

TECHNICAL ASSISTANCE

for development of sustainable financing models for TB control, allocation mechanism, and provider payment mechanisms for TB care in different care settings in the Republic of Moldova

REPORT

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1. Introduction

The Republic of Moldova is a landlocked country situated in south-eastern Europe. Approximately 53 percent of the population lives in rural areas. It is a multi-ethnic country with population approximately 3.5 million (as of July 2016). The Republic of Moldova is divided into 32 districts¹; 5 municipalities (Chisinau, Balti, Tighina, Tiraspol, Comrat); and 2 regions with special status (Autonomous Territorial Unit Gagauzia, Territorial administrative units from the left part of Nistru river, commonly known as Transnistria).²

The Republic of Moldova is one of the 18 high-priority countries for TB control in the World Health Organization (WHO) European Region and the one of the highest multidrug resistance (MDR-TB) burden countries worldwide. TB incidence is 152 and mortality rate 7.7 per 100 000 population (in 2015) based on WHO estimates. The MDR-TB prevalence is one of the highest in the world, reaching 32 percent of newly diagnosed and 69 percent of previously treated TB patients. In total, there were 5 055 TB cases (year 2013), of which 3 604 were new cases.³ Still, treatment success rate is low – in 2014 79 percent patients were successfully treated. Among DR-TB patients the treatment success rate is lower - only 49.1 percent in 2014⁴. Bacteriological confirmation among pulmonary TB cases is lower than expected given the well-functioning laboratory network and policy of culture, as well as rapid diagnostic tests for all TB suspects. In 2014, bacteriological confirmation among new pulmonary cases was 62.3 percent in 2016.

The **objective of this technical assistance** was to focus on providing more effective options for development of sustainable financing models for TB control, and provider payment mechanisms to align financial incentives to increased role in TB care for outpatient settings (home, community, primary care specialist care) and decreasing contribution of inpatient settings. Mission agenda and people met is provided in Appendix.

The **scope of assignment** included:

1. assess the current financing model for TB care in Moldova by levels of care and type of providers and services;
2. develop recommendations on how to align the financial incentives to support transition from hospital-centric to decentralized outpatient model of TB care: support shift of funding to incentivize primary care to manage patients with TB, link provider payment to performance for specialist care and recommend payment models to cover the necessary additional treatment adherence interventions (including psycho-social and material support) and decrease incentives for unnecessary long hospital stays patients in the hospital.

¹ Anenii Noi, Basarabasca, Briceni, Cahul, Cantemir, Calarași, Causeni, Cimislia, Criuleni, Donduseni, Drochia, Dubasari, Edinet, Falesti, Floresti, Glodeni, Hincești, Ialoveni, Leova, Nisporeni, Ocnita, Orhei, Rezina, Rîșcani, Singerei, Soroca, Straseni, Soldanești, Stefan Voda, Taraclia, Telenesti, Ungheni

² <http://www.moldova.md/en/content/administrative-territorial-organization-moldova>

³ Mission Report: Green Light Committee for the WHO European Region mission for monitoring the implementation of the national tuberculosis response plan in the Republic of Moldova Right Bank of the River Dniester (13-17 February 2017)

⁴ http://www.euro.who.int/_data/assets/pdf_file/0020/334703/tuberculosis-surveillance-and-monitoring-in-europe-2017.pdf?ua=1

2. Policy framework

Recently, several documents have been approved by the Ministry of Health, Labour and Social Protection (MoHLSP), including the National Strategic Plan on TB (NSP) 2016–2020 (approved 20 October 2016) and the National Plan for the Introduction of New Anti-TB Drugs (approved 23 January 2017). Furthermore, the five-year plan for sustained funding of TB program activities (sustainability plan) has been prepared by the National TB Program (NTP) and submitted to the Global Fund to Fight AIDS, Tuberculosis and Malaria (GF)⁵. Protocols on TB prophylaxis, treatment and care for adults and children for primary, secondary and tertiary levels exist. The rayon administrations, and the Moldovan Penitentiary Department, are expected to prepare five-year strategic plans following the NSP.

Furthermore, the MoHLSP has prepared the Roadmap on Modernization of the Phthiopolmonology Service (approved 14 April 2017). Roadmap identifies the main challenges of the current TB care organization in the Republic of Moldova which are the high level of hospitalization and long hospital stays and low reliance on TB care provision in the outpatient setting coupled with late detection. The roadmap sets the general goal to increase the efficiency of TB care through early detection and extension of outpatient care. Simple calculations show that roadmap targets reduction of total number of bed days (by reductions of average length of stay and hospitalizations) by 69 percent by end of 2018 compared to the year 2016. It is doubtful that so extensive reduction of bed capacity is achievable with so short period. Moreover, this would need restructuring all inpatient care to assure that care provision is sustainably financed (reduction of number of bed days reflects directly in the hospitals budget) and that care is transferred to the outpatient level with respective funds and resources (e.g. health workers who have skills, time and other necessary resources).

