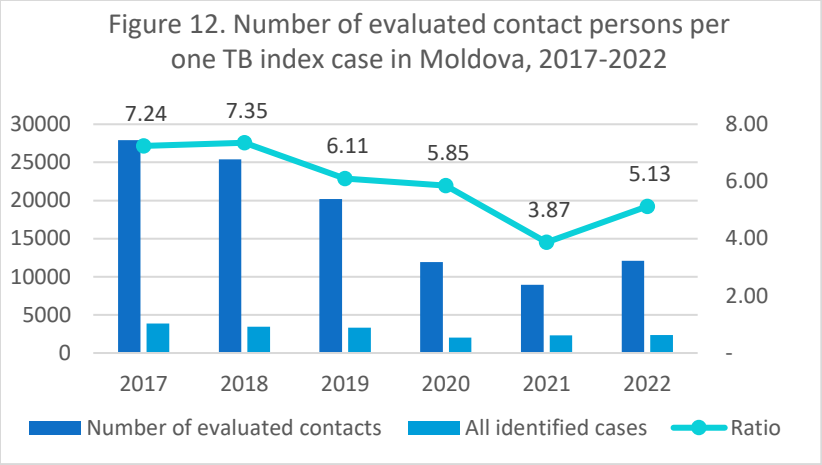
On the part of the NTP, there are concerns about collecting data by risk groups, since the current TB register does not have a module on screening and prevention, as well as records by risk groups. Thus, it is not possible to verify the accuracy of the data presented in the report.

According to the WHO country profile the coverage of TB household contacts with systematic TB screening gradually decreasing during the last four years and reached 87% in 2022 which is 3% below the target level (Fig.11). At the same time the number of evaluated contact persons per one TB index case after huge drop in 2021 raised and reached 5.13 screened persons per TB index case in 2022 (Fig. 12).

Figure 11. Number of TB contact persons evaluated for TB disease and infection in Moldova, 2019-2022



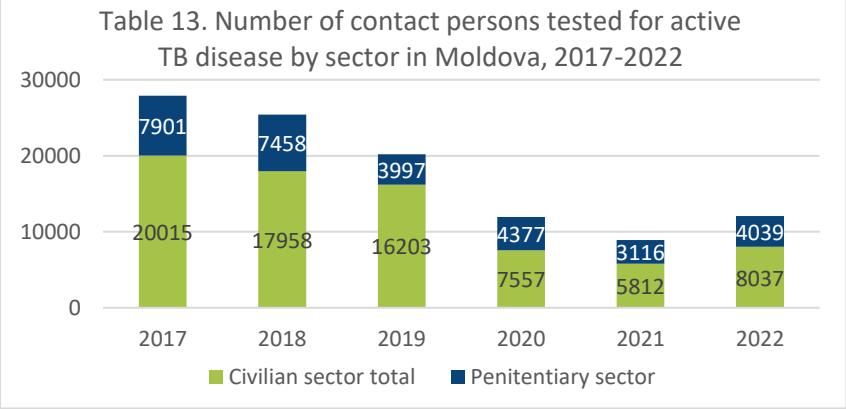
Source(s): WHO TB country profile



Data source: NTP data

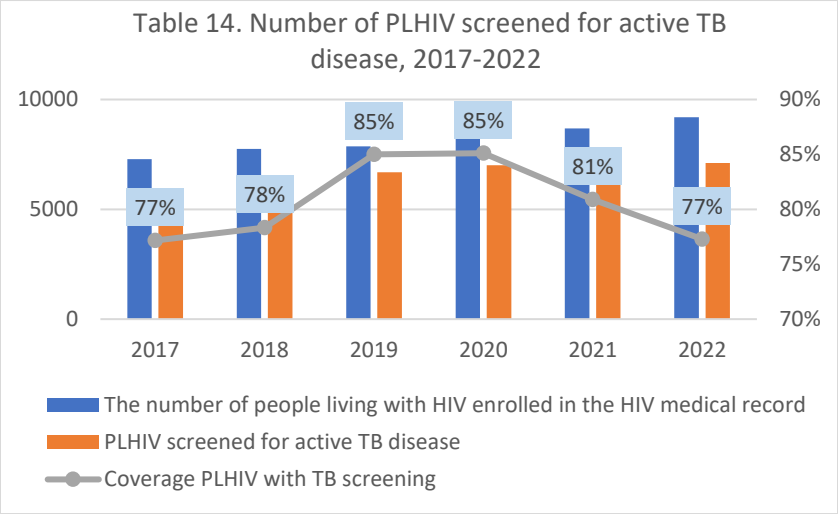
During the mission, it became known that in some remote areas there are problems with access to medical care, especially to x-ray. Mobile X-rays and ultra-portable X-ray systems with CAD can facilitate detection of TB in hard-to-reach populations that currently face barriers to accessing services. Currently, there are four mobile x-rays in civilian TB service. All these machines are equipped with CAD. The oldest of the mobile x-ray is primarily used as a stationary x-ray due to technical condition of the vehicle. Two other machines from 2017 require some upgrades to comply with radiological safety regulations. The newest mobile x-ray from 2019 works properly and does not require an upgrade. In the penitentiary sector there is one mobile unit, which constantly breaks down, which affects the coverage of X-ray examinations of incarcerated people. Due to unfavorable circumstances incarcerated persons undergo systematic screening once per year. TB screening is also carried out at the entrance of the penitentiary system and in case there are TB signs or symptoms or known TB contact (Tab.13). All mentioned above affects the coverage with the screening activities, which is negatively influenced on TB notification rate.

In May 2022 it was purchased 4 ultra-portable X-ray systems with CAD (three systems in frame of the TB-REP framework and one in frame of GF grant). Currently EU legislation prohibits the use of ultra-portable X-ray systems. Thus, NTP started a dialogue with all responsible departments about piloting a TB screening program using ultra-portable X-ray systems with CAD among hard-to-reach populations that currently face barriers to accessing services.



Data source: NTP data

Clinical protocol of HIV management in adults includes TB screening part with screening and diagnostic algorithms which is in line with the latest WHO recommendations and includes W4SS, C-reactive protein, chest X-ray, LF-LAM Ag (severe immunosuppression) and Xpert MTB/RIF. TB screening is provided two times per year at the AIDS center. All patients are treated regardless of disease stage and at any CD4 count. The use of GeneXpert and LAM testing has demonstrated efficacy in diagnosing HIV/TB co-infection. Thus, there were 11% (50 out of 453) and 24% (43 out of 180) positive rate of LF-LAM tests in 2022 and 2023 (11 months) respectively. And, 4% (17 out of 397) and 6% (10 out of 173) positive rate of Xpert MTB/RIF in 2022 and 2023 (11 months) respectively.
However, there is a significant drop in the number of PLHIV screened for TB in 2022 which is more likely due to the transition to a new reporting system in 2022 and associated with this process partially data loss. Thus, only 77% of PLHIV were screened on TB in 2022 which is 13% below the target level (Fig.14).



Data source: NTP data base

2nd Ensure early diagnosis of all forms of tuberculosis with detection of at least 90% of the estimated total number of tuberculosis cases by the end of 2025 with Rifampicin resistance and multidrug resistance by ensuring universal access to early diagnosis of all forms of tuberculosis and drug susceptibility testing, including using rapid methods.

National clinical protocol TB in the child was approved on November 3, 2023 and currently available. Updated National protocol of TB management in adults is in the process of MoH approval. However, the current diagnostic algorithm for TB and laboratory treatment effectiveness monitoring schedule for DS-TB require revision and update in line with the latest WHO recommendations.
In general, the number of suspects screened for TB is almost a total of 0,5% population[1] in 2022 (14,634).
There is good equipment and strong capacity of laboratory service in the country for effective TB detection. The TB laboratory service in Moldova is well developed. The routine courier sputum transportation system is functional and covers transportation of sputum specimens from peripheral laboratories to RRLs and NRL for culturing and DST. NRL is dislocated in separate 3-floor building, and

[1] According to the NTP data, Moldova's population is 3,005,405, as of 2022.

are equipped with bio-safety cabinets, thermostats, oven; BACTEC/MGIT, equipment's for molecular genetics investigations, LED microscopes, autoclaves, etc. The biosafety was improved with installation of class I&II bio-safety cabinets and an improved negative & positive pressure ventilation system. The technology procedures are dislocated on second (culture and DST) on the third floor (molecular methods). The first floor is designed for training. The laboratory has participated in different international projects financed by National Institute of Health (USA), USAID, FP7 & Horison2020 programs, GFATM, Stop TB Reach, FIND, WHO, European & Developing Countries Clinical Trials Partnership (EDCTP). As well Laboratory participate as bilateral programs with Harvard University, University of California from San Diego; Center of Research, Borstel; Koch Institute, Berlin, Germany; University of Amsterdam, KNCV, Netherlands; Health Protection Agency, UK; Swedish Institute for Infectious Disease Control; Medical University from Bucharest, Romania.
The laboratory personnel consist of 35 persons: from these 7 MD (2PhD), 3 biologists, 18 laboratory technicians and 7 auxiliar personnel. 5 MD have the international trainings in the WHO Centers (Riga, Borstel, Sondalo, Milan) and other Research Centers and Universities (Institute Pasteur, Paris; GenoScreen, Lile, France; University of California, San-Diego). These international training courses were with thematic of molecular methods, including Deeplex Myc-TB training.
Culture and phenotypic DST available at the NRL to all, including the new and re-purposed drugs. Number of Xpert machines (total 57 machines, currently all 57 labs have GeneXpert) and aligned sample transportation system allows nearly universal access to rapid WRDs and laboratory monitoring, including for aDSM (LFTs, electrolytes, etc.). There is a well-functioning national TB surveillance system, including consolidated with other services (HIV) and components (lab).
The NRL has the capacity to perform X-pert MTB/RIF and culture testing for any extrapulmonary samples, including blood and tissue samples and claims to have the necessary consumables and standard operating procedures (SOPs) in place. However, the diagnostic yield for the specimens is not assessed; and the patient and sample referral pathways are not clearly defined in the diagnostic algorithm. In situations when it is challenging to obtain adequate respiratory specimens for the diagnosis of pulmonary TB, such as in younger children. TB diagnosis provided inpatient. Stool examination could be a good opportunity to provide TB diagnosis outpatient for younger children. However, stool as a newly recommended specimen for the diagnosis of pulmonary TB in children using Xpert MTB/RIF or Ultra is examined only inpatient for those children who have indication while the gastric aspirate is the lead specimen in algorithm in Moldova. Another point to add to the diagnostic algorithm is Xpert XDR role in the TB diagnostic in Moldova. In expert opinion XDR test should be done for all MTD DNA positive samples despite Rif resistance or sensitivity. In such a way both H and FQ resistance can be detected immediately after MDB DNA detection and treatment started. As NRL should increase capacity on use of XDR machine during the visit, it was agreed to add to the current DS TB diagnostic algorithm at least patients with SS positivity. But for Rif resistant XDR will be used for all MTB DNA positive and Rif resistant.
Despite strong technical capacity on laboratory diagnosis (HR and skills), there is no equipment to perform targeted genome sequencing that is recommended by WHO and highly essential for implementation of shorter treatment regimens. M.tuberculosis DNA sequencing in the NRL began in 2010 in collaboration with the Borstel Research Center. Continued collaborations with the Broad Institute of M.I.T. and Harvard University in collaboration with the National Institute of Health (2014-2017); Translational Genomics Research Institute in collaboration with Yale University and Harvard University, USA (2018-2020). During this period, more than 5000 M. tuberculosis strains were

performed, extracted DNA and send for sequencing in these centers. The result of these studies is presented in the different prestigious international journals.

