



# Summary of findings

■ The total cost of tuberculosis (TB) control in the Russian Federation was estimated at US\$ 245 million in 2003. This is equivalent to about 30% of the total cost of TB control in the 22 TB high-burden countries that account for 80% of global cases. The Russian Federation accounts for 2% of global TB cases, and 4% of cases notified in the 22 high-burden countries.

■ A study in four regions or oblasts within the Russian Federation (Ivanovo, Orel, Samara, and Vladimir) shows that only one third of TB hospital infrastructure is used for active, infectious TB patients.

■ The profile of hospitalized patients shows that 45% of beds can be justified from a clinical and public health point of view. The remaining beds are used for social reasons or are unoccupied.

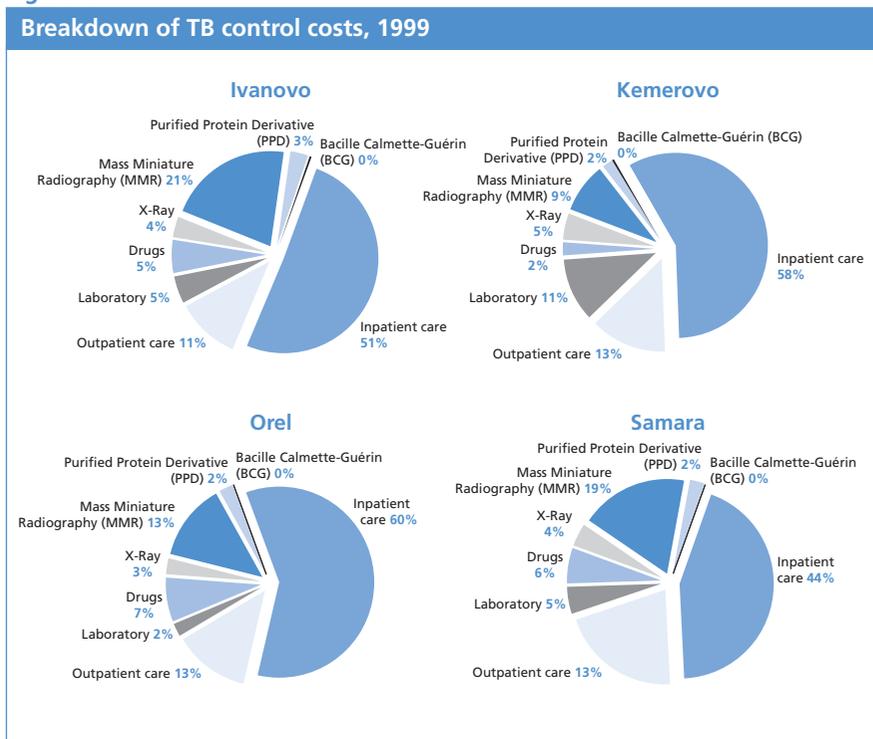
■ Hospital funding is based on historical norms rather than needs.

■ The Russian Federation should gradually change the treatment strategy from inpatient to outpatient care. This will require strengthening of existing outpatient services in the TB sector and in the general health care system, and provision of social support to encourage adherence to treatment. It will also require a shift in how funding is allocated for TB control, and more flexibility in how funds can be used at oblast level.

## Improving the cost-effectiveness of TB control in the Russian Federation: the role of inpatient care

The Russian Federation ranks twelfth globally in terms of the number of TB cases. It accounts for 2.3% of the total estimated number of new cases that occur each year, compared to 3.6% of the global population [1]. The TB control system consists of a well-established network of specialized institutes, TB dispensaries, hospitals, outpatient clinics, sanatoria and rural feldsher points. There are 80 246 specialized TB beds excluding sanatoria and 106 646 TB beds in total [2]. In 2003, there were 378 820 registered cases, of which 95 183 were new cases<sup>1</sup> (i.e. registered for the first time in 2003) [3]. According to the most recent World Health Organization (WHO) Global TB report, case-finding and treatment outcome results are low. In regions that have introduced the DOTS strategy, only 40% of new sputum smear-positive (ss+) patients were detected in 2003 (the global target is 70%) and the treatment success rate among such patients was 67% (the global target is 85%) [1].

