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# Improving payment mechanisms to support a new delivery model for TB care in Romania

By:
Laszlo Imre, Alexandre Lourenço, Nisha Ahamed,
Szabolcs Szigeti and Pierpaolo de Colombani

# ABSTRACT

In July 2015, the WHO Regional Office for Europe signed an agreement with the Romanian Angel Appeal Foundation, principal recipient of the current tuberculosis (TB) grant of the Global Fund to Fight AIDS, Tuberculosis and Malaria, for technical assistance which included the development of a new delivery model of TB care that is financially sustainable and enhances people-centred integrated/coordinated services. This work was conducted in coordination with the Ministry of Health and the Romanian Angel Appeal by a small group of WHO external consultants and staff who visited the country in October 2015 and April and December 2016. The group developed a revised list of tasks for the different levels of care (pulmonology services in hospitals and outpatient dispensaries, family medicine practices, communities) and identified their new payment methods. This model diverges significantly from the current hospital paradigm and is expected to improve the quality of TB services, their cost-effectiveness and financial sustainability. It will require both field-testing in order to fine tune the way it works and a strong political commitment for its countrywide roll-out. Other countries aiming to introduce universal coverage of their TB services may be inspired by this report.



## Keywords

TUBERCULOSIS – prevention and control
TUBERCULOSIS – economics
TUBERCULOSIS – therapy
HEALTH CARE COSTS
HEALTH EXPENDITURES
DELIVERY OF HEALTH CARE, INTEGRATED – economics
PATIENT-CENTERED CARE – economics
AMBULATORY CARE – economics
ROMANIA

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# Abbreviations

| | |
|---|---|
| ALOS | average length of stay |
| BCG | bacillus Calmette-Guérin |
| DOT | directly observed treatment (for TB) |
| DS | drug-susceptible |
| ECDC | European Centre for Disease Prevention and Control |
| LTBI | latent TB infection |
| MDR-TB | multidrug- resistant tuberculosis (resistant to, at least, isoniazid and rifampicin) |
| NHIH | National Health Insurance House |
| NTP | national tuberculosis control programme |
| TB | tuberculosis |
| XDR-TB | extensively drug-resistant tuberculosis |

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# Introduction

Romania is one of the 18 high-priority countries in the fight against tuberculosis (TB) in the WHO European Region. The most recent (2015) WHO estimates of TB incidence and mortality in the country are 84 (72–97) cases and 5.8 (5.3–6.4) deaths, respectively, per 100 000 population *(1)*. These rates have been falling slowly but steadily in recent years. TB resistance to rifampicin (as a proxy of multidrug-resistant (MDR) TB) is estimated to be 3% (2.1–3.9%) and 12% (9.3–15%), respectively, among newly diagnosed and previously treated TB patients; these proportions led to an estimated 940 (730–1100) total new MDR-TB patients in 2015. HIV co-infection was estimated to be present in 2.6% (2.4–2.8%) of the TB patients. In 2015, the national TB programme (NTP) detected 14 225 new/relapse TB cases, equivalent to 89% (75–100%) of the estimated cases occurring. Treatment was successful in 85% of the newly treated TB cases but only 45% of the retreatment cases (2014 patient cohorts), 68% among TB/HIV cases (2014 cohort), 41% among rifampicin-resistant MDR-TB cases (2013 cohort) and 7% among extensively drug-resistant (XDR) TB cases (2012 cohort).

In March 2014, WHO and the European Centre for Disease Prevention and Control (ECDC) jointly carried out a review of the NTP. Based on their recommendations, the National Strategic Plan to Prevent and Control M/XDR-TB 2015–2020 was developed and officially endorsed and budgeted for in February 2015. On the basis of that Plan, a TB Concept Note was successfully submitted to the Global Fund to fight AIDS, Tuberculosis and Malaria, which approved a TB grant of US$ 8.9 million (April 2015–March 2018) with the Romanian Angel Appeal Foundation (a local nongovernmental organization) as principal recipient. Under this grant, the Romanian Angel Appeal and the WHO Regional Office for Europe signed an agreement for technical assistance in a number of areas, including the development of a new model for the delivery of TB care that is financially sustainable and enhances people-centred integrated/coordinated services across the different health providers (such as pulmonologists in hospitals and dispensaries, family doctors and community health workers).

WHO carried out three missions on 19–22 October 2015 and 13–15 April and 12–16 December 2016. This report attempts to describe in detail the new model of delivering and financing TB services which was the final outcome of these missions, together with a roadmap agreed during the first mission (Annex 1).

The specific objectives met through the technical assistance under the above agreement were:

- an analysis of the costs of hospital and ambulatory TB care (in order to prepare for the introduction of a bundled case payments system integrating hospital and ambulatory care);
- an analysis of the payment of inpatient and outpatient pulmonary-dedicated services and recommendations to introduce a bundled case payments system integrating hospital and ambulatory TB care;
- an analysis of the income of family doctors under the framework contract with the National Health Insurance House (NHIH) and development of performance-based financial incentives for inclusion of TB services in the basic package of services;
- development of performance-based financial incentives for the provision of TB services by community health providers (such as community health workers, patronage nurses, Roma mediators and nongovernmental organization workers).

# Methods and limitations of the report

This report was prepared by the authors using data partly collected by local experts, whose work is acknowledged with thanks. The authors were provided with useful data on the hospital activities reimbursed by NHIH countrywide and on hospital and dispensary activities in Constanta county.

The countrywide hospital data retrieved from the NHIH reports did not, unfortunately, differentiate drug-susceptible (DS) TB and MDR-TB cases through the use of International Classification of Diseases codes, so the authors had to estimate which cases were MDR-TB by selecting those TB cases with much higher than average lengths of stay (ALOS) in hospital. A further difficulty arose from the limited time allowed for discussion and agreement with counterparts of the final types and volumes of service to be delivered at each level of care.

The WHO missions noted the need to encourage change through further discussion, implementation of the proposed new model of care in a pilot area and close monitoring of the model for immediate adjustment when necessary. They recommend that the NHIH uses the International Classification of Disease codes from now on.

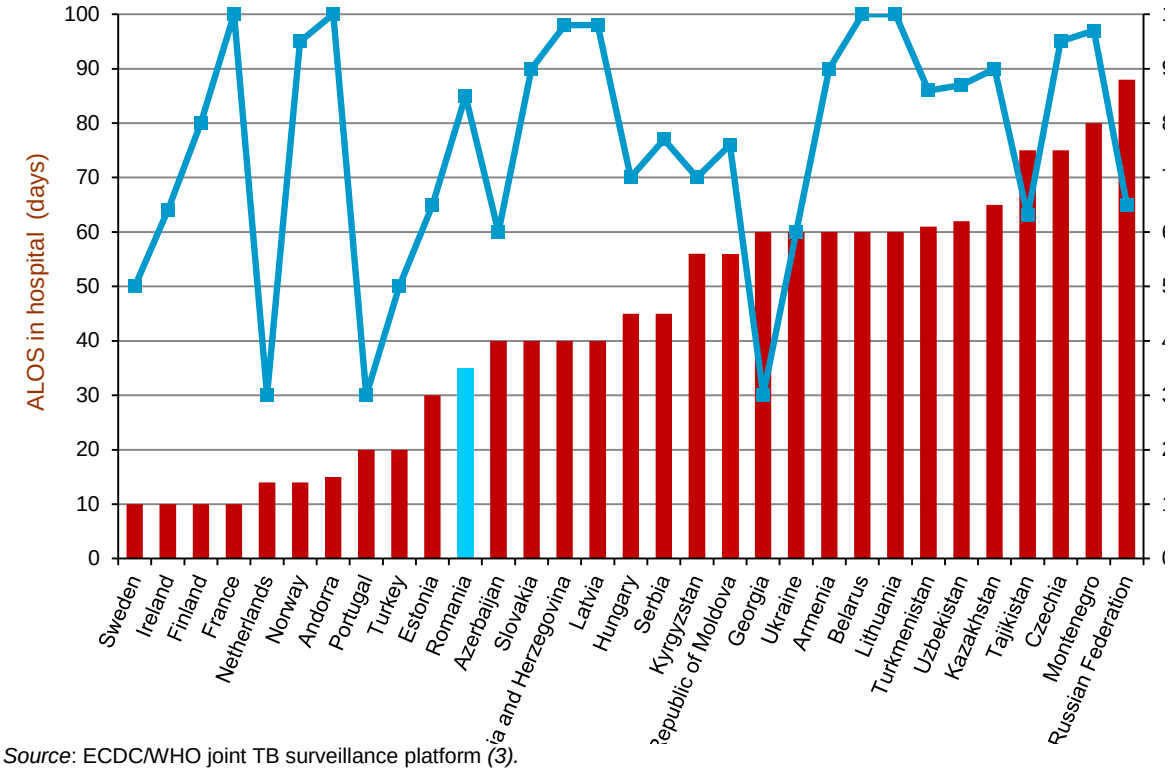
# Delivery model of TB services

Since the Declaration of Alma-Ata on Primary Health Care in 1978 *(2)*, the delivery model of health services has been developing in the direction of coordinated/integrated services across the different levels of care with a focus on the needs of patients and their families. People-centred care is being pursued in all countries of the world, adjusted to their epidemiological profiles, the capacities of their health systems and available resources. The same is happening to TB services, which are moving towards a model of delivery that is more balanced between hospital and ambulatory care, including community care.

Many of the hospitals have poor TB infection control measures, as a result of which nosocomial transmission is common and contributes to further TB and MDR-TB transmission in the community. In the past, sanatoria were built to isolate TB patients from the community and to support their healing with good food and rest aimed at strengthening immune defences at a time when anti-TB drugs were not available. Nowadays, however, anti-TB drugs are available that can stop infectiousness and cure patients, and standard operating procedures are carried out following rapid diagnosis and effective treatment, including the involvement of non-TB specialists. Early diagnosis and uninterrupted treatment (to avoid the development of drug resistance) are priority interventions that have been proved to be more effective as a consequence of their lower level of access and higher responsiveness to the needs of patients and their families.

