

# Policy Assessment Report KAZAKHSTAN

for the Central Asian TB Control Partnership



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## ABBREVIATIONS AND ACRONYMS

ADB	Asian Development Bank
AFB	Acid-fast Bacilli
AIDS	Acquired Immunodeficiency Syndrome
ALOS	Average length of stay
BCG	Bacilli Calmette-Guerin
CDC	Center for Disease Control
CIA	Central Intelligence Agency
CIS	Commonwealth of Independent States
CRH	Central Rayon Hospital
DFID	UK Department for International Development
DOT	Directly observed treatment
DOTS	The internationally recommended strategy for TB control
DOTS Plus	The internationally recommended strategy for MDR-TB control
DRG	Diagnosis related group
DST	Drug Susceptibility Testing
ECA	Europe and Central Asia Region
EU	European Union
FAP	Feldsher-obstetrical Point
FSU	Former Soviet Union
GDF	Global TB Drug Facility
GDP	Gross domestic product
GP	General Practitioner
HC	HOPE Consortium
HIS	Health Information Systems
HIV	Human Immunodeficiency Virus
HLSC	Healthy Life-style Formation Center
HLWG	High Level Working Group
HR	Human Resources
IEC/BCC	Information Education Communication/Behavior Change Communication
IMR	Infant Mortality Rate
IT	Information Technology
JSI	John Snow Inc.
KfW	German Development Bank
KUIS	MoJ Penal Execution Committee
KZ	Kazakhstan
<i>M. tuberculosis</i>	Mycobacterium Tuberculosis
Mantoux	Tuberculin Skin Test
MDG	Millennium Development Goal
MDR-TB	Multidrug-resistant Tuberculosis
Medinform	KZ health related software development firm
MoD	Ministry of Defense
MoEC	Ministry of Education and Culture
MoF	Ministry of Finance
MoH	Ministry of Health
MoIA	Ministry of Interior Affairs
MoJ	Ministry of Justice
MoLSP	Ministry of Labour and Social Protection

MSEC	Medical and Social Expert Committee
NGO	Non-governmental organization
NTBC	National TB Center
NTP	National TB Program
OFD	Oblast Finance Department
OHD	Oblast Health Department
OMO UKUIS	Medical Department of the Oblast KUIS
ORT	Oblast Round Table
PC	Personal Computer
PHC	Primary Health Care
Project HOPE	International NGO
SDR	Standardized Death Rate
SES	Sanitary-Epidemiologic Service
SGBP	State Guaranteed Benefit Package
SIZO	Pre-trial detention facility for people under investigation
STI	Sexually Transmitted Infection
SU	Soviet Union
SUB	Rural District Hospital
SVA	Rural Doctor Ambulatory
TB	Tuberculosis
TB/HIV	TB/HIV co-infection
TBD	TB Dispensary
TBH	TB Hospital
TS	Thematic Sub-Group
TV	Television
TWG	Thematic Working Group
TWG KZ	Technical Working Group
UN	United Nations
UNDP	United Nations Development Program
USAID	United States Agency for International Development
USD	United States Dollars
WB	World Bank
WHO	World Health Organization
WHO HFA	WHO Health for All database

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## **PART I. PREAMBLE**

### **1 INTRODUCTION TO THE REPORT**

#### **1.1 BACKGROUND INFORMATION**

The Project HOPE Tuberculosis Control Program for Central Asia, is a multi-component program to assist the governments of the five Central Asian Republics (Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan) in Strengthening Political Commitment towards TB control, Building Human and Systems Capacity for TB Control which includes upgrading clinical capacity, improving the quality and availability of TB services, strengthening drug management and the laboratory network, assisting with TB control in prisons and addressing multi-drug resistant TB and TB/HIV. The third objective of the program is directed to raise community awareness and to strengthen TB control through social mobilization. The program is funded by USAID from April 2004 until May 31, 2009. The program is implemented with a consortium of partners that assist in addressing specific components of the program.

The tuberculosis (TB) situation in the Central Asian Republics (CARs) has deteriorated since the disintegration of the Soviet Union, with TB incidence reaching epidemic proportions in the region. Kazakhstan has the highest TB burden among Central Asia countries. According to WHO, the TB notification rate exceeds 185 cases per 100,000 population in 2002 (WHO 2006c).

A Project HOPE Consortium policy assessment team looked into the current tuberculosis control strategy and specifically the DOTS strategy implementation in Kazakhstan, exploring policies and policy-relevant issues that impact the ability of the country to maintain a sustainable and effective public sector TB program.

The first element of the DOTS strategy is “sustained political commitment to increase human and financial resources and make TB control a nation-wide activity and an integral part of the national health system.” The WHO asserts that “The DOTS program should be made an integral health system activity with nation-wide coverage that anchors TB activities throughout the health system at all levels, including peripheral health facilities and the community (WHO 2007).

Given WHO’s emphasis on the interaction of TB activities with the general health system, this assessment examined the specialized TB program itself, its linkages with and integration into the general health system, and the broader context for sustainability. Country-specific conditions were carefully considered.

#### **1.2 AIMS AND OBJECTIVES**

The assessment was meant to obtain a “bird’s eye view” of the TB control program in Kazakhstan with emphasis on building political support and identifying policy-related obstacles, opportunities, and critical areas of focus for follow-up activities. The assessment team was asked to provide recommendations for specific activities aimed at enhancing broad-based political commitment to TB control that should ultimately contribute to the health system’s primary goal of improving the population’s health.

The aim of the country policy assessment was to identify critical obstacles and bottlenecks of the TB control program and the DOTS strategy implementation in particular, that need to be addressed at the policy level. The objectives were to:

- analyze the current health sector, financial and economic policies and practices relevant to improved TB control;
- explore and devise policy options designed to promote more efficient and effective public sector TB programs and appropriate private sector participation in TB control.

The main deliverables of the country assessment were:

- an assessment report to be submitted to the country's HLWG;
- an internal report for Project HOPE to sustain its activities; and
- policy briefs to a wider TB audience.

### **1.3 METHODOLOGY**

The assessment team consisted of the Regional Policy Specialist of Project HOPE and the Policy Research Specialist of CAMRIS. The team conducted interviews with major stakeholders inside and outside the MoH and analyzed official reports, statistics and publications. The assessment framework and toolkit used for the analysis are described in [Annex I. Assessment Framework and Toolkit](#).

The policy team was accompanied by Project HOPE's Kazakhstan country team manager for each interview and a USAID representative and a local counterpart for high level interviews. The duration of each interview was around one hour allowing enough time to explore all topics in-depth. Each team member was taking interview notes, which were later collated and triangulated, and short summaries were developed.

In order to safeguard the validity of the results, the team used a triangulation technique.

Prior to the assessment the team obtained permission from the MoH and other appropriate agencies, to conduct the assessment. Each agency issued an official letter for their staff, explaining the goals of the assessment and calling for support for the team.

The team adhered to professional ethics, including informed consent of the interviewees, their right to privacy and protection from harm. The team has also been aware of and sensitive to local traditions.

All information was systematically analyzed and put into a coherent narrative that captures the structures, inputs, processes, outputs and outcomes and link them together. The discussion of these issues is followed by a list of recommendations, which could be easily translated by the TWG and HLWG into action plans.

### **1.4 LIMITATIONS**

Much of the data on health status and on health services were obtained from the WHO Health for all database (HFA), however we worked closely with the NTBC and the MoH to collect statistical information on the same indicator. Some of indicators differed from those of the WHO and authors were taking the WHO data as the right one.

As we unfortunately could not meet with key persons from the Ministry of Finance, and oblast's treasury departments and could not obtain actual financing data as reported by these agencies, this may have biased our analysis of the health financing environment, structures and inputs, as our data were limited to those provided by the health systems institutions.

The analysis that informs this paper was conducted in August – January 2006, and some considerable changes have occurred since then, thus the paper does not contain detail on recent changes.

## **PART II. FINDINGS**

### **2 STRENGTHENED POLITICAL COMMITMENT**

#### ***Findings***

Political commitment for tuberculosis (TB) control at the government level is high. The government established a Technical Working Group (TWG) and Thematic Sub-groups (TS) at the national level to better coordinate implementation of TB control in the republic.

The TB program budget increases year by year in real terms; however as a share of the total health care spending it has decreased almost 3 times in 2005 compared to 2001 level.

#### ***Recommendation***

The government's political and financial commitment to fight TB has been very impressive. However, it should not limit itself to the progress achieved and should evolve its commitment to streamlining the health care delivery by introducing more effective and efficient mechanisms of service delivery and organization. TB control program managers should think carefully about possible ways of achieving better program results with the available resources by improving the technical efficiency of the program.

#### ***Discussion***

The President's vision of Kazakhstan 2030 set out a broad social policy agenda. Following the 1998 Decree of the President "On priority measures on improving the health status of the citizens of Kazakhstan", the government has developed a state program "Health of the Nation" that defined the main health reform areas for 1998-2008. This Program is in line with the World Health Organization (WHO) Health for All Strategy, is divided into three phases, and outlines action plans under specific objectives. Although not fully implemented, together with the Concept of Further Health Care Development in Kazakhstan in 2000-2005, this Program established a direction and conceptual framework for further health sector reform and development. TB has been identified as one of the priority areas, with nationwide implementation of WHO recommended DOTS strategy.

Analysis of the health reform experiences of the 1990s led to the development of the 'National Program of Health Sector Reform and Development in the Republic of Kazakhstan for 2005-2010' that initiated a new era of health sector development. Priority for TB control was stressed again in this program. PHC as the backbone of the health system, and inter-sectoral cooperation on health matters are emphasized throughout the document.

In September 1998, the government adopted a decree 'On Urgent Measures on Protecting the Population of the Republic of Kazakhstan from Tuberculosis'. The decree ordained the establishment of coordination councils on fighting TB at the government, city, oblast, and rayon levels.

In reaction to the President and government decrees, the Ministry of Health (MoH) issued its first prikaz on DOTS implementation in Kazakhstan, in November 1998. In 2001, the MoH and the Ministry of Justice (MoJ) approved an order 'On the Improvement of TB Medical Services for the Population of the Republic of Kazakhstan', and in May 2001, an order 'On the Status and Measures to Strengthen the TB Control in the Republic of Kazakhstan'.

Later that year the National TB Center (NTBC) submitted a National TB Program 2002 – 2006. The program was approved by the government, adapted by each oblast health administration and enacted by the governor.

In 2004, the MoH and the MoJ issued a joint order #145, regulating TB health services delivery to TB patients in the penitentiary system.

In addition to the coordination councils, positions of national, regional and local coordinators had been introduced in the country. The government established a High Level Working Group (HLWG), in Kazakhstan named the Technical Working Group (TWG) and Thematic Working Groups (in Kazakhstan called Thematic Sub-groups) at the national level to better coordinate implementation of TB control in the Republic. The mission of the HLWG and its subgroups is to establish mechanisms for effective consultation between national and international experts on all aspects of TB control in KZ, facilitate coordination of TB control activities by national and international organizations and to devise recommendations on strategies and tactics for TB control. International organizations provide constant technical support and sometimes have too much a leading role.

With support of Project HOPE, Oblast Round Tables (ORT) have been established, to support the management TB service delivery on a daily basis at the district level. The role of ORTs is to identify and solve operational issues and to address TB issues based on cohort analysis data.

All activities and programs have been funded from central and local level government budgets. The government of Kazakhstan has been able to significantly increase health care spending. Between 1999 and 2005, public health care expenditures have grown 4.6 times in nominal terms, 3 times in real terms, or from 2.2% to 2.8% as percentage of GDP. The proportion of public expenditures in total (public + household) health care spending has increased from 76.5% in 1999 to 79.1% in 2004, which suggests increased commitment of the state to financial protection of its people from health-related expenditures. Increased proportions of health care expenditures in the total government spending, Republican budget, and local budgets also show evidence of a growing priority for health care on the state agenda.

The government attempts to increase allocative efficiency of health care services by directing additional funds to PHC in the framework of health care reforms and heavy capital investments and procurement of equipment. The TB program budget increased year by year in real terms; however as a share of the total health care spending in 2005 it has decreased almost 3 times compared to 2001.

### **3 MORE FUNDS LESS CARE**

#### ***Findings***

The present resource allocation mechanism based on capacity and historical budgeting, creates little incentives to use resources efficiently. It creates strong incentives to increase capacity and keep patients hospitalized for as long periods of time as possible. This explains the recent tendency of constructing new hospitals, increasing the numbers of beds, procurement of hi-tech equipment and the opposition to the integration of TB services into PHC structures with its perceived fear of losing control over TB funds.

Funds can not be transferred across line-items and savings can not be retained.

#### ***Recommendation***

One possible way to overcome this obstacle is to finance TB institutions based on global budgeting (chapterless financing) and allow health care facilities to retain savings. These will improve operational effectiveness and efficiency, increase health care managers' responsibility for effective health care delivery, while savings could be used for remuneration of staff or other purposes. During this transition stage budget formation mechanism, bookkeeping and reporting could stay without changes.