Currently, culture-based methods are widely used for TB diagnostics and drug susceptibility testing (pDST) of M. tuberculosis. However, pDST is slow with up to several weeks for diagnosis and poor performance for several drugs. This puts patients at high risk of being treated with ineffective regimens leading to failure, resistance development and further pre- /XDR strain transmission. pDST should be preceded by WHO-endorsed molecular tests, which provide rapid identification and detect the most common drug resistance-conferring mutations. However, these tests are limited with respect to the number of mutations that can be probed and do not provide information for common drugs used in the treatment of MDR-TB such as bedaquiline and linezolid. Here, genome-based approaches performed on sputum samples represent a rapid alternative allowing pathogen detection and differentiation as well as DST based on the detection of point mutations in its genome. In addition, genome analysis is a useful tool for high-resolution transmission surveillance.

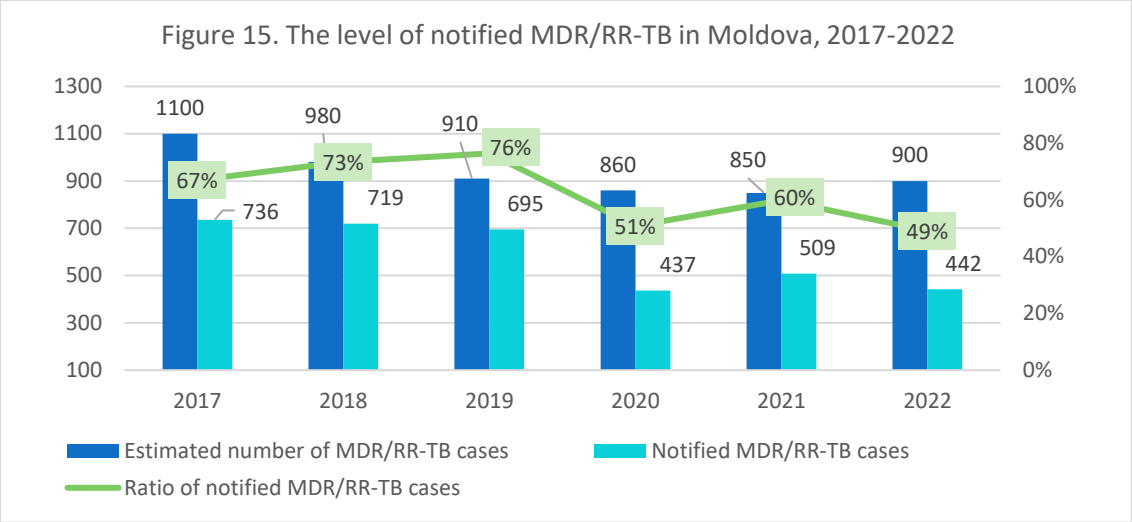
The internal and external quality assurance (EQA) systems have been in place in Moldova for all testing types for almost 20 years. In particular, since 2005, EQA has been provided annually for DST to first-line and for second-line drugs since 2009. According to this system, the average proportion of false results during the last 5 years has not exceeded 0.5%.

According to the NTP data there was a significant decrease in both the number of X-pert MTB/RIF tests performed and absolute diagnostic yield in 2022 compared to 2021 against the backdrop of an almost unchanged TB notification rate in these years (Table 8). The decreased X-pert positivity rate aggravates this gap and is reflected in the decline of the MDR-TB detection rate (Fig.15).

Table 8. Xpert MTB/RIF test results in the country, 2018–2023(6m).

Year	Total number of Xpert MTB/RIF tests	Invalid test results					Valid test results						
		Total invalid tests		"Test invalid"	"Test error"	"Test No Result"	Total valid tests	MTB(-)	MTB(+)				
		#	%						MTB(+) total	Proportion of MTB(+) out of valid tests	MTB(+)/RIF Sensitive	MTB(+)/RIF-Resistant	MTB+/RIF Inde-terminate
2018	39105	981	3%	56	823	102	38124	35493	2631	7%	1627	924	80
2019	29029	560	2%	33	442	85	28469	26226	2243	8%	1439	743	61
2020	12428	307	2%	27	249	31	12121	10827	1294	11%	778	446	70
2021	37377	672	2%	14	129	8	36705	33034	3671	10%	2349	1280	42
2022	19317	**326**	2%	20	279	27	18991	17385	1606	8%	1011	530	65
2023 (6m)	12512	**162**	1%	10	136	16	12350	11260	1090	9%	708	348	34

Source(s): NTP data



Data source: NTP data base

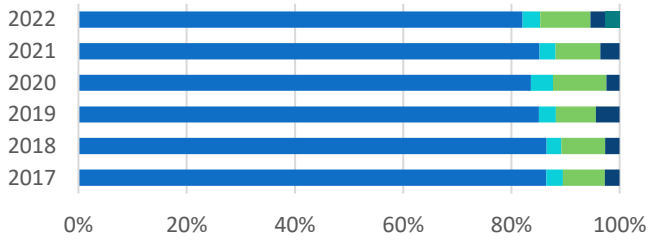
Bacteriological confirmation among pulmonary TB, although has increased over the last few years, still is lower than the End-TB target (>90%): In 2021 and 2022 it was 67%. The percentage of cases with rifampicin (Rif) DST results among bacteriologically confirmed cases quite high: In 2022 and 2023(6m) was 97%. However, coverage with DST result to Rif among all pulmonary TB cases was 70% and 71% in 2022 and 2023(6m) respectively, indicating possible under-detection of RIF-resistant cases. Possible reasons for low bacteriological confirmation among pulmonary TB may be an increase in clinically diagnosed TB due to TB over diagnosis, as well as insufficient coverage of all cases of pulmonary tuberculosis with rapid molecular tests (Fig.7). Also as a reason should be mentioned poor quality of collected specimen and previously mentioned low uptake of Stool test.

3rd Provide treatment for Rifampicin-susceptible and resistant tuberculosis and multidrug-resistant tuberculosis with achieving a treatment success rate of at least 90% for new cases and relapses of sensitive tuberculosis and cases of Rifampicin-resistant tuberculosis and tuberculosis with multidrug resistance – at least 80% by 2025 by ensuring equal access to quality and consistent care for all people with tuberculosis, including children, through a person-centered approach and needs-based support.

The management of MDR/RR-TB is one of the main components of the National TB Control Program in Moldova. DR-TB treatment is administered in both inpatient and outpatient settings in the civilian and in the penitentiary sectors. In the civilian sector, the treatment delivery model for DR-TB is a combination of hospitalization at inpatient TB facilities and therapy continuation at outpatient settings, which are widely available across the country.
Hospitalization is not a mandatory TB treatment modality in Moldova; however, most patients are hospitalized at the start of the MDR-TB therapy. The main criteria for hospitalization are the clinical condition of the patient. Discharge from the hospital mostly takes place upon bacteriological conversion (1 to 2 months of therapy), and adequate DOT treatment and care at the polyclinic closer to the patient's place of residence are provided for the patients. During the visit a trend of hospitalization time reduction was seen and NTP was ensured to continue this trend. At this moment there is one hospital with two locations (Chisinau and Vorniceni) dealing with treatment of MDR TB patients. For newly diagnosed and most severe cases hospitalization is done in a central facility, at

the same time for retreatment cases and for those patients with social problems and impossibility to organize outpatient treatment other hospital is used. However, the mission observed that there are patients with extensive resistance (often smear positive) being readmitted to a central hospital where infection control measures are only partially followed at the moment (those with positive smear isolated by rooms only and all walking in one corridor, insufficient number of UV lamps per m2). All group A, B and C drugs are sustainably available for TB treatment in Moldova. Transition to fully oral treatment for DR-TB is complete both under programmatic and OR conditions.
There is a well functional DR-TB consillium (works in person and remotely) with an established meeting schedule and SOP for case presentation and feedback.
Early detection and management of drug toxicities is ensured through safety monitoring schedule and trained TB doctors and is done in accordance with latest guidelines.
In the frame of patient-centered approach various models of treatment adherence support are available: DOT in ambulatory, VST, conditional cash incentives for adherence, transportation cost.
There is a strong collaboration with CSO on TB control and their meaningful engagement in implementation of VST and home based DOT. Social contracting available with funding of National Health Insurance.
Despite the NTP achievements in the TB management area there is a gradual decline in a treatment success rate among new and relapse TB cases of sensitive tuberculosis. Thus, treatment success rate among new and relapse TB cases reached 85% in the 2021 cohort which is 5% below the target level (Fig.16). The implementation of a new shorter regimen for DS-TB which is planned in 2024 for those patients who are at great risk of lost to follow up could improve the treatment success rate.

Figure 16. TB treatment outcomes, new and relapse cases notified, 2017-2022 cohorts



	2017	2018	2019	2020	2021	2022
Treatment success	86%	87%	85%	84%	85%	82%
Treatment failed	3%	3%	3%	4%	3%	3%
Died	8%	8%	7%	10%	8%	9%
Lost to follow up	3%	3%	4%	2%	4%	3%
Still on treatment	0%	0%	0%	0%	0%	3%

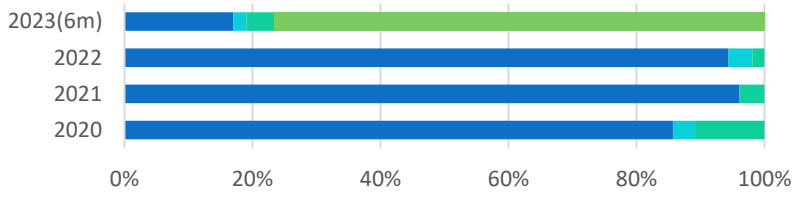
*Source(s):*NTP data

Despite implementation of the new and fully oral treatment regimens overall treatment outcomes for DR-TB patients remain quite low – 62% in 2020 cohort. However, if disaggregate by the regimen type, the treatment success is quite high (94% in 2022 cohort) for mSTR (Fig.17) and low for longer treatment regimen (59% and 40% in 2020 cohort among RR/MDR-TB and XDR-TB cases respectively), with majority of patients being treated with longer regimens. The number of patients enrolled on

shorter treatment regimens gradually increased and in 2022 and 2023 (6m) reached 22% and 34% respectively (Tab.12). In the first Cohort among other exclusion criteria were: prison sector and Left bank. On the following Cohorts this issue was solved, but nevertheless main reasons for not starting the shorter regimen even after including these two parts into screening are: ~ 20 % of FQ resistance, quite high proportion of refusal to participate which decreased by time as doctors acquired more confidence if giving informed consent, severe condition of the patients (we still think that this proportion is too high, but for that separate assessment is needed), and high proportion of patients who previously received some of mSTR component drugs. In addition (and maybe not for the report) during the mission we found that in the Left bank physicians have still high resistance against introduction of mSTR, in their opinion, due to extra work). It seems an obvious opportunity to achieve the goal in treatment success rate for Rifampicin-resistant tuberculosis and tuberculosis with multidrug resistance in case of preferential enrollment to shorter treatment regimen.