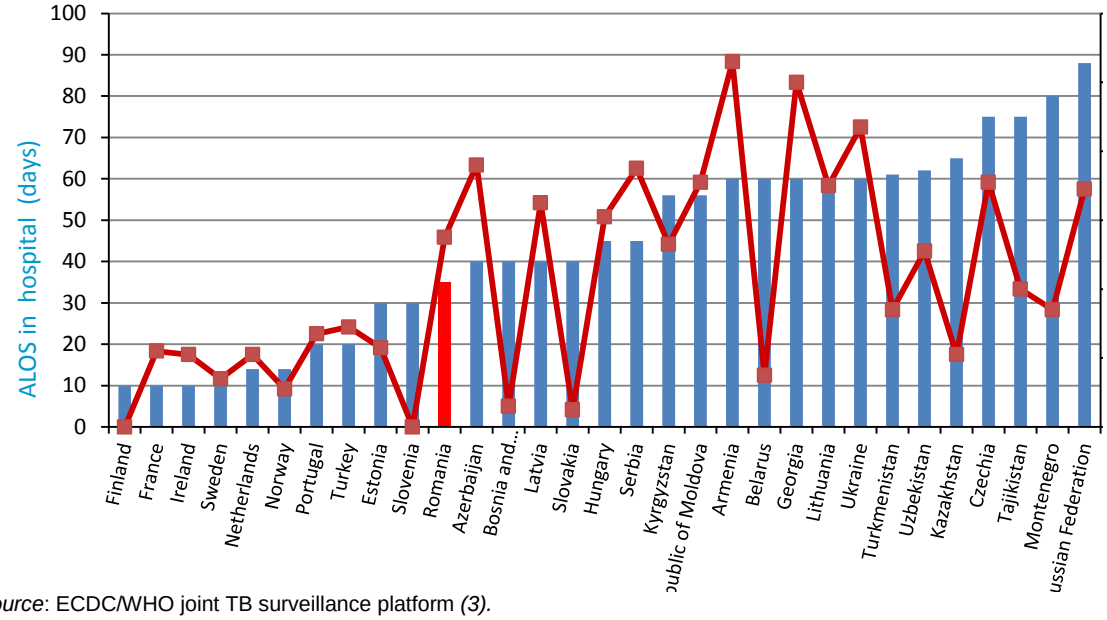
The data submitted to ECDC/WHO show a significant variation between countries both in average length of stay (ALOS) in hospital and rate of hospitalization of DS-TB patients; compared with other countries in western Europe, Romania has a relatively high ALOS (35 days) and a high hospitalization rate (85%) (Fig. 1). Meanwhile, the country seems to be less successful in keeping patients on TB treatment, as indicated by the higher rate of lost-to-follow-up treatment (5.5%) (Fig. 2).

**Fig. 1. ALOS and hospitalization rate of new TB patients, WHO European countries, 2014**




*Source*: ECDC/WHO joint TB surveillance platform *(3).*

**Fig. 2. ALOS and lost-to-follow-up treatment of new TB patients, WHO European countries, 2014**




*Source*: ECDC/WHO joint TB surveillance platform *(3).*

The explanation is the underuse of the available outpatient care network (especially family doctors and community workers) encouraged by financing mechanisms that incentivize hospital care and discourage ambulatory care *(4).* A new people-centred delivery model of TB care requires an optimal combination of services provided at different levels of care (hospital, pulmonology dispensary, family medicine practice and community) and the alignment of the payment methods

of these services. The reconfiguration of the delivery model of TB care should comply with the overall health care delivery structure and its human resources, both current and planned in a future reform. Moreover, the NTP guidelines need to be revised and agreed, as well as the terms of reference of all relevant health providers. They should be trained accordingly and education/advocacy should be provided to the patients, their families and the population in general.

The four WHO missions conducted in October 2015 and April, July and December 2016 were able to discuss with the NTP the new concept of delivering TB services and to agree on the model. Table 1 shows how the main tasks essential for effective TB care can be delivered by the different levels of the health system by coordinating and integrating the different health providers and ensuring the necessary flexibility of the health system response to the needs of TB patients and their families.

**Table 1. Proposed new delivery model for TB services in Romania**

| Main task | Hospital (specialist) | Outpatient (dispensary specialist) | Outpatient (family doctor) | Community (community workers, others) |
|---|---|---|---|---|
| Early identification of presumptive TB | X | X | X | X |
| Diagnosis of TB disease | X | X | | |
| Prescription of TB treatment regimen | X | X | | |
| Administration of TB treatment | X | X | X | X |
| Monitoring of TB treatment progress | X | X | X | X |
| Management of severe clinical conditions | X | X | | |
| Management of adverse anti-TB drug reactions | X | X | | |
| Management of co-pathologies | X | X | X | |
| Patient/family support | X | X | X | X |
| Education, social mobilization | X | X | X | X |
| Tracing TB patients lost to follow up | | X | X | X |
| Screening for latent TB infection (LTBI) | | X | X | X |
| Diagnosis of LTBI | | X | | |
| Prescription of LTBI treatment | | X | | |
| Administration of LTBI treatment | | X | X | X |
| Bacillus Calmette-Guérin (BCG) vaccination | | X | | |
| Management of anti-TB drugs | X | X | X | X |
| TB recording and reporting | X | X | X | X |

The roles and responsibilities for the various levels of staff must be clearly defined through more detailed job descriptions to be used for specific training and supervision. Job descriptions for specific providers in the settings listed above (hospital pulmonology specialist, outpatient pulmonology specialist, family doctor and community health worker) are presented in Annex 2 and were developed from a review of a number of documents *(5–10)* and the WHO missions conducted in July and December 2016. Other providers and health care workers also carry out TB-related tasks in these settings, however (such as nurses, laboratory staff, pharmacists, epidemiologists and county coordinators) and job descriptions should be developed for them too.

In order to quantify the costs required to implement the new delivery model of TB care in one pilot area (as agreed in the roadmap in Annex 1), the volume of services described in Annex 3 is proposed. The annex contains a spreadsheet with a number of proposed entries that can be changed with other fields updated automatically through predefined formulas.

# Current payment methods to TB-relevant providers

## Community health workers

Community health workers, including Roma health mediators, work under a contract with the local authorities or with nongovernmental organizations (very few). The approximately 1300 community health workers and Roma health mediators are mainly distributed in the rural areas and cover only some of the almost 3200 local administrative units (cities, municipalities and rural communes). The salaries of the community health workers hired by the local health authorities paid through Ministry of Health funds. Notwithstanding their specific job description (which includes TB services), they are often diverted to different jobs (sometimes not even health-related) to compensate for the shortage of local administrative staff.

A number of community health workers are also hired by nongovernmental organizations and funded by the Global Fund and other international donors. Usually, nongovernmental organizations pay the community health workers through a lump sum unrelated to the volume of activities performed. Some projects are, however, piloting the use of incentives to patients (social vouchers to increase their adherence to TB treatment) and to providers (motivational vouchers to promote early TB case detection and directly observed treatment (DOT)). The pilot projects launched by the Romanian Angel Appeal in September 2015 in the counties of Arges, Bucharest, Constanta, Maramures and Neamt) provide quarterly motivational vouchers, each worth 10 Leu (net of 16% income tax) to community health workers and Roma health mediators for:

- identification of TB cases in the general population: three motivational vouchers for each case referred for diagnosis (independently from the final confirmation of TB disease by a specialist);
- DOT and distribution of social vouchers: 10 motivational vouchers/month for fewer than five patients, 15 motivational vouchers/month for six to 10 patients and 25 motivational vouchers/month for more than 10 patients.

The Romanian Angel Appeal completed these pilot projects at the end of December 2017 and is now evaluating their effectiveness.

## Family doctors

Primary health care services are delivered by approximately 12 000 family doctors. They are independent professionals, very rarely organized in group practices, who are contracted by the local NHIH branch under the national framework contract. The family doctor is expected to work 35 hours a week and to serve 1800 inhabitants (with an accepted minimum of 800). Each family doctor must employ at least one nurse. New family doctors also receive some financial support to open their practice. The NHIH contract includes payments with age-weighted capitation fees (50%) and fees for service (50%), calculated through a system of points designed to discourage the enrolment of too many patients (since their number is considered inversely related to the quality of care that can be provided) and to limit the fees for service.

If the number of persons registered exceeds 2200 and the related threshold exceeds 18 700 points per year, the payments of per capita fees is reduced by 25% (between 18 701 and 23 000 points), 50% (between 23 001 and 29 000 points) and 75% (above 29 000).

The fees for service are to provide a minimum package of promotion, prevention and curative services, such as immunizations, follow-up of some chronic diseases[1] and mother and child health. The fees for service are paid according to points assigned to each type of service multiplied by the number of patients served. The total number of points is adjusted to the professional seniority of the family doctor and his/her working conditions with the aim of promoting professional development and attracting family doctors to unserved/difficult-to-reach areas. The services to be included in the minimum package, as well as the weight in points for each type of service, are negotiated every year under the framework contract between the Ministry of Health, the Family Doctors Association and the NHIH. Normally, a family doctor is expected to report a maximum number of services per day corresponding to an average of 20 visits to the surgery (of 15 minutes duration) + a maximum of three home visits. The average number of visits per day is calculated within a quarter. A maximum number of 40 visits per day could be accepted, as long as the quarterly average is maintained. No more than 42 home visits per month are reimbursed. In situations where more than 2200 or more than 3000 people are served by one family doctor, the working time could be increased by one and two hours per day, respectively, and the number of visits consequently increased to 24 or 28 a day. This scheme in practice limits the number of services for which a family doctor can be reimbursed by the NHIH per working day. The additional patients may choose to go on a waiting list or to be visited the same day at their own expense. The result is that many respiratory patients bypass their family doctor and go directly to the emergency department of the hospital.

Until 2009, the national framework contract with the NHIH included payments for the detection of new TB cases and for the completion of treatment. Since 2009, these fees have been replaced by the payment of only 5.5 points (10.45 Leu or 1.9 Leu per point) for the detection of a new TB case confirmed by a specialist. All other TB services that may be needed from a family doctor are assumed to be part of the basic services paid through the capitation fees. In practice, only a few family doctors agree to provide DOT on the basis of their good will and personal relations with the pulmonology specialist referring the patient.

## Specialists working in dedicated outpatient facilities

TB specialist outpatient care is provided through pulmonology dispensaries, which are entities without judicial status, belonging to general or pulmonology hospitals and owned by local communities. In the past, their budget was partly provided by the Ministry of Health (for salaries and some prevention activities) and partly by the NHIH (for consumables for diagnosis and drugs for treatment). In 2013, as a consequence of the centralization of anti-TB drug procurement, all budget allocation moved back to the Ministry of Health, which currently provides staff salaries through a separate budget line as well as all other expenses. Some financial support, mainly for utilities but also for rehabilitation and procurement of medical equipment, could be provided by the local authorities or through the European Union structural funds or nationally financed projects. These changes in budgeting and administration caused breakdowns in the services, including stockouts of some anti-TB drugs. In the near future, it is expected that the entire budget will be brought together under the NHIH national framework contract with a consequent simplification of administration and increased efficiency.