Figure 1

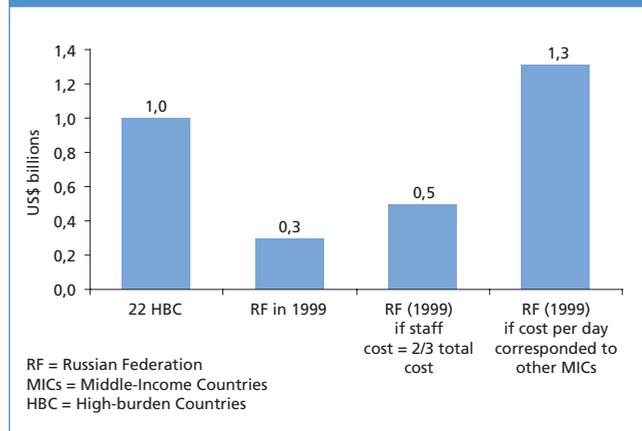


<sup>1</sup> Registered in civilian TB services. Total number of new cases registered in 2003 – 118,564 (including prison sector and other ministries).



Figure 2

Total cost of TB control in the Russian Federation under different scenarios and compared to total cost of TB control in all 22 high-burden countries and middle-income countries in 1999 prices.



The total cost of TB control in the Russian Federation was estimated at US\$245<sup>2</sup> million in 2003 [1]. This was equivalent to about 30% of the total cost of TB control in the 22 high-burden countries that account for 80% of all TB cases globally, though the Russian Federation accounted for only 4% of newly-notified cases in these countries in 2003 [4]. Recent studies show that more than 50% of all TB control costs are accounted for by inpatient care ([5, 6], Figure 1), and that newly-diagnosed smear and/or culture-positive patients spend four to six months in hospital. They also show that the cost of bed days is about six times lower than in other countries with similar income levels [4]. Moreover, if there were changes in the TB control strategy and reform programme and if the cost structure of inpatient care corresponded to other countries, salaries would increase approximately fourfold while the overall TB budget for the Russian Federation would double.

Outpatient systems of care in other countries with similar income levels are much better developed, and are able to achieve good treatment outcomes at a lower cost. In the Russian Federation, the large number of TB hospital beds and the large percentage of total costs accounted for by inpatient care suggest that the greatest potential for improving the efficiency of TB control lies in reducing the currently extensive reliance on inpatient care.

This brief examines the use of inpatient care for TB patients to answer three questions:

<sup>2</sup> Based on expenditure data plus estimates of the cost of hospitalization and fluorography.

- What kinds of patients are admitted to TB hospitals, and what are the reasons for their admission?
- What scope exists to reduce the existing use of inpatient care?
- What policies are needed to reduce the existing reliance on hospitalization while ensuring that the quality of patient care and treatment outcomes are not compromised?

### Inpatient care in TB hospitals: Who is admitted and for what reasons?

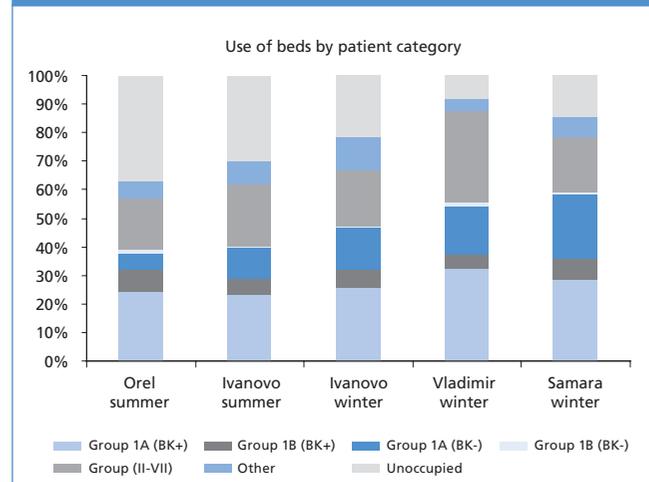
To investigate the existing use of beds in TB hospitals, surveys were undertaken in four Russian oblasts: Ivanovo, Orel, Samara and Vladimir [Reference 7 provides full details of the methodology]. A standard questionnaire was used to document how each TB bed in the oblast was being used on a specified day (or for larger oblasts, how a large representative sample of beds were being used). The survey was designed to address two questions:

- What kinds of patients are using existing TB hospital beds?
- What are the reasons for their admission?

Bed utilization according to the Russian classification of cases is illustrated in Figure 3. This shows that:

Figure 3

Use of beds according to Russian-defined groups in four oblasts (2003-2004)\*

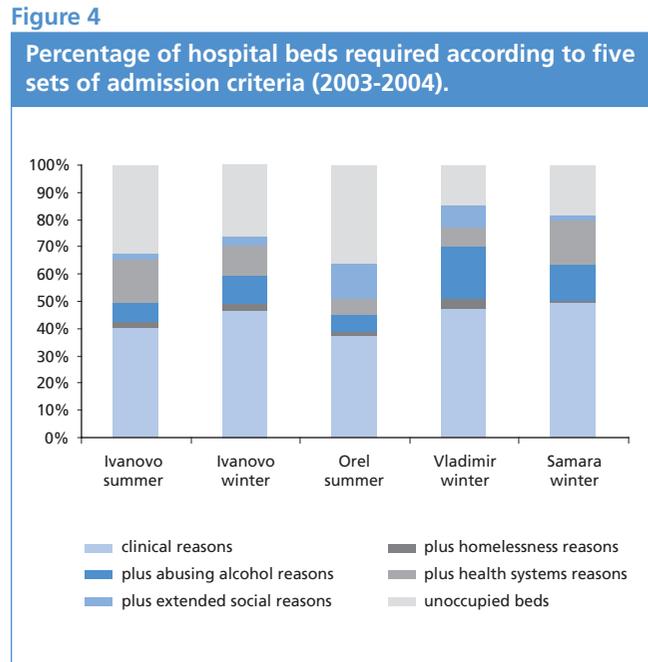


\* Dispensary group 1 - Pulmonary TB; Subgroup 1A - newly diagnosed, or exacerbated diseases or relapse cases; cases that restart treatment after interruption are not registered again; patients stay in 1A at least for one year. Subgroup 1B - chronic patients i.e. patients who have been treated without success in group 1A for at least two years. Groups II to VII no longer have active TB or have extrapulmonary TB.



- The percentage of beds occupied by patients with active TB (groups IA or IB, see definition in figure 3) that were smear or culture-positive at the time of the surveys was similar in all regions, at 25-30% (IA) and 5-7% (IB) of all beds respectively.
- Overall, about 20% of beds were occupied by active TB patients that were smear and/or culture-negative at the time of the study, though numbers varied across oblasts (range 7-23%).
- Patients who no longer had active TB or who had extrapulmonary TB (Groups II-VII) also occupied about 20% of beds: again, numbers varied among oblasts (range 18-32%). Numbers with extrapulmonary TB within this group were small.
- Overall, about 20% of beds were unoccupied (range 8-37%). In every region at least one third of beds were either unoccupied or occupied by patients that did not have active TB, and in two regions the figure was over 50%.

The percentage of beds needed according to clinical, public health, health system and social criteria<sup>3</sup> is shown in Figure 4. The results show that 40-50% of beds are justified from a clinical and public health perspective.<sup>4</sup>



<sup>3</sup> It is assumed that the average bed occupancy rate should be 80%, in line with international standards (although in the Russian Federation it is considered acceptable to have a bed occupancy rate of 90%).