The roadmap reveals that excising payment mechanisms does not give incentives to transform the model of TB care from the inpatient to the primary health care level. Payment per bed day (per diem) in the inpatient setting stimulates high level of hospitalization and longest possible hospitalization. Additionally, limited incentives and financial means in the outpatient setting, particularly primary health care, limit their ability to take more active role over early detection of TB and TB treatment and care support.⁶

3. TB model of care

This section gives brief overview of the current TB care model from the patient perspective and about the role of the National Tuberculosis Program (NTP).

⁵ From the second half of 2015, the country began the implementation of the current grant from the GF (2015-2017) with two principal recipients: (1) the Public Institution “Coordination, Implementation and Monitoring Unit of the Health System Restructuring Project”; and (2) the Center for Health Policies and Studies (PAS).

⁶ The roadmap sets measurable targets for year 2018:

- 1.Reduce the ratio of late detection of tuberculosis by 10% by the end of 2018.
- 2.Initiation and full treatment management in outpatient conditions by the end of 2018, for 60% of new sensitive TB cases.
- 3.Initiation and full treatment management in outpatient conditions by the end of 2018, for 40% of new MDR TB cases.
- 4.Reduce the duration of hospitalization of new sensitive TB cases, that require on average up to 30 days of in-patient care, by the end of 2018.
- 5.Reduce the duration of hospitalization of new MDR TB cases, that require on average up to 90 days of in-patient care, by the end of 2018.

3.1. National Tuberculosis Program

The NTP is hosted by the Institute of Ptsiopulmonoly Chiril Draganiuc” (IPP). Its functions are developing policies and technical guidelines for MoHLSP approval, planning, coordination with partners, laboratory surveillance and quality control, anti-TB drugs supply management, staff training, monitoring and technical supervision. The NTP central unit has three sub-units: National Reference Laboratory, the Supervision and Training Unit (in charge of field supervision and in-service training), and the Monitoring and Evaluation Unit (overseeing recording and reporting). The NTP central unit conducts monitoring and supervision of the districts and primary health-care centres and villages. The NTP monitoring and evaluation team includes 5–6 officers which is apparently too small to cover the country needs⁷. The NTP staff are IPP employees and directly accountable to the IPP director. However, NTP is directly funded from the IPP funds which comes from NHIC for IPP services, motivating IPP to generate resources through their services in order to maintain NTP operations. This is one factor that undermines the NTP’s role to implement TB control activities, as it does not have official status.

3.2. TB patient’s pathway

TB detection is responsibility of primary health care, mostly done through the passive case-finding by investigation of individuals seeking health care for symptoms. Active case finding is done to screen high-risk and vulnerable populations. The definition of risk groups was broadened in mid-2017 and it divides now to high TB risk⁸ and vigilance⁹ groups. High TB risk group persons should have mandatory annual X-ray. For vigilance group X-ray is indicated only in case of symptoms suggesting tuberculosis. In practice, the division of the responsibilities (screening, DOT) may be divided between primary health care and rayon hospital’s outpatient ptsiopulmonology unit (in regions) or medico- territorial associations with CMF (in Chisinau).

The initial diagnosis of TB suspected cases is set by a family doctor based on patients’ history and physical exam, microscopic verification of sputum smear on acid-fast bacilli (AFB) performed in one of 59 smear microscopy centres, GeneXpert MTB/RIF. All new patients as well as those who are target group for active screening should have an X-ray examination. All susceptible patients are referred to a ptsiopulmonologist to confirm the diagnoses.

⁷Mission Report: Green Light Committee for the WHO European Region mission for monitoring the implementation of the national tuberculosis response plan in the Republic of Moldova Right Bank of the River Dniester (13-17 February 2017)

⁸ Persons who have been in contact with pulmonary tuberculosis patients; persons with previous tuberculosis record (in the last 5 years) and with tuberculosis scars; persons with HIV/AIDS; persons with immunodeficiency under immunosuppressive/biological treatment; persons suffering from diabetes; patients with mental disorders living in communities (upon placement into inpatient treatment); detainees and prison staff; internal and external migrants; persons of no fixed abode; emergency medical assistance staff; specialized phthisiological institution staff.

⁹ Persons exposed to social risk factors who come from socially disadvantaged groups (the unemployed, including asylum seekers, and persons with a low income); persons exposed to medical and biological risk factors; patients with chronic kidney disease; patients with chronic nonspecific lung diseases and active smokers; persons with alcohol abuse and drug consumers; persons with gastrectomy or jejunoileal bypass; pregnant women with symptoms suggesting tuberculosis; women who have recently given birth and have symptoms suggesting tuberculosis; children who were not vaccinated with BCG; persons placed in and the staff of secure and semi-secure institutions: asylums, palliative care institutions, placement centres and specialized institutions; medical college students, Medical University students, residents and house physicians; medical institution staff; social workers.

After TB is confirmed by a TB specialist, the patient is referred to either a TB hospital or ptisiopulmonology out-patient unit in rayon hospitals or medico-territorial associations (in Chisinau) to prescribe and start a treatment and to make a treatment plan. Each TB patient should be registered at the (city or rayon) ptisiopulmonologist for treatment monitoring and follow-up. Once the TB is categorized, the treatment as DOT takes place at either a TB hospitals or in primary health care centers. In practice, primary health care centres may shift part of the work (e.g. administration of DOT) to the rayon hospital's outpatient ptisiopulmonology unit. The drug therapy is split into an intensive phase and a continuation phase. Duration of the intensive phase can vary from 2 to 6 months and the continuation phase from 4 to 18 month depending on the type of TB.