[1] In 2014, it was agreed that these would be five conditions of public health relevance such as hypertension, chronic bronchitis, renal failure, kidney diseases and asthma.

## Specialists working in dedicated inpatient facilities

All hospitals have an annual contract with the NHIH that determines the number of inpatient admissions and the tariff for reimbursement for each clinical case depending, in most of the cases, on the type of hospital and the clinical complexity defined by the diagnosis-related group classification system (Annex 4). The more complex the case, the greater the costs of care and thus the budget to be allocated to the hospital. The diagnosis-related group system fixes the maximum number of hospital days for each group of patients but promotes hospital admissions in order to have all hospital beds always occupied.

TB cases are excluded from the diagnosis-related group system, probably as a result of the former policies of long isolation and treatment in TB-dedicated hospitals and sanatoria. All TB cases are considered to require long-term hospital care, with the cost reimbursed by the NHIH through a flat fee per diem which cannot exceed Leu 200.20 (or €45) for adult patients and Leu 258.01 (or €57) for children (2015). The maximum number of TB inpatient days that the NHIH reimburses is the number from the previous year. The hospital budget for TB is calculated through the formula in the Box 1.

**Box 1. Formula for NHIH reimbursement of hospital TB care**

Number of discharged cases[a] × average length of stay[b] × daily rate.[c]

[a] The number of cases discharged by the hospital is negotiated with the NHIH based on:

- the average number of cases discharged by each hospital ward/department in the last five years (taking into account the structural changes approved by the Ministry of Health, as applicable) and the number of cases in the county;
- the number of cases discharged to be deducted from the total because hospitalization was considered unnecessary (a right usually not implemented by the NHIH);
- the number of cases expected to be discharged by each hospital ward/department in the coming year, taking into account the number of beds, the average bed occupancy rate and the length of stays in the previous year;
- the estimated annual number of discharged cases to be divided by four for the quarterly payments by the NHIH.

[b] The length of stay is the number of inpatient days in the previous year.

[c] The daily rate is the base rate negotiated by each hospital ward/department with the NHIH, given the justifying documents, depending on the type of hospital but not exceeding Leu 200.2 for adults and Leu 258.01 for children. Hospitals can apply up to 15% increase of the actual daily rate; many NHIH county offices approved such increases in the past.

The status of non-diagnosis-related TB case makes it possible to keep TB patients in hospital for the maximum length of stay, which is one of the few instruments available to the hospital manager to preserve the budget needed for salaries, procurement of goods and equipment and maintenance/service.

All staff working in hospitals receive bonuses according to a national pay scale for occupational risk. In the case of TB this is 60–75% of the basic salary and is only paid to staff directly caring for TB patients. Understandably, such a bonus is a major incentive for physicians to favour the hospitalization of TB patients and their fragmented placement across hospital departments/ wards to ensure that all staff have an equal chance of receiving the bonus. It also limits the implementation of effective administrative measures for infection control, such as separating TB patients by drug-resistance profile as well as from other pulmonology patients.

The NHIH national database provided to the mission allows the analysis of all TB cases admitted to hospital[2] by their acute or chronic condition[3] but without the possibility to differentiate between DS-TB and MDR-TB cases. However, these two types of case can be guessed by considering their different needs for treatment[4] and the ALOS pattern by patient and case[5] through the encrypted number for each patient in the NHIH database that allows his/her number of hospitalizations to be traced.

In 2015, a total of 1021 patients and 1118 cases (including readmissions) received acute care in hospital with an ALOS of 6.8 days and 6.2 days, respectively (Table 2). Of these, 772 (76%) also received chronic care.[6] A total of 19 076 patients and 28 764 cases received treatment in chronic care hospital wards with an ALOS of 59 days and 39.1 days, respectively.

**Table 2. Main hospital statistics by type of TB care, Romania, 2015**

| TB patient | TB patients | | | TB cases | |
|---|---|---|---|---|---|
| | Number | Average age (years) | ALOS (days) | Number | ALOS (days) |
| In acute care | 1 021 | 50.1 | 6.8 | 1 118 | 6.2 |
| In chronic care | 19 076 | 45.2 | 59.0 | 28 764 | 39.1 |
| Total | 19 324 | 45.4 | 58.6 | 29 882 | 37.9 |

*Source*: NHIH database.

Separating all TB patients admitted for chronic care over intervals of 15 bed days ALOS, the majority of patients were treated up to a maximum of 75 days (Fig. 3). Of the 1507 TB patients who spent more than 135 days in hospital in 2015, the majority were there evidently because of their MDR-TB status. Table 3 shows an analysis of patients by their estimated drug resistance status.

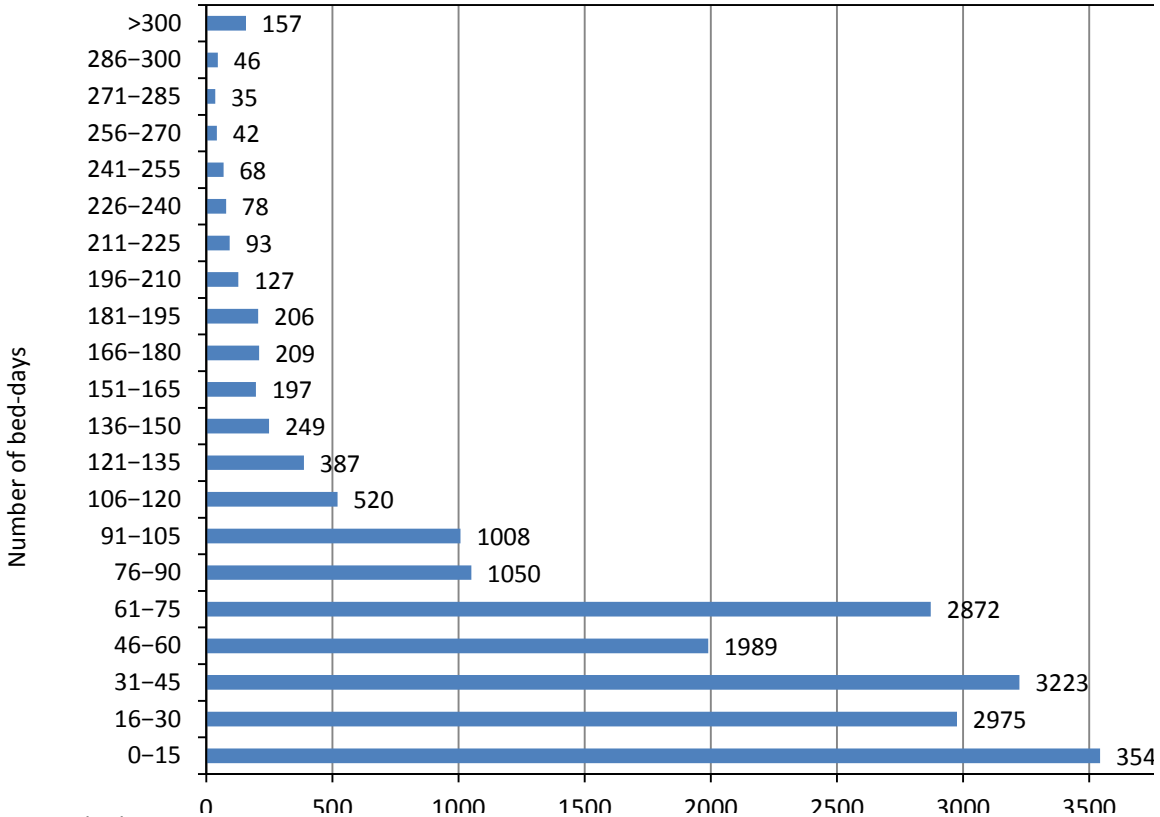
Patients treated in hospital for fewer than 135 days (and thought to have DS-TB) had an ALOS of 46.1 days per patient and 34.3 days per case. Patients treated in hospital for longer than 135 days (and thought to have MDR-TB) had an ALOS of 208.5 days per patient and 61.5 days per case.

Fig. 4 shows a model of cumulative income reimbursement to hospitals from the NHIH for different treatment lengths. A short treatment is 14 days and is paid approximately 2800 Leu; an average-length treatment is 42 days and paid 8400 Leu; a long/repeated treatment is 62 days (without taking into account the interruptions between different admissions) and paid a maximum of 12 400 Leu. It is evident how prolonging the treatment and increasing hospital readmissions are financially advantageous only when the number of patients is limited and there is no other way to fulfil the bed occupancy rate and increase the hospital's income.

Substantial differences in ALOS (Fig. 5) and number of TB patients treated in hospital (Fig. 6) can also be observed between the different counties.

[2] All cases are coded under the International Classification of Diseases, with TB diagnosis indicated in the range A15.0–A19.9.
[3] Each hospital service has a code indicating the type of care provided, that is, acute care (paid through diagnosis-related group) or chronic care (paid through per diem).
[4] The treatment of a DS-TB case is at least six months and for an MDR-TB patient it is at least 20 months.
[5] A *hospital event* starts with the admission in hospital and ends with the discharge. A *patient* includes all hospital events of the same patient in the year. A *case* refers to each hospital event, even if of the same patient. It is important to distinguish between one or more hospital events (rehospitalization) for a single patient.
[6] This usually happens when a patient is initially diagnosed with pneumonia (acute condition) and then diagnosed with TB (chronic condition).

**Fig. 3. Number of hospitalized TB patients by ALOS in bed-days, Romania, 2015**




*Source*: NHIH database.

**Table 3. ALOS in hospital by type of TB patient and case, Romania, 2015**

| TB treatment | TB patients | | | TB cases | |
|---|---|---|---|---|---|
| | Number | Average age (years) | ALOS (days) | Number | ALOS (days) |
| <135 days (estimated to be for DS-TB patients) | 17 567 | 44.5 | 46.1 | 23 650 | 34.3 |
| >135 days (estimated to be for MDR-TB patients) | 1 507 | 46 | 208.5 | 5 110 | 61.5 |
| Total | 19 704 | 45.2 | 59.0 | 28 670 | 39.1 |

*Source*: NHIH database.