#### ***Discussion***

Provider payment systems differ for health facilities depending on their organizational form. Health facilities organized as state enterprises are financed based on competitive state orders: PHC providers are paid based on a per capita fee, the general profile hospitals based on Diagnosis Related Groups (DRGs) and the specialized services are financed on a historical capacity based financing system. Health facilities organized as state institutions are financed based on capacity.

The TB control program is financed from the republican and local budgets. The republican budget covers targeted transfers, capital investments and procurement of drugs, whilst the local budget pays for all costs of running the TB system in an oblast. Allocation of resources to TB institutions is based on historical financing and developed capacity, i.e. the number of beds, bed-days, number of employed personnel etc., with subdivision by line-items or chapters and adjustments for inflation.

The line-item allocation allows limited or no flexibility to redistribution of resources between lines. Health care managers have to invest a lot of effort and time into paper work and bureaucratic procedures before money from one item is approved to be directed to another item. This usually takes up to 3 weeks.

In general the system has been designed in such a way that no possible saving can be retained. Money left at the end of the year is pooled back into the oblast level health care budget and health care managers are punished for under-spending, sometimes by budgetary cuts for the next year. This creates perverse incentives to use all available funds without paying close attention to efficiency.

The present resource allocation mechanism creates strong incentives to increase capacity and keep patients hospitalized for long periods of time. This explains the recent tendency of constructing new hospitals, increasing the numbers of beds, procurement of hi-tech equipment and the opposition to integration of TB services into PHC structures with its perceived fear of losing control over the TB funds.

Cost effectiveness of these expenditures is doubtful. Currently, considerable funds are invested in the construction of new TB facilities: both TB hospitals and TB sanatoria, whose necessity is not substantiated by projections of future hospitalization or rehabilitation needs. The number of

these institutions has increased by more than 50 percent, compared with 1998, despite the decreasing number of TB cases. A similar increase is seen for the number of beds. This tendency promises to be even more accelerated given the Government Decree #1289, of December 2004, on the 'Realization of the Law on Republican Budget for 2005'.

## **4 A NEED FOR INTELLIGENT DRUG MANAGEMENT**

### ***Findings***

The MoH discontinued the practice of centralized TB drugs procurement. This may adversely affect the continuity of drug supply and/or the quality of procured drugs, and thus ultimately the TB situation in KZ.

### ***Recommendation***

We highly recommend to resume centralized procurement of TB drugs. This recommendation, conflicts with existing regulations. However, a detailed analysis of the legal framework suggests that one of the following actions may make the recommendation possible:

- Adopt a National TB Program with allocation of funds from the republican budget, or;
- Include TB drugs into the list of centrally procured drugs of Chapter 8 of the Budget Code, or;
- Declare TB as an emergency of a regional level, or;
- Amend the state procurement law, specifically taking away phrases like: “other than state organizations subordinate to government agencies” throughout the Code.

### ***Discussion***

The Constitution of the Republic of Kazakhstan, Health Protection Law and Law on Health System (Правительство РК 1997 а; Правительство РК 1997; Правительство РК 2006b) guarantee accessibility, continuity, equity, quality of health care services to its citizens, and social protection. Moreover, they secure provision of Free State Guaranteed Benefit Package and supply of pharmaceuticals and medical and hygienic technologies.

TB is regarded as a socially significant disease, representing a danger to the population, and the provision of therapeutic and social services, and follow up is free of charge, on concessionary terms and is included into the Free State Guaranteed Benefit Package. Types and volumes of services are regulated by the MOH.

The MOH develops regulations for provision of medical services and pharmaceuticals and organizes procurement of medical services, pharmaceuticals, and medical technologies in emergency situations. At the same time local governments and health authorities, protect rights of the population for Free State Guaranteed Benefit Package. Thus it is not clear who is responsible for procurement of pharmaceuticals for socially significant diseases.

Moreover, the budget code states that, the Republican Budget covers expenses for:

- organization of centralized state procurements;
- maintenance of criminal suspects and accused;
- prevention and elimination of emergency situations of global or regional scale (TB could be meant)
- counteraction to extremely dangerous infections (TB could be meant)
- activities to protect health of the population, other than expenses covered by local budgets;
- official transfers to oblasts, cities of the republican level, and the capital.

While, oblasts and cities finance:

- Provision with Free State Guaranteed Benefit Package, other than those financed by the republican level;
- Procurement of vaccines, immunobiological and other pharmaceuticals in accordance with state laws.

The MoH can not centrally procure pharmaceuticals unless it is designated by the Government as an administrator of a budget program, or the government includes TB drugs into the list of centrally procured drugs. Moreover, State Procurement Law and Regulation on provision of state health care organization with medical equipment, technologies and pharmaceuticals, procured centrally in expense of the republican budget state that an administrator of a budget program can act as an organizer of a centralized bidding process for subordinate health care organizations.

At the same time, State Procurement Law states that; - in order to reduce budget expenses and in case of need to procure homogeneous products, works and services by several orderers, other than state organizations subordinate to government agencies, could implement a unified bidding process for procurement of products, works and services. The organizer of the process is determined by the government of the Republic of Kazakhstan. Accordingly, the MOH can not act as an organizer of a bidding process for health care organizations.

## **5 INTER AND INTRA STAKEHOLDER COOPERATION**

### **5.1 TRAINING**

#### ***Findings***

The TB control system has developed its own network of TB training institutes (or training centers) and quality cadre of trainers with assistance of Project HOPE. However, these training centers are not self sufficient and sustainable. They do not have an official status. The result is that the training programs are not officially recognized, the courses are not considered as contributing to a postgraduate education, and training centers are not supported financially from either republican or local levels.

#### ***Recommendation***

The logical way to overcome this obstacle is to integrate the training programs of these training centers into the training programs of post-graduate education and transfer the training centers to the postgraduate studies institutes' structure.

#### ***Discussion***

There are 11 training centers which are based at NTBC (1) oblast TB dispensaries (9), KUIS (1). These training centers deliver basic DOTS training, advanced DOTS training, and a training program on the "peculiarities of TB control in prisons". With the help of Project HOPE, curricula have been developed that fully comply with WHO recommendations. These curricula have successfully been used by the graduate education institutes. The post-graduate studies institute is highly interested in adopting the DOTS curricula for their own use.

### **5.2 HEALTH PROMOTION**

#### ***Findings***

There are four structures involved Health Promotion: The Healthy Life Style Centre (HLSC), the Primary Health Care (PHC), the TB services and the Sanitary and Epidemiologic Services (SES). All these institutions try to promote health by targeting the general community, TB patients and risk groups. But due to the absence of a strategic vision for these activities and the lack of a central coordinating body, the effectiveness of the work is doubtful.

#### ***Recommendation***

Clarify roles and responsibilities of each and every stakeholder, develop and adapt a national communication strategy and empower HLSC.<sup>1</sup>

#### ***Discussion***

Although the HLSC is the primary agency responsible for health communication and promotion in Kazakhstan, it is not in the position to coordinate health marketing efforts, as technical capacity in research, mass-media campaigning and development of media materials still needs to be gained. Moreover, the HLSC does not receive adequate financial support from the government to be able to generate and implement its own strategy. Its technical capacity to deliver technical advice and support to other organizations has been questioned by some international organizations.

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<sup>1</sup> At the time of finalizing this report a National Communication Strategy has been presented to the Technical Subgroup.

PHC, TB and SES staff lack the necessary skills to conduct health promotion, as they have not been trained in this area. They feel forced to do something that in their opinion does not bring about positive results and change.

### **5.3 SOCIAL PROTECTION**

#### ***Finding***

Kazakhstan's public spending on social protection is modest compared to many countries of CIS and ECA region, however it has more social benefits and the coverage is limited to narrow groups at risk.

TB services play their own role in social protection by keeping patients from the deprived parts of society in long stay admission, instead of taking steps for tighter collaboration with MoLSP.

#### ***Recommendation***

The MoH should make profound efforts for better collaboration with the MoLSP, and take the social protection problem to be discussed at the government level.

#### ***Discussion***

Kazakhstan's public spending on social protection was 5.4% of GDP or 25% of total public expenditures in 2002. Though this amount appears high, it is modest compared to many CIS countries and to the ECA region with spending on social security and welfare are an estimated 8.1% and 10.1% of GDP respectively. This is explained by the relatively lower number of pensioners in Kazakhstan and by the absence of universal programs such as child or family allowances that consume a large budget in many ECA and CIS countries or programs with substantial coverage as the unemployment insurance programs. Though Kazakhstan has more social benefits than many other countries in the region, the coverage of many of them is limited to narrow groups at risk.

The TB system has its own form of social protection. All TB patients receive their intensive phase of treatment at specialized TB facilities. The continuation phase of treatment however is meant to be ambulatory. However, around 10-15 % of patients stay in specialized facilities for the whole length of treatment. These patients come from socially deprived, alcohol and drug abusing, shelterless groups of society. But based on ALOS and bed occupancy rates, we assume the number of long stay patients to be much higher.

TB system takes over the role of social protection instead of seeking closer collaboration with the MoLSP. The latter seems to ignore the problem.

## **6 EXTERNAL FACTORS MATTER**

### **6.1 ACCESS**

#### ***Findings***

In recent years health care in rural areas has deteriorated, largely because of budget constraints. This, the economic deprivation of the population, the low status and low payment of health care workers and the perception of low-quality decreased the utilization of health care services. There is a lack of alternative providers. Thus the rural population turned to self-medication as a first-line strategy for dealing with illness.

Social stigma and fear of TB make TB patients hide that they have or had TB, as the society, friends and even relatives try to avoid them. The same attitude exists towards medical personnel of TB facilities. Moreover, as TB treatment requires long hospital treatment, and for fear of losing jobs patients do not want to stay in hospital and return to their jobs, sometimes not fully recovered (WB 2005). TB stigma, financial and sometimes geographical access barriers and low awareness force patients to seek alternative care or delay treatment.

The current social security and labor system does not work effectively and is not positively influencing TB patients' behavior.

#### ***Recommendation***

Strengthen PHC and empower the population by health education and promotion.

#### ***Discussion***

Kazakhstan ensures universal access to health care services. Thus, 85% of the population has a medical facility nearby (within 30 minutes walking distance). The access to these facilities is not hindered by income levels or rural-urban locations. However, utilization of services varies significantly with only 6% of the poorest versus 16% of the richest seeking medical attention in the previous six months. Persons from the lower income groups tend to use medical services to a lesser extent than the affluent, indicating possible under-utilization of health services. The lower utilization rates by the poor could mean that they do not obtain needed services (perhaps due to lack of comprehensiveness of services), delay medical treatment, or do not undergo preventive checkups, resulting in preference for self-treatment using pharmaceuticals.

It is well documented that health care, especially in rural areas, has deteriorated in recent years, largely because of budget constraints. National funding reductions have been disproportionately felt in rural areas, which have also been affected by the withdrawal of support from state-owned farms that used to build and maintain rural facilities (but have now dwindled due to bankruptcies and privatization). This decreased the respect for the health care services, leading to a low status and low payment of health care workers and a perception of low-quality of health care services by the population.

In rural areas this perception of low-quality is compounded by the lack of alternative providers. The choice is often limited to the state health care facility and a monopolistic pharmacy, whereas in urban areas a range of alternatives exist, including private specialists (Balabanova & McKee 2006; Thompson, Miller, & Witter 2003).

Historically, free health care has been a right for the whole population of the country and it was understood that doctors bear full responsibility for the health of any individual person. The result is that people do not recognize that health is a person's own responsibility. Thus people tend to wait until their condition worsens before seeking help from health care workers. The focus on specialized and hospital care has made people to believe that it is superior in effectiveness and quality to PHC.

This is also true for the utilization of TB services. The World Bank 2005 (WB 2005) research into aspects of TB and provider perceptions uncovers that stigma, fear of TB, or fear for losing one's job limit the effectiveness of health care delivery and patients' compliance despite recent injections of huge funds into TB program.

TB patients do not recognize the severity of their health status and do not feel responsible for it. Often they do not reach their designated PHC facility, get lost, default and drop out from the treatment. Long distances to health care facilities present another barrier.

Economic factors also significantly influence care seeking behavior. Even if TB services are declared to be free of charge, there are costs, which have to be covered out of pocket. These costs include transportation, food, linen, un-official remuneration, and sometimes drugs.

It is thought that economic crisis, increased unemployment and income inequality, worsened diet, psychosocial stress, and risen consumption of alcohol and tobacco have all contributed to the growth of the mortality rates and decreased life expectancy (Adeyi 1997;Bobak 2002;Davis 2001).

## **7 HUMAN RESOURCES FOCUS**

### ***Findings***

The TB control system suffers from an acute shortage of staff.

### ***Recommendation***

Kazakhstan should seriously consider working on a human resources development strategy, that includes the increase of the status of the TB specialty and mechanisms that provide incentives to health care personnel to relocate to rural areas.