According to the TB road map¹⁰, the current TB care model in practice means that the treatment is usually started in the hospital (intensive phase of treatment) and continued in outpatient settings. The vast majority of the patients are hospitalized (phthiopiopulmonology department), having been diagnosed by outpatient phthiopiopulmonology specialist. The outpatient DOT is administered by family doctor under the supervision of phthiopiopulmonology specialist. However, the explicit responsibility over successful treatment completion relies on family doctor (reflected also in the pay for performance incentives). Thus, there are several uncertainties regarding the distribution of responsibilities for the successful completion of TB treatment in the outpatient setting.

4. TB care financing

This section reviews the current TB financial arrangements and discusses alternative options to improve TB financing model to better align financial incentives to support transformation of model of TB care.

4.1. Sources of funding TB care

TB is mostly funded through NHIC (68 percent) to cover TB detection and treatment (except drugs), part of the patient incentives and some investments to the equipment (see table 1). Sill, some expenses are covered through state budget (9 percent) as 1st line treatment. External sources, mainly Global Fund, cover about quartet (23 percent) of the TB costs. Local government allocations to cover some TB related activities (e.g. capital investments) play a minor role and depend fully on local government priorities. In the future, there is a possibility to reduce existing fragmentation of different sources of funding flows by pooling all TB care related funds to the NHIC who should be fully accountable to ensure access to the TB care for the entire population.

Table 1. TB budget division by different sources (2016)

Source	Activities	% of the budget*
State budget	1st line treatment (for PHC and hospital level), lab materials, prisons	9%
NHIC	Detection and treatment, DS-TB patient incentives (food coupons), investments to the equipment (x-ray), National TB Program	68%

¹⁰ The Order of MoH no. 305 from 14.04.2017 "Roadmap on Modernization of the Phthiopiopulmonology Service"

Source	Activities	% of the budget*
External sources (Global Fund, WHO)	2 nd line treatment, commodities, community centers, civil society	23%
Local governments	Capital investments, transportation, additional support for service provision)	1%

Source: National TB Program 2016-2020

The NHIC contracts for the following type of health care: pre-hospital emergency care, primary healthcare (including outpatient drugs), specialized ambulatory care, hospital care, highly specialized medical services, community care and home care (see table 2 for the 2017-year budget).

Table 2. The NHIC budget for health care in 2017

Type of care	Sum in thousand (MDL)	Share of total budget (%)
Pre-hospital emergency care,	524 381,5	9%
Primary healthcare (including outpatient drugs)	1 882 576,6 ¹¹	31%
Specialized ambulatory care	427 190,5	7%
Hospital care	3 027 433,6	50%
Highly specialized medical services	184 108,7	3%
Community care and home care	9 220,6	0%
Total	6 054 911,5	100%

4.2. Financial incentives for TB hospitals

4.2.1. Inpatient TB care financing

In total, there are 940 beds of phthisiopneumological profile of which 700 are operating at the point of writing the report (additional 240 beds in the IPP Vorniceni department will be opened soon). Of these 700 beds, 360 are in the state-owned institutions, 265 in specialized municipality owned hospital in Chisinau and 75 in Balti rayon multi profile hospital. Since 2012, the number of TB beds has been reduced from 1255 to 940. Still, the number of beds is much higher than suggested by local and international experts and it is evident that gradual decrease of beds is further needed.¹²The high number of TB beds is accompanied with high level of hospitalization of TB cases and long length of stay. The hospitalization rate for sensitive cases is around 70 percent and 90 percent for MDR TB cases. The average length of stay was 72.6 days, and was reaching 127 days for MDR TB. Plan is to consolidate all TB hospitals under one management which would be a very important step forward and gives much more leverage to optimize the TB care bed capacity.

¹¹ Including outpatient reimbursement drugs expenditures 522 431,3 thousand MDL (28 percent of primary health care budget).

¹² According to the technical report by James Cercone (2012) the need of TB beds by three different scenarios is 93-300-704.

The NHIC applies different payment methods for inpatient hospital care. Most prominent of them is case based payment with budget ceiling. In addition, per diem, global budget and some other forms of payments are applied. TB hospitals/departments are reimbursed based on per diem which is same – 479 MDL - for all TB patient categories and without any upper limit. Moreover, this per diem rate is expected to cover all patient care related expenditures (including salaries), except capital costs. Also, resources that are generated by the IPP through the per diem rate is supposed to cover all NTP functions (see below). Formerly, case payment for TB inpatient care was used but based on the NHIC explanations this was replaced by per diem payment as case payment had negative effect on TB outcomes. TB drug cost are part of the per diem rate but in practice inpatient TB treatment is covered similarly to outpatient drugs from the state budget (1st line) or by Global Fund (2nd line). Therefore, it is likely that there is no extra drug cost for the system if patient care is transferred from the inpatient to outpatient setting.