The country is poised to introduce the BPaL(M) regimen for DR-TB patients, pending approval of new guidelines by the Ministry of Health in the first week of February. While readiness assessments, training sessions, and drug availability are in place, the actual implementation may be delayed until after the guideline approval. The plan, as discussed and agreed upon during recent missions, is to gradually scale up the enrollment of RR TB patients onto the BPaLM regimen, aiming for nearly 50% coverage by the end of 2024 and actually reaching previous prognosis for 2024 (248 patients). mSTR should be continued for those patients who are not eligible for BPaL(M) in the next year

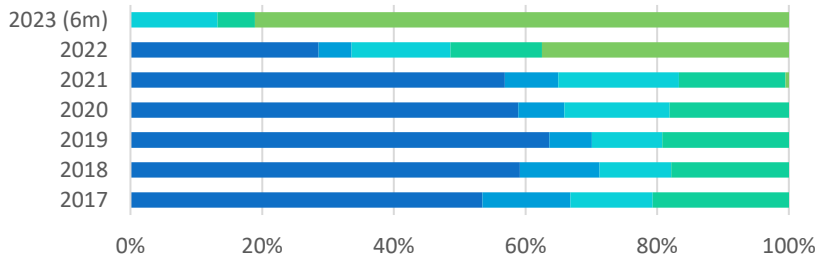
Figure 17. TB treatment outcomes, RR/MDR-TB cases enrolled to shorter treatment regimen, 2020-2023(6m) cohorts



	2020	2021	2022	2023(6m)
Treatment success	86%	96%	94%	17%
Treatment failed	0%	0%	0%	0%
Died	4%	0%	4%	2%
Lost to follow up	11%	4%	2%	4%
Still on treatment	0%	0%	0%	77%

*Source(s):*NTP data

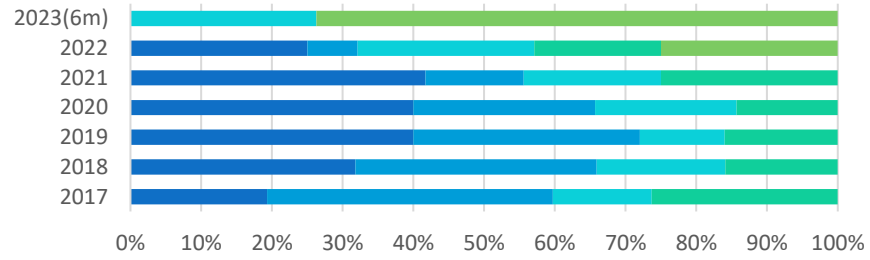
Figure 18. TB treatment outcomes, RR/MDR-TB cases notified, on longer treatment regimen, 2017-2023(6m) cohorts



	2017	2018	2019	2020	2021	2022	2023 (6m)
Treatment success	55%	59%	64%	59%	57%	29%	0%
Treatment failed	14%	12%	7%	7%	8%	5%	0%
Died	13%	11%	11%	16%	18%	15%	13%
Lost to follow up	21%	18%	19%	18%	16%	14%	6%
Still on treatment	0%	0%	0%	0%	1%	38%	81%

*Source(s):*NTP data

Figure 19. TB treatment outcomes, XDR-TB cases notified, 2017-2023(6m) cohorts



	2017	2018	2019	2020	2021	2022	2023(6m)
Treatment success	19%	32%	40%	40%	42%	25%	0%
Treatment failed	40%	34%	32%	26%	14%	7%	0%
Died	14%	18%	12%	20%	19%	25%	26%
Lost to follow up	26%	16%	16%	14%	25%	18%	0%
Still on treatment	0%	0%	0%	0%	0%	25%	74%

*Source(s):*NTP data

Table 12. Number of RR/MDR-TB patients enrolled in treatment, 2017-2023 (6m)

	2017	**2018**	**2019**	**2020**	**2021**	**2022**	**2023 6m**
Total number of RR/MDR-TB patients enrolled in treatment (XDR included)	976	921	882	529	561	487	275
– out of which, in penitentiary sector	71	53	70	34	32	28	13

– out of which, children (0-14 years)	23	22	32	12	18	13	11
– out of which, on shorter treatment regimens (STRs)	0	0	0	28	102	108	94

*Source(s):*NTP data

4th Ensure universal coverage and continuity of health services, management of comorbidities and socio-economic problems based on human needs by expanding cooperation with national programs on HIV, hepatitis, drugs, alcoholism, diabetes, mental health, etc., cooperation with the penitentiary, social sectors, and civil society.

During the mission, we were not able to assess the interaction of the NTP with all related services. But we can confidently note the close cooperation with national programs on HIV.
Significant results were achieved by including specialists with the opposite profile (a TB specialist working for an infectious disease service and vice versa) in the staff of the relevant medical institutions, which allowed a closer interaction in the more effective management of patients with HIV/TB co-infection. Good results were demonstrated by the project which included an audit of all TB/HIV cases. There is a strong cooperation between the NTP and penitentiary, social sectors and civil society which were mentioned above.

The role of in-country Partners and CSOs/NGOsc

Engagement of civil society in the Republic of Moldova's TB response is guided by the END TB Strategy, highlighting the crucial role of NGOs. The current National TB Strategic Plan (NSP) for 2021-2025 underscores the active involvement of NGOs and individuals affected by TB. Thanks to NGOs' input into the TB strategy, their service coverage has expanded since 2021.

NGOs have become increasingly active as members of the Country Coordinating Mechanism (CCM), significantly contributing to the development of the 2021-2025 NSP, the 2021-2023 Global Fund funding request, and the corresponding grant currently being executed. The current NSP incorporates NGO-related indicators monitored by NTP, recognized as a good practice in the WHO European Region. NGOs have played a vital role in locating individuals with TB who were previously unidentified, surpassing the 2021 national targets for both case finding and adherence support provision.

Civil society organizations (CSOs), primarily community-based and increasingly community-led, have significantly contributed to the detection of undiagnosed TB cases. Since the onset of full-scale war in Ukraine, NGOs such as Speranta Teri, Clinica ES and SMIT in Balti (located in the northern part of the country) as well as AFI in southern part of the Republic of Moldova have actively supported refugees, including those affected by TB, DR-TB, and HIV. Support for patients and their families has encompassed services such as hotline information, finding housing, home patronage, and social support. CSO initiatives, which involve questionnaire-based symptom screening and assistance in navigating the healthcare system, have demonstrated effectiveness and resource efficiency. Targeted screening of high-risk populations by CSOs has resulted in the identification of undiagnosed TB cases with fewer resources and provision of TB preventive treatment for people from close contact with person confirmed with TB. Overall support to meaningful engagement of CSOs in national TB

response has been provided from Center PAS. It was proposed during the visit that such experiences should be documented and published.

Current CSO service models emphasize:

1. Continuity of services from case finding to treatment support and, if necessary, rehabilitation and client reintegration.
2. Collaboration with governmental healthcare providers.
3. Awareness of and protection for human rights.

CSOs' contributions to the TB response align with key characteristics of CSO service models. Commonalities include the widespread use of peer support, provision of psychological/motivational support, and peer-to-peer counseling.

Community-based active case finding has been effective, leading to improved case detection in patients from vulnerable groups, shorter diagnostic delays, and successful patient engagement in care. Nine non-governmental organizations (6 on the right bank and 3 on the left bank)systematically screened high-risk groups for TB, identified based on a decline in TB case notifications. CSOs collaborated with primary care providers and local public authorities to develop screening lists and establish out-of-hours screening schedules. CSOs facilitated transportation to screening facilities and provided accompaniment. The resulting radiological assessments were sent to TB specialists or family doctors, with individuals accompanied to specialist appointments for further diagnostics if necessary.

Another community-based initiative is video-supported treatment (VST), largely implemented by CSOs to ensure treatment support. VST allows TB patients to use mobile devices and secure applications to record themselves taking their medication, which is then shared with healthcare providers. VST clients can also use the app to report adverse drug reactions or other health concerns.

An exemplary organization in this regard is the Moldova National Association of Tuberculosis Patients (SMIT), a non-governmental, non-profit organization officially registered in 2010. SMIT supports individuals affected by TB and their families, advocating for an inclusive public health system, protecting the rights of TB patients, and promoting people-centered care. Since 2011, SMIT has represented patient interests before various stakeholders, including local health authorities, clinicians, government officials, parliament members, and WHO representatives.

The provision of social support is a critical aspect of CSO work, with SMIT offering psychosocial support tailored to individual client needs. This support is delivered in partnership with multiple stakeholders, including other NGOs and local authorities, employing a multidisciplinary approach.

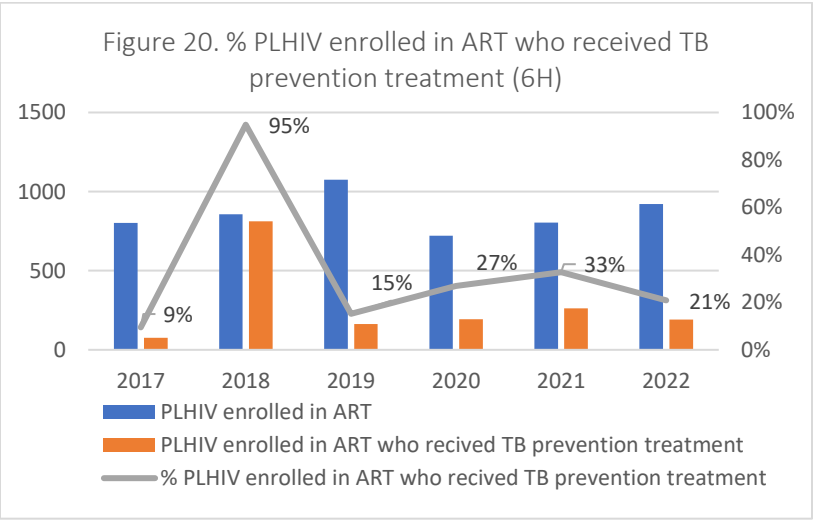
Securing funding remains essential for NGO participation in TB response activities. Currently, both inpatient and outpatient services provided by NGOs rely on external funding sources, highlighting the need for sustainable financing mechanisms. Efforts should be directed towards identifying potential domestic funding sources for psychosocial support and establishing a cost framework similar to that for active case finding. While social contracting with the Mandatory Health Insurance Fund (CNAM) presents challenges, it represents a significant achievement in NGO-government collaboration. Hence, ongoing endeavors are essential to ensure the social contracting of NGOs from national and local funding sources to support this critical component across the entire country.

5th Reduce the level of transmission of tuberculosis in the community through preventive measures to combat tuberculosis, including the expansion of preventive treatment for tuberculosis in people living with HIV and their contacts tuberculosis in adults and children, and ensuring at least 95% vaccination rate with Bacillus Calmette-Guerin vaccine in newborns.