### ***Discussion***

Key informants at the national and local levels reported serious problems with human resources:

- The TB control program suffers badly from aging of the existing human resources. More than half of the currently employed doctors are at pre-retirement age or have already retired but continue practicing.
- The system has difficulties to retain the existing staff due to high-turnover to other sectors of the economy, caused by the low status of the TB specialty, its low salaries or migration to other countries.
- The system falls short in recruiting new staff to rural and remote areas of the country, due to a lack of remuneration and incentives for potential candidates.
- Medical students do not want to specialize in TB, as the specialty is not prestigious, perceived as hazardous because of the risk of infection, not well paid and TB patients are seen as a difficult group of patients to work with.
- There is poor planning of Human Resources, due to a lack of holistic vision and strategy on human resources development.

Possible ways to deal with this are:

1. Revise the pay scale of TB personnel and introduce incentive schemes for people to be relocated to rural and remote areas. For example, provide free accommodation, exempt from public utilities payments, increase rural and remote areas allowances.
2. Devise policies to attract qualified personnel from foreign countries.
3. Market the TB specialty as a vital one in saving lives of people, not dangerous to work in, well paid.
4. Introduce contract relationships with students pursuing studies financed by the government.
5. Develop and introduce high quality programs for professional development.

Some of the actions can be easily implemented, without additional funds, by an efficient use of available resources, for instance, diverting the investments for the construction of new hospitals, rehabilitation facilities and the increase of numbers of beds, to a better remuneration of and the provision of incentives for health care personnel.

The NTBC serves as a teaching foundation for those specializing in TB. Each year medical schools recruit only 6-7 students for residencies, despite the ever increasing demand for these specialists.

Planning of human resources is done by the MoH, which places a bid for the delivery of training for a certain number of students in a certain specialty each year. This approach ideally should create incentives for higher education institutions to deliver quality trainings using contemporary teaching methods and techniques. Outstanding students receive grants from the government; those that do not get the government financing bear the expenses themselves. However, it is unclear whether the number of freshmen is linked to the current and future demand and whether those who pay themselves are taken into account also.

There is no system in place to track if graduates really do start practicing and where. A great number of graduates apparently do not join the government health sector because of:

- More attractive benefits available in the private health sector,
- Reorientation to a different specialty,
- Changing sectors (private companies in other sectors, private business practices),
- Getting married (females).

## **8 WHY INTEGRATION AND COOPERATION SUFFERS**

### ***Findings***

The role of the PHC in case finding and treatment delivery is not clear.

There are operational problems with the continuity of care, in particular the transfer of patients from specialized TB facilities to PHC for treatment delivery in the continuation phase.

One of the underlying reasons is that existing roles and responsibilities are not clear.

### ***Recommendation***

TB control has to be seen as an integrated activity based on a clinical and public health approach involving primary health care services, the specialized TB services, the sanitary-epidemiological services and the health promotion institutes.

Based on existing legislation, but taking into account modern developments and new visions, the roles and responsibilities of the various services involved in TB control need to be newly defined.

### ***Discussion***

The TB health care services are delivered through an extensive network of health organizations, such as PHC, TB hospitals and dispensaries, general health care facilities (TB departments in general hospitals and TB rooms at policlinics), the SES and the HLSC.

The TB control system is the primary body responsible for implementation of TB control in the country, but it has the responsibility for clinical health services delivery at each level. A TB Control Program deals with all possible interventions to reduce the epidemic. This might undermine effectiveness of TB care delivery, by reducing physical access to health services and inefficient use of available resources.

Theoretically a person complaining of cough will seek help at the nearest PHC facility. The PHC doctor should be able to establish the reason for this symptom and refer the patient for further diagnosis if s/he suspects TB.

Diagnosis confirmation and initiation of treatment is done by the TB specialists.

The continuation phase of treatment is delivered through a network of PHC facilities, where staff members observe drug intake by the patient (DOT).

Despite the government policy of strengthening the PHC paradoxically the number of general practitioners (GPs) is declining. Thus the average number of new and relapse TB patients per general practitioner has doubled, from 8 per GP in 1998 to 15 per GP in 2004. This hinders successful integration of TB services into the PHC.

Contact tracing, defaulter tracing, vaccination, and disinfection of patient homes are a function of the SES.

Community awareness and health promotion are also part of early case detection and adherence to (lengthy) treatment, but in the absence of a TB Control Program coordinating mechanism there is no responsibility for an integrated approach of all these activities.

## **9 DATA HAVE NO MEANING UNLESS THEY ARE CONVERTED INTO INFORMATION**

### ***Findings***

The MoH possesses a well organized health information system. In recent days the MoH attempts to bring the system to an electronic format. Data are routinely collected for medical, statistical and reporting purposes and cover such areas as, health system's structure and capacity, health services delivery, health status of the population, financing and accounting. A lot of data is being collected but no analysis and evidence based decisions are being made.

### ***Recommendation***

The policy and decision makers should think of revisiting the collected data sets, developing a system of data quality assurance, and using collected data to guide decision and policy making.

### ***Discussion***

The health information system policy, the infrastructure and information flows structure have been inherited from soviet times. Soviet forms on health information had been revised and a new prikaz on primary medical documentation of the health care organization was adopted in July 2005. This is a four volume document regulating collection of each and every piece of data.

With the introduction of DOTS as a national TB control strategy in 1998, the MoH adapted the WHO standard forms without revision and elimination of the old soviet forms. Because of different case definitions this led to maintaining a double recording and reporting system, and increased paper work and workload.

During our assessment we found more than 20 medical recording and reporting forms in TB health system, but these do not include forms that serve different purposes such as capacity, financing etc.

In 1999, CDC developed and introduced the Electronic Surveillance and Case Based Monitoring System, which contains data on individual patients from the TB-01 form. This system was gradually introduced in all oblasts. However, in 2003 the use of this system was suspended, due to the perceived weaknesses of the TB-01 form.

The MoH decided to revise the form and develop a National Electronic System for TB (called Register). Form TB-01 was revised and expanded to include data on drugs, side effects, drug resistance and chronic illness. Development, pilot testing and implementation of the system were delegated to a company Medinform. In February 2003, the MoH approved the new TB-01 form and the National Electronic System for TB.

Overtime the MoH has realized that this electronic system does not allow analysis of the entered data and it initiated the development of a compatible application for data analysis. This is being implemented by Medinform with the assistance from CDC.

To implement the electronic system TB facilities have been equipped with computers, however with the number of computers at rayon level in remote areas are limited. But even if computers are available the IT literacy is very low, which hinders successful implementation of the system country wide.

Slow diffusion and even unavailability of internet technologies in remote areas contribute to late submission of data and force people to travel distances to submit paper forms, thus increasing the costs.

## **10 ATTENTION TO SOCIAL MARKETING**

### ***Findings***

The activities for World TB Day lack coordination, continuity and impact assessments. This is due to the absence of a strategic vision and the lack of a central coordinating body for social marketing.

### ***Recommendation***

A National Communication Strategy is under development. A Thematic Subgroup, with the help of Project HOPE and other partners will shortly present this to the TB Technical Working Group. The government should indicate which institute should take the leading role and provide sufficient funding.

### ***Discussion***

There are four structures involved into social marketing: the HLSC, PHC, TB service and SES. All these institutions should carry out health promotion work with the general community, TB patients and groups at risk. However, there seems to be doubt about the effectiveness of their work.

Health communication/promotion work on TB is limited to the so called “TB month” that is dedicated to the preparation of World TB day. During this month health care personnel of all institutions organize old style lecture talks for the community at their places of living or and work, interviews on radio and TV, and limited dissemination of printed materials. A national conference is also organized on this day. More innovative approaches, like TV and radio shows with quizzes or school competitions to mention some are also being used.

All these activities lack coordination, continuity and impact assessments. This happens due to absence of a strategic vision of these activities and the lack of a central coordinating body. Although, HLSC is the primary agency responsible for health communication and promotion in the country, it has not become strong and reputable enough to coordinate health marketing efforts. Moreover, it does not receive adequate financial support from the government to be able to generate and implement its own ideas and activities. In addition to it its technical capacity to be able to deliver technical advice and support to other organizations is questionable.

PHC, TB and SES personnel are not interested in conducting these activities and what is more important they do not have the necessary skills. They feel forced to do something, what they think does not bring about positive results and change.

## PART III. TECHNICAL SUMMARY

### 11 EXTERNAL ENVIRONMENT

#### 11.1 POLITICAL ECONOMY

Kazakhstan is one of the largest states in the Eurasia region. It is located right in the heart of the region and occupies 2.7 million square kilometers. Its territory stretches from the Volga to the Altai Mountains and from the plains in western Siberia to oases and deserts in Central Asia. Kazakhstan is a landlocked country bordering with Russia to the north, China to the east, and adjoins Kyrgyzstan, Uzbekistan and Turkmenistan to the south and the Caspian Sea to the West.

**Figure 1. Map of Kazakhstan.**



Source: (CIA 2006; IMF 2006; WB 2004)

There is a bicameral parliament, which consists of the Senate and the Mazhilis, most of whose members are elected, but its powers are limited. The president is elected by popular vote for a seven-year term (two term limit), the prime minister and first deputy prime minister are appointed by the president. The president appoints oblast akims (the governors), who wield considerable power in decision making in their oblasts.

The country is divided into 16 administrative divisions: 14 oblasts, plus Astana and Almaty cities. The oblasts are further subdivided into rayons. In December 1997 the capital of the country was moved from Almaty to Astana. The government's vision is to keep Astana as a political and administrative center and develop Almaty into the business and financial center of the country.

Kazakhstan is rich in fossil fuel, minerals and metals. It also has a large agricultural sector featuring livestock and grain. Its industrial sector rests on the extraction and processing of these natural resources and on a growing machine-building sector specializing in construction equipment, tractors, agricultural machinery, and some defense items. The break-up of the Soviet Union in December 1991 resulted in decline of demand for Kazakhstan's traditional heavy industry products and a short-term contraction of the economy, with the steepest annual decline occurring in 1994.

Kazakhstan is working on developing a cohesive national identity; expanding the development of the country's vast energy resources and exporting them to the world

markets; achieving a sustainable economic growth outside the oil, gas, and mining sectors; and strengthening relations with neighboring states and other foreign powers.

## 11.2 ECONOMIC FACTORS

Kazakhstan has been very successful in its economic performance over the past half decade. Real GDP increased by 10% a year on average. In 2005 the growth was 9.4%, while in the first quarter of 2006 it is estimated at 7.7%. Per capita income has risen sharply; unemployment and poverty have declined steadily.

The poverty rate in Kazakhstan is consistent with its level of economic development. The World Bank analysis using different poverty lines and methodology shows a decline in poverty from 17.6% in 2001 to 15.4% in 2002 using a basic needs poverty line with food and non-food components. While using a subsistent minimum of \$2.15 a day, 24.2% of the population in 2002 lived below the poverty lines comparing to 34.6% in 1996 (IMF 2006; WB 2004).

Income inequality has become evident in Kazakhstan. The three most common contributing factors to being poor are large household size, relatively low educational qualification of the household head, and lower probability of household adults being employed. In addition to household and individual characteristics, poverty has a strong geographical difference: poverty is higher in rural areas (22%) than in urban areas (10%) and higher in small and medium cities than in large cities. In addition, the southern and eastern parts of Kazakhstan exhibit higher poverty. The oblasts with the highest rates of poverty are Kyzylorda at 32% and in Zhambyl, Mangystau, Kostanay, and Atyrau (23%-24%)--the latter three are oil rich oblasts (WB 2004).

Unemployment rate has fallen from 13.1% in 1998 to 8.4% in 2004. During 1998-2005, the proportion of employed among the working age population increased from 54% to 58% due both to greater participation and a modest decline in the number of the unemployed. The significant increase in participation, which rose from 68% to 71% of the working age population, was a result of a growing share of persons in the age category of 45-64 years entering the labor market, especially in the urban sector. On the other hand, unemployment fell in large part due to a decrease in urban unemployment and among 15-44 year olds (including among the youth aged 15-24 years). Unemployment rates are higher in rural areas than in urban areas and among the poor rather than the affluent (WB 2004).

Kazakhstan ensures universal access to health care services. Thus, 85% of the population has a medical facility nearby (within 30 minutes walking distance). The access to these facilities is not hindered by income levels or rural-urban locations. However, utilization of services varies significantly with only 6% of the poorest versus 16% of the richest seeking medical attention in the previous six months. Persons from the lower income groups tend to use medical services to a lesser extent than the affluent indicating possible under-utilization of health services. The lower utilization rates by the poor could mean that they do not obtain needed services (perhaps due to lack of comprehensiveness of services), delay medical treatment, and or do not undergo preventive checkups, resulting in preference for self-treatment using pharmaceuticals.

Government expenditure has increased almost fourfold, from 377,400 million tenge in 1998 to 1,323,821 million tenge in 2004, which represents 22.5% of GDP. Health care expenditure as a percentage of GDP has grown only a little significantly, and is at 2.8% of GDP in 2005. This is low compared to the 7% EU average. Between 1998 and 2004

health care spending as a proportion of the total government expenditure, has increased only by 0.3%, and is currently at 10%.