Overall, current TB inpatient care payment model gives a strong incentive to hospitalize, especially less complex patients as the per diem payment is not categorized by complexity levels and “profit margin” of those patients is higher. Moreover, there is an incentive to keep patients in the hospital as there is no cap or reduced margin for the per diem payment and which most probably leads to excessive hospital stays.

4.2.2. Options to revise inpatient financial incentives

Independent of the alternative scenarios for funding inpatient care, the priority has to be to separate the NTP function, including staff and administration, financing from IPP’s contract with the NHIC for TB care. This does not mean that the NTP should be physically separated from TB service provider as current location enabled to sustain good cooperation with main TB care provider and to have better understanding of the practical needs of the TB programme.¹³ However, administrative and financial independence of the NTP is important to ensure its impartiality from the TB hospital management. Current situation, where survival of the NTP depends on the revenues of the TB hospital receiving income through per diem payment, is peculiar.

If TB hospitals would be consolidated into 1 management structure/framework, there would be a scope for optimizing the bed capacity even keeping the status quo with current hospital payment system which is more difficult in the current environment where more than one providers attract TB patients to guarantee their revenues. Consolidation of hospitals would also give better grounds for some type of payment mechanisms (see below).

The first and **easiest option for changing hospital payment system is to introduce upper limits for per diem rates.** For example, 30 days for DS-TB and 90 days for MDR-TB (30-days and 90-days limit is taken from the roadmap. There will be a certain proportion of patients who have clinical indication for longer inpatient treatment and therefore it is advisable not to refuse for payment but to apply lower per diem rate (e.g. 70-80 percent of per diem) for these additional days. Lower rate reduces incentive to keep those patients who could be already discharged but at the same time covers the necessary costs (usually actual costs are higher during the beginning of the hospitalization which also justifies the reduced

¹³ Mission Report: Green Light Committee for the WHO European Region mission for monitoring the implementation of the national tuberculosis response plan in the Republic of Moldova Right Bank of the River Dniester (13-17 February 2017).

rate for longer stays) for those ones who need prolonged stay. In addition, **categorizing per diem rates by TB patient groups would help to reduce the incentive to hospitalize less complex TB patients**, e.g. use 80-90 percent of per diem rate for DS-TB patients from the first day in the hospital.

The second option is to move back to the **case based payment which could be simple extension of the current per diem payment system**. For the DS-TB patient the case rate could be calculated by using the formula: $90\% \times \text{per diem rate} \times 30 \text{ days}$. For the MDR-TB patients the case rate would be: $\text{per diem rate} \times 90 \text{ days}$. Again, these 30 days and 90 days limits are arbitrary and could be adjusted according to the consensus between stakeholders by keeping in mind the objective to optimize TB inpatient care. It is important to keep in mind that actual patient stay could be longer or shorter but hospital still receives full case rate with well-defined and reasoned duration of stay and appropriate per diem formula. It is also possible to move to the more sophisticated case groupings but in the environment with few (hopefully one) providers its additional value for the payment purposes is questionable. It is reasonable to have an exemption for a very complex cases (very long stay, e.g. more than 6 month) which could be financed fully based on per diem.

The third option, **in case all TB hospitals are consolidated under one legal entity and management, would be to move to global budget based financing**. The budget may be calculated using the case adjusted (see example above) activity information. In parallel, it would be advisable to keep some activity related incentives (partial per diem or case based funding while tariffs do not cover full cost but rather marginal cost) and to validate the estimated budget according to the expected costs which are needed to provide quality TB care.

The fourth option, which could be applied in combination with any of the above described three payment system, is the **add-on performance payment**. The size of the performance component should be attractive (at least 5 percent of the hospital's budget) and the source for this additional payment should be savings from optimizing inpatient care. This would need that key performance indicators (e.g. ALOS for DS and MDR patients) are identified and expected performance levels determined. One additional option is to include some indicators that focus on the after-discharge performance which would help to facilitate stronger cooperation across all levels of care and assure stronger support from hospital specialist to the outpatient level. Latter could be further developed for a case management payment (see below).

In summary, the inpatient care payment mechanism should give incentives to optimize the inpatient care (less hospitalizations, shorter length of stay) without withdrawing quality of care. It is obvious, that there is vast potential to increase the efficiency of TB care at the inpatient setting. However, it can be done only in a case if primary health care with outpatient TB network is well-functioning and has enough resources to cope with increasing volume of care and responsibilities (see below).

4.3. Outpatient specialised clinics and community centres¹⁴

4.3.1. Outpatient specialised clinics and community centres financing

Outpatient TB specialists are expected to work in each district hospital. Though, there are at least 3 districts without phthisiopulmonologists working permanently in the outpatient clinic. According to the staffing norms, there should be 0,3 full time equivalent (FTE) phthisiopulmonologists per 10 000 adult population and 0,6 FTE per 10 000 children population in the outpatient setting. Their role is to support the PHC level by confirming the TB diagnosis and to do a follow up consultations and clinical treatment monitoring and follow up until the TB treatment is completed.