National TB screening and prevention protocol was developed in line with the latest WHO recommendations and approved by the Ministry of Health on May 31, 2023 and currently available. Series of trainings according to the new protocol implementation were provided for medical personnel of TB services and primary health care facilities in the civilian sector. And additional training was provided for the medical staff in the penitentiary sector. Educational materials about TBI and TPT for representatives of different target groups were developed.
There were prioritized 18 risk groups for the TB preventive treatment in Moldova according to the new protocol. Considering that the implementation of the new protocol with the new report form began in the second half of 2023 there is no data by risk groups available.
New TPT regimens (3HP and 1HP) are available in civilian and penitentiary sectors. Implementation of the new TPT regimen has started from the end of 2020.

Rifapentine based regimen also included in updated clinical protocol of HIV management in adults and children but despite this, a 6-th month of Isoniazid is still predominantly prescribed for TB prevention among PLHIV. Due to the long duration of the TPT course, there is a large number of TPT refusals. Thus, the coverage with TPT in 2022 was 21% among PLHIV (Fig.20).

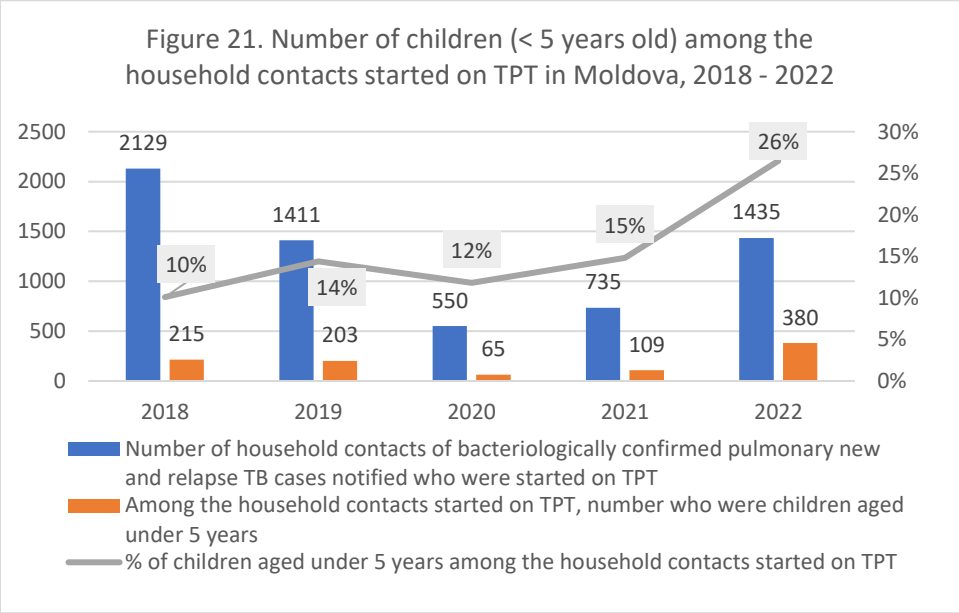
Figure 20. % PLHIV enrolled in ART who received TB prevention treatment (6H)



Source(s): National HIV Program data

According to the WHO TB country profile the coverage of children (aged < 5 years) household contacts of bacteriologically-confirmed TB cases with preventive treatment in 2022 was 100%, while coverage of all household contacts of bacteriologically-confirmed TB cases was 58%.

There is no data available about the number of household contact persons eligible for TPT. According to the profile data the number of those who started TPT drop in 2020-2021 and rose to the 2019 level in 2022 perhaps due to NTP activities implemented in screening and prevention area (Fig.21).



Source(s): WHO TB country profile

The information about the level of TPT completion among household contacts is available starting with the 2020 cohort. Thus, the TPT completion rate was 80% in the 2020 cohort and 75% in the 2021 cohort.

The lack of TB screening and prevention database surveillance makes it difficult to collect data at each level of the cascade for all prioritized 18 risk groups.

TBI database surveillance

Currently, data on TPT adherence and outcomes are not routinely collected at the national level. TPT treatment cards, registries, monitoring and reporting forms was developed and spreading among primary health care, penitentiary sector and AIDS center all over the Republic.

The NTP uses a centralized electronic database "SIME TB" (https://simetb.ifp.md/Download/oficial_docs/) to collect data through all TB outpatient and inpatient clinics, for monitoring and evaluation of active TB cases, as well as for general surveillance and reporting purposes. "SIME TB" includes information about index cases. However, there are no respective fields available in "SIME TB" that would allow data collection on other groups for the screening and TBI care cascade. In addition, reasons for TPT non-completion, which could be rather useful for program assessment to distinguish TPT discontinuation due to adverse events or active TB detection during TPT that can be a result of improper active TB screening, death, or a person's decision. In this case online application that capture TB preventive treatment individualized data and allow following up the preventive care cascade would be the best solution. It should lead to improvement in identification and calculation of targets, help in setting up TB screening, and improve TB detection and

enrollment for TPT overall. It could be useful to connect App with “SIME TB” via index patients for care cascade evaluation among contact persons.

6th Adopt policies and implement measures to achieve the goals of reducing the burden of tuberculosis by introducing a person-centered approach, reducing social determinants, adapting financing mechanisms to a person-centered model at every level of care, with the participation of civil society organizations and people affected by tuberculosis.

Moldova is a pioneering country in the European Region on the engagement of the communities to deliver people centered TB care along the patient pathways. Reducing the catastrophic costs to TB patients and their household members by providing decentralizing health care, social support and community involvement. Civil society organizations ensure continuity of services from case identification to treatment support and, where necessary, rehabilitation and reintegration of clients through the collaboration with providers of government health services. Also, they lead the fight against stigma and discrimination in the society via awareness and protection of human rights.

7th Strengthen national research and innovation capacity for decision-making to accelerate and improve the national response to tuberculosis.

The country continues to promote innovation through scientific and operational research in support of the implementation of the National Tuberculosis Control Program.
NGOs have largely initiated and implemented video-supported treatment (VST), a relatively new activity that was piloted in 2016 and is now being implemented throughout the Republic. As a result, VST significantly improved adherence, saved time, reduced out-of-pocket expenses for people with TB, and increased treatment satisfaction. According to key informants, further expansion of VST provision by NGOs is possible and desirable.
The main scientific projects and operational studies which were done, continued or started are listed below.

Scientific projects:

1. Complex multifactorial analysis of the epidemiological situation in territories with different levels of tuberculosis incidence. 2015-2019
2. Diagnostic aspects and treatment management of tuberculosis with extensive resistance (XDR AND XXDR). 2015-2019
3. Optimizing rapid diagnosis of resistant tuberculosis cases by improving susceptibility testing methods. 2015-2019
4. Immune peculiarities of pulmonary tuberculosis patients with primary and secondary resistance. 2015-2019
5. Medico-social, microbiological and immunogenetic aspects of tuberculosis developed in the outbreak. 2015-2019
6. Clinical-immunological and treatment particularities of TB/COVID-19 co-infection. 2020-2021
7. Peculiarities of relapse of pulmonary tuberculosis. 2020-2023
8. General non-specific adaptation reactions of the body in patients with TB/HIV co-infection. 2020-2023
9. Clinical-immunogenetic and microbiological peculiarities of tuberculosis with multiple locations. 2024-2027.

10. Evolution, transmission and control of drug-resistant tuberculosis. 2024-2027.

Operational studies:

1. mSTRs (modified short treatment regimens) for MDR/RR-TB cases were initiated in Moldova. 2020 – 2025
2. A gender-focused qualitative study on health care-seeking behavior and access to tuberculosis treatment among mobile populations from the Republic of Moldova. https://publications.iom.int/books/gender-focused-qualitative-study-health-carep-seeking-behaviour-and-access-tuberculosis
3. Application of new tests for the active detection of tuberculosis in HIV positive patients. 2022 - 2023
4. Determination of local calibration of computer-aided detection (CAD) software thresholds and other parameters for the detection of pulmonary TB in the Republic of Moldova. 2022 - 2023
5. Differential diagnosis between active tuberculosis and pulmonary aspergillosis. 2022 - 2023
6. Study on catastrophic expenditures for TB patients. 2023 - 2024
7. Evaluation of the quality of clinical management of TB/HIV co-infection cases in the period 2015-2021 and evaluation of the causes of death of people living with HIV. 2023 - 2024

NTP is planning to conduct several operational research according to treatment of HCV/TB co-infection (research protocol was approved by IRB committee) and piloting of ultra-portable X-ray systems/CAD implementation in frame of a new TB screening and prevention protocol.

The performance of NSP indicators are summarized in the Tab.1.

Table 1. The progress of the NSP indicators

#	**Indicator**	**Result, 2022 vs 2015**	**Goal by 2025**
1	TB deaths	23% reduction	75% reduction
2	TB incidence	27% reduction	50% reduction
3	The level of notified MDR/RR-TB	49%	at least 90%
4	TB treatment success among new and relapse cases	80%	at least 90%
5	TB treatment success among new cases MDR/RR-TB	62%	at least 80%
6	The level of vaccination of newborns with the Bacillus Calmette-Guerin vaccine	94- 97%	at least 95%

Assessment the effectiveness of implementing the current drug-resistant TB (DR-TB) control project supported by the Global Fund

The program "Strengthening tuberculosis control and reducing AIDS-related mortality in the Republic of Moldova", financed by the Global Fund to Fight AIDS, Tuberculosis and Malaria, derives from the

National TB Response Program (2022-2025) and the National HIV Prevention and Control Program/ AIDS/STIs (2022-2025).

This project includes a dedicated focus on addressing DR-TB. The objectives (Objective 2: Improve DR-TB Treatment Results) related to DR-TB within the project are as follows:

- Implement new short oral treatment regimens for DR-TB.
- Expand patient-centered approaches for integrated support, monitoring, and follow-up activities.

The emphasis on DR-TB reflects the program's commitment to enhancing the outcomes of treatment for individuals affected by drug-resistant strains of tuberculosis. By implementing innovative treatment regimens and adopting patient-centered approaches, the project aims to contribute to the overall reduction of TB transmission and mortality, aligning with the broader goals of the National TB Response Program and the Global Fund to Fight AIDS, Tuberculosis, and Malaria.

The progress report of the GF project for 2023 outlines various activities and initiatives carried out according to the Objective 2:

- A multidisciplinary team, including a treatment adherence coordinator, psychologist, and social assistant, was established to support individuals affected by TB and their families.
- Psychosocial support is provided to ensure adherence to TB treatment, with a particular focus on the left bank of Moldova.
- The implementation of mSTR began in 2022, following a planning meeting held in Tiraspol in December 2021.
- A multidisciplinary team is supporting the operational study at the TB Bender Hospital and eight districts in the region.
- A collaboration agreement was signed between the PAS Center and IMSP IFP Chiril Draganiuc to ensure the continuity of the mSTR operational study in 2023.
- During quarter III.2023, 132 patients (61 with sensitive TB and 71 with DR-TB) were supervised by DOT assistants. Of these, 108 were adherent to treatment (82%), and 36 successfully completed treatment (27%).
- A total of 59 detainees, including 17 prisoners with TB, received support.
- Within the mSTR Operational Study, prisoners with TB were provided support, and 17 of them successfully completed treatment.
- Monitoring and evaluation activities are conducted to assess the progress of TB service and DOT assistant activities.
- In the reporting period, 463 patients were evaluated, with 175 enrolled in treatment.