**Table 1. Macroeconomic Indicators**

Indicators	1998	1999	2000	2001	2002	2003	2004	2005
GDP (bln. tenge)	1,73	2,02	2,60	3,25	3,78	4,61	5,87	7,45
GDP per capita (x 1000 tenge)	115	135	175	219	254	309	391	494
GDP ( mln. \$)	20,71	14,59	18,27	22,13	24,60	30,85	43,16	56,08
GDP per capita (\$)	1,37	977	1,23	1,49	1,66	2,07	2,88	3,72
Government spending (mln tenge)	377,40	468,40	602,02	759,61	834,17	1,068,44	1,323,82	-
Health care spending (mln. tenge)	36,44	44,83	54,32	62,32	71,12	93,22	136,30	206,59
Health care spending per capita, tenge	2,417	3,003	3,650	4,194	4,786	6,252	9,079	13,705
Household health care spending, per capita, tenge	740	921	1268	1442	1696	2014	2397	-
Health care, as % of GDP	2.1	2.2	2.1	1.9	1.9	2.0	2.3	2.8
Health care, as % of total govnmnt spending	9.7	9.6	9.0	8.2	8.5	8.7	10.0%	-
Unemployment rate in %	13.1	13.5	12.8	10.4	9.3	8.8	8.4	-

In 2002 Kazakhstan's public spending on social protection was 5.4% of GDP or 25% of total public expenditures. Though this amount appears high, it is modest compared to many other CIS countries and to the ECA region where spending on social security and welfare are an estimated 8.1% and 10.1% of GDP respectively. This is explained by the relatively lower number of pensioners in Kazakhstan and by the absence of universal programs such as child or family allowances that consume a large budget in many ECA and CIS countries, or programs with substantial coverage as the unemployment insurance programs. Though Kazakhstan has more social benefits than many other countries in the region, the coverage is often limited to narrow groups at risk. As in other countries in the region in Kazakhstan social protection spending is largest item within the government's total spending (WB 2004).

### 11.3 SOCIO-CULTURAL

Historically, the public has not been recognizing that health is a person's own responsibility, thus people tend to wait until their condition becomes worse before seeking help from health care workers. Moreover, the focus on specialized and hospital care has made people to believe in its superior effectiveness and quality and therefore they give preference to secondary (and tertiary) care rather than to primary health care.

Deterioration of rural health care has lead to decreased respect for health care, low status and low pay of health care workers and perceptions of low-quality of health care services by the population. It is further compounded by the lack of alternative providers.

The choice often is limited to a state health care facility and a monopolistic pharmacy (Balabanova & McKee 2006; Thompson, Miller, & Witter 2003). In such a situation rural population turned to self-medication as a first-line strategy for dealing with illness.

The above is also true for TB services utilization. The World Bank research into aspects of TB patients and provider perceptions uncover some of the factors, which may limit the effectiveness of health care delivery and patients' compliance despite recent injections of huge funds into the TB program (WB 2005).

Because of social stigma TB patients hide that they have or had TB, as society, friends and even relatives will avoid them. The same attitude exists towards medical staff of TB facilities. Moreover, as TB treatment requires long (hospital) treatment, people fear to lose their jobs. They are unwilling to stay in hospital and return to their job while not having been fully recovered. Economic factors also significantly influence care seeking behavior. Even if TB services are declared to be free of charge, there are costs, which have to be covered out of pocket. These costs include transportation, food, linen, unofficial remuneration, and sometimes drugs.

#### 11.4 SOCIO-DEMOGRAPHICS

In July 2006 the population of Kazakhstan was estimated to be 15,233,244, (Table 2. Socio-demographic indicators). The country is ethnically very diverse, with more than 100 ethnic groups. The main ethnicities are Kazakhs (53.4%), Russians (30%), Ukrainians (3.7%), Uzbeks (2.5%), Germans (2.4%), Tatars (1.7%), Uygurs (1.4%), others (4.9%) (SARK 1999).

**Table 2. Socio-demographic indicators**

Indicators	1990	1995	2000	2004	2005	2006
Population (millions) <sup>a</sup>	16.7	16.5	14.9	15	15.1	15.2
% urban population <sup>a</sup>	-	60	55.8	56	55.9	-
Live births per 1000 population <sup>a</sup>	21.8	16.8	14.6	18.2	18.4	-
Crude death rate per 1000 population <sup>a</sup>	7.7	10.2	10.0	10.1	10.4	-
Life expectancy at birth, in years <sup>a</sup>	68.8	64.7	65.8	66.2	65.9	-
Unemployment rate in % <sup>b</sup>	-	11.0	12.8	8.4	-	-
Total fertility rate <sup>c</sup>	2.7	2.4	1.83	2.2	-	-

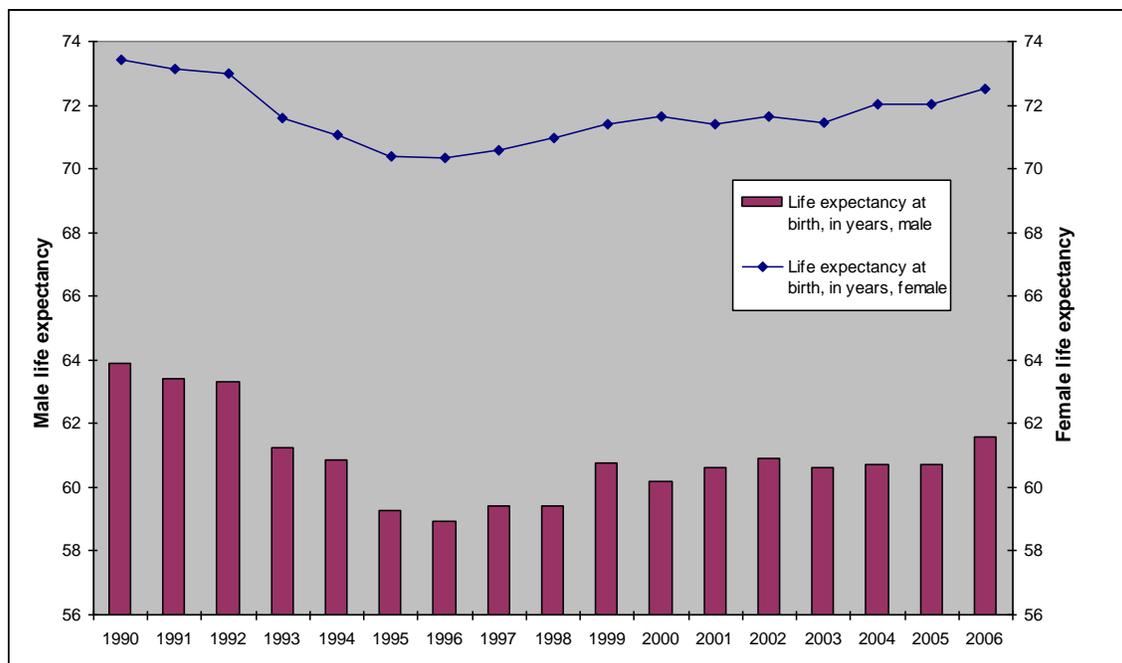
Source: a) (WHO 2006c) Note: Data for 2006 taken from The World Factbook 2006. CIA (CIA 2006) b) (SARK 1999) c) (UN 2005)

Between 1992 and 2003 Kazakhstan has experienced a dramatic decrease in its population by nearly 2.2 million people. This can be explained by emigration of some ethnic groups (mainly Russians), decreased fertility rates, and increased mortality rates. The live birth rate fell from 21.8 births in 1990 to 14.6 in 2000, but increased since then and in 2004 was back at its 1993 level.

The total fertility rate had declined from 2.7 in the beginning of the 90s to 1.8 in 2000; however, from 2000 onwards, it increased smoothly and was 2.2 in 2004. The population structure of Kazakhstan shows a small shift towards the elderly and the population is slightly older than in the other Central Asia countries. The number of persons under 15 years has dropped almost 7% by 2002 compared to the 1990 level. The crude death rate

increased significantly, reducing life expectancy. Life expectancy at birth had decreased by more than 4 years by 1997. It started to increase in 1997 and is now estimated at 66.9 years, which is still low compared to the 78.6 years in the EU, and even 67.2 for the whole CIS. Male life expectancy at birth has dropped from 63.9 in 1990 to 61.6 by 2006 (almost 15 years difference compared to the EU average), with lowest levels being 58.9 in 1996. Female life expectancy at birth followed the same pattern as in males. The expectancy dropped from 73.4 in 1990 to 70.3 in 1996 and increased to 72.5 in 2006 (compared to 81.7 in the EU) (WHO 2006c).

**Figure 2. Life Expectancy**



Source: (WHO 2006c). Note: Data for 2006 taken from The World Factbook(CIA 2006).

It is believed that the economic crisis, increased unemployment and income inequality, worsened diet, psychosocial stress, and risen consumption of alcohol and tobacco have all contributed to the growth of mortality rates and decreased life expectancy (Adeyi 1997; Bobak 2002; Davis 2001).

## 11.5 LEGISLATIVE FRAMEWORK

The health care system that was inherited from the Former Soviet Union, was state owned and financed through general taxation. A central administrative unit planned and governed, while oblast and rayon health administration executed. Universal accessibility and free of charge services at the point of consumption were and remain the key principles of the Kazakh health care system.

The FSU system achieved very impressive results in prevention and control of communicable diseases. However, it became over-specialized and hospital based, with little focus on primary health care and vast amounts of resources going to specialized care and construction of health care facilities.

Centralized management with under-funding and under-budgeting of the system, with no financing flexibility left to lower level managers, were some of the problems faced at independence in 1991. The resource allocation mechanism had been based on health

facilities infrastructure, number of beds and employed personnel. The remuneration system was also based on so called tariffs, providing little incentives for improved performance. All of the above made the system to be input and output driven and contributed to its deterioration and a lack of incentives for increased effectiveness, efficiency and quality of care.

Consumers of health services, used to receiving quality health care at hospitals and availability of resources, became unhappy with developments in the system (WHO 1999).

Facing these problems, the health care system received much more attention after the 1997 President's vision statement on Kazakhstan 2030, which set out a broad social policy agenda. In 1998, the President issued a decree 'On Priority measures for Improving the Health Status of the Citizens of Kazakhstan' and approved 'The Health of the Nation Program', giving an extensive overview of health issues for the country, priorities for change and ways to achieve set goals. TB was identified as one of the priority areas, with nationwide implementation of the WHO recommended DOTS strategy.

In September 1998, the government adopted a decree 'On Urgent Measures for Protecting the Population of the Republic of Kazakhstan from Tuberculosis'. The decree ordained the establishment of coordination councils to fight TB at the government, city, oblast, and rayon levels.

In November 1998, reacting to the President's and government decrees, the MoH issued its first prikaz on DOTS implementation in Kazakhstan. In 2001 the MoH and MoJ approved an order 'On the Improvement of TB Medical Services for the Population of the Republic of Kazakhstan', and in May 2001, an order 'On the Status and Measures to Strengthen TB Control in the Republic of Kazakhstan'. Later that year the National TB Center submitted a National TB Program 2002 – 2006. The program was approved by the government and adapted to its local needs by each oblast health administration, and endorsed by the governor.

In 2004, the MoH and MoJ issued a joint order #145, regulating TB health services delivery to TB patients in penitentiary system.

TB as a priority was stressed again in the National Health Reform Program 2005-2010.

The 1995 Law on Local Self-Government transferred more responsibility to the oblast level. Thus the oblast governors possess real managerial and financial power over the health care system in their oblast.

## 12 HEALTH STATUS

### 12.1 GENERAL ASPECTS

During Soviet times Kazakhstan achieved significant successes in the prevention and control of communicable diseases and in the improvement of the health status of its population. However, indices started to deteriorate in the 1960s and even more in the 1980s. In the CIS in the yearly 1990s, only 15% of diseases were developed in infancy, 43% originated in the 35-64 year age group and 23% in those 65 and older (Bobak 2002).

**Table 3. Morbidity structure**

	2001	2002	2003	2004	2005
Respiratory diseases	27.7	26.3	27.7	27.1	27.5
Digestive system disorders	8.6	8.8	8.4	8.5	8.4
Urogenital system disorders	7.7	8.1	7.9	8.4	8.3
Cardiovascular diseases	7.7	8.1	8.0	8.5	8.6
Diseases of eye and its appendages	6.0	6.2	6.0	6.0	5.8
Dermatological diseases	5.6	5.3	4.8	4.8	4.7
Nervous system disorders	4.5	5.0	5.0	4.8	4.8
Infectious and parasitic diseases	4.4	3.9	3.7	3.5	3.4
Traumas and poisonings	4.4	4.1	4.1	4.1	4.1
Other	23.4	24.2	24.2	24.2	24.5
TOTAL	100	100	100	100	100

Source: (Bobak 2002;M3 PK 2005;M3 PK 2006;SARK 1999)

Morbidity rates for various diseases have risen since the 1990s and are still increasing for some nosologies. Respiratory diseases account for more than a quarter (27.5%) of all cases, while cardiovascular diseases (8.6%) and digestive system disorders (8.4%) each contribute about one-tenth. These three groups are therefore good for almost half of all diseases.