The advantage of TB outpatient clinic is that they work closely with hospital and therefore have instant access to the diagnostic services. Also, they tend to have a somewhat mediating role between the NTP and primary health care. In practice, they also do passive case detection and may provide DOTS for surrounding population. It is not clear, how much additional value this mid-layer adds in practice and whether their current way of sharing tasks with primary health care is optimal.

One of the latest developments is the scale up of TB community centres (the GF project, 10 centres were established in 2010 and the phase out to cover whole country was in 2017) as an integrated part of these outpatient clinics. This gives opportunity to expand the TB team and to make supportive services (e.g. psychological and social support) more accessible for the TB patients. In minimum, community health centre should have a multiprofessional team comprising 5 members: psychologist, social worker, nurse and two non-full time supportive staff as accountant and coordinator. TB doctor coordinates the multidisciplinary team.

Outpatient TB clinics are contracted by the NHIC by using capitation payment in a similar manner as in primary health care based on the size of the population in the catchment area.¹⁵ The annual capitation varies: 125.44 MDL in Chisinau (this is top up to the global budget based funding), 125.48 MDL in rayons and 137.00 MDL in Balti. Integrated community health centre is contracted in parallel by the PAS centre using global budget which should cover salary cost of psychologist and social worker and some overhead costs. The latest development is that the NHIC started social contracting for non-medical supportive services for HIV and TB patients. The public tender for the HIV harm reduction services is in the middle of the procurement process and TB one is under preparation during the writing of the report. This is too early to assess the results of this new initiative but in general that is a very much welcomed development that gives more flexibility for the NHIC to finance full package of services that are needed to achieve good TB treatment outcomes, including non-medical supportive ones.

4.3.2. Options to revise outpatient specialist care and community centres financial incentives

The role of outpatient specialist care and community centres in the TB care model needs to be better defined in the new model of care, which would enable to design proper incentives, e.g. joint case management payment for a TB patient with PHC with shared performance targets for screening and treatment (see below).

4.4. Primary health care

4.4.1. Primary health care financing

¹⁴ Except those in Chisinau. PHC model in Chisinau is described in the following sub-chapter.

¹⁵ National reference laboratory of the Institute of Phthisiopneumology "Chiril Draganiuc" is contracted by using global budget mechanism.

In Moldova, family medicine centred primary health care is rather well developed compared to many others post-Soviet countries. Since 2008, PHC facilities are autonomous and operate independently from hospitals and are contracted by the NHIC. Since 2010, primary health care is organized as a network of group practices. A health centre should serve at least 4 500 inhabitants with at least three doctors and at least six nurses. There are allowed exceptions due to geographical reasons and in the communities with less than 900 inhabitants nurses post are replacing the primary health care centres. However, these nurse posts are not separate legal entities but form a network with primary health care centre.

In Chisinau, the primary health care is organized differently and primary health care centres are grouped in territorial medical associations which include specialists and diagnostic services (polyclinic type of primary health care model). In total, there are 32 facilities in Chisinau and on average 24 family doctors, 25 nurses and 23 specialist work in one entity.

According to the regulation, one family doctor should be available per 1500 inhabitants but in reality this is difficult to reach and actual number of inhabitants is close to the 2000¹⁶. The situation is challenging outside capital region where it is difficult to attract family doctors and nurses to work there. In general, family doctors have a gate keeper role which is also seen as a guiding principle in TB care where family doctors have a leading role in active case finding and TB detection.

Primary health care facilities are contracted by the NHIC if they have determined territory that they serve by the MoHSP. The NHIC has two payment methods for primary health care: age adjusted capitation and performance payment.¹⁷ Year 2017 budget for capitation is 1 082 598,4 thousand MDL (85 percent) and for the performance payment 190 484 thousand MDL (15 percent). Additionally, primary health care facilities are responsible for outpatients prescription of reimbursement medicines within the limits of the set budget for each rayon. CNAM ensures reimbursement for outpatient prescription, directly to the community pharmacy.

The number of registered persons by each facility is updated quarterly and is the basis for **capitation payments**. Capitation payment (annual) is age adjusted by three different age groups (see table 3). About 65 percent of the capitation payment is foreseen for salary costs and remaining 35 percent all other expenditures, including all necessary diagnostic tests that patients may need in the primary health care setting.

Table 3. Capitation payments for primary health care in 2017

Age group	Capitation payment (MDL)
0 to 4 years 11 months 29 days	457.56
5 to 49 years 11 months 29 days	269.16
50 years and over	403.72

Primary health care **performance payment system** includes 29 different indicators which

¹⁶ http://www.euro.who.int/_data/assets/pdf_file/0007/177586/E96717-v2.pdf

¹⁷ Additional global budget type of payment is applied to the Youth Friendly Health Centres and Community Mental Health Centres.

have quarterly and annual targets. It was revised in 2017 based on the World Bank recommendations and the difference from the previous system is that according to the new system no payment is done if coverage target per indicator is not achieved. Previously each single activity by each indicator was rewarded by payment which value was recalculated depending on total budget available. The points per each indicator are set for the patient list 1500, number of point is recalculated if there are more or less patients in the patient list which leads to the higher or lower P4P payment accordingly.