<sup>4</sup> Clinical and public health reasons considered to justify admission: one or more of: a) currently smear or culture positive; b) have MDR-tuberculosis; c) unsatisfactory clinical condition (bedridden or in need of intensive care); d) undergoing pre or post-operative surgical care.

Other reasons for hospital admission included social factors (e.g. 5% of patients were homeless and 5-20% were abusing alcohol) and health system criteria<sup>5</sup> (5-10%). In total 64-86% of beds are justified according to five sets of criteria (see Figure 4).

## Policy recommendations

The findings from the studies in Ivanovo, Orel, Samara and Vladimir Oblasts show that while much of the Russian Federation's large TB hospital infrastructure is needed for clinical and public health reasons, much of it is being used to provide social support. Given the high cost of TB control and existing programme effectiveness, there is much scope for efficiency improvements. Together with discussions held during a workshop in Vladimir Oblast (see blue Box on page 5), the following recommendations for improving the efficiency of TB control can be suggested:

1. The Russian Federation should gradually change the treatment strategy from inpatient to outpatient care.
2. Assessments of the beds needed for TB control in each oblast should be carried out. These assessments should identify how many beds for TB patients currently exist, how many are needed, and how many beds could be reprofiled. The assessments should pay particular attention to:
  - the special requirements of patients with MDR-TB and HIV coinfection;
  - the needs of patients hospitalized for social reasons;
  - the number of beds potentially available for use by TB patients in general hospitals.
3. The costs of the services that are needed to replace inpatient care at oblast level should be defined and compared with the cost-savings that could be generated by reprofiling of beds.
4. Plans and budgets should be developed at oblast level for reprofiling beds (shelters, nursing homes, day-stay wards etc.) and strengthening outpatient and social support services, based on the results of the assessments described above.
5. Clearer policy recommendations should be developed on which TB patients should be hospitalized, and on what length of hospitalization is appropriate.
6. Any cost-savings generated through reprofiling of beds should be reinvested as necessary in strengthening outpatient and social support services.

<sup>5</sup> Health system reasons considered to justify admission: outpatient facility is not accessible and/or treating physician considers default likely if discharged.



7. The system should gradually introduce financial incentives to improve case-finding, treatment outcome results and cost-effectiveness.
8. The flexibility of the financing system should be increased to allow reallocation of funds among different budget lines at local (oblast) level.
9. The existing approach of allocating funding based on input indicators (e.g. number of beds, or number of beds occupied) should be gradually replaced by allocation of funds based on output indicators (e.g. number of cases identified or treated). This would provide incentives to improve programme performance in terms of both treatment outcomes and efficiency.

## Comment

Changes in the existing approach to TB control could save substantial funds and thus make the system more efficient. Financial incentives should be gradually introduced to encourage a shift from an expensive inpatient care system to a lower cost but equally or more effective outpatient system. This process can be facilitated by the additional financial resources now available from the World Bank and the Global Fund to Fight HIV/AIDS, TB and Malaria (GFATM). These funds will help to strengthen the outpatient services infrastructure, improve access to laboratory diagnostic services, provide social support for TB patients, and facilitate involvement of nongovernmental organizations (NGOs) in TB patient care.

## References

1. Global Tuberculosis control: surveillance, planning, financing. WHO report 2005. Geneva, World Health Organization.
2. Ministry of Health, Russian Federation. Recording/reporting form number 47: “Information on Health Facilities infrastructure”, 2003.
3. Ministry of Health, Russian Federation. Recording/reporting form number 33: “Information on TB patient”, 2003.
4. World Health Organization WHO project on Cost-effective TB control in the Russian Federation. Moscow; WHO, 2002.
5. Atun et al. *Barriers to sustainable TB control in the Russian Federation health system*; Bulletin of the WHO, March 2005, 83(3).
6. Hutubessy et al. *The cost and cost-effectiveness of tuberculosis control in the Russian Federation:*

*evidence from Ivanovo, Kemerovo, Orel and Samara.* In preparation.