**Fig. 4. Cumulative income (Leu) per patient by model of hospital TB treatment, Romania, 2015**

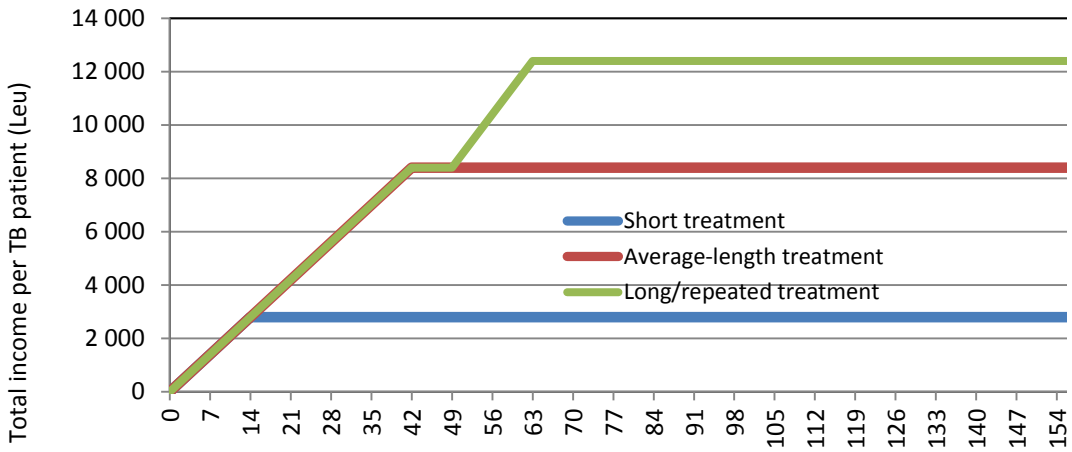
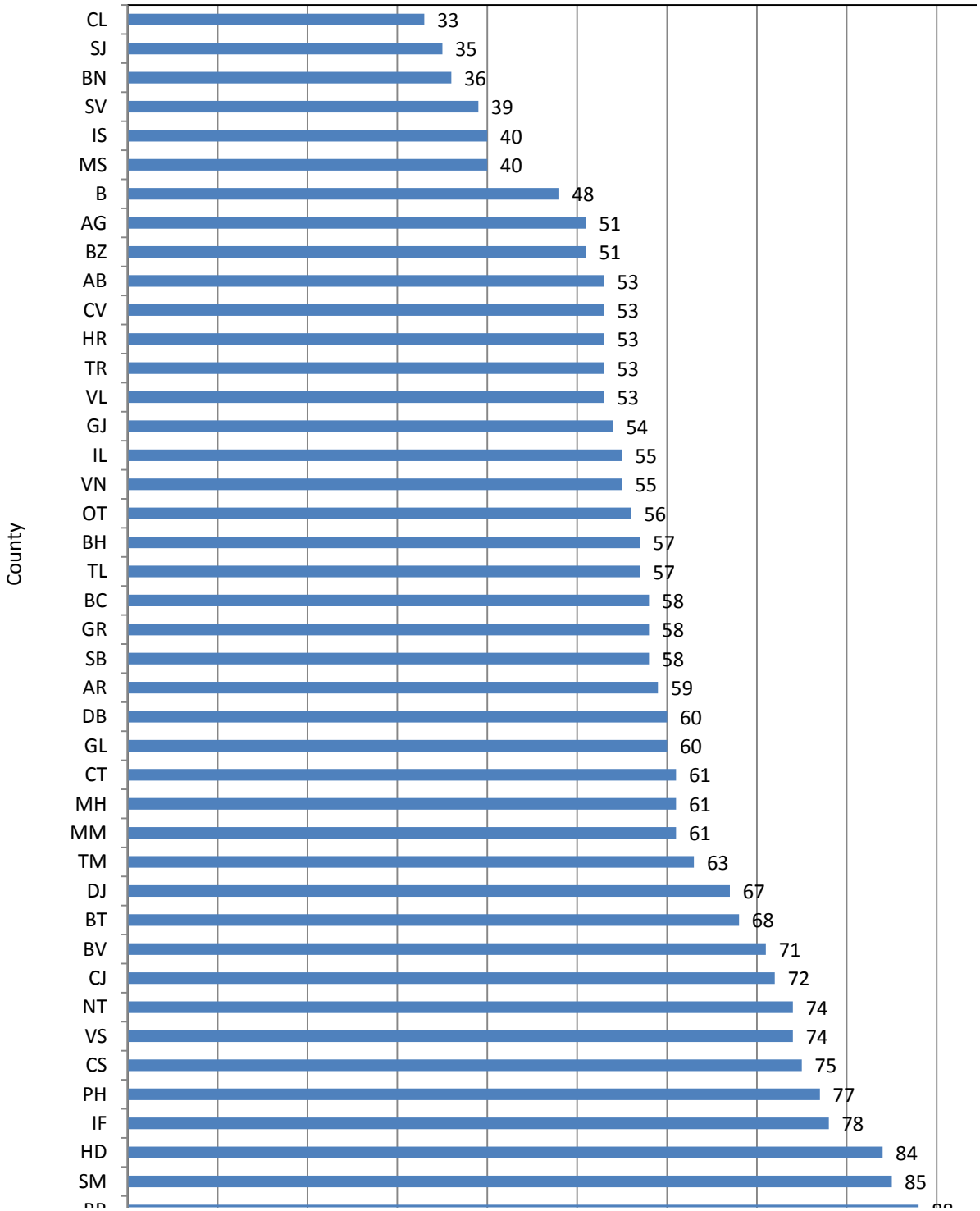


**Fig. 5. ALOS in hospital by county, Romania, 2015**

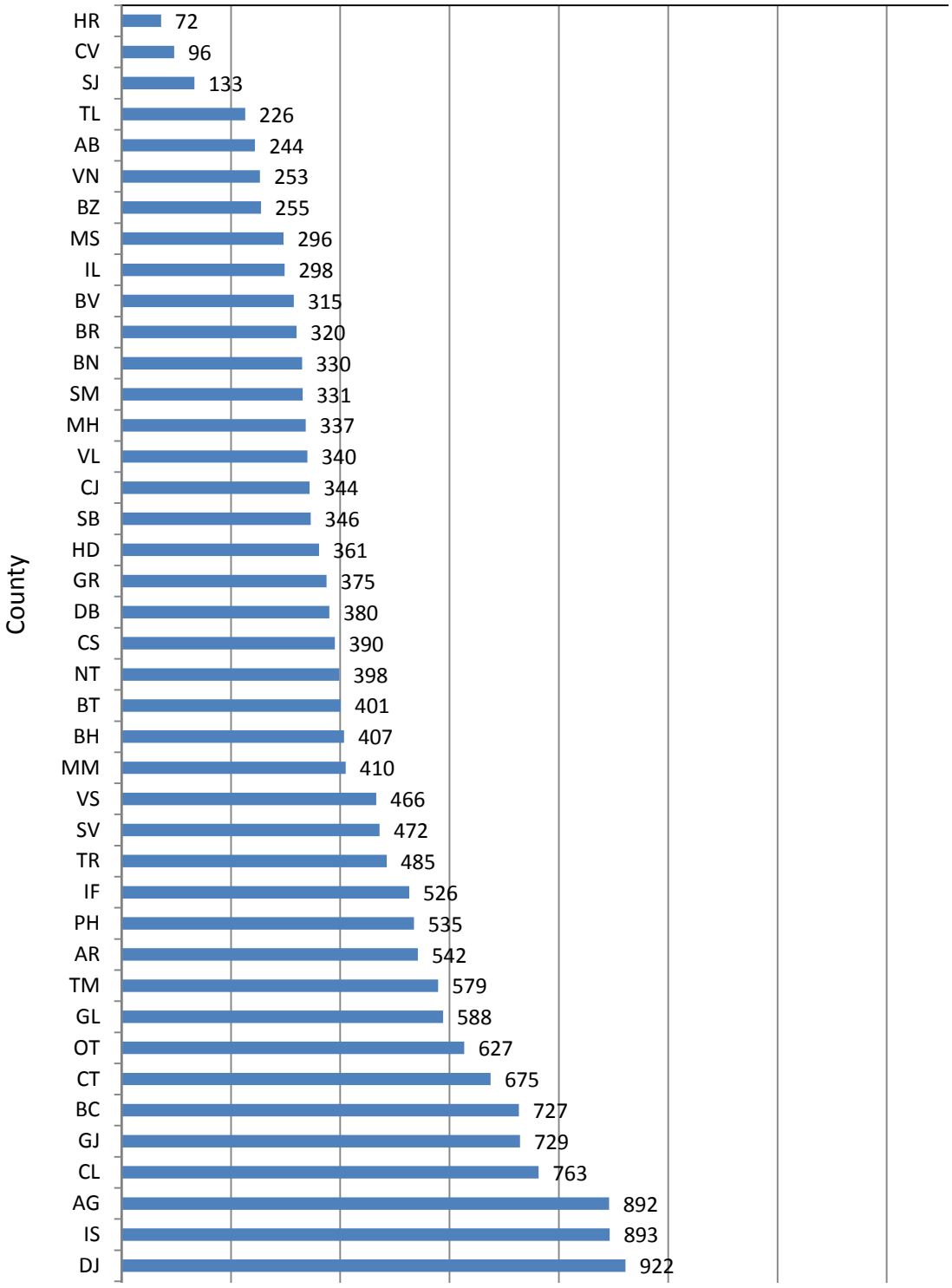



Note.

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| AB | Alba | B | Bucharest | DJ | Dolj | MM | Maramureș | SB | Sibiu |
| AR | Arad | BZ | Buzău | GL | Galați | MH | Mehedinți | SV | Suceava |
| AG | Argeș | CS | Caraș-Severin | GR | Giurgiu | MS | Mureș | TR | Teleorman |
| BC | Bacău | CL | Călărași | GJ | Gorj | NT | Neamț | TM | Timiș |
| BH | Bihor | CJ | Cluj | HD | Hunedoara | OT | Olt | TL | Tulcea |
| BN | Bistrița-Năsăud | CT | Constanța | IL | Ialomița | PH | Prahova | VL | Vâlcea |
| BT | Botoșani | CV | Covasna | IS | Iași | SM | Satu Mare | VS | Vaslui |
| BV | Brașov | DB | Dâmbovița | IF | Ilfov | SJ | Sălaj | VN | Vrancea |
| BR | Brăila | | | | | | | | |

*Source*: NHIH database.