There are two TB related indicators in the performance scheme: proactive detection of the population with the risk of TB and finalized TB treatment (DOTS). The first TB related indicator sets the target that 85 percent of TB risk group should be screened according to the screening protocol¹⁸ which results in 60 points annually. Lower level annual target is 70 percent which gives 48 points. Annual targets are divided to the quarterly targets which enables quarterly payments. For the second TB indicator measuring the finalized TB treatment according to the DOTS standards, the annual target is calculated according to the formula: (% of TB cases * 85%) + (% cases MDR-TBC * 50%). The indicator's value is 108 points for achieving the annual target. In total, it is possible to earn 972 points per 1500 patients of which 168 points – 17 per cent - are linked to achieving TB related targets. The value of one point is 80.5733 MDL in 2017. This means that if patient list size is 1500 then the family doctor achieving TB related targets can earn extra $60 * 80.5733 + 108 * 80.5733 = 13\,536.31$ MDL annually. This amount is meant to be a salary top up to the base salary and primary health care centres are autonomous to decide how that amount is divided between different workers.

The TB risk group management and data collection by indicators is done paper based (special paper “registries” by indicators have been distributed to the primary health care facilities in mid-2017) and each primary health care facility should submit aggregated quarterly reports (paper based, electronical submission is optional) to the NHIC. The NHIC has the right to validate these aggregated reports against paper based registries and actual medical records.

The availability of necessary equipment for the diagnostics in the primary health care facilities depends on their size. It seems that access to the TB specific laboratory services is relatively well organized but still challenges (mostly logistical) exist if sputum is collected during the outreach or in the remote nurse posts. More challenging is to have an access to the X-ray which is usually not available in the primary health care facility but in the district hospital. First, it is difficult to get all target group patients to have X-ray due to logistical barriers and there is limited availability of mobile X-ray units and making these available would be questionable in terms of cost-effectiveness. Second, family doctors might face financial barriers if they should contract out X-rays and cover the fee from their capitation. According to the regulation, the allocated amount from capitation to the X-rays should fit to the 2 percent limit of total capitation amount. This limit was broadened to 4 percent in 2017 due to the revisions in the risk group definition that resulted in the increase of number of people to be screened. Family doctor has to pay 102¹⁹MDL (140 MDL with film) fee to the hospital for a single X-ray which is half of an official tariff. In real life, this official fee is not always followed and hospital may charge higher price and the NHIC has limited capacity to oversight this kind of practices. Similar challenges could be faced by

¹⁸ X-ray (digital or conventional) or bacilloscopy of BAAR sputum (for symptomatic) Mantoux sample.

¹⁹ It was also mentioned by providers that for TB this price is reduced to 51 MDL but no formal evidence about that was found.

family doctors with other necessary tests (e.g. blood and urine tests, ECG) if they have to buy these services from another provider.

Textbox 1. Unit cost calculation: X-ray example

Nurse

Average monthly salary with payroll: 5000 MDL
 Working hours related to direct service delivery per day: 6 hours
 Annual working days: 47 weeks * 5 days per week = 235
 Annual working minutes: 235 * 6 * 60 = 84 600 minutes
 Unit cost per minute = 5000 MDL * 12 / 84 600 = 0.71 MDL
 Cost per one X-ray: 10 min * 0.71 MDL = 7.10 MDL

Radiologist

Average monthly salary with payroll: 10000 MDL
 Working hours related to direct service delivery per day: 6 hours
 Annual working days: 47 weeks * 5 days per week = 235
 Annual working minutes: 235 * 6 * 60 = 84 600 minutes
 Unit cost per minute = 5000 MDL * 12 / 84 600 = 1.42 MDL
 Cost per one X-ray : 5 min * 1.42 MDL = 7.10 MDL

X-ray machine (digital)

Price: 3 540 000 MDL
 Years of depreciation: 8
 Working hours per day: 8 hours
 Annual working days: 51 weeks * 5 days per week = 255
 Annual working minutes: 255 * 8 * 60 = 122 400 minutes
 Unit cost per minute = (3 540 000/8) / 122 400 = 3.62 MDL
 Cost per one X-ray: 10 min * 3.62 MDL = 36.2 MDL

Additional cost (e.g. overhead, maintenance): 10% top up

Unit cost per 1 X-ray =

(7.10 MDL + 7.10 MDL + 36.2 MDL)*1,1 = **55.44 MDL**

One possibility to get better understanding about potential costs related to the one X-ray is to do simple normative activity based costing exercise²⁰. This costing exercise does not give an answer about the actual cost (which differs by providers anyway) but helps to put the current incentive scheme (tariff that PHC provider has to pay; 2-4 percent of the capitation by taking into account number of needed x-rays; P4P incentive size) into perspective. Key cost categories for the digital radiography are labour and X-ray equipment. For example, we may assume that on average one X-ray takes 10 minutes and later there is needed 5 minutes for radiologist's time to fill the medical records²¹. We may also make assumptions about optimal working days and hours for a health personnel and use existing salary scales for nurse and radiologist to

estimate the unit cost. Similar approach can be applied for X-ray machine. The unit cost of one X-ray by applying different assumptions (see text box 1) is about 55 MDL²² of which direct labour cost is around 14 MDL and X-ray machine related cost is approximately 36 MDL. Currently the full tariff of X-ray that is applied by the NHIC is 102 MDL. For TB screening reduced 50 percent of that full tariff should be applied MDL which PHC should pay to the hospital if they buy X-ray from them. The actual cost of X-ray varies by providers depending on several factors of which most important are the cost related to the X-ray machine and productivity level. For example, if X-ray machine acquisition costs are covered separately by NHIC, then this cost is double-covered through X-ray tariff (more than half of the cost) and enables to have higher profit margin for that service.