7. Floyd et al. *Health systems efficiency in the Russian Federation: the case of tuberculosis control.* Submitted for publication.
8. Sheiman. I. *Reforma upravleniya I finansirovaniya zdravooohraneniya.* Moscow: Rus; 1998 [Russian].

## Acknowledgements

We would like to thank the TB authorities of Ivanovo, Orel, Samara and Vladimir Oblasts for their contribution and collaboration. This study was financially supported by the UK Government's Department for International Development (DFID).



## The case of Vladimir Oblast

In Vladimir Oblast, TB inpatient care is provided in seven specialized TB inpatient facilities. In addition, nine general health care facilities have TB departments. In both types of facilities there are 696 full-time beds and 113 day-care beds. There are 75 TB specialists and 304 nurses.

Meetings to discuss the findings of the TB hospital survey [7] were held in January 2004 in Moscow city and in June 2004 in Suzdal, Vladimir Oblast. Representatives included staff from the Ministry of Health, federal-level institutes, regional TB and health authorities, TB research institutes, general health care management institutes, and WHO (Moscow office and headquarters in Geneva).

### What are the major constraints to reform of inpatient care?

Six major factors that explain the extensive use of inpatient care in the Russian Federation were identified. These were:

- Hospital funding based on historical norms rather than needs.
- An inflexible financing system that does not allow reallocation of funds among different budget lines.
- Medical standards that do not permit assessment of TB hospital performance.
- Large numbers of TB staff that would need to be redeployed if there was less hospitalization of TB patients.
- Outpatient clinics that are not adequately prepared for providing TB treatment after hospitalization. For example, staff need training, and facilities need renovation and new equipment.
- Funds for patient incentives (e.g. food packages) and enablers (e.g. vouchers to cover travel costs) to improve treatment adherence are not available.

### Recommendations for Vladimir Oblast

#### Short-term recommendations

It was agreed that there is substantial potential for the ‘reprofiling’<sup>1</sup> of existing specialized TB beds in Vladimir Oblast, i.e. reallocating TB beds to other uses. For example, TB beds could be converted into social care units where patients with social problems and poor access to health facilities are admitted. Where this is not possible or necessary, the existing number of beds should be reduced.

<sup>1</sup> Reprofitting beds: allocate TB beds that are not required for TB patients to other uses or, if this is not possible or necessary, close beds.

Participants suggested that the existing number of TB beds could be reduced by 10% in Vladimir Oblast, and that reductions should focus on closing beds in low-capacity, poorly-equipped hospitals that do not meet the minimum infection control requirements.

The following recommendations were also made:

- Clearer policy recommendations about the duration of inpatient stay for TB patients should be developed. Existing legislation and guidelines do not specify what duration of stay is appropriate.
- There is a need for long-term strategies for both the TB and general health care services involved in TB control. This should include assessment of spare capacity in the general hospital system. For example, in Vladimir Oblast it may be possible to use existing boxed infectious wards in general hospitals to treat TB patients.
- Alternatives to inpatient care facilities need to be established, such as shelter-type facilities with minimal clinical care, nursing homes and hospice-type facilities.
- In parallel, ambulatory services should be strengthened (e.g. training, introduction of standardized procedures and investments in facilities) with social support such as food packages and subsidies for transport provided where necessary to increase patient adherence.

#### Medium to long-term recommendations

In the medium to longer term, the following recommendations were made:

- Integrate outpatient care for TB patients into general health care services.
- Reform TB financing. This should include prospective funding of inpatient TB services with more flexible budgets, and an incentive system that would encourage staff to reduce inpatient stays and strengthen the role of ambulatory services [8]. The existing financing system in which funds are allocated according to input indicators such as the number of beds occupied would be replaced by one based on output indicators (e.g. number of cases identified or treated).
- Social services need to be more involved in providing TB inpatient and outpatient care for non-infectious, socially-disadvantaged TB patients.

## Contact information

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