- Financial support is provided to people with TB on the left bank through the "I LIKE VST" platform.
- The platform is updated for further integration into a new electronic record-keeping and monitoring system for TB.
- A total of 146 patients (91 with sensitive TB and 55 with DR-TB) received psycho-social support services during quarter III.2023.
- Civil society actively participates in the TB response through small grants focused on education, information, and interventions to increase treatment adherence and prevent relapses.

As a continuation of these activities is planned to include the purchase of 900 mobile phones for individuals enlisted in the VST on both banks for education, information, and interventions aimed at increasing adherence to treatment in the years 2024-2026.

Despite implementation of the new and fully oral treatment regimens overall treatment outcomes for DR-TB patients remain quite low – 62% in 2020 cohort. However, if disaggregate by the regimen type, the treatment success is quite high (94% in 2022 cohort) for mSTR (Fig.17) and low for longer treatment regimen (59% and 40% in 2020 cohort among RR/MDR-TB and XDR-TB cases respectively), with majority of patients being treated with longer regimens. The number of patients enrolled on shorter treatment regimens gradually increased and in 2022 and 2023 (6m) reached 22% and 34% respectively. Main areas to pay attention and to consider further improvements were discussed.

1. Ensure that all GeneXpert positive samples (including in Balti and Vorniceni lab) are sent to the NRL for further testing with XDR test, and culturing according to the national algorithm.
2. Low uptake of shorter regimen is risk factor for low uptake for BPaLM as well and that means that main instrument –MDR TB consillium may paly crucial role in prescribing and shorter regimens and motivation physicians across the country.
3. For patients receiving longer regimen treatment regimen currently in many cases that includes Z, Z should be prescribed only in cases when DST for it is available and according to the ABC approach.
4. Use of Bdq and Dlm is still constricted by 6 months, this practice should be stopped.
5. At this moment 16% of all TB patients are on VST and in several regions **no** 7-day treatment available. With start of BPaLM the proportion of VST should where it is possible be increased, but more important directly observed treatment (by all means) for 7 days per week should be organized.

Calculations and advise on estimated number of multi drug-resistant TB (MDR TB) and extensive drug resistant TB (XDR-TB) patients for the next period of treatment.

At this moment calculation for next years and also procurement for 2024 are per table below.

Year/Regimen	2024	2025	2026
BPaL	71	69	67
BPaLM	177	170	163
Adult LTR Bdq 6 month with Lfx-250	123	119	114
Adult LTR Bdq 6 month with Mfx	53	50	48
Adult XDR-18 month 12Bdq; 12Dlm	37	35	33
Total	461	443	425

As per results (mentioned previously in the report) and agreement with the country, mSTR should be continued for those patients who are not eligible for BPaL(M). Those are children below 14, patients low BMI (below 16), pregnant women and HIV positive patients with CD_4 lower than 100. And taking into account that most probably the incidence in 2024 will not be lower than 2023, country could consider using mSTR in case also if amount of Pa will not be sufficient. Country team was advised to use BPaLC regimen for at least 5 % of patients in the next years, especially for retreatment cases with confirmed FQ sensitivity, but due to financial constrictions from GF, team is skeptical if their capacity to allow introduction of one more OR.

Total number of RR TB patients diagnosed in 2023 are 517, out of them 278 are newly diagnosed and 238 previously treated. Out of 278 newly diagnosed patients 36 had FQ resistance and out of 238 previously treated 80 FQ resistant and received Bdq or Lzd or both. Total number of XDR cases for the last year was 27. Children under 14 were 19, pregnant patients –only one. Patients with miliary TB or extrapulmonary TB 19 and 14 respectively. HIV positive 62, with no specification on CD4 count. As new DR TB guidelines are panned to be submitted and approved by the MoH by the first week of February, introduction of BPaL(M) could not happen earlier. From the readiness to start BPaL(M) perspective (training conducted and drugs are in the country already) country is ready to start. During the mission scale up was discussed and agreed that for the 2024 almost 50 % of all RR TB patients will be enrolled to the BPaLM regimen, in the first quarter smaller amount and increasing numbers with the next quarters to reach 50% out of all MDR TB patients. I consultant view proportion of BPaLM should reach 60 % at least in following years. Also use of longer regimen should be renegotiate after first experience on use of BPaL(M). Complete agreement was not achieved on smaller numbers of longer regimens.

According to these numbers and discussions with country team advise on estimated numbers of M/XDR TB cases was done and showed in the table below.

Treatment in year	**Duration**	**2025**	**2026**	**2027**
		%	**%**	**%**
Total estimated number of RR/MDR-TB cases		**100**	**100**	**100**
BPaL	26 weeks	5	10	10
BPaL	39 weeks	2	4	4
BPaLM	26 weeks	61	60	60
mSTR, Regimen 1 OR	39 weeks	2	2	2

mSTR, Regimen 2 OR	39 weeks	1	1	1
Bdq(9)-Lfx(18)-Lzd(18)-Cfz(18)-Cs(18)	18 months	13	8	8
Bdq(9)-Mfx(18)-Lzd(18)-Cfz(18)-Cs(18)	18 months	8	7	7
Bdq(18)-Dlm(12)-Lzd(18)-Cfz(18)-Cs(18)	18 months	8	8	8

Annexes

Annex 1. Agenda

MISSION AGENDA

Date and proposed time	***Organization, participants***	***Discussion points***
	Monday, 11 December, 2023	
9:30 – 10:00	**Briefing at the Ministry of Health** **Participants:** The TB focal point: Ministry of Health, Secretary of State, Public Health – Angela Paraschiv, angela.paraschiv@ms.gov.md NTP Coordinator – Valentina Vilc, valentina_vilc@yahoo.co.uk Director of the Institute of Phthisiopneumology "Chiril Draganiuc" – Doina Rusu, doina.rusu.ifp@gmail.com Head of the Department of Coordinating of the National Tuberculosis Program (NTP), Institute of Phthisiopneumology "Chiril Draganiuc" – Andrei Corloteanu, acorloteanu@gmail.com GLC and GDF consultants	The goals and objectives of the GLC mission
10:15– 12:00	**Meeting with the NTP management team** **Participants:** NTP Coordinator – Valentina Vilc, valentina_vilc@yahoo.co.uk Director of the Institute of Phthisiopneumology "Chiril Draganiuc" – Doina Rusu, doina.rusu.ifp@gmail.com Head of the Department of Coordinating of NTP, Institute of Phthisiopneumology "Chiril Draganiuc" – Andrei Corloteanu, acorloteanu@gmail.com Head of NRL, Institute of Phthisiopneumology "Chiril Draganiuc" – Valeriu Crudu, valeriu.crudu@gmail.com Deputy director of Institute of Phthisiopneumology – Ana Donica, annadonica741@gmail.com	- TB Program Overview – TB epidemiology - TB case pathway – from symptoms to diagnosis and treatment - RR/MDR-TB treatment organization (inpatient/outpatient) and strategy (DOT, VST) - Funding of TB programmatic interventions, including diagnosis, treatment and the treatment safety tests/clinical monitoring at central and regional levels - TB Contact Investigation – Policy, practice, implementation quality

	GLC and GDF consultants	- Active (systematic) Screening of TB - TBI screening and TB preventive Treatment (TPT) - Interventions under the Global Fund Proposal - Challenges and room for improvement GDF consultant specific discussion points
12.00 - 13.00	Lunch	
13:00 – 15:30	**Meeting with the NRL Head** **Participants:** Head of NRL, Institute of Phthisiopneumology "Chiril Draganiuc" – Valeriu Crudu, valeriu.crudu@gmail.com NTP Coordinator – Valentina Vilc, valentina_vilc@yahoo.co.uk Microbiologist NRL - Nadejda Turcan, nadia.turcan@gmail.com Microbiologist NRL - Alexandru Codreanu, alexandru.codreanu@yandex.com Head of the Department of Coordinating of NTP, Institute of Phthisiopneumology "Chiril Draganiuc" – Andrei Corloteanu, acorloteanu@gmail.com GLC consultants	- National Tuberculosis Diagnostic and treatment monitoring algorithms; - Laboratory network; - Sample Transportation system; - Access to GeneXpert testing – number of modules, availability of cartridges, training of personnel, annual numbers of GeneXpert testing - Line Probe Assay – access, kits, infrastructure, annual numbers of LPA investigations; - Culture and DST – tubes and reagents, biosafety cabinets, annual numbers of cultures disaggregated by result (positive, negative, contaminated); - TB suspects investigation; - Internal and External quality assurance – last report; - Challenges and room for improvement.
13:00 - 15:30	**Meeting with NTP Coordination Department** Head of the Department of Coordinating of NTP, Institute of Phthisiopneumology "Chiril Draganiuc" – Andrei Corloteanu, acorloteanu@gmail.com	- Forecasting, quantification and early warning system, human resources, roles and responsibilities for each of these tasks, generation of the QuanTB reports (timeliness, completeness and accuracy);

	NTP Coordinator – Valentina Vilc, valentina_vilc@yahoo.co.uk Institute of Phthisiopneumology "Chiril Draganiuc", Department of Coordinating of the NTP, Phtisiopneumologist - Tatiana Gulpe, gulpe@mail.ru Institute of Phthisiopneumology "Chiril Draganiuc", Department of Coordinating of the NTP, Phtisiopneumologist – Sclifos Olga, olga.gheorghe.sclifos@gmail.com Institute of Phthisiopneumology "Chiril Draganiuc", Department of Coordinating of the NTP, Phtisiopneumologist – Plamadeala Oxana, mdoxana@gmail.com Institute of Phthisiopneumology "Chiril Draganiuc", Department of Coordinating of the NTP, Phtisiopneumologist – Cula Evghenia, mdevghenia@gmail.com Institute of Phthisiopneumology "Chiril Draganiuc", Department of Coordinating of the NTP, Phtisiopneumologist – Axenti Ecaterina, catrin-ax@mail.ru GDF consultant	- Stock management at each level, drug distribution system for state and TGF funded TB medicines; - Information management including LMIS and patient data for quantification, the data collection and reporting system, including the flow of patient related and PSM information (collection, reporting, consolidation, etc.) from the central level to the treatment sites. GDF consultant specific discussion points
15:30 – 16:30	**mSTR meeting** Members of the TB Management Committee DR Institute of Phthisiopneumology "Chiril Draganiuc", Department of Coordinating of the NTP, Phtisiopneumologist - Tatiana Gulpe, gulpe@mail.ru Institute of Phthisiopneumology "Chiril Draganiuc", Department of Coordinating of the NTP, Phtisiopneumologist – Sclifos Olga, olga.gheorghe.sclifos@gmail.com Institute of Phthisiopneumology "Chiril Draganiuc", Department of Coordinating of the NTP, Phtisiopneumologist – Plamadeala Oxana, mdoxana@gmail.com Institute of Phthisiopneumology "Chiril Draganiuc", Department of Coordinating of the NTP, Phtisiopneumologist – Cula Evghenia, mdevghenia@gmail.com GLC consultants	- Monitoring the implementation of the operational study mSTR
16.00 – 17.00	**Meeting with Medicines and Medical Devices Agency** **Participants:**	- Overview of the PV activities countrywide - Legal and policy aspect of TB related PV in ARM