To better understand family doctor's incentives to focus on active TB detection (first TB related performance indicator) – which is one on the key priorities to achieve better TB care outcomes

²⁰ See example of applying activity based costing methodology to calculate the cost per one X-ray scan: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3415060/>

²¹ Assumption is that patient communication is done by PHC doctor and not counted as part of the X-ray. Also, all time estimates provided here are hypothetical and not validated against optimal nor usual practice in Moldova.

²² This is a simplified illustrative example that uses authors own generated assumptions to better understand the power of current incentive scheme.

– is to compare the costs and rewards/revenues related that particular activity. For example, if family doctor has 1500 patients then the maximum amount of points for active TB screening indicator is annually 60. The value of one point is approximately 80.57 MDL which means that in total it is possible to get annual bonus $80.57 \times 60 = 4834$ MDL. Family doctor has to screen 85 percent of the defined risk group according to the screening protocol to achieve these 60 points. The amount of points is dependent on the size of the patient list but independent of the size of the risk group. This mean that family doctor has an incentive to show the risk group smaller (work load, available financial resources, transportation and community outreach). This also puts family doctors in high TB prevalence areas in a disadvantaged situation. For example, if the size of the risk group is 30 percent the family doctor must screen at least $0.85 \times 0.3 \times 1500 = 383$ patients which will cost (assuming that screening is done by using X-ray and family doctor has to purchase it from other provider) 383×51 MDL = 19 533 MDL. Risk group size 10 percent of total served by PHC population would cost 3 times less – 6 511 MDL. Thus, 30 percent risk group size means that family doctor should spend 4 times more than receives back as a bonus payment. Obviously, these are different cost lines – performance pay is a salary top up, but X-ray costs should be covered from the capitation. Still, during the interviews some family doctors mentioned that there are not enough capitation funds (especially after expansion of the risk group in mid-2017) to cover necessary X-ray and additional lab test costs. Moreover, active case detection needs additional efforts for outreach which evidently is dependent on the local level support. Any kind of shortage of funds or false incentives to focus on active TB case detections undermines seriously the ability to improve TB active case finding and care outcomes.

Similar calculations could be done for TB case management (second TB related performance indicator) to better understand the family doctor's incentive to take more role over TB treatment and to focus on achieving good outcomes. Active case management is a time and resource demanding activity and current target related performance incentive might not be enough to motivate to take a proactive role and to be interested in TB care shift to outpatient setting which obviously increases workload and need for additional resources to ensure effective case management.

In summary, primary health care payment methods – capitation in a combination with performance payment – are in line with good international practice. Also, primary health care system in the Republic of Moldova is well developed compared to many other countries which gives advantage to shift TB care for inpatient setting to the primary health care level. However, digging deeper to TB related incentives one understands that although adequate financing mechanism are in place, there is a lack of financial incentives to define risk groups accurately, to screen risk group actively and to take more role over TB patients case management at the primary health care level as the current payment arrangements does not take into account the actual workload. At the moment, a family doctor is paid the same if they have to follow 2 or 10 TB patients. Also, current paper based data collection and management is a serious limitation to improve the NTP monitoring function and to develop proactive support mechanisms for family doctors.

4.4.2. Options to revise primary health care financial incentives

The primary health care incentives should be seen by two categories which define the role of primary care role in TB care: active case detection and successful TB case management.

First, active TB screening is a key to overcome current challenge related to late case detection and therefore it is crucial to guarantee enough financial means and proper incentives for that.

Therefore, some changes in the current performance indicator of active case detection may increase the power of financial incentives. One option is to **combine previous (each test gave financial reward) and current (only achieving a target level gives financial reward) logic of performance scheme for that indicator** – each screened risk group member gives some financial reward and when a set target is achieved additional reward for a good performance would be given. This combined logic would minimize the risk that family doctors are interested to show risk group smaller or lose interest for active case detection when realizing they do not have enough capitation funds to cover the related costs. Size of the reward per each screened person should reflect the actual cost that family doctor faces when purchasing X-ray – 51 MDL. Family doctor has to anyway cover other cost related to active case detection - time, transportation, outreach. Additional reward achieving a target would be salary add on for a good performance as it currently is. Also, the role of community centre in active case detection should be more clearly defined which would enable to develop joint incentives to assure that all contributors to the successful screening could be rewarded.