**Table 4. Selected incidence rates**

Years	1998	1999	2000	2001	2002	2003	2004
TB incidence per 100,000	136.8	159.0	173.4	175.9	185.4	180.1	175.6
TB case notification rate per 100,000	126	146	160	162	172	168	166
TB SDR, all ages, per 100,000	46.9	36.0	30.8	28.0	29.1	27.0	25.0
STIs incidence per 100,000 (new cases)	239	321	323	315	297	209	-
Newly registered cases of HIV	299	185	347	1175	694	747	699
Cancer incidence per 100,000	191	181	192	196	197	193	194

Infant Mortality Rate, All causes, per 100000	2210	2075	1976	1954	1716	1602	1483
Under 5 Mortality Rate, All causes, per 100000	2398	2230	2131	2090	1843	1721	1587

Source:(WHO 2006c).

Cancer morbidity rate per 100,000 population had fallen from 188 in 1990 to 173 in 1995, but increased to 194 in 2004. Registration procedures may have contributed to this fluctuation.

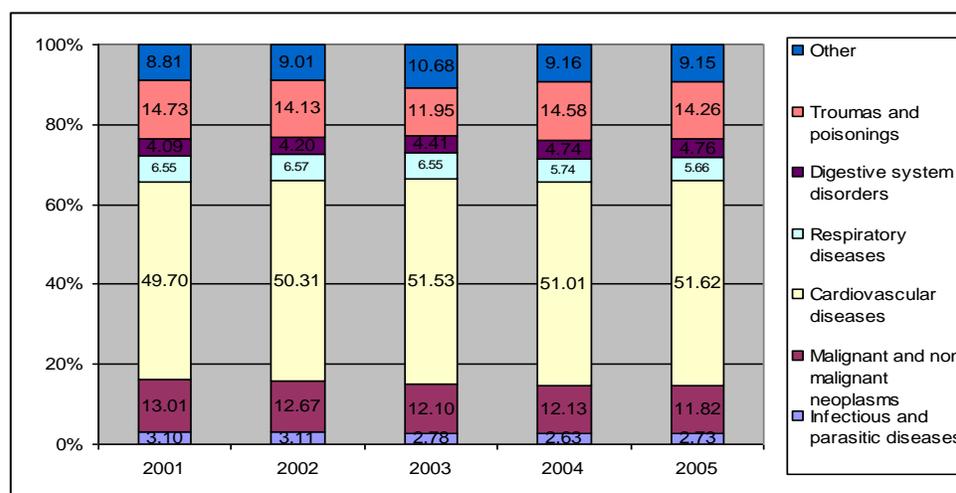
Rates of STIs have risen to almost epidemic levels. Communicable diseases, previously successfully controlled, have returned to Kazakhstan, especially those associated with poverty. The TB incidence rate has increased since the beginning of 1990s and remains very high at 176 per 100,000 in 2004. Most affected oblasts are Kyzyl-Orda (233), Atyrau (210) and Mangistau (209).

The TB incidence rate in Kazakhstan is the highest of all Central Asian Republics. It peaked to 185 per 100,000 people in 2002, but slowly decreased since then. The majority of TB patients are socially and economically deprived people. Most TB patients are in the 25-54 year age group.

Infant mortality declines steadily from 2210 cases per 100,000 in 1998 to 1483 in 2004. The same decline is observed for the under five mortality rate.

Kazakhstan experiences an increase of mortality in cardiovascular and respiratory diseases, and digestive system disorders, while some slow down of mortality due to traumas and poisoning and malignant and non-malignant neoplasms.

**Figure 3. Selected mortality rates**



Source: (M3 PK 2005;M3 PK 2006;SARK 1999)

SDR for TB is decreasing steadily and has reached 25 cases per 100,000 in 2004, in comparison to 47 in 1998.

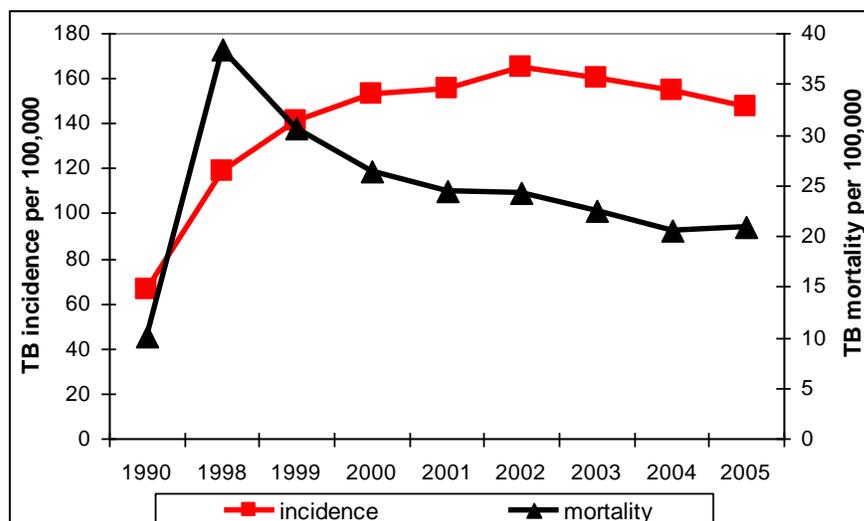
Studies on causes for poor health suggest that medical care has little influence on morbidity and mortality indicators. The causes of dramatic fluctuations in mortality are not fully understood, but there is a general consensus that changes in health are related to deeper social and economic problems such as instability, unemployment, intensive

migration, alcoholism, increased consumption of tobacco and illicit drugs (Bobak 2002;WHO 1999).

## 12.2 TB EPIDEMIOLOGY

Just as in other FSU countries, the TB situation in Kazakhstan has dramatically worsened compared to 1990. Kazakhstan has the highest TB burden in Central Asia. Graphs 1-6 show the TB dynamics in the country in 1990-2005.

**Figure 4. TB incidence and mortality per 100,000 population**



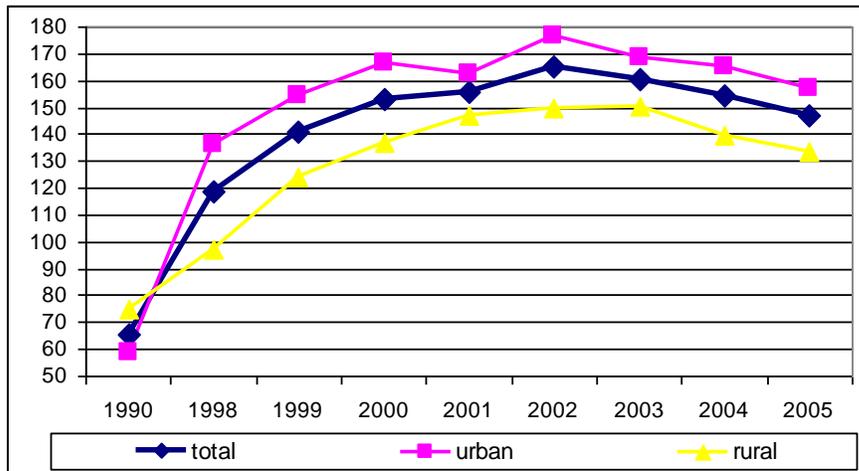
Source: Statistical TB Review in the Republic of Kazakhstan(НЦПТ РК 2005;НЦПТ РК 2004;НЦПТ РК 2003;НЦПТ РК 2002;НЦПТ РК 2001;НЦПТ РК 2000;НЦПТ РК 1999).

Overall, between 1990 and 2005 both TB incidence and mortality have more than doubled.

During 1990-98, the TB epidemic increased enormously, with mortality grown almost four-fold (from 10.1 to 38.4 per 100,000 population) and incidence almost doubled (from 65.8 to 118.8 per 100,000 population).

Following the DOTS introduction in 1998, TB mortality has been going down. TB incidence though continued the upward trend until 2002, when it peaked at 185 per 100,000 population, but has been declining since 2003. This development suggests that the country has managed to gain control of the epidemic.

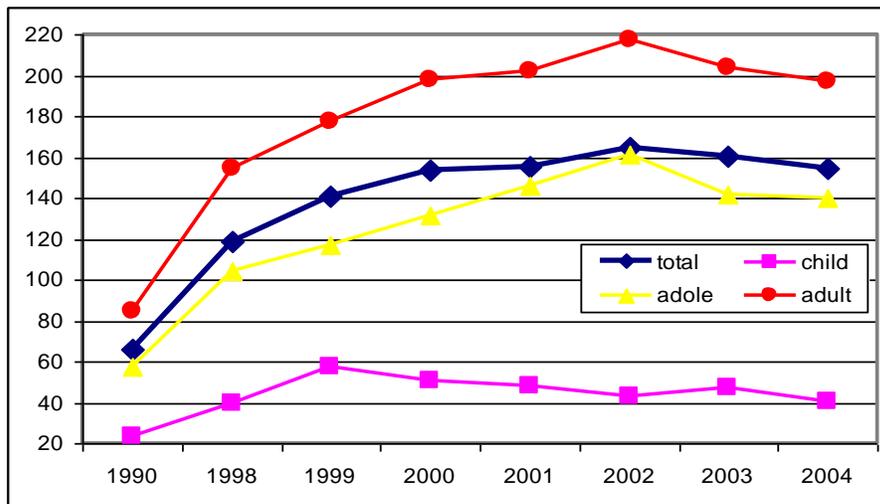
**Figure 5. TB incidence per 100,000 population, urban/rural**



Source: Statistical TB Review in the Republic of Kazakhstan (НЦПТ РК 2005;НЦПТ РК 2004;НЦПТ РК 2003;НЦПТ РК 2002;НЦПТ РК 2001;НЦПТ РК 2000;НЦПТ РК 1999).

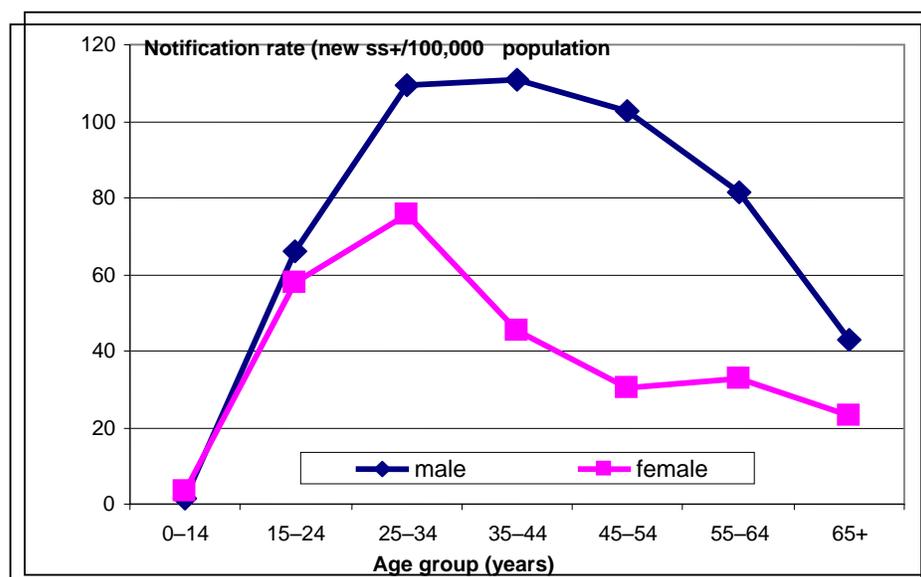
Given that the change in the urban/rural population structure of Kazakhstan has been within 3% during 1990-2004 across all oblasts, except Kostanai and Mangistau oblasts, changes in the urban/rural population cannot explain the shift in the structure of incidence. The underlying factors that have led to it could be: i) increased migration to cities, including from the neighboring countries; and/or ii) the worsened case detection/underreporting in rural areas due to the weakened infrastructure and capacity of the health system there.

**Figure 6. Incidence per 100,000 group specific, child/adolescent/adult**



Source: Statistical TB Review in the Republic of Kazakhstan (НЦПТ РК 2005;НЦПТ РК 2004;НЦПТ РК 2003;НЦПТ РК 2002;НЦПТ РК 2001;НЦПТ РК 2000;НЦПТ РК 1999)

Incidence by child/adolescent/adult groups shows almost doubled growth in all groups and widened gaps among them. Given the population aging observed in the country, this epidemiological pattern testifies to growing prevalence of TB in elder age groups.

**Figure 7. Case notification by age and sex in 2004**

Source: (WHO 2006b)

Case notification data by age and sex confirms much higher prevalence in older groups and shows a significant difference between the sexes. In young ages (0-14 years), girls contract TB more than boys. In older ages though, TB is spreading much faster in men than in women: case notification is 1.1 times higher in 15-24 age group; 1.4 times higher in 25-34 age group; 2.4 times higher in 35-44 age group; 3.4 in 45-54 age group; 2.5 times higher in 55-64 age group; and 1.9 times higher in 65+ age group.