**Fig. 6. Number of TB patients treated in hospital by county, Romania, 2015**




*Note.*

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| AB | Alba | B | Bucharest | DJ | Dolj | MM | Maramureș | SB | Sibiu |
| AR | Arad | BZ | Buzău | GL | Galați | MH | Mehedinți | SV | Suceava |
| AG | Argeș | CS | Caraș-Severin | GR | Giurgiu | MS | Mureș | TR | Teleorman |
| BC | Bacău | CL | Călărași | GJ | Gorj | NT | Neamț | TM | Timiș |
| BH | Bihor | CJ | Cluj | HD | Hunedoara | OT | Olt | TL | Tulcea |
| BN | Bistrița-Năsăud | CT | Constanța | IL | Ialomița | PH | Prahova | VL | Vâlcea |
| BT | Botoșani | CV | Covasna | IS | Iași | SM | Satu Mare | VS | Vaslui |
| BV | Brașov | DB | Dâmbovița | IF | Ilfov | SJ | Sălaj | VN | Vrancea |
| BR | Brăila | | | | | | | | |

*Source*: NHIH database.

# Proposed new payment methods for TB providers

## Outcome-related fee-for-service to community workers

As shown in Table 1, community workers (health workers, Roma mediators and others) can provide early identification of presumptive TB cases, DOT, support to patients and their families, tracing of TB contacts and TB patients lost to follow up, education and social mobilization. It is recommended that they should be paid outcome-related fees for these services in proportion to their delivery volumes (see Annex 5). For example, to cover the two most important TB outcomes (case detection and treatment success), fees could be considered to incentivize each TB diagnosis confirmed by a pulmonologist and each successful treatment (defined as cure or completion of treatment). The tariffs should be attractive to the community workers and Roma health mediators and can be similar to those adopted under the pilot project implemented by the Romanian Angel Appeal, that is, motivational vouchers worth 10 Leu (net from 16% income tax) for:

- identification of TB cases in the general population: three motivational vouchers per each TB case detected after confirmation by the specialist;
- DOT and distribution of social vouchers to patients when they had taken all doses of medicines prescribed for the month:
  - for fewer than five patients: 10 motivational vouchers/month
  - for six to 10 patients: 15 motivational vouchers/month
  - for more than 10 patients: 25 motivational vouchers/month.

## Outcome-related fee-for-service and capitation fee to family doctors

Consideration is given in the National Health Strategic Plan to revising the NHIH payment system to prevent the unnecessary hospitalization of patients and provide TB-related outcome-based incentives to family doctors as part of the package of minimum services.

The inclusion of TB in the package of minimum services reimbursable by the NHIH to family doctors is an opportunity that cannot be missed to ensure that:

- TB control is coordinated, integrated and people-centred, and
- family doctors are co-opted for:
  - the early identification and referral of presumptive TB cases for diagnosis and treatment;
  - DOT;
  - support to patients and their families;
  - tracing of TB contacts and lost to treatment follow up TB patients;
  - education;
  - social mobilization (Table 1).

To engage family doctors in TB care, it is recommended to apply a mix of payment methods made up of the current age-weighted capitation fee plus fees for service under the NHIH point system. The number of points payable for TB services should be similar to the points payable for non-TB services in terms of time consumed, cost, risk and complexity. The number of points should be enough to create an attractive incentive for family doctors, as suggested in Table 4.

**Table 4. Outcome-related fees for service (comprehensive package of services) to family doctors**

| Service | Unit | | Points | | Fee per case (Leu) |
|---|---|---|---|---|---|
| | Type | Number | Per service | Total | |
| TB case detected and confirmed by a pulmonologist | Case | 1 | 5.5 | 5.5 | 10.45 |
| DOT (6 months) | Week | 26 | 5.5 | 143 | 271.70 |
| DOT (9 months) | Week | 39 | 5.5 | 214 | 407.55 |
| DOT (12 months) | Week | 52 | 5.5 | 286 | 543.40 |
| TB case successfully treated (6 months) | Week | 26 | 5.5 | 143 | 271.70 |
| TB case successfully treated (9 months) | Week | 39 | 5.5 | 214 | 406.60 |
| TB case successfully treated (12 months) | Week | 52 | 5.5 | 286 | 543.40 |

Each new TB case confirmed by a pulmonologist and each week of DOT should have points allocated for NHIH reimbursement, with a bonus for each TB case successfully treated (cured completion of treatment). For the last two services, points should be given in accordance with the duration of treatment – six months or 26 weeks for drug-resistant TB patients, nine months or 39 weeks for treating meningitis and bone TB in severe but DS-TB patients, and 12 months or 52 weeks outpatient treatment after hospitalization for MDR-TB patients.

Non-financial rewards should also be given, such as awards for the best performing family doctors given at national health-related events and publication of data on the performance of family doctors.

Finally, the implementation of the new payment arrangement and management of TB need to be supported by the family doctors integrated unique electronic informatics system which interfaces with all NHIH service providers and users. A TB-specific module should be developed that supports follow-up and clinical decisions for patients. Additionally, business information tools with monitoring and evaluation components can generate TB key performance indicators and alerts to family doctors.

## Bundled payment for inpatient and outpatient TB facilities

To reduce the over-hospitalization of TB patients arising from the current payment mechanism, different models need to be developed. Were the diagnosis-related group system to be applied to TB, it would force hospital managers to reduce dramatically the length of stay of TB patients admitted to hospital but not their number. Alternative payment models should be considered and agreed with hospital managers, and their implementation should be supported through changes in clinical guidelines and practice and by an effective network for outpatient TB care.

The present per diem payment for inpatient TB care can lead to (unnecessarily) long hospitalization, while payments for outpatient TB care through fixed budgets and partial reimbursement of operational costs do not motivate dispensaries to undertake more activity. Such payment methods may explain the overuse of hospital services and underuse of outpatient services. A bundled payment, where the funding is not dependent on the length of stay, with the

addition of a payment for performance (see Annex 4 for definitions) can be appropriate in supporting a change towards more outpatient TB care.

Bundled payments should be considered for the treatment of DS-TB patients as well as MDR-TB patients. In the case of the latter, the cost of anti-TB drugs should be paid separately as it is now.

Data on costs are needed to calculate the correct reimbursement for TB cases through the bundled payment mechanism. The cost per bed-day is a necessary factor in calculating the amount of the bundled payment. Using the step-down cost allocation method, the cost per bed-day was calculated in two different hospital departments of Constanta county treating TB patients from January to June 2016 (Table 5).

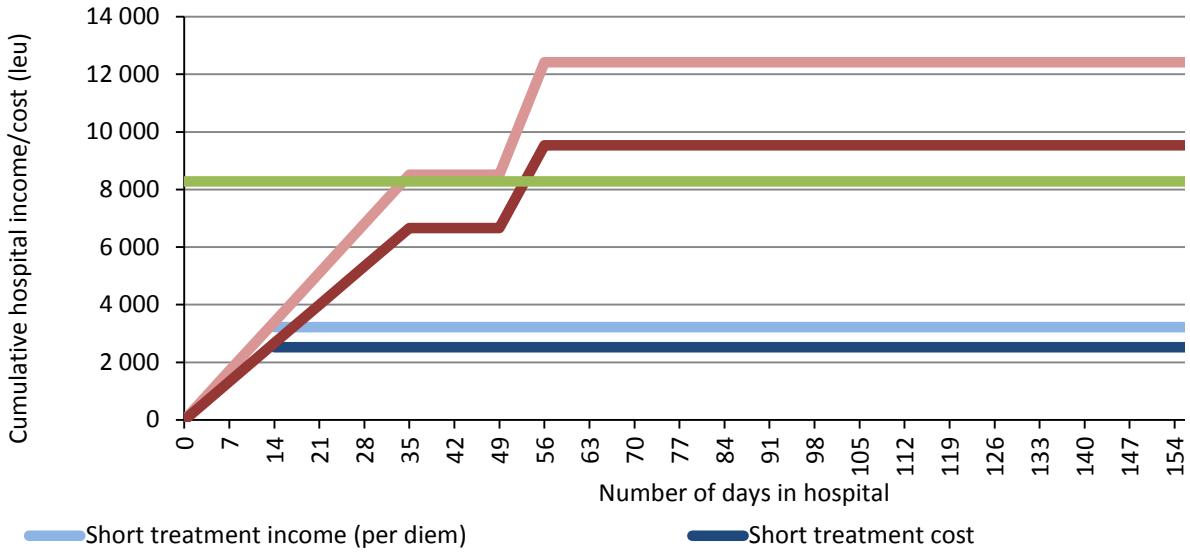
**Table 5. Cost/bed-day in two hospital departments treating TB patients in Constanta county, January–June 2016**

| Hospital unit | Total cost of the department/unit (Leu) | Bed-days | |
|---|---|---|---|
| | | Number | Cost (Leu) |
| Clinical Pulmonology Hospital, Constanta | 8 494 617 | 33 503.00 | 253.5 |
| TB Department Agigea, General Hospital, Constanta | 2 913 480 | 16 186.00 | 180.0 |

Note: cost per bed per day is the total cost of the hospital unit divided by the total number of bed-days.

To study the relationships between inpatient cost and income, models can be made with different treatment lengths. Fig. 7 shows such modelling based on the bed/day income (per diem payment) of 230 Leu and the bed/day cost of 180 Leu (data from Constanta county).[7] It is evident that under the per diem payment method, hospital managements benefit from longer hospital stays and readmissions of patients because the daily income is higher than the cost. In the case of a bundled payment method, hospitals' income remains the same with shorter or longer periods of hospitalization, while hospital costs increase with longer hospitalization. On the other hand, less hospitalization creates a need for more specialist outpatient services.

**Fig. 7. Modelling of different payment methods and hospital stays**




[7] In Constanta county, the NHIH reimbursed TB bed-days at 230 Leu/day, after accepting hospitals' claims for a 15% increase in the 200 Leu/day base rate.

Bundled payments for DS-TB patients, consisting of a single payment for an episode of care involving both hospital and dispensary care, can cover all TB specialist services needed to assure successful treatment. Potentially, the implementation of a bundled payment for DS-TB patients allows an adequate clinical pathway to be followed while reducing the incentives for over-hospitalization, excess readmissions and prolonged length of stay.

In addition, and independently from hospitalization, pay-for-performance payments should also be considered for taking care of a TB patient, calculated as 10% of the defined tariff and paid only for patients treated successfully (cure or completion of treatment). Additionally, medical doctors working in dispensaries should continue to receive a bonus for their occupational risk of TB, similar to doctors working in hospitals.