	Head of the Department of Coordinating of NTP, Institute of Phthisiopneumology "Chiril Draganiuc" – Andrei Corloteanu, acorloteanu@gmail.com GDF consultant	- Mandate, roles and responsibilities of the PV department - Mandatory reporting criteria and requirement - Causality assessment (who is responsible and has a capacity) - Reporting forms and modes (paper vs electronic) - Available PV and aDMS data and analysis (total spontaneous report, TBdrug related reports out of them, distribution of the reporting facilities, distribution of report by event, events severity, events seriousness, unexpected events, events outcomes, causal relationship - Challenges and room for improvement GDF consultant specific discussion points
Tuesday, 12 December 2023		
08.00	Departure to Bălți	
10.30–16.30	**Meeting with NGO representatives** **Participants:** **ONG „Speranța terrei„:** Feodora Rodiucova - director ONG ,,Speranța terrei,, rodiucova@gmail.com Snejana Lungu Outreach - snejanalungu20@mail.ru Margarirta Preachina - Manager, social assistant-mpryakina@bk.ru Irina Razdorojnaia - social assistant, irinarazzzdorojnaia@gmail.com **Union for Equity and Health, Balti city, 7 A Victoriei street:** - Ala Iatco, president, protineret@yahoo.com	-

	- Oxana Buzovici, program coordinator, obuzovici@gmail.com - Arina Vetreniuc, psychologist, arina.vetreniuc@gmail.com - Alexandr Stolear, social worker - Aliona Babina, social assistant, M&E specialist, aljona1747@gmail.com **"SMIT"** https://smitmd.wordpress.com/ **:** Pavel Rucsineanu, Coordinator and administrator, smit_tb@yahoo.com Oxana Rucsineanu, Executive director, oxana_rucs@yahoo.com Alexandr Andries, Outreach ACF and adherence, andrieshalexandr@gmail.com Natalia Baranova, Outreach Floresti, natalia.baranova1977.11@gmail.com Stela Dragutan, Assistent, dragutan.stela@yahoo.com	
16.30	Departure from Bălți	
	Wednesday, 13 December 2023	
9.00 – 12.00	**Institute of Phthisiopneumology "Chiril Draganiuc" (IPP)** – Committee of Management of DR TB – MDR Department **Participants:** Director of the Institute of Phthisiopneumology "Chiril Draganiuc" – Doina Rusu, doina.rusu.ifp@gmail.com Deputy director of Institute of Phthisiopneumology – Ana Donica, annadonica741@gmail.com Head of the Department of the Consulting Polyclinic of Institute of Phthisiopneumology "Chiril Draganiuc", chairman of the management committee of TB DR - Aliona David, alionadavid@gmail.com Institute of Phthisiopneumology "Chiril Draganiuc", Head of MDR TB Department - Olga Crasnova, olga.gulea@gmail.com	- Overview of treatment regimens, treatment monitoring and follow up - Availability of aDSM activities within TB guideline (mandatory monitoring schedule, AE reporting, forms) - Committee format, case presentation forms, interaction with regional and district level, frequency of meetings, etc - Prescribed Treatment regimens/drugs - Mentorship of the regional doctors - Follow-up of discussed on treatment cases - DS-TB and MDR/RR-TB card review

	Institute of Phthisiopneumology "Chiril Draganiuc", Head of Phthisiology Department 2 - Liuba Nepoliuc, liuba_nepoliuc@yahoo.com Head of the Department of Coordinating of NTP, Institute of Phthisiopneumology "Chiril Draganiuc" – Andrei Corloteanu, acorloteanu@gmail.com Institute of Phthisiopneumology "Chiril Draganiuc", Department of Coordinating of the NTP, Phtisiopneumologist - Evgenia Cula, mdevghenia@gmail.com GLC and GDF consultants	- mSTR - Room for improvement; GDF consultant specific discussion points
9.00 – 12.00	**Meeting with key in-country Partners and CSOs/NGOs** Venue: Institute of Phthisiopneumology "Chiril Draganiuc", NTP Coordination Department **Participants:** Representatives of the partner organizations/CSO/NGOs: WHO, country office Moldova – Alexandru Voloc, voloca@who.int Center for Health Policies and Studies, subrecipient of the Global Fund grant "Strengthening Tuberculosis control and reducing AIDS related mortality in the Republic of Moldova", Director - Sergiu Gherman, sergiu.gherman@pas.md Center for Health Policies and Studies, subrecipient of the Global Fund grant "Strengthening Tuberculosis control and reducing AIDS related mortality in the Republic of Moldova", Project coordinator - Lucia Pirtina, lucia.pirtina@pas.md Community representative, Vice President, AO Moldovan Patients Association SMIT (Society Against Tuberculosis), member of the National Council for the Coordination of the National Programs for the Prophylaxis and Control of HIV/AIDS, Sexually Transmitted Infections and Tuberculosis Control (CCM) - Oxana Rucsineanu, oxana_rucs@yahoo.com Community representative, NGO AFI, Director -Svetlana Doltu, member of the Equality Council, Republic of Moldova, svetlana.doltu@gmail.com NTP Coordinator – Valentina Vilc, valentina_vilc@yahoo.co.uk Director of the Institute of Phthisiopneumology "Chiril Draganiuc" – Doina Rusu, doina.rusu.ifp@gmail.com Head of the Department of Coordinating of the National Tuberculosis Program (NTP) – Andrei Corloteanu, acorloteanu@gmail.com	- Overview of the various project goals and activities - Funding sustainability and timelines - The partners' prospective - Collaboration with the NTP - Challenges and room for improvement. - GDF consultant specific discussion points

	Head of NRL, Institute of Phthisiopneumology "Chiril Draganiuc" – Valeriu Crudu, valeriu.crudu@gmail.com Director of the Tuberculosis Hospital from Tighina, coordinator of the territorial tuberculosis program - Osadchyi Serhii, osadser@rambler.ru GLC and GDF consultants	
12.00 - 13.00	Lunch	
13.00 - 16.00	**Meeting with the representatives of the Prison Medical Centre of the Central Hospital for Detainees of the Ministry of Justice (MOJ)** **Participants:** National Administration of Penitentiaries, Deputy Head of the Medical Department, TB program departmental coordinator - Nelea Caras, n.caras@anp.gov.md P16-Pruncul (with hospital status), Deputy Director for curative activity - Natalia Gospodarenco, p16.adjunct.medicina@anp.gov.md P16-Pruncul, head of the Phthisiology II section - Elena Popovici, p16ftiziatrie2@anp.gov.md P16-Pruncul, Phthisiology I section, Phtisiopneumologist - Tcaci Svetlana, p16ftiziatrie1@anp.gov.md Head of the Department of Coordinating of NTP, Institute of Phthisiopneumology "Chiril Draganiuc" – Andrei Corloteanu, acorloteanu@gmail.com GLC and GDF consultants	- Overview of the TB screening, prevention, diagnosis, and treatment services in penitentiary sector; - Number of detainees, number screened for TB each year, confirmed TB cases; - Systematic screening of detainees – screening algorithm, implementation, challenges; - TB diagnostic laboratory algorithm; - Management of other cross-cutting conditions – HIV, HCV, opioid substitution (OST) therapy, COVID-19; - Funding of TB services in penitentiary sector; - Active drug safety monitoring and management in prison; - TB drug and diagnostic commodity management (storage, transportation, dispensing, ordering and reporting); Challenges and room for improvement.
Thursday, 14 December 2023		
08.30	Departure to municipal/districts health care facilities	
9.00 – 12.00	**Meeting with the district's health care facilities** **Ialoveni district clinical hospital** **Phthisiopneumological service** **Participants:**	- Overview of the clinic catchment area - Patient pathways to the clinic and from the clinic - Access to rapid diagnostics

	Ialoveni district clinical hospital, Deputy medical director – Babalici Nicoleta, babalicinicoleta@gmail.com Ialoveni district clinical hospital, Phthisiopneumological service, Phtisiopneumologist – Cernenco Ilie, ilie.cernenco@gmail.com Head of the Department of Coordinating of NTP, Institute of Phthisiopneumology "Chiril Draganiuc" – Andrei Corloteanu, acorloteanu@gmail.com GLC and GDF consultants	- LTBI screening - TB systematic screening - Contact Investigation - Annual numbers – index cases, contacts investigated, TB confirmation - DS-TB and MDR/RR-TB card review; - Challenges and room for improvement. GDF consultant specific discussion points
12.30 - 13.30	Lunch	
13.30 - 15.30	**Meeting with the municipal health care facilities** **Territorial Medical Association Botanica mun. Chisinau** **Participants:** Territorial Medical Association Botanica mun. Chisinau, Director - Marina Golovaci, marina.golovaci@ms.md Territorial Medical Association Botanica mun. Chisinau, Deputy medical director - Georgeta Gavrilița, georgeta.gavrilita@ms.md Territorial Medical Association Botanica mun. Chisinau, Phtisiopneumologist - Ciubotaru Viorica, ciubotaru.viorica@mail.ru Head of the Department of Coordinating of NTP, Institute of Phthisiopneumology "Chiril Draganiuc" – Andrei Corloteanu, acorloteanu@gmail.com GLC and GDF consultants	- Overview of the clinic catchment area - Patient pathways to the clinic and from the clinic - Access to rapid diagnostics - TBI screening - TB systematic screening - Contact Investigation - Annual numbers – index cases, contacts investigated, TB confirmation - DS-TB and MDR/RR-TB card review; - Challenges and room for improvement. GDF consultant specific discussion points
16.00 - 17.00	**Meeting with the Center for Centralized Public Procurement in Health, Ministry of Health** **Participants:** Ala Gojan – Deputy Director, Centre for Centralized Public Procurement in Healthcare, ala.gojan@capcs.md	- Procurement of drugs, consumable and services per funding source (Gov or GF);

	Constantin Nedelea – Chief of medicines procurement Section, Centre for Centralized Public Procurement in Healthcare, constantin.nedelea@capcs.md Head of the Department of Coordinating of NTP, Institute of Phthisiopneumology "Chiril Draganiuc" – Andrei Corloteanu, acorloteanu@gmail.com GDF consultant	
Friday, 15 December 2023		
9.00 – 10.45	**Meeting TB/HIV management team** Dermatological and Communicable Diseases Hospital, Director – Sofia Alexandru, sofi.alexandru@gmail.com National AIDS Programme Coordinator – Iurie Climasevschi, iurie.climasevschi@ms.md National AIDS Programme, HIV/AIDS treatment and care coordinator - Svetlana Popovici, svet.popovich@gmail.com Infectious disease specialist within ARV Treatment Department - Elena Golovco, elena-golovco@mail.ru NTP Coordinator – Valentina Vilc, valentina_vilc@yahoo.co.uk Head of the Department of Coordinating NTP – Andrei Corloteanu, andreicorloteanu@mail.ru GLC and GDF consultants	- Clinical cases of co-infection - TB screening among PLHIV - TB case detection pathways - Responsibilities for TB and HIV treatment - Co-trimoxazole prevention - TBI management
11.00 – 13.00	**Debriefing with NTP** NTP Coordinator – Valentina Vilc, valentina_vilc@yahoo.co.uk Head of the Department of Coordinating of NTP, Institute of Phthisiopneumology "Chiril Draganiuc" – Andrei Corloteanu, acorloteanu@gmail.com	- Summary of mission findings - Discussion around development of recommendations - Preliminary recommendations.
13.00 - 14.00	Lunch	
14.00 – 15.00	**Debriefing at the Ministry of Health** **Participants:** Ministry of Health, Secretary of State, Public Health – Angela Paraschiv, angela.paraschiv@ms.gov.md WHO, country office Moldova – Alexandru Voloc, voloca@who.int	