**Table 5. Age-standardized TB mortality rate per 100,000 population, male/female**

	1998		1999		2000		2001		2002		2003	
Total	46.9		36.5		30.8		28.0		29.1		27.0	
	m	f	m	f	m	f	m	f	m	f	m	f
Total	86.7	14.0	64.2	13.4	55.2	11.3	49.5	10.4	51.2	11.6	48.9	10.4
0-64	84.0	13.5	59.6	13.1	52.1	10.9	48.0	9.8	49.3	11.3	46.0	10.3
25-64	131.4	19.8	94.4	19.6	84.0	15.8	77.0	14.3	79.4	17.1	74.6	15.1
65+	108.8	17.9	101.4	16.6	79.9	14.2	61.4	14.9	66.8	13.5	71.8	10.6
0-14	1.4	1.4	1.6	1.1	0.8	1.0	0.8	0.8	0.9	0.7	0.6	0.8
15-29	51.5	11.4	33.1	11.7	24.3	11.5	25.4	10.3	24.6	10.7	21.3	9.5
30-44	123.0	20.0	82.0	20.8	74.7	15.8	68.9	15.1	70.9	17.5	66.4	17.9
45-59	153.7	20.2	114.3	17.9	103.2	15.4	94.8	13.5	96.7	16.7	90.6	13.3
60-74	121.8	17.9	106.4	17.8	86.0	15.4	65.9	11.9	68.2	14.1	62.7	10.9
75+	109.5	21.7	101.2	16.7	81.5	10.2	66.5	18.2	86.8	11.3	116.4	11.2

Source:(WHO 2006a).

Age-standardized mortality (Table 5) also confirms much higher TB prevalence in men. Overall, male mortality was 5 times higher in 1998-2003, although it has gradually decreased in all age groups, except the oldest, which took upward trend in 2002.

TB doctors reported that TB is mainly prevalent in 25-45 year old men, 70% of TB patients are unemployed, while another 10-15% are homeless, alcoholics, drug addicts, migrants, and persons released from the penitentiary facilities. In addition to these risk groups, the MDG Report 2005 (UN 2005) suggests that the poor, and people with weak immune systems, including HIV-positives, should be added to that, while the NTBC (НҚПТ РК 1999) also identifies TB contacts, children and adolescents from worse-off families, and women after maternity belong to these risk groups.

Overall, Kazakhstan exceeds the WHO target of 70% case detection rate, but comes short of the 85% cure rate target (Table 6).

**Table 6. DOTS monitoring indicators**

	1998	1999	2000	2001	2002	2003	2004
DOTS new ss+ treatment success (%)	79	79	79	78	78	75	74
DOTS new ss+ case detection rate (%)	4	79	93	92	94	86	79
DOTS notification rate (new ss+/100,000 pop)	40	46	59	61	63	58	53
DOTS notification rate (new and relapse/100,000)	135	165	172	176	185	181	179

Source:(WHO 2006a;WHO 2006b).

### 12.3 TB IN PRISONS

**Table 7. TB in prisons**

	1998	1999	2000	2001	2002	2003	2004
Registered TB cases <sup>a</sup>	12,970	13,697	10,061	8,060	8,242	6,340	5,591
New cases <sup>a</sup>	5,061	5,591	3,434	3,038	3,011	2,137	1,388
Notification rate, per 100,000 <sup>b</sup>	4,268	2,995	2,515	2,210	2,316	1,937	1,573
Number of deaths <sup>a</sup>	1,218	345	175	174	134	103	74
Mortality rate, per 100,000 <sup>b</sup>	820	300	140	130	100	90	80

Source: a)(Atabay & Laticevski 2006), b)( Godinho & Veen 2005).

TB indicators in prisons are much-much higher than in the civilian sector (Table 7). Nonetheless, the situation has drastically improved between 1998 and 2004. Notification rate has decreased a little less than three-fold, while mortality rate has decreased more than ten-fold. This impressive achievement in curtailing TB in prisons must mainly be attributable to the extension of DOTS to prisons. A further analysis is required to identify the net effect of DOTS, as the country has been actively implementing penal reform, including a considerable reduction of the penitentiary population.

MDR-TB in prisons is high: 27% primary MDR-TB, and 70% of acquired MDR-TB (Godinho & Veen 2005). In the civilian population, in 2002 it was estimated at 9.7% and 18.3% respectively. This is lower than the WHO estimates of 14.2% in new cases

and 56.4% in cases treated before (WHO 2004). In 2004, there were 1,553 MDR-TB patients on treatment in TB hospitals (НҚПТ РК 2005; НҚПТ РК 2004).

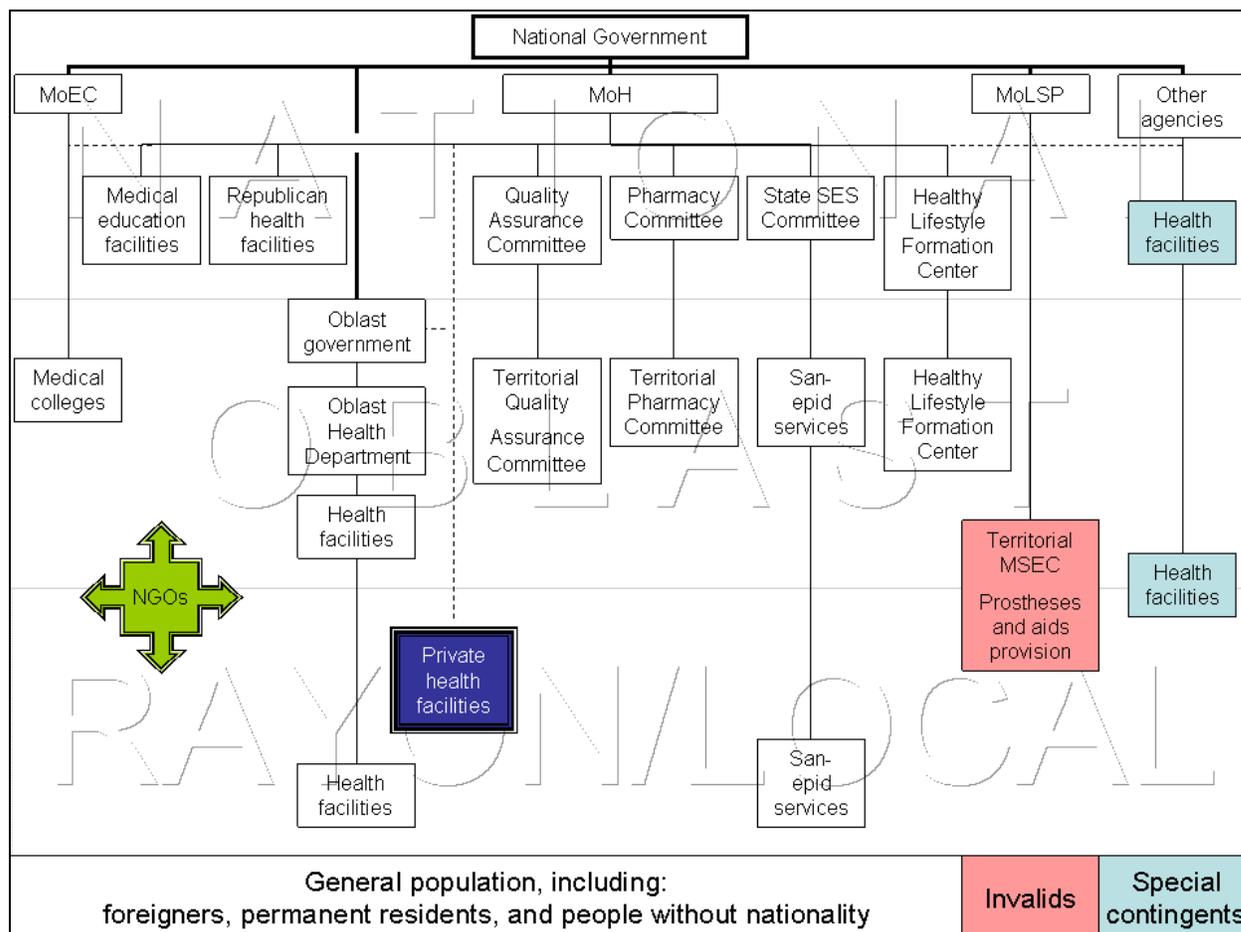
Prisons also house a significant pool of dual TB/HIV infection – considering that ¼ of registered HIV/AIDS cases are in prisons, Godinho et al. (Godinho & Veen 2005) suggest that at least half of HIV cases in prisons also have TB. Little data is available on TB/HIV in the civilian population.

### 13 HEALTH SYSTEM STRUCTURE AND ORGANIZATION

#### 13.1 HEALTH CARE SYSTEM

Based on the analysis of Kazakhstan’s health legislation, the structure and organization of its health system can be depicted as follows:

**Figure 8. Health system structure in Kazakhstan**



The health system of Kazakhstan is a multi-level, multi-dimensional system that consists of the public and private sector providers serving health needs of the population. The health sector includes state-owned health facilities, i.e. health providers of the MoH and other ministries and agencies, including medical education institutions of the Ministry of Education and Culture (MoEC). The private health sector unites private health practitioners, privately owned health facilities, including pharmacies and pharmaceuticals producers, and traditional healers. An important factor in the health system are non-governmental organizations (NGOs) that provide social, counseling, humanitarian and/or other services to the population or health providers. These include local and international professional organizations, charities and donor agencies. Finally, the population, which interacts with the health system providing it with labor and using health services, must be responsible for maintaining and promoting their and others’ health.

The overall direction of the health system at the national level is provided by the central government, which develops national and state health programs and policies, and approves the SGBP based on MoH proposals. The roles of the President and

national/local parliaments in the health system are respectively to develop a long-term, strategic vision of health care and to approve national/local health care budgets.

As the central authorized executive health body, the MoH is responsible for the development and implementation of health programs and policies, and their monitoring. Irrespective of the form of ownership and administrative subordination, all health facilities must follow the guidelines and standards set by the MoH. In addition, the MoH is in charge of large investment projects in the health sector, including the construction of new health facilities and procurement of high technology equipment, and centralized procurement of drugs for socially significant diseases.

Under its structure, the MoH has higher and post-graduate medical education institutions, such as state medical academies, the Higher School of Public Health, the State Institute for Postgraduate Training of Doctors and the Republican College for Training and Re-training of Middle Level Health Personnel and Pharmacist Workers. Together with medical colleges administered by the MoEC, these facilities provide medical education.

The MoH Republican facilities, such as national centers and research institutes are intended to provide highly specialized (tertiary) health care to the entire population of Kazakhstan and methodological guidance to lower level specialized facilities. Within the Republican facilities, there are several specialized (vertical) services responsible for the control of socially significant diseases or provision of specific services. The Healthy Lifestyle Formation Center (HLSC), established in 1997, is in charge of health promotion activities. Other vertical services not reflected on the diagram are the TB service, AIDS service, psycho-neurological, narcological and dermato-venereal services, forensic medicine, and blood transfusion service.

The Sanitary Epidemiologic Service (SES) service is a vertical service responsible for public health. The SES performs surveillance and controls programs, including the organization and implementation of vaccination; sanitary-epidemiological activities for infectious and parasitic diseases; registration of infectious, parasitic, occupational and other diseases and poisonings; observation of compliance with the sanitary rules and hygienic norms; health promotion; and sanitary-epidemiological and social-hygienic monitoring (Government of the Republic of Kazakhstan 2004b).

The other two MoH vertical services, represented on the diagram, are the Pharmacy Committee and Quality Assurance Committee services. The Pharmacy Committee is responsible for the implementation of state policy on the distribution, safety, efficacy and quality of drugs, including medical equipment and supplies. In particular, it performs drugs (re-)registration/recall, monitoring of rational drug use, and drug monitoring (Government of the Republic of Kazakhstan 2004a). The Quality Assurance Committee is responsible for the implementation of the state policy on health care quality assurance, compliance with health care standards, and ensuring the fulfillment of guaranteed accessibility and quality of health services on the entire territory of the country. In particular, it monitors the compliance of health workers' qualifications with the established norms, the extent to which health facilities are equipped with medical equipment and supplies, and the extent of people's satisfaction with the quality of health services. Also, it performs accreditation and licensing of health services providers, awards category qualifications to health workers (except SES), and investigates people's complaints about health care quality (Government of the Republic of Kazakhstan 2006a).

At sub-national level, local governments – city/rayon/oblast akimats, manage health care. Following the adoption of the new Budget Code in 2005 and changes in the local governance legislation, the role of the Oblast Health Department (OHD) in health management has significantly increased. At rayon level, the Central Rayon Hospital (CRH) plays an important role in health management, defining the structure of the health care facilities network and managing some centralized functions, such as rayon health statistics and accounts. Since 1999, the health facilities network in rural areas has developed/been brought in accordance with the Minimal State Standard of Rural Health Care Development under which:

- settlements with over 5,000 population and no less than 50 km away from the nearest rayon (central rayon) hospital are allowed to have a rural hospital;

every rayon center must have:

- a central rayon hospital (CRH) with a maternity department and ambulance station (department);
- sanitary-epidemiological station with all structural divisions; and
- facilities for treatment of socially significant diseases (department, ward);

every oblast center must have:

- an oblast adult, children or combined hospital;
- blood center;
- oblast sanitary-epidemiological station; and
- facilities for treatment of socially significant diseases (hospital, dispensary) (Government of the Republic of Kazakhstan 2005b).