The Romanian experts reported to the team an ALOS[8] for DS-TB patients of between 30 and 37 days. However, the ALOS claimed for reimbursement to NHIH (Table 2) for "guessed" DS-TB patients was 46 days in 2015. The difference could be explained by the fact that the NHIH was charged with an ALOS including the admissions and readmissions of single patients. The average of 46 days hospitalization multiplied by 200 Leu (the hospital per diem) should, therefore, be used as the reference average cost of hospital care for a DS-TB patient.

It could be too complicated to define different costing groups of TB patients based on their clinical conditions (such as with extrapulmonary TB, with complications, with different anti-TB drug resistance). Instead, it is proposed that there should be only two groups of patients for bundled payment, those with DS-TB and those with MDR-TB. In the case of the DS-TB patients, up to 9200 Leu (46 × 200) could be moved from inpatient care to outpatient care in dispensaries (where hospital and dispensaries are under same administration, as in most cases), especially for those patients requiring shorter lengths of stay and a more limited volume of hospital services. Similar reasoning could be applied to the MDR-TB patients, for whom the ALOS reimbursed by the NHIH in 2015 was 209 days hospitalization per case (admission and readmissions merged).

It is known that there are significant differences between ALOS in hospitals in the different counties (Fig. 5). Consequently, setting the bundled case payment to the national average could cause a loss of income for those hospitals with long ALOS. In these cases, both national and local ALOS could be considered in order to set a transitional compromise. This will necessarily result in higher case tariffs in counties with historically higher ALOS, but they will still be less than now. With time, there will be a gradual reduction in the counties' tariffs and a national convergence towards reducing ALOS and counties' inefficiencies and encouraging more people-centred TB services.

# Pilot project-testing of the new model of delivering and financing TB services

## Coordination

The pilot project should be steered by a technical working group of the Ministry of Health with the participation of the NHIH, NTP, the Family Doctors Association and other relevant stakeholders. Support from international experts should be ensured.

[8] In this paragraph, ALOS refers to patients and not to cases.

The overall coordination of implementation should stay at local hospitals, where the in/outpatient mix of TB care is decided and where there is the administrative capacity to manage financing.

A special team composed of all key providers (hospital pulmonologist, dispensary pulmonologist, family doctor and social worker) should take responsibility for the continuum of care for every patient enrolled in the pilot project. In addition, a payment coordinator should take responsibility for all financing arrangements.

## Selection of the site

To facilitate the establishment, monitoring and evaluation of the pilot testing of the new model of delivering and financing TB services, the following criteria should be considered:

- the location should be in one to two administrative areas at the most and involve one to two hospitals and their pulmonology dispensaries;
- hospital(s) and dispensary/ies should be directly linked administratively (to ensure an easier internal reallocation of financial and human resources);
- all health providers should have a full understanding and strong commitment to work together for the success of the pilot project, including some adjustments which may be required during the process;
- the hospital administrations should not have any financial debts, and the capacity to present the costs of services using the template in Ministry of Health Order No. 1043/2010 on "Methodological standards for the elaboration of revenues and expenditures of public hospitals";
- the ALOS should be close to the national average.

## Selection of the patients

To avoid any selection bias and ensure the testing of a new model of TB care that can later be rolled out countrywide, all TB patients should be selected without regard to their drug susceptibility, risk factors (HIV infection, use of injecting drugs, alcohol use disorders) and social determinants (poverty, imprisonment, migration)

## Financing arrangements

There is no need for additional financial resources. The new model of TB care will be financed by reallocating savings from hospitals' budgets. The bundled case payment for DS-TB and MDR-TB cases will be calculated by multiplying the local ALOS by the per diem. The procurement of anti-TB drugs, including for MDR-TB cases, remains the same.

The bundled case payment financed by the NHIH will be allocated by the payment coordinator based on the following formula.

| | |
|---|---|
| *Total bundled payment* | equal to the current amount paid on average by the NHIH for the treatment of a TB inpatient (taking account of all episodes); |
| *inpatient part +* | reimbursement of the costs of hospitalization, depending on the care model (planned treatment days) and the daily cost and payment data; |

| | |
|---|---|
| *outpatient part +* | reimbursement of the costs of outpatient care; |
| *pay for performance* | financial incentive to providers (nurses, doctors), including for management of TB cases who do not need inpatient care. |

It is expected that in the new model of care, the ALOS for DS-TB patients will be decreased from 46 days (in 2015) to 30 days and that for MDR-TB patients to 80–100 days. This would allow, for instance in cases of DS-TB, the saving and partial transfer from hospital to ambulatory care of 3200 Leu (16 days × 200 Leu), or US$ 800 per case, which could sustain the introduction of the pay-for-performance scheme for all providers (hospital and dispensary staff and community health workers).

## Preparation

The success of the pilot project depends on a number of conditions being ensured in advance:

- the agreement of a legal framework between national and local health authorities, the NHIH and all health providers and officially endorsed through an order of the government;
- the availability of all diagnostic and treatment services (for example, anti-TB drugs for DS-TB and MDR-TB);
- the setting of standard operating procedures and their circulation among all stakeholders with clear descriptions of the distribution of responsibilities, revised hospital admission/ discharge criteria, revised terms of reference for all providers, schemes of payments and criteria for monitoring and evaluation;
- updated training for the health managers and all health service providers.

The training should be developed to provide the knowledge and skills to carry out the tasks outlined in Annex 2. More detailed task analysis could be needed to identify the gaps and needs for training in the specific settings of the pilot area chosen and to extend the training to other key staff such as nurses, laboratory staff and pharmacists. Depending on their number, their training could be organized on an individual basis by a trained physician or in groups. Training should use active adult learning principles and should include lectures, plenary discussions with the sharing of experiences, individual and group exercises and role play. Particular emphasis should be placed on multidisciplinary team work and communication skills with patients and families. Existing curricula, exercises and certified trainers from current projects (such as communication training, developed under a grant from Norway) can be adapted for these training courses. Training should be conducted by skilled facilitators, performance should be monitored during the training and follow-up carried out at designated intervals afterwards.

## Monitoring and evaluation

To properly monitor and evaluate the financial aspects of the pilot project, additional data should be collected that are not included in the routine recording and reporting system (see the forms proposed for the collection of additional financial data in Annex 5).

In hospitals, the total cost of the pulmonology department (including direct and indirect costs) and the number of bed-days for the same period should be collected. These data are used to calculate the cost/bed-day ratio and the cost/bed-day ratio (if the cost of drugs is available).

In the pulmonology dispensaries, the total costs (including direct and indirect costs) and the total number of outpatient visits for the same period should be collected. These data are used to calculate the cost/visit and the cost/patient.

The pilot project should be closely monitored jointly by the working group of the Ministry of Health and the local hospital administration. A number of indicators should be used to monitor the implementation of the project, to allow for the early identification of problems needing solution during the process and documentation of the final outcomes (Table 5).

**Table 6. Monitoring and evaluation framework**

| Level | Indicator | Source | Evaluation time |
|---|---|---|---|
| Output | ▪ Hospitalization rate by type of patient<br>▪ ALOS<br>▪ Bed occupancy rate | Hospital records | Quarterly |
| | ▪ Percentage of satisfaction among patients<br>▪ Percentage of satisfaction among providers | Survey | |
| Intermediate outcome | ▪ DOT compliance rate<br>▪ Percentage of patients lost to follow-up | TB register | Quarterly |
| Final outcome | ▪ Treatment outcomes<br>▪ Percentage of relapsed patients in need of retreatment | TB register | Annually |
| | ▪ Cost per treatment completed<br>▪ Cost savings by patients | Hospital records | |

In addition, the technical working group of the Ministry of Health should arrange supervisory visits to all health facilities/providers involved in supporting the local implementation of the pilot project and deciding together if and how to fine tune interventions.

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# *Annex 1*

## INITIAL PROPOSAL FOR A ROADMAP FOR REFORMING TB SERVICE DELIVERY IN ROMANIA

| Activity | 2015 | 2016 | | | | 2017 |
|---|---|---|---|---|---|---|
| | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 |
| Setting up of working group and first meeting | X | | | | | |
| Monthly meeting of working group | X | X | X | X | X | X |
| Revise TB patients' hospital admission/discharge criteria | | X | | | | |
| Revision of family doctors' terms of reference | | X | | | | |
| Revision of community health workers' terms of reference | | X | | | | |
| Cost analysis and revision of payment methods for TB hospitals and dispensaries | | X | | | | |
| Cost analysis of the 2016 basic package of services for family doctors and development of performance-based financial incentives for TB services | | X | X | | | |
| Revision of legal framework to support the new model of TB care at hospital, ambulatory and community level | | X | X | | | |
| Negotiation with National Association of Family Doctors | | | X | | | |
| Negotiation with NHIH | | | X | | | |
| Consensus workshop with Ministry of Health and main national TB stakeholders | | | X | | | |
| Consensus workshop with health authorities and providers in the pilot county | | | X | | | |
| Order of Ministry of Health for implementation of the pilot project | | | X | | | |
| Development of training plan and package for all levels of TB providers in the pilot county | | | X | | | |
| Training for NTP management on results-based management practices | | | X | X | | |
| Training for all levels of TB providers in the pilot county | | | | X | | |
| Conduct and monitoring of pilot projects | | | | X | X | X |
| Mid-term evaluation of pilot project (financial indicators) | | | | | X | |
| Final evaluation of pilot project (TB treatment outcomes) | | | | | | X |
| Final tuning of new model of TB care | | | | | | X |
| Order of Ministry of Health for adoption of the new model of TB care countrywide | | | | | | X |

Q = quarter.