	NTP Coordinator – Valentina Vilc, valentina_vilc@yahoo.co.uk Director of the Institute of Phthisiopneumology "Chiril Draganiuc" – Doina Rusu, doina.rusu.ifp@gmail.com Head of the Department of Coordinating of NTP, Institute of Phthisiopneumology "Chiril Draganiuc" – Andrei Corloteanu, acorloteanu@gmail.com Head of NRL, Institute of Phthisiopneumology "Chiril Draganiuc" – Valeriu Crudu, valeriu.crudu@gmail.com Deputy director of Institute of Phthisiopneumology – Ana Donica, annadonica741@gmail.com GLC and GDF consultants	

Annex 2. Data request form

Epidemiology

Table 1. TB case notifications, 2017 – 2023(6m)

	2017	2018	2019	2020	2021	2022	2023 (6m)
New cases	2681	2451	2280	1375	1613	1668	898
Relapse cases	671	565	596	386	454	453	211
Previously treated cases other than relapse	504	441	432	278	239	233	97
All TB cases	3856	3457	3308	2039	2306	2354	1206
TB mortality	320	304	248	209	199	209	99
Population used for rate calculation[a]	4023043	4017583	4017320	4017796	3060721	3005405	3005405
New cases per 100 000	66.6	61.0	56.8	34.2	52.7	55.5	29.9
Relapse cases per 100 000	16.7	14.1	14.8	9.6	14.8	15.1	7.0
Previously treated cases per 100 000	12.5	11.0	10.8	6.9	7.8	7.8	3.2
All TB cases per 100 000	95.8	86.0	82.3	50.7	75.3	78.3	40.1
TB mortality per 100 000	7.9	7.6	6.2	5.2	6.5	7.0	3.3
Incident (new and relapse) cases in children (0–14 years)	123	95	101	56	92	83	73
Notified RR-TB cases	736	719	695	437	509	442	256
Enrolled RR-TB cases	983	942	885	537	574	490	276
TB/HIV cases out of all TB cases	355	320	345	195	256	275	155

Source(s): NTP data

Table 2. TB case notifications by category, 2017-2023 (6m)

	2017	2018	2019	2020	2021	2022	2023 (6m)
New cases total:	2681	2451	2280	1375	1613	1668	898
New pulmonary laboratory confirmed	1492	1423	1340	837	976	1029	552
New pulmonary clinically diagnosed	882	764	699	415	456	479	252
New extrapulmonary laboratory confirmed	57	51	57	24	27	27	15

New extrapulmonary clinically diagnosed	250	213	184	99	154	133	79
Previously treated cases total:							
Relapses pulmonary laboratory confirmed	388	383	368	227	272	274	142
Relapses pulmonary clinically diagnosed	245	161	198	149	166	161	61
Relapse extrapulmonary laboratory confirmed	12	10	10	5	2	4	4
Relapse extrapulmonary clinically diagnosed	26	11	20	5	14	14	4
Other previously treated pulmonary laboratory confirmed	394	342	348	205	175	174	84
Other previously treated clinically diagnosed	97	82	75	61	56	48	11
Other previously treated extrapulmonary laboratory confirmed	7	9	8	7	4	4	1
Other previously treated extrapulmonary clinically diagnosed	8	8	1	5	4	7	1
Other TB cases	504	441	432	278	239	233	97
All TB cases	3856	3457	3308	2039	2306	2354	1206

Source(s): NTP data

TB diagnosis

Table 3. FLD and SLD resistance profile among new TB cases, 2018–2023 (6m)

Line		**2018**	**2019**	**2020**	**2021**	**2022**	**2023 (6m)**
		N	***N***	***N***	***N***	***N***	***N***
1	Number of new TB cases notified	2451	2280	1375	1613	1668	894
2	Number of pulmonary cases out of line 1	2187	2039	1252	1432	1508	801
3	Number of laboratory confirmed cases out of line 2	1414	1326	822	1013	1083	584
4	Number of cases with DST result to rifampicin (Rif) out of line 3	1383	1300	804	994	1053	565
5	Number of Rif-resistant TB (RR-TB) cases out of line 4	426	372	212	305	256	153
6	Number of cases with DST results to fluoroquinolones (fq) out of line 5	354	313	163	273	214	127
7	Number of cases sensitive to fq out of line 6	290	267	142	233	179	114
8	Number of cases resistant to fq out of line 6	64	46	21	40	35	13
9	Number of cases with DST results both to linezolid (Lzd) and bedaquiline (Bdq) out of line 8	24	19	0	39	33	12
10	Number of cases sensitive to both Lzd and Bdq out of line 9	0	1	0	39	31	10
11	Number of cases resistant to both Lzd and Bdq out of line 9	0	0	0	0	0	0
12	Number of cases resistant to Bdq and sensitive to Lzd out of line 9	0	0	0	0	2	1

Source(s): NTP data

Table 4. FLD and SLD resistance profile among previously treated TB cases, 2018–2023 (6m)

Line		2018	2019	2020	2021	2022	2023 (6m)
		N	*N*	*N*	*N*	*N*	*N*
1	Number of previously treated TB cases notified	1006	1028	664	693	686	312
2	Number of pulmonary cases out of line 1	968	989	642	669	657	303
3	Number of laboratory confirmed cases out of line 2	699	699	407	483	485	233
4	Number of cases with DST result to rifampicin (Rif) out of line 3	667	644	353	445	437	223
5	Number of RIF-resistant TB (RR-TB) cases out of line 4	431	378	196	239	221	114
6	Number of cases with DST results to fluoroquinolones (fq) out of line 5	400	334	154	212	194	104
7	Number of cases sensitive to fq out of line 6	242	223	110	145	128	72
8	Number of cases resistant to fq out of line 6	158	111	44	67	66	32
9	Number of cases with DST results both to linezolid (Lzd) and bedaquiline (Bdq) out of line 8	38	35	0	61	64	28
10	Number of cases sensitive to both Lzd and Bdq out of line 9	1	1	0	38	46	18
11	Number of cases resistant to both Lzd and Bdq out of line 9	0	0	0	5	8	5
12	Number of cases resistant to Bdq and sensitive to Lzd out of line 9	0	0	0	5	5	4

Source(s): NTP data

Table 5. Number of microscopy, culture and DST investigations, 2018-2023 (6m)

	2018	2019	2020	2021	2022	2023 (6m)
Direct smear microscopy (DSM)	96162	121124	101187	24623	110229	58014
Culture on solid media	67907	68316	48981	11562	61940	31578
DST to FLDs on solid media	2090	1350	631	125	8785	4567
DST to SLDs on solid media	2006	1658	796	133	1881	994
Culture in liquid media (automated MGIT)	25401	27392	24828	8285	24909	13010
DST to FLDs in liquid media (automated MGIT)	3085	2371	1731	518	7732	4070
DST to SLDs in liquid media (automated MGIT)	1577	1017	955	300	4442	2333
LPA MTBDR-Plus	1747	1586	1417	640	2810	1471
LPA MTBDR-sl	1369	992	1038	350	2102	1102
Xpert XDR					305	166

Table 6. Structure of TB diagnostic / laboratory network and methods used

Region / sector	Number of TB diagnostic facilities *	Number of facilities performing:									
		DSM	Xpert MTB/RIF	*Solid media investigations (e.g. LJ)*			*Liquid media investigations (automated MGIT)*			*Line Probe Assays (LPA)*	
				Culture	DST to FLDs	DST to SLDs	Culture	DST to SLDs	DST to FLDs	GenoType MTBDR-Plus	GenoType MTBDR-sl
Civilian sector total	**54**	**54**	**54**	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**4**
Penitentiary sector	**3**	**3**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Country total	**57**	**57**	**57**	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**4**

Source(s): NTP NRL Moldova data

* Note: laboratories, as well as basic management units using Xpert only, should be included.

Table 7. Number of Xpert MTB/RIF instruments and investigations performed, 2017-2023

Region / sector	Number of Xpert MTB/RIF instruments	Number of Xpert MTB/RIF tests performed:						
		2017	**2018**	**2019**	**2020**	**2021**	**2022**	**2023 (6m)**
Civilian sector total	**54**	30116	37747	27779	11908	36569	18926	12373
Penitentiary sector	**3**	1536	1358	1250	520	808	391	139
Country total	**57**	**31652**	**39105**	**29029**	**12428**	**37377**	**19317**	**12512**

Source(s): NTP NRL Moldova data

Table 8. Xpert MTB/RIF testing results, 2018-2023 6m

Year	Total number of Xpert MTB/RIF tests	Invalid test results				Valid test results					
		Total invalid tests	"Test invalid"	"Test error"	"Test No Result"	Total valid tests	MTB(-)	MTB(+)			
								MTB(+) total	MTB(+)/ RIF Sensitive	MTB(+)/ RIF-Resistant	MTB+/RIF Indeterminate
2018	39105	981	56	823	102	38124	35493	2631	1627	924	80
2019	29029	560	33	442	85	28469	26226	2243	1439	743	61
2020	12428	307	27	249	31	12121	10827	1294	778	446	70
2021	37377	672	14	129	8	36705	33034	3671	2349	1280	42
2022	19317	**326**	20	279	27	18991	17385	1606	1011	530	65
2023 (6m)	12512	**162**	10	136	16	12350	11260	1090	708	348	34

Table 9. Availability of DST to new and repurposed TB drugs, as of July 2023 (Yes/No)

DST	NRL	RRL Balti	RRL Vornicen i	RRL Bender
Bdq	Yes	Ye	Ye	Ye
Dlm	Ye	Ye	Ye	Ye
Cfz	Ye	Ye	Ye	Ye
Lzd	Ye	Ye	Ye	Ye

TB treatment

Table 10. TB treatment outcomes, new and relapse cases notified, 2017-2023(6m) cohorts

	2017		2018		2019		2020		2021		2022*		2023 (6m)	
	N	*%*	*N*	*%*	*N*	*%*	*N*	*%*	*N*	*%*	*N*	*%*	*N*	*%*
New and relapse cohort size	2579		2299		2211		1340		1554		1672		841	
Treatment success	2229	86,4	1989	86,5	1881	85,1	1120	83,6	1324	85,2	1372	82,1	321	38,2
Treatment failed	79	3,1	62	2,7	69	3,1	55	4,1	46	3,0	55	3,3	12	1,4
Died	200	7,8	186	8,1	164	7,4	132	9,9	129	8,3	155	9,3	67	8,0
Lost to follow up	71	2,8	62	2,7	97	4,4	33	2,5	55	3,5	45	2,7	13	1,5
Still on treatment	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	0	**0**	45	2,7	428	50,9

Source(s): NTP data

*Include number of patients enrolled

Table 11. TB treatment outcomes, previously treated cases notified (other than relapse), 2017-2023(6m) cohorts