At facility level, decision-making is vested in the chief doctor who is responsible for financial and human resources management in addition to health management.

The private health sector has been developing dynamically. The number of privately owned hospitals has grown from 85 in 1999 to 150 in 2004, while the number of privately owned outpatient facilities has grown from 369 to 1,049 during the same period. The pharmaceuticals sector is almost fully privatized. At present, there are over 100 producers of medical products and 9,177 pharmacist organizations in the country, 95.6% of which are private (Akanov 2005;M3 PK 2005;M3 PK 2006). Private health facilities are believed to serve health needs of the high-income segment of the population. Activities of private health providers are regulated by licensing.

Health needs of special contingents, such as the military, militia, national security servants, public officials, and prison population are served by special health facilities managed and administered by agencies other than the MoH. These parallel health services are present at the national and local levels.

The citizens, foreigners, permanent residents, refugees and people without nationality, use health services of the MoH health facilities and private health facilities depending on income level. Disabled also use health services of the MoH health facilities, but prosthetic and other compensatory aids are provided to them through the Ministry of Labor and Social Protection (MoLSP). Under its structure, the MoLSP also has a paramedical health service called Medical-Social Expert Commissions (MSEC) that grant/revoke disability status.

The taxonomy of health care services and providers of Kazakhstan is presented in Figure 9. The national legislation distinguishes types and forms of health care. The four main types of health care are primary, qualified, specialized and highly specialized care. The fifth type – medical rehabilitation to individuals suffering from congenital and acquired diseases, consequences of acute, chronic diseases and traumas, is crosscutting and extends to include organizations of the social protection system.

**Figure 9. Taxonomy of health care services and providers in Kazakhstan**

Type of care	Health provider	Administrative level
Highly specialized health care is medical care provided to individuals with diseases requiring extremely sophisticated diagnostics, treatment and use of unique medical technology	Republican multi-profile (adult and children's) hospital Republican health organization (research institute, research facility, scientific center, clinic) Other republican facilities	National
Specialized health care is medical care provided to individuals with diseases requiring specialized diagnostics, treatment and use of sophisticated medical technology	Oblast and city multi-profile (adult and children's) hospital Oblast specialized dispensary (tuberculosis, oncological, psycho-neurological, dermato-venereal, narcological, cardiological, endocrinological) Rayon TB dispensary	Oblast
Qualified health care is doctor-provided medical care provided to individuals with diseases that do not require specialized diagnostics, treatment and use of sophisticated medical technology	Rayon (central, city) hospital Infectious hospital Maternity house Rural district hospital Other inpatient health organizations Rural doctor ambulatory Family doctor ambulatory Policlinic (consultation center) under rayon (central) hospitals, including adolescent room (department) Territorial city polyclinic, including children's polyclinic Women's consultation center Consultative-diagnostic polyclinic Other ambulatory-polyclinic organizations	Rayon

<p>Primary health care (PHC) is state activity on permanent and free-of-charge provision of population with accessible types of medical care performed by health care workers of outpatient health organizations upon individuals' referrals that includes diagnostics and treatment of most common illnesses, traumas, poisonings and other emergency conditions, sanitary-hygienic and anti-epidemic activities and prevention, health promotion, parenthood and child protection, and information-education work on safe drinkable water and rational nutrition. PHC is provided by health and SES organizations in the form of outpatient, hospital-replacing and emergency care.</p>	<p>Feldsher point                      Feldsher -obstetrical point (FAP)                      Rural (family) doctor ambulatory (SVA)                      Polyclinic (ambulatory) of rayon (central) hospital                      Sanitary-epidemiological station</p>	<p>Local/rayon</p>
	<p>Health practitioner                      General profile health organizations                      Ambulance brigade/department/station/hospital                      Sanitary aviation service</p>	
<p>Medical rehabilitation                      Traditional healing</p>	<p>General profile health organizations                      Health resort/sanatorium                      Licensed individuals with medical education*</p>	<p>Local</p>

Note: \*In exceptional cases, licenses may be issued to individuals without medical education (Правительство РК 2006a).

The forms of health care are emergency, ambulatory-policlinic, hospital-replacing and inpatient care, sanitary aviation, and sanatoria-resort treatment. Emergency care is medical care provided by health practitioners, health facilities or special ambulance services to individuals with conditions requiring urgent medical intervention. Sanitary aviation service is a special medical service for the provision of emergency health care to individuals in the country's areas of difficult access. Ambulatory-policlinic care includes the PHC, qualified and specialized health care provided without patient hospitalization. Hospital-replacing care is a form of health care provided in day care departments (wards) of hospitals and polyclinics, and home care provided by health organizations. It includes mainly qualified and specialized health care. Inpatient care includes qualified, specialized and highly specialized health care with patient hospitalization. Sanatoria-resort treatment is a form of health care based on the use of natural curative factors combined with preventive, rehabilitative and treatment activities. Finally, traditional medicine (healing) is a form of treatment allowed to be practiced by licensed individuals with medical education as part of medical rehabilitation. It is under control of the MoH. Massive healing séances are prohibited, while illegal healing is punished under administrative law. Euthanasia is also prohibited in Kazakhstan.

### 13.2 HEALTH SECTOR REFORM

Health sector reform was not high on the political agenda in the early 1990s, as economic and fiscal reforms took priority. As the country was moving towards market relations, a major crosscutting reform of privatization occurred in the health system, even though partially. The pharmaceuticals and medical supplies sub-sector, most dental care facilities and some general health facilities were privatized. Fee-for-service was introduced in the public health sector due to deteriorated state funding.

In the second half of the 1990s, Kazakhstan underwent a series of health reform experiments in health financing (health insurance in 1996-98, and revoked health insurance and program budgeting since 1999), optimization of health facilities network (mainly downsizing), and PHC (introduction of family medicine/general practice). The health community perceived these endeavors ambivalently, and lacking continuity in leadership and implementation, as well as necessary political, financial and information support, they ended up unsuccessfully or were suspended (Akanov 2005). Another underlying reason why the initial health reforms failed is in that they were missing a uniting comprehensive program at the national level, in which a holistic vision of the health system and strategic priority areas would be set out.

Only in 1998, following a Decree of the President “On priority measures on improving health status of the citizens of Kazakhstan”, the government has developed a state program “Health of the Nation” that defined main health reform areas for 1998-2008. This Program was in line with the WHO Health for All Strategy, divided in three phases, and outlined action plans under specific objectives. Although not fully implemented, together with the Concept of Further Health Care Development in Kazakhstan in 2000-2005, this Program established a direction and conceptual framework for further health sector reform and development.

Review and analysis of the health reform experiences of the 1990s led to the development of the National Program of Health Sector Reform and Development in the Republic of Kazakhstan for 2005-2010 that broke a new era of health sector development. The National Program has the goal of developing an “effective health delivery system based on the principles of joint responsibility of the state and the population for health protection, priority development of PHC aimed at improving the health status of the population” and the following objectives:

- Sharing the responsibility of the state and population for health protection;
- Transition to international principles of health care delivery shifting the focus to PHC;
- Creation of a new health management model supported by an integrated health information system;
- Strengthening maternal and child health;
- Sustainable reduction of socially significant diseases morbidity;
- Medical education system reform (Government of the Republic of Kazakhstan 2004c).

It has two phases: 2005-2007 and 2008-2010, for each of which it specifies concrete objectives. In short, Phase 1 can be identified as ‘rationalization and strengthening’, while Phase 2 can be called ‘reorganization and development’. PHC as the backbone of

the health system and inter-sectoral cooperation on health matters are emphasized throughout the document.

The National Program is a framework document that represents a platform for the development of more specific, intra-sectoral reforms, policies and programs.

TB has been identified as one of the priority areas, with a nation wide implementation of the WHO recommended DOTS strategy.

### **13.3 TB CONTROL SYSTEM**

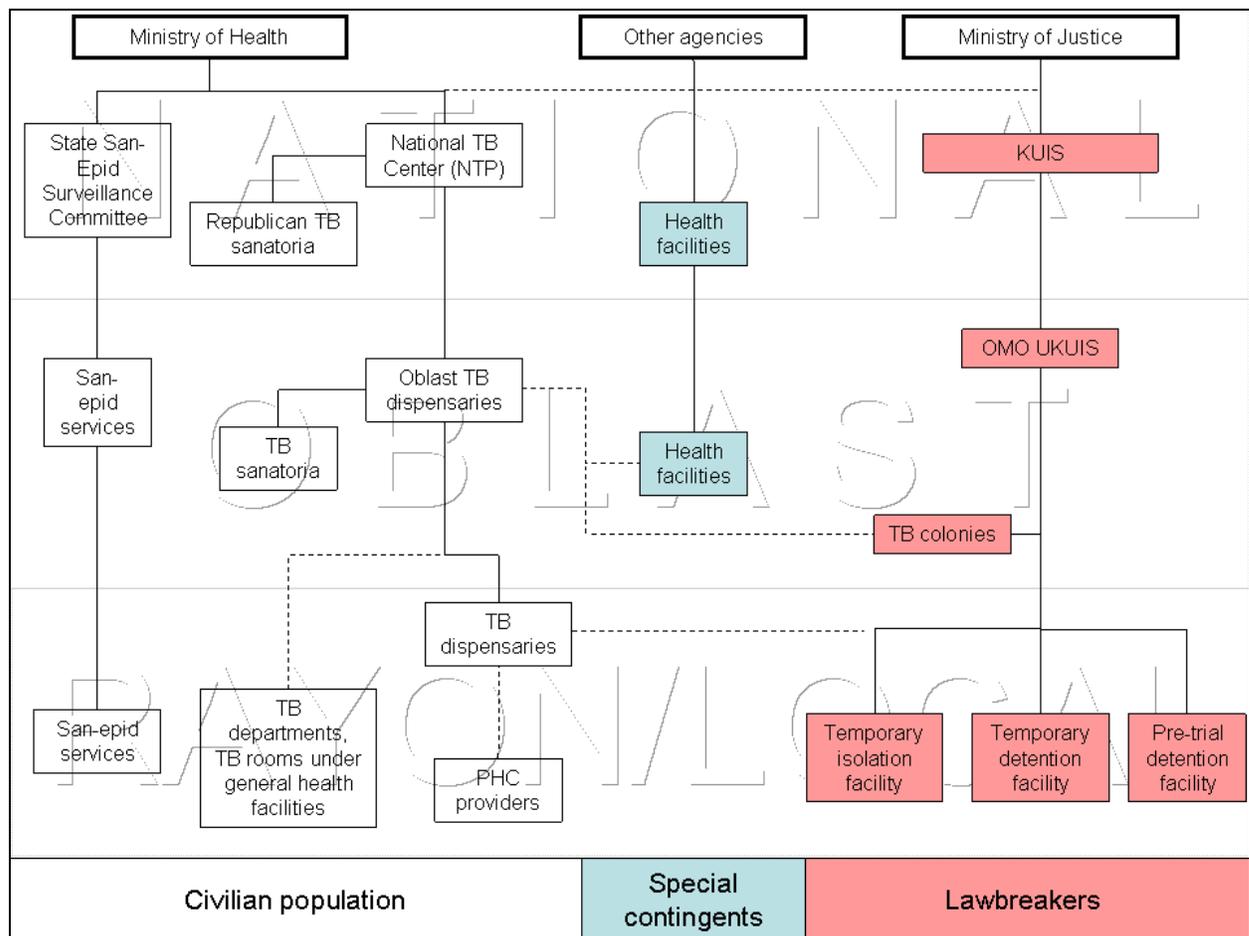
Under the MOH the TB services are organized as a vertical, specialized structure starting with the National TB Center (NTBC) and Republican TB sanatoria at the national level, Oblast TB dispensaries and TB sanatoria at oblast/city level, and Rayon TB dispensaries and TB hospitals at rayon/city level. TB departments under the CRH, TB rooms in outpatient facilities, and PHC represent the TB service in the general health facilities network. The TB services coordinate with the SES for services, like disinfection in so-called pockets of TB infection, i.e. home, study- or workplace of a newly detected TB source (men and animals) and contact tracing.

Parallel health services do not have specialized TB facilities, except for the MoJ Penal Execution Committee (KUIS) that manages the penitentiary system. The KUIS TB facilities include TB colonies (corrective colonies with TB hospitals or inpatient TB departments) and TB wards/cells within the medical departments of SIZO (pre-trial detention facility for people under investigation). Smaller penitentiary facilities, such as temporary isolation/detention facilities, have to rely on the closest TB dispensary or general health facility. The SES subdivision of KUIS has a role in infection control in the penitentiary facilities. Medical departments of the oblast KUIS departments (OMO KUIS) coordinate health matters in the penitentiary system.

The MoH TB services provide methodological guidance on TB control to all health providers, including KUIS and are the main implementers of the National TB Control Program (NTP). The NTBC Director is also the national NTP manager, while Deputy Directors are NTP coordinators responsible for laboratory services, drug management, and information systems. The NTBC is supposed to provide the overall guidance on TB control activities, as well as monitor and analyze the TB situation in the country.