*Annex 2*

# PROPOSED JOB DESCRIPTION FOR THE DIFFERENT LEVELS OF TB CARE

| Main TB task | Hospital (specialist) | Pulmonology dispensary (specialist) | Primary health care (family doctor) | Community (community workers, others) |
|---|---|---|---|---|
| Early identification of presumptive TB | • Identify all close contacts through interview with TB patients.<br>• Coordinate with pulmonary dispensary specialist, district epidemiologist, family doctors and others to trace TB contacts. | • Coordinate with hospital specialist, district epidemiologist, family doctors and community workers to identify and trace all TB contacts.<br>• Evaluate all TB contacts for active TB. | • Screen all respiratory patients for risk of TB (close contact, main signs/symptoms indicative of TB) and refer them to the dispensary.<br>• Coordinate with dispensary specialist to identify all TB contacts.<br>• Trace and refer all TB contacts to the dispensary.<br>• Ensure that all contacts referred were seen in the dispensary. | • Investigate all respiratory patients for risk of TB (close contact, main signs/ symptoms indicative of TB, social vulnerability) and refer them to the family doctor.<br>• Coordinate with family doctor and dispensary specialist to identify all TB contacts.<br>• Trace and refer all TB contacts to the dispensary.<br>• Ensure that all contacts referred were seen by the family doctor or in the dispensary. |
| Diagnosis of TB disease | • Conduct physical examination and other investigations, as per national guidelines.<br>• Ensure appropriate communication with X-ray and laboratory services on tests and results.<br>• Ensure appropriate documentation of all examination results and final diagnosis. | • Conduct physical examination and other investigations, as per national guidelines.<br>• Ensure appropriate communication with X-ray and laboratory services on tests and results.<br>• Ensure appropriate documentation of all examination results and final diagnosis. | | |
| Prescription of TB treatment regimen | • Select appropriate treatment regimen based on clinical, laboratory and epidemiological findings as per national guidelines.<br>• Adjust treatment prescription as per results of the follow-up. | • For patients with treatment prescribed in other facilities, ensure the consistency of the treatment prescribed with the national guidelines and its continuation.<br>• For patients not referred by other facilities, select appropriate treatment regimen based on clinical, laboratory and epidemiological findings as per national guidelines.<br>• Adjust treatment prescription as per results of the follow-up. | | |

| Main TB task | Hospital (specialist) | Pulmonology dispensary (specialist) | Primary health care (family doctor) | Community (community workers, others) |
|---|---|---|---|---|
| Administration of TB treatment | • Ensure DOT (supervision of intake of oral and injectable anti-TB drugs).<br>• Together with patient and family and taking their needs into account, identify the most appropriate plan for DOT to be followed outside the hospital.<br>• Ensure that appropriate infection control measures are implemented as per national guidelines.<br>• Prior to discharge of patient, coordinate with the pulmonary dispensary to arrange continuation of treatment after hospital discharge. | • Together with hospital specialist, patient and family and taking their needs into account, identify the most appropriate plan for DOT to be followed in and outside the dispensary.<br>• Ensure the supervision of intake of oral and injectable anti-TB drugs for patients who decide to attend the dispensary.<br>• Ensure that appropriate infection control measures are implemented as per national guidelines.<br>• Coordinate with the family doctors and the community health workers to arrange for the continuation of treatment outside the dispensary:<br>- provide initial or refresher training and educational materials;<br>- establish close communication with the patient and the family doctor (direct telephone line);<br>- ensure that all relevant information on the patient is available. | • Together with patient and family and taking their needs into account, identify the most appropriate plan for DOT to be followed in the family doctor practice or by a community health worker.<br>• Communicate plan to pulmonary dispensary.<br>• Ensure the supervision of intake of oral and injectable anti-TB drugs for patients who decide to attend the family doctor practice.<br>• Ensure that appropriate infection control measures are implemented, as per national guidelines.<br>• Coordinate with the community health workers to arrange the treatment by them:<br>– provide initial or refresher training and educational material;<br>– establish close communication with the patient and the community health worker (direct telephone line);<br>– ensure that all relevant information on the patient is available. | – Supervision of intake of oral anti-TB drugs. |

| Main TB task | Hospital (specialist) | Pulmonology dispensary (specialist) | Primary health care (family doctor) | Community (community workers, others) |
|---|---|---|---|---|
| Monitoring progress of TB treatment | • During hospitalization, monitor progress of treatment through medical follow-up as per national guidelines.<br>• Identify potential barriers to adherence to treatment and work with the patient to overcome them. | • Monitor progress of treatment through monthly medical follow-up of the patient as per national guidelines.<br>• Identify potential barriers to adherence to treatment and work with the patient to overcome them.<br>• Communicate changes to family doctor or community health worker as needed. | • Monitor progress of treatment through weekly medical follow-up of patient and refer to pulmonary dispensary as needed for adverse reactions to anti-TB medication or other clinical concerns.<br>• Remind patient about monthly follow-up at dispensary.<br>• Ensure that all TB patients are seen monthly in the dispensary. | • Remind patient about weekly follow-up by the family doctor and monthly follow-up at pulmonary dispensary.<br>• Accompany the patient to medical appointments, as needed.<br>• Ensure that the patient reported for follow-up visits. |
| Management of severe clinical conditions | • Identify a severe clinical condition occurring at its earliest occurrence.<br>• Treat the patient promptly for the severe condition. | • Identify a severe clinical condition and refer the patient to hospital if necessary. | | |
| Management of adverse anti-TB drug reactions | • Monitor the patient for adverse reactions as per national guidelines.<br>• Give appropriate advice and reassurance to the patient in case of minor adverse reactions.<br>• Manage major adverse reactions as per national guidelines.<br>• Report adverse reactions according to national guidelines on active drug safety monitoring. | • Monitor the patient for adverse reactions as per national guidelines.<br>• Give appropriate advice and reassurance to the patient in case of minor adverse reactions.<br>• Manage major adverse reactions as per national guidelines. Refer to hospital if necessary.<br>• Communicate regularly with family doctor regarding adverse reactions.<br>• Report adverse reactions according to national guidelines on active drug safety monitoring. | | |

| Main TB task | Hospital (specialist) | Pulmonology dispensary (specialist) | Primary health care (family doctor) | Community (community workers, others) |
|---|---|---|---|---|
| Management of co-pathologies | • Investigate the risk of co-pathologies (HIV counselling and testing, alcohol use disorders identification test, drug use, diabetes mellitus, other immunosuppressive conditions)<br>• Coordinate with other specialized services for diagnostic confirmation, treatment and continuity of care of the co-pathologies identified.<br>• Ensure communication and coordination among all care providers. | • Investigate the risk of co-pathologies (HIV counselling and testing, alcohol use disorders identification test, drug use, diabetes mellitus, other immunosuppressive conditions).<br>• Coordinate with other specialized services for the diagnostic confirmation, treatment and continuity of care of the co-pathologies identified.<br>• Ensure communication and coordination among all care providers. | • Investigate the risk of co-pathologies (HIV counselling and testing, alcohol use disorders identification test, diabetes mellitus, other immunosuppressive conditions).<br>• Coordinate with other specialized services for the diagnostic confirmation, treatment and continuity of care of the co-pathologies identified.<br>• Ensure communication and coordination among all care providers. | |
| Patient/family support | • Identify and assess social and psychological barriers or challenges that may have an impact on adherence to treatment.<br>• Arrange with available staff (multidisciplinary team) to provide the necessary support, including individual or group counselling, access to social welfare, enablers and incentives.<br>• Communicate and coordinate with the TB dispensary on identification of the patient's social and psychological needs prior to release from hospital.<br>• Communicate effectively with patients and provide supportive, encouraging messages to them throughout all treatment in hospital. | • Identify and assess social and psychological barriers or challenges that may have an impact on adherence to treatment.<br>• Arrange with available staff (multidisciplinary team) to provide the necessary support, including individual or group counselling, access to social welfare, enablers and incentives.<br>• Communicate and coordinate with family doctors, community workers and others about the provision of all necessary social and psychological support.<br>• Communicate effectively with patients and provide supportive, encouraging messages to them throughout all treatment, including at all monitoring and DOT visits. | • Identify and assess social and psychological barriers or challenges that may have an impact on adherence to treatment.<br>• Communicate and coordinate with the dispensary and others on the provision of all necessary social and psychological support, including individual or group counselling, access to social welfare, enablers and incentives.<br>• Communicate effectively with patients and provide supportive, encouraging messages to them throughout all treatment, including at all monitoring and DOT visits. | • Identify psychological barriers or challenges that may have an impact on adherence to treatment.<br>• Communicate and coordinate with the family doctor and others on the provision of all necessary social and psychological support, including individual or group counselling, access to social welfare, enablers and incentives.<br>• Communicate effectively with patients and provide supportive, encouraging messages to them throughout all treatment, including at all DOT visits. |

| Main TB task | Hospital (specialist) | Pulmonology dispensary (specialist) | Primary health care (family doctor) | Community (community workers, others) |
|---|---|---|---|---|
| Education, social mobilization | • Meet the patient and family and educate them using clear non-technical language (verbal, educational material) on the following topics:<br>– what is TB, how it spreads, how it can be prevented;<br>– main TB signs and symptoms and where to seek care;<br>– how TB can be cured; details of treatment regimen (drugs, duration, frequency); the importance of having complete and uninterrupted treatment, frequency and type of monitoring visits;<br>– which are the main signs/symptoms of adverse drug reactions;<br>– what is the social and psychological support available and how to get it.<br>• Proactively ask for questions and respond clearly | • Meet the patient and family and educate them using clear non-technical language (verbal, educational material) on the following topics:<br>– what is TB, how it spreads, how it can be prevented;<br>– main TB signs and symptoms and where to seek care;<br>– how TB can be cured; details of treatment regimen (drugs, duration, frequency); the importance of having complete and uninterrupted treatment, frequency and type of monitoring visits;<br>– which are the main signs/symptoms of adverse drug reactions;<br>– what is the social and psychological support available and how to get it.<br>• Proactively ask for questions and respond clearly.<br>• Continue to provide educational messages throughout treatment. | • Meet the patient and family and educate them using clear non-technical language (verbal, educational material) on the following topics:<br>– what is TB, how it spreads, how it can be prevented;<br>– main TB signs and symptoms and where to seek care;<br>– how TB can be cured; details of treatment regimen (drugs, duration, frequency); the importance of having complete and uninterrupted treatment, frequency and type of monitoring visits;<br>– which are the main signs/symptoms of adverse drug reactions;<br>– what is the social and psychological support available and how to get it.<br>• Proactively ask for questions and respond clearly.<br>• Continue to provide educational messages throughout treatment. | • Provide education on TB to high-risk populations in the community.<br>• Provide reminders on main signs/symptoms of adverse drug reactions and frequency and schedule of monitoring visits to patients receiving treatment.<br>• Motivate the patient about the importance of continuing treatment and the possibility of cure. |