Second, similar approach – combining previous and current performance scheme logic – could support family doctors taking more role over DOT in outpatient setting. Shifting care from inpatient to outpatient level would inevitably increase family doctors and their team workload (more patients, longer treatment periods) and applying “**case management**” fee for each TB patient would support primary health teams to better cope with their increasing role. Size of the case management fee should also reflect the actual work load and other costs related to effective DOT administration and could be with different size for DS and MDR patients. These case management fees could be monthly payments for patients receiving a DOT or scaling up VOT if appropriate in concrete setting. After successful completion of treatment additional performance pay for salary add on would be a reward for a good work similarly to the current performance pay logic. Extension of this case management fee is to combine it with outpatient TB specialist and community centre activities related to TB patients.

Additionally, priority must be given to **move from paper based TB risk group and performance indicators registries to electronic ones** which would enable to build cost efficient central and regional monitoring systems to support proactive cooperation across all levels of TB care and the NTP. Moreover, this would enable to build joint performance indicators – hospital, outpatient TB specialist with community centre and primary health care centre. Latter is a possibility to add non-financial incentives that build on intrinsic motivations for care delivery (e.g. dedication to improve TB outcomes) but also provides reputational benefits (e.g. our rayon performs better than average).

4.5. Patient incentives

Patient incentives role in successful TB treatment cannot be underestimated as patient plays a key role in completing the TB treatment successfully. This is especially challenging in later stages of the treatment when patient already feels better and it is difficult to ensure adherence to the treatment in line with the guidelines. However, recent Cochrane review concludes that material incentives and enablers may have some positive short term effects on clinic attendance, particularly for marginal populations such as drug users, recently released prisoners, and the homeless, but there is currently insufficient evidence to know if they can improve long term adherence to TB treatment.²³

²³ <http://onlinelibrary.wiley.com/doi/10.1002/14651858.CD007952.pub3/abstract>

Currently there are two different kind of TB patient incentive schemes in place. First one is for DS-TB patients during the treatment phase when patient is expected to come to get the treatment daily and receives food coupon (value 35 MDL per day) for that that is paid out twice a month. This incentive scheme is financed by the NHIC. Second scheme is for MDR-TB patients who receive monthly money transfer to their bank account if they have received at least 25 days of treatment (of 28 days) according to the treatment protocol. The size of the monetary bonus is 980 MDL and this scheme is financed by using the GFATM funds. Both benefits are equal in their size, although one is food coupon and other monetary incentive.

Both incentive schemes follow the principle that smaller but more frequent incentives are more efficient compared to a bigger size one time bonus after successful completion of treatment. Most important is to assure enough resources for patient incentives if the TB care is transferred from inpatient to outpatient setting. Though, patient face indirect cost (absence from every day activities, transportation) to access care and ways to overcome these barriers is also important. Therefore, one may consider the extension of similar type of financial incentives to the care-givers (e.g. community nurses, social workers) or patients (e.g. travel reimbursement²⁴), particularly keeping in mind rural settings. Also, piloting video observed therapy is a good example of ways to reduce access barriers from the patient perspective.

²⁴ Currently available for those covered by insurance scheme.

Annex

Mission agenda and people met

How

Time	Meetings	Participants
	Monday 21 August	
09:00 – 10:15	Center PAS	TB team/Rita Seicas
10:30 – 13:00		Director IFP, Sofia Alexandru NTP Coordinator, Valentina Vilc
14:30 – 15:00	Ministry of Health	Deputy Head of Public Health Department, D. Demiscan
	Tuesday 22nd August	
09:00 – 11:00	Ministry of Finance	Head, Health and Social Assistance Financing Department, Marina Seminiuc
11:30 – 12:30	ONG active in TB control	Director, AFI Center, Lilian Severin
12:30 – 14:00	AMT Centru	A.Glavan , Director AMT Center,A. Barbarosie. Deputy Director, ZaveruhaL – TB Coordinator/Territorial Center
14:40 – 17:00	Health Insurance Fund (CNAM)	D. Parfentii Director CNAM, Deputy Director, Iurie Osoianu Head, Contracting department, Ghenadie Damascan, Doina- Maria Rotaru, Deputy head contracting department,
	Wednesday, 23rd August	
08:30-10.30	MoH	Head, Financing Department, Denis Valac Lilea Gantea, Deputy of Financing Department
12:00	Departure to Nisporeni	
13:00 – 14:30	Cabinet TB	TB Doctor, Nina Ionita, 069272358
	Community Centre	CC Coordinator, Lidia Craciun
14:00 – 15:30	Primary Health Care Unit	Family Doctor and Nurse
	Thursday, 24th August	
08:00	Departure to Rezina	
10:00 – 12:30	Cabinet TB	TB Doctor, Nina Postu, 069599228
	Community Centre	CC Coordinator, Eugen Postu
14:00 – 15:30	Primary health care unit	Family doctor Nurse
	Friday, 25th August	
09.00- 13.00	Validation meeting	MOH /T. Zatic , Head Primary Health Care Director IFP, Sofia Alexandru NTP Coordinator, Valentina Vilc CNAM. I. Osoianu, Deputy Director CSO PAS Center R. Seicas / Coordinator
14:00- 16:00	Debriefing at PAS Center	TB team