	2017		2018		2019		2020		2021		2022*		2023(6m)	
	N	*%*	*N*	*%*	*N*	*%*	*N*	*%*	*N*	*%*	*N*	*%*	*N*	*%*
Retreatment cohort size	165		148		137		104		102		105		54	
Treatment success	94	57,0	76	51,4	87	63,5	64	61,5	62	60,8	68	64,8	15	27,8
Treatment failed	29	17,6	17	11,5	13	9,5	9	8,7	9	8,8	6	5,7	0	0,0
Died	20	12,1	23	15,5	19	13,9	11	10,6	15	14,7	7	6,7	3	5,6
Lost to follow up	22	13,3	32	21,6	18	13,1	20	19,2	16	15,7	18	17,1	8	14,8
Still on treatment											6	5,7	28	51,9

*Source(s):*NTP data

*Include number of patients enrolled

Table 12. Number of RR/MDR-TB patients enrolled in treatment, 2017-2023 (6m)

	2017	2018	2019	2020	2021	2022	2023 6m
Total number of RR/MDR-TB patients enrolled in treatment (XDR included)	976	921	882	529	561	487	275
– out of which, in penitentiary sector	71	53	70	34	32	28	13
– out of which, children (0-14 years)	23	22	32	12	18	13	11
– out of which, on shorter treatment regimens (STRs)	0	0	0	28	102	108	94

*Source(s):*NTP data

Table 13. TB treatment outcomes, RR/MDR-TB cases enrolled to shorter treatment regimen, 2019-2023(6m) cohorts

	2019	2020	2021	2022	2023 (6m)

	N	*%*	*N*	*%*	*N*	*%*	*N*	*%*	*N*	*%*
RR/MDR-TB cohort size (on shorter regimens)	0		28		102		108		94	
Treatment success	0	0	24	85,7	98	96,1	102	94,4	16	17,0
Treatment failed	0	0	0	0	0	0	0	0	0	0
Died	0	0	1	3,6	0	0	4	3,7	2	2,1
Lost to follow up	0	0	3	10,7	4	3,9	2	1,9	4	4,3
Still on treatment	0	0	0	0	0	0	0	0	72	76,6

Source(s): NTP data

Table 14. TB treatment outcomes, RR/MDR-TB cases notified, on longer treatment regimen, 2017-2023(6m) cohorts

	2017		**2018**		**2019**		**2020**		**2021**		**2022**		**2023 6m**	
	N	*%*	*%*	*%*	*N*	*%*	*N*	*%*	*N*	*%*	*N*	*%*	*N*	*%*
RR/MDR-TB cohort size (XDR included)	976		921		876		470		431		360		174	
Treatment success	538	55,1	545	59,2	557	63,6	277	58,9	245	56,8	103	28,6	0	0,0
Treatment failed	135	13,8	111	12,1	57	6,5	33	7,0	35	8,1	18	5,0	0	0,0
Died	126	12,9	100	10,9	94	10,7	75	16,0	79	18,3	54	15,0	23	13,2
Lost to follow up	208	21,3	165	17,9	168	19,2	85	18,1	70	16,2	50	13,9	10	5,7
Still on treatment	0	0,0	0	0,0	*0*	0,0	0	0,0	2	0,5	135	37,5	141	81,0

Source(s): NTP data

*Table 15. TB treatment outcomes, XDR-TB cases notified, 2017-2023(6m) cohorts**

	2017		**2018**		**2019**		**2020**		**2021**		**2022**		**2023 6m**	
	N	*%*	*N*	*%*	*N*	*%*	*N*	*%*	*N*	*%*	*N*	*%*	*N*	*%*
XDR-TB cohort size	57		44		25		35		36		28		19	
Treatment success	11	19,3	14	31,8	10	40	14	40,0	15	41,7	7	25,0	0	0,0
Treatment failed	23	40,4	15	34,1	8	32	9	25,7	5	13,9	2	7,1	0	0,0
Died	8	14,0	8	18,2	3	12	7	20,0	7	19,4	7	25,0	5	26,3
Lost to follow up	15	26,3	7	15,9	4	16	5	14,3	9	25,0	5	17,9	0	0,0
Still on treatment										7	25,0	14	73,7	7

*Source(s):*NTP data

*Fill-in as per old definition of XDR-TB

16. Number of TB inpatient facilities, number and profile of TB hospital beds, by sector and level of care, as of July 2023

Type of institutions and beds	Country total	Breakdown by sector		Breakdown by level of care (civilian sector)		
		Civilian sector	*Penitentiary sector*	*Central level*	*Regional level*	*District level*
Number of facilities providing hospital treatment of patients with active TB	**11**	6	5	1	4	
Total number of beds for treatment of active TB	**944**	685	259	255	430	
– out of which, for DR-TB patients	**331**	195	136	125	70	
– out of which, for children	**79 (among them 10 beds for DR TB)**	**79 (among them 10 beds for DR TB)**			**79 (among them10 beds for DR TB)**	
– out of which, for extrapulmonary TB						
– out of which, for surgery	**15**	15		15		
Number of facilities providing palliative care for TB patients						
Number of beds for palliative care						
Number of facilities providing involuntary isolation of TB patients						
Number of beds for involuntary isolation						

Source(s): NTP data

Table 17. Main activity indicators for institutions providing inpatient treatment of active TB cases, country-wide, 2017-2023 (6m)

	2017	**2018**	**2019**	**2020**	**2021**	**2022**	**2023 (6m)**
Total number of beds for treatment of active TB							
IMSP IFP ,,Chiril Draganiuc"	360	360	360	290	219	245	275
IMSP SCMF Chisinau	215	215	215	200	200	197	195
IMSP SCM Balti	75	40	40	30	30	25-30	25
IMSP Spital Clinic de Psihiatrie sectie psihoftiziatrie	40	40	40	30	30	20	20
Penitenciar Pruncul P16 Malul Drept	170	170	170	170	170	170	99
Transnistria (Region-level hospital	200	200	200	200	200	200	150
Transnistria (Pulmonary TB department, Dubasari)	,40	40	40	40	40	40	40
Transnistria (TB clinic for psychiatry patiens, Slobozia)	15	15	15	15	0	0	0
Penitenciare Transnistria total	160	160	160	160	160	160	160
Total number of hospitalizations (discharges)							

IMSP IFP ,,Chiril Draganiuc"	1414	1501	1801	1243	1564	1339	774
IMSP SCMF Chisinau	889	887	808	790	594	459	320
IMSP SCM Balti	375	286	254	169	135	179	115
Penitenciar Pruncul P16 Malul Drept	138	133	101	71	88	138	44
Transnistria (Region-level hospital)	587	596.5	568	402	359	357	185
Transnistria (Pulmonary TB department, Dubasari)	115	103.5	78	84	76	51	25
Transnistria (TB clinic for psychiatry patiens, Slobozia)	52	33.5	32	8	-	-	-
Total number of patient-days ('bed-days')							
IMSP IFP ,,Chiril Draganiuc"	132921	118292	101622	67374	67312	76757	42421
IMSP SCMF Chisinau	51667	50253	50853	48334	39973	35091	22753
IMSP SCM Balti	22108	14554	12653	9434	6651	6984	4888
Penitenciar Pruncul P16 Malul Drept	35905	30294	33061	25129			
Transnistria (Region-level hospital)	60412	61864	56914	36822	27542	31495	15809
Transnistria (Pulmonary TB department, Dubasari)	9480	8420	8271	-	6244	5338	1893
Transnistria (TB clinic for psychiatry patiens, Slobozia)	3574	3132	2694	517	-	-	-
Average length of stay, days							
IMSP IFP ,,Chiril Draganiuc"	94.0	70.0	56.4	54.2	43.0	57.3	54.8
IMSP SCMF Chisinau	57.3	55.7	62.9	65.3	62.5	74.2	68.1
IMSP SCM Balti	56.69	49.67	49.8	55.8	58.6	46.2	57.5
Penitenciar Pruncul P16 Malul Drept	489.8	248.15	155.85	166.6			
Transnistria (Region-level hospital)	102.2	103.3	99,9	91.5	76.8	90.0	89.8
Transnistria (Pulmonary TB department, Dubasari)	72.45	72.95	90.75	-	97.55	87.95	90.1
Transnistria (TB clinic for psychiatry patiens, Slobozia)	238,4	208.8	179.6	34.4	-	-	-
Bed occupancy rate, %							
IMSP IFP ,,Chiril Draganiuc"	94.0	85.4	77.3	63.6	84.2	85.8	42.2
IMSP SCMF Chisinau	70.0	67.6	65.9	68.6	86.2	69.9	82.4
IMSP SCM Balti	94.99	100.45	128.8	85.15	87.64	90.44	89.07
Penitenciar Pruncul P16 Malul Drept	117.5	50.4	55.45	40.05			
Transnistria (Region-level hospital)	104.2	106.3	97.8	63.5	47.5	54.3	54.5
Transnistria (Pulmonary TB department, Dubasari)	48.2	51.3	49.1	-	1.3	0.875	2.4
Transnistria (TB clinic for psychiatry patiens, Slobozia)	72.1	63.0	54.2	41.9	-	-	-
Number of surgical interventions, all types							
IMSP IFP ,,Chiril Draganiuc"	186	168	163	135	322	532	198

IMSP SCMF Chisinau	-	-	-	-	-	-	-
IMSP SCM Balti	-	-	-	-	-	-	-
Penitenciar Pruncul P16 Malul Drept	-	-	-	-	-	-	-
Transnistria (Region-level hospital)	-	-	-	-	-	-	-
Transnistria (Pulmonary TB department, Dubasari)	-	-	-	-	-	-	-
Transnistria (TB clinic for psychiatry patiens, Slobozia)	-	-	-	-	-	-	-
Surgical activity, %							
IMSP IFP ,,Chiril Draganiuc"	66.9	55.4	56.0	41.9	63.3	135.3	105.3

Source(s): NTP data

* Note: Where available, include data for DR-TB cases (expand the table or describe in text). For the current year, include data for 6 months if available from the NTP.

TB systematic screening.

Table 18. Number of TB suspects tested for active TB disease, 2017-2023 (6m)

Region/sector	2017	2018	2019	2020	2021	2022	2023(6m)
Region 1							
Region 2							
Region 3							
…							
Civilian sector total	30116	37747	27779	11908	36569	14335	12373
Penitentiary sector	1536	1358	1250	520	808	299	139
Country total	31652	39105	29029	12428	37377	14634	12512

Source(s): LNR PNRT

Table 19. Number of TB contacts tested for active TB disease, 2017-2023 (6m)

Region/sector	2017	2018	2019	2020	2021	2022	2023 (6m)
Region 1							
Region 2							
Region 3							
…							
Civilian sector total	20015	17958	16203	7557	5812	8037	*
Penitentiary sector	7901	7458	3997	4377	3116	4039	*
Country total	27916	25416	20200	11934	8928	12076	*

* data are reported annually

Table 21. Number of PLHIV screened for active TB disease, 2017-2023 (6m)

Region / sector	2017	2018	2019	2020	2021	2022	2023 (6m)

Registered PLHIV (the number of people living with HIV enrolled in the HIV medical record)	7290	7745	7870	8233	8677	9194	9460
PLHIV screened for active TB disease	5625	6067	6690	7007	7020	7106	4687
Civilian sector total	5347	5781	6364	6715	6694	6748	4314
Penitentiary sector	278	286	326	292	326	358	373
Country total	5625	6067	6690	7007	7020	7106	4687

Source(s): IMSP SDMC