| Main TB task | Hospital (specialist) | Pulmonology dispensary (specialist) | Primary health care (family doctor) | Community (community workers, others) |
|---|---|---|---|---|
| Tracing TB patients lost to follow-up | | • Contact (or work with family doctor to contact) the patient when DOT is missed by more than 24 hours.<br>• Administer the treatment.<br>• Reinforce the message on the importance of adherence to treatment.<br>• Identify social and psychological barriers or challenges that may have an impact on adherence to treatment.<br>• Communicate and coordinate with family doctors, community workers and others on the provision of all necessary social and psychological support. | • Contact (or work with community health worker to contact) the patient when DOT is missed by more than 24 hours.<br>• Administer the treatment.<br>• Reinforce the message on the importance of adherence to treatment.<br>• Identify and assess social and psychological barriers or challenges that may have an impact on adherence to treatment.<br>• Communicate and coordinate with the dispensary and others on the provision of all necessary social and psychological support. | • Inform the family doctor as soon as the patient misses the treatment.<br>• Locate the patient and return him/her to treatment as directed by the family doctor or pulmonary specialist. |
| Screening for LTBI | | • Coordinate with district epidemiologist, family doctors, community workers and others to identify and screen all risk group populations indicated in the national guidelines. | • Coordinate with district epidemiologist, community workers and others to identify and refer to the dispensary all risk group populations indicated in the national guidelines.<br>• Ensure that all patients referred were seen in the dispensary. | • Coordinate with family doctor to identify and refer to the dispensary all risk group populations indicated in the national guidelines.<br>• Ensure that all patients referred were seen by the family doctor or in the dispensary. |
| Diagnosis of LTBI | | • Perform and read the tuberculin skin test as per national guidelines.<br>• Ensure adequate supplies of tuberculin are available for tuberculin skin testing. | | |
| Prescription of LTBI treatment | | • Prescribe the TB preventive treatment as per national guidelines. | | |
| Administration/ monitoring of LTBI treatment | | • Coordinate with family doctors and community workers to ensure that TB preventive therapy is taken regularly. | • Coordinate with community workers to ensure that TB preventive therapy is taken regularly. | • Ensure that TB preventive therapy is taken regularly. |
| BCG vaccination | | • Provide BCG vaccination to all infants not previously vaccinated in hospital as per national guidelines. | | |

| Main TB task | Hospital (specialist) | Pulmonology dispensary (specialist) | Primary health care (family doctor) | Community (community workers, others) |
|---|---|---|---|---|
| Management of anti-TB drugs | • Calculate the needs for anti-TB medications annually and report them to ensure that supplies are on time.<br>• Coordinate with the pharmacy as needed to ensure that an adequate supply of ant-TB drugs is in stock for patients in treatment and the expected number of new patients to begin treatment. | • Calculate the needs for anti-TB medications quarterly and report them to ensure that supplies are on time.<br>• Ensure that an adequate supply of anti-TB drugs is in stock and stored appropriately for all patients in treatment and for the expected number of new patients to begin treatment during the quarter.<br>• Coordinate the monthly supply of anti-TB drugs to the family doctors. | • Collect the needed quantity of anti-TB drugs from the dispensary monthly.<br>• Store medications appropriately.<br>• Supply weekly the anti-TB drugs to the community health workers as relevant.<br>• Provide weekly supply for TB preventive therapy to patient as prescribed by the dispensary.<br>• Monitor and cross-check the consumption of anti-TB drugs.<br>• Report any problems with medications to the dispensary. | • Collect the needed quantity of anti-TB drugs from the family doctor weekly.<br>• Store medications appropriately. |
| TB recording and reporting | • Ensure that all recording and reporting are accurate, on time and completed as per national guidelines (patient registration, laboratory results, treatment regimen, DOT visits, monitoring, treatment outcome). | • Ensure that all recording and reporting are accurate, on time and completed as per national guidelines (patient registration, laboratory results, treatment regimen, DOT visits, monitoring, treatment outcome). | • Ensure that recording and reporting of all DOT and weekly follow-up visits are accurate, on time and completed as per national guidelines. | • Ensure that recording and reporting of all DOT visits are accurate, on time and completed as per national guidelines. |

*Annex 3*

# SUGGESTED VOLUME OF TB SERVICES BY LEVEL OF CARE AND TB CONDITION

| A | B | C | D | E | F |
|---|---|---|---|---|---|
| **Patient** | | **Length of treatment per patient** | | | **Home visits per patient (No.)** |
| **Category** | **%** | **Total (weeks)** | **In hospital (weeks)** | **Outside hospital (weeks)** | |
| *New TB patients* | | | | | |
| DS-TB pulmonary patients (85% of new patients) | 60 | 26 | 2 | 24 (C4-D4) | 0 ($E4^a2^a0$) |
| DS-TB pulmonary patients with severe condition[b] (10% of new TB patients) | 5 | 26 | 4 | 22 (C5-D5) | 4 ($E5^a2^a0.1$) |
| DS-TB extrapulmonary patients (15% of new TB patients) | 10 | 26 | 2 | 24 (C6-D6) | 0 ($E6^a2^a0$) |
| DS-TB extrapulmonary patients with severe condition[b] (10% of new TB patients) | 1 | 39 | 9 | 30 (C7-D7) | 12 ($E7^a2^a0.2$) |
| MDR-TB patients (2% of new TB patients) | 2 | 87 | 9 | 78 (C8-D8) | 47 ($E8^a2^a0.3$) |
| *Previously-treated TB patient/polydrug-resistant TB patients* | | | | | |
| DS-TB patients (all forms) | 8 | 26 | 2 | 24 (C10-D10) | 10 ($E10^a2^a0.2$) |
| Polydrug-resistant TB patients | 10 | 26 | 3 | 23 (C11-D11) | 9 ($E11^a2^a0.2$) |
| MDR-TB patients (18% of previously-treated patients) | 3 | 87 | 9 | 78 (C12-D12) | 78 ($E12^a2^a0.5$) |
| *XDR-TB patients (21% of all MDR-TB patients)* | 1 | 156 | 52 | 104 (C13-D13) | 62 ($E13^a2^a0.3$) |
| Total TB patients | 100 | | | | |

Notes.
Column B: proportions of patients as reported by the NTP or estimated from the main reported category.
Columns C, D: variables that change according to policy criteria for hospital admission and discharge.
Columns E, F: columns with formulas that change automatically based on the inputs in the previous columns.
[a] Number of days indicated as best estimated average.
[b] Severe condition: any diffuse TB (miliaris, meningitis, TB coinfection, hepatitis, adverse drug reaction).

# *Annex 4*

# DEFINITION OF THE PAYMENT METHODS DISCUSSED IN THE REPORT

## Fee for service

Fee for service is a payment model where services are unbundled and paid for separately. It is a financial incentive to health providers to increase the number of their services but not necessarily their quality. The frequent impact on the health system is increased costs and fragmentation of care. Various reform efforts have been suggested to counteract these negative impacts, such as moving towards capitation and bundled payments.

## Capitation fee

Capitation is a fixed payment to the health provider per assigned covered person regardless of what that person may need clinically or receive as services. The calculation of the capitation amount derives from actuarial principles of insurance. In capitation, the health providers are discouraged from performing procedures, including necessary ones, because they receive no additional payment.

## Diagnosis-related group

The diagnostic-related group system is a standard system of measuring costs in a health institution. It is based on aggregating hospital discharges in groups of patients with similar conditions (principal and secondary diagnosis, age and sex, presence of comorbidities and complications) and costs (described as weight). All cases belonging to a particular diagnosis-related group are characterized by a homogenous resource consumption pattern and have the same weight for reimbursement of costs, with possible exceptions. By adding the weights of all discharges, it is possible to calculate the average for each hospital. The complexity (as a proxy of cost) can be also calculated and compared across hospitals using the same system.

The diagnosis-related group payment system aims to contain inpatient care costs and to increase the efficiency and accountability of hospital services. It usually leads to shorter hospital stays but to an increased number of hospital cases (as a way to compensate for the loss of income due to shorter hospital stays). The quality of services is also not ensured. In many countries, the diagnosis-related group system is accompanied by some adjustment payments that contribute to an overall decrease in hospitalization and improvement in the quality of services (see below).

## Bundled payment

The bundled payment is the payment of multiple providers sharing the same financial risk pool. Payments may be bundled around a single service (such as hospital admission) or around different services across a continuum of care for a specific patient for a specific condition (for example, hospital admission for acute myocardial infarction and outpatient cardiac rehabilitation). To establish the amount of the payment, boundaries in terms of time and the range of services to be included must be defined, usually through standard clinical pathways with increasing attention to outcomes and with the possibility of moving savings from hospital care into ambulatory care.

The bundled payments system aims to improve the coordination, efficiency and quality of the services delivered. It may, however, involve exposure to the financial risk of expensive medical follow-up if low-quality treatment is provided in a hospital and is, therefore, often used to cover pre- and post-hospital care (paid by diagnosis-related group) but ruled by evidence-based guidelines for pricing.

# *Annex 5*

## ADDITIONAL INFORMATION NEEDED ON ACTIVITIES AND COSTS

**Table 5.1. Suggested presentation of costs and incomes of hospitals related to the treatment of TB patients (based on the framework approved by Ministry of Health Order No 1043/2010)**

| Department | Total income | Expenditure | | | | Balance |
|---|---|---|---|---|---|---|
| | | Direct | | Indirect | Total | |
| | | Human resources | Other | | | |
| Department (TB patients) | | | | | | |
| Department (MDR-TB patients) | | | | | | |
| TOTAL (Hospital) | | | | | | |

**Table 5.2. Suggested activity data to be collected from hospitals**

| Activity data | Unit |
|---|---|
| Staff of hospital | Number (full-time equivalent) or hours |
| Bed-days in TB department or ward | Number |
| Staff of TB department | Number (full-time equivalent) or hours |
| ALOS in TB department | Days |
| Number of TB patients | Number |
| Number of TB cases | Number |

**Table 5.3. Suggested cost items to be collected from dispensaries[a]**

| Budget line items | Costs (Leu) |
|---|---|
| Total cost of the dispensary (as a hospital unit) | |
| Administration (including staff and contribution costs, miscellaneous) | |
| Security | |
| Utilities | |
| Transport | |
| Clinical staff costs (including staff and contributions) | |
| X-ray | |
| Diagnostic tests, laboratories | |
| Supplies | |

[a] The most important information is the total cost of the care at institutional level provided by the dispensary.

**Table 5.4. Suggested activity items to be collected from dispensaries**

| Activity data per clinical field (when more clinical fields work in the same dispensary) | Unit |
|---|---|
| Staff (full-time equivalent) | Number or in hours |
| Visits (including home visits) | Number |
| Patient | Number |
| Space used by clinical fields | Share of total space |
| X-ray | Number |
| Laboratory test | Number |
| Transport | Number |
| Supplies | Number |