At oblast level, the head of the Oblast TB dispensary is the oblast NTP manager, while deputy chief doctors are oblast TB coordinators on specific domains on TB control, such as laboratory services, drug management, and information systems. The Oblast TB dispensary is often the biggest health care facility that has outpatient and inpatient departments. It monitors the TB situation in the oblast and distributes TB drugs to lower level TB facilities and general health facilities.

**Figure 10. TB services structure**



At city/rayon level, the role of city/rayon NTP manager is vested in chief doctors of the CRH who must ensure proper TB detection and treatment in the general health facilities network. City/rayon TB dispensaries provide methodological guidance on TB control to the general health facilities. General health facilities have been recently staffed with a nurse called chemizator, who is responsible for the delivery of anti-TB drugs under direct observation to patients in the continuation phase of treatment. PHC deliver DOT at specially organized rooms for drugs intake, in some cases it is allowed to dispense drugs to patients living in remote areas. In this case DOT should be performed by a family member of a patient.

Private health providers do not have specialized TB facilities, yet they also participate in TB control. In accordance with MoH Orders, all health facilities irrespective of the form of ownership and administrative subordination must refer detected TB patients to specialized TB facilities.

NTBC is the highest available level of health care provision in the country and is responsible not only for scientific research, overall technical guidance of TB program, recording and reporting but also for provision of highly specialized care for severe cases and MDR-TB patients. Admission to NTBC is only on referral from oblast dispensaries, however, criteria for selection and referrals of patients are not clear.

Departments for delivery of DOTS Plus therapy are being opened at national and oblast levels beginning from 2001, and should have been established in all regions of the

country by now. However, treatment guidelines had been adopted only in 2003. According to key informants this prikaz needs further improvements in terms of its comprehensiveness, conciseness and concordance with internationally adopted practice. The need has been recognized and newly anticipated prikaz is to contain revised guidelines on MDR-TB. Nonetheless, given a short history of the country of dealing with MDR-TB and systems capacity, we strongly recommend thorough work on this matter with engagement internationally renowned experts in this field.

## 14 HEALTH CARE DELIVERY AND UTILIZATION

### 14.1 GENERAL SERVICE DELIVERY

Health care services are delivered through an extensive network of health care facilities, arranged in three levels; primary, secondary and tertiary. There are sometimes unclear boundaries in roles and scope of services delivered at each level, especially for PHC in relation to secondary care.

Primary health care is differently delivered in rural than in urban areas. In rural areas primary care is delivered through feldsher-obstetric posts (FAPs), rural physician ambulatories (SVAs), and rural district hospitals (SUBs). In urban areas primary health care is delivered at polyclinics, which may have specialized services for adolescents, women and children, while also secondary care is present at these facilities.

Secondary care in rural areas is provided by central rayon hospitals, more specialized and complex care by oblast hospitals. In urban areas secondary care is provided at the general and specialized hospitals. Tertiary care is provided by highly specialized national institutes.

The state guarantees its citizens a certain package of free health benefits in the public health facilities known as the SGBP, which is financed from the state budget. In 2006-07, the SGBP includes:

- emergency and sanitary aviation care to all population categories;
- outpatient care, including PHC, qualified and specialized health care (including hospital-replacing care);
- inpatient care, including highly specialized care.

Scope, types and conditions of health services delivery are legally defined (Government of the Republic of Kazakhstan 2005a; Правительство РК 1997). Under the SGBP, foreigners and persons without nationality are entitled to emergency care and health services for socially significant diseases. Health services beyond the SGBP are provided on a paid, usually fee-for-service, basis. Paid services are regulated by government rules (Government of the Republic of Kazakhstan 2006b).

### 14.2 TB SERVICES DELIVERY AND CAPACITY

The Law “On people’s health protection in the Republic of Kazakhstan”:

- classifies TB as a disease hazardous to other people in the neighborhood of a source of infection, which allows for special prevention measures and free-of-charge and privileged provision of medical-social care for and dispensary observation of persons with TB;
- obliges persons with TB to undergo examination and treatment upon requirement of health organizations; and stipulates for;
- free-of-charge hospitalization and TB drugs for TB patients, and special privileges established by legislation;
- compulsory hospitalization of patients that discharge *M.tuberculosis* , and priority provision of housing to such patients (Government of the Republic of Kazakhstan 1999).

TB patients that evade treatment fall under the provisions of the Law “On coercive treatment of people with contagious forms of tuberculosis”, which stipulates for their coercive treatment in specialized TB facilities until they stop discharging *M. tuberculosis*. The Law also provides for social benefits, such as retention of workplace, relating the period of treatment to the length of service, and assistance after treatment (Government of the Republic of Kazakhstan 1999).

TB health services are delivered through an extensive network of health organizations, such as PHC, TB hospitals and dispensaries, general health care facilities (TB departments in general hospitals and TB rooms at polyclinics), and SES, and HLSC.

**Table 8. TB control system capacity**

	1998	1999	2000	2001	2002	2003	2004	2005
TB Dispensaries	46	48	49	54	53	53	53	53
TB Hospitals	48	58	57	59	61	71	74	74
TB Sanatoria	30	30	30	32	32	32	32	32
TB Departments	42	42	N/A	47	46	35	28	28
TB Rooms	164	166	N/A	147	147	134	117	117
Total	330	344	136 <sup>2</sup>	339	339	325	304	304

The total number of TB care delivery points in general health care facilities had increased, but by 2002 started to decrease following the epidemic pattern. This was not the case for the TB dispensaries, hospitals and sanatoria. Compared to 1998 the number of TB hospitals has increased by more than 50 percent. This trend promises to be more accelerated based on findings from interviews and the Government Decree #1289, of December 2004, on the Realization of the Law on Republican Budget for 2005. This confirms our findings that the TB control system does not plan to transfer some of its functions to the PHC.

This might undermine the effectiveness of TB care delivery, by reducing physical access to health services and inefficient use of available resources.

Not only has the number of TB facilities increased, but also the number of available beds. Table 9 presents recent trends in changes of bed capacity.

**Table 9. Bed fund capacity<sup>3</sup>**

	1998	1999	2000	2001	2002	2003	2004	2005
1. Population (x 1000)	15,073	14,927	14,869	14,861	14,854	14,909	15,013	15,147
2. TB beds	13330	13350	13490	13522	13525	13977	14169	16900
3. TB beds, per 10000 population	8.8	8.9	9.1	9.1	9.1	9.4	9.4	11.2

<sup>2</sup> data are derived by triangulation of data from different sources

<sup>3</sup> data are derived by triangulation of data from different sources

4. TB beds, per 1000 notified cases	720.3	638.4	592.1	584.7	552.5	584.4	611.7	n/a
5. Notification rate, per 100000	136.8	167.3	173.8	176.5	185.4	180.7	176.5	n/a
6. Total number of new notified patients	18505	20912	22782	23126	24478	23918	23163	n/a
7. Total number of new and relapse cases	20623	24979	25843	26224	27546	26936	26493	n/a
8. ALOS (months): MoH & NTBC***	3.5	3.1	2.8	3.0	3.0	3.1	3.2	n/a
9. Patients per bed: MoH&NTBC**4	4.4	3.6	3.6	3.9	4.6	4.7	4.8	n/a

Notes: \* [Annex II. TB Bed Fund Capacity Scenario Planning](#)

Table 9 shows the same situation as with the TB facilities. Moreover, it presents us a situation, in which with increasing number of population the number of beds, per 10000, is increasing even faster, not taking into account real demand for beds. A correlation analysis of the number of beds and notification figures, across oblasts, revealed no relationship between increasing number of beds and decreasing number of new and relapse cases, with  $R=-0.57$  and  $P<0.01$

Kazakhstan reportedly has an excess of TB beds ( Godinho & Veen 2005;WB 2005). A calculation based on different lengths of hospitalization scenarios can be found in [Annex II. TB Bed Fund Capacity Scenario Planning](#). If WHO recommendations would be followed the number of beds could be halved. But even with the longest possible stay in hospital the overcapacity of beds is 31%.

However with an increase in MDRTB cases that need longer hospitalization the excess of beds is likely to be less. These beds have to be re-oriented though to specific MDR-TB wards.

The modeling exercise shows that the TB system uses increased funding to build extra capacity for the TB facilities. This results in an unnecessary costly infrastructure and inefficient use of funds. Considering that health systems resources are always scarce, one might suggest to redirect savings from needless investments to other aspects of TB control i.e. quality of care, incentivisation and remuneration of health care personnel.

### 14.3 HUMAN RESOURCES

TB health services are delivered by qualified, state employed, specialist TB doctors and PHC physicians. All these doctors are allowed to practice after completing graduate education with a specialization in TB. There is no formal system of licensing and

<sup>4</sup> (НЦПТ РК 2005;НЦПТ РК 2004;НЦПТ РК 2003;НЦПТ РК 2002;НЦПТ РК 2001;НЦПТ РК 2000;НЦПТ РК 1999)

accreditation in the country. All graduates are considered to be licensed and are allowed to practice. All specialists should advance their knowledge every five years, the post-graduate education or intensive courses are considered as accreditation of health care personnel by awarding categories which in turn results in increased pay.

It was not possible to obtain official norms regulating numbers of patients to be served by a TB specialist in a hospital and numbers of nurses per physician. We located a draft document (as of 2004) (МЗ РК 2004) with staffing norms, but it is not known if it has been approved. From various interviews we learned that the system uses former soviet norms, but we were not able to obtain this document.

It is recognized by the MoH and NTBC that these norms should be revised and amended, thus new TB prikaz is going to contain norms regulating workload per doctor and nurse doctor coefficients. Table 10 shows the availability of health care personnel involved in TB health services delivery.

**Table 10. Human resources for TB delivery**

	1998	1999	2000	2001	2002	2003	2004
TB specialists	1251	1318	1305	1346	1379	1436	1472
Number of new and relapse cases, per TB specialist	16	19	20	19	20	19	18
Number of general practitioners	2619	2584	2227	2234	1942	1818	1715
General practitioners, per 100,000	17.4	17.3	15.0	15.0	13.1	12.2	11.4
Number of new and relapse cases, per general practitioner	8	10	12	12	14	15	15

Source. (НЦПТ РК 2005;НЦПТ РК 2004;НЦПТ РК 2003;НЦПТ РК 2002;НЦПТ РК 2001;НЦПТ РК 2000;НЦПТ РК 1999)

The number of TB specialist in the system is increasing steadily (Table 10). However, this increase does not reflect changes in TB epidemiology. A simple test for the relationship between notified cases and the availability of TB physicians resulted in negative correlation coefficient of -0.36 ( $p < 0.001$ ), suggesting an inverse relationship between demand for and availability of TB doctors.

There are wide variations in the numbers of doctors across oblasts (Table 11). This means that the case rate per doctor is 10 in Karaganda, 11 in Almaty city, 12 in South-Kazakhstan and 13 in Astana city, while in North-Kazakhstan, Kyzyl-Orda and West-Kazakhstan the rates are 26, 24 and 23 cases per doctor, respectively. It is difficult to explain such variations in the number of doctors.

**Table 11. New and relapse cases, per TB doctor\*.**

	2000	2001	2002	2003	2004
Akmola	26	22	22	23	17
Aktyubinsk	25	20	24	23	16
Almaty	21	19	19	19	17

Atyrau	15	25	22	18	16
East-Kazakhstan	18	17	20	19	18
Jambyl	21	31	22	22	22
West-Kazakhstan	29	40	34	24	23
Kyzyl-Orda	22	21	22	21	24
Karaganda	15	14	17	17	10
Kostanay	25	27	28	24	20
Mangistau	28	29	25	23	21
Pavlodar	30	31	27	31	21
North-Kazakhstan	32	24	27	22	26
South-Kazakhstan	19	16	18	16	12
Astana	21	21	29	23	13
Almaty	13	12	12	11	11

Note: calculation was based on numbers of new and notified cases from NTBC statistics (НЦПТ РК 2005;НЦПТ РК 2004;НЦПТ РК 2003;НЦПТ РК 2002;НЦПТ РК 2001;НЦПТ РК 2000;НЦПТ РК 1999).

Paradoxically the number of GPs is declining despite the government policy of strengthening PHC. This results in a doubling of the average number of new and relapse TB patients per general practitioner, from 8 per GP in 1998 to 15 in 2004. This may prevent a successful integration of TB services into PHC, as PHC doctors complain about their increased workload.

#### 14.4 GENERATION OF HUMAN RESOURCES

Training of doctors is delivered through graduate and post graduate medical institutions offering training in 57 specialties. There are 6 government and 3 private high education medical institution, and 25 government and 16 private colleges. Training programs are developed and approved by MoH and MoEC.

To graduate students follow five year basic studies and then enter specialization course of a one year primary specialization to obtain a degree as a surgeon, therapist or gynecologist. In order to be recognized as a specialist and have a right for sole practice, a graduate should go through one year internship or two year residency.

The NTBC serves as a teaching institute for those specializing in TB. Each year only 6-7 students are recruited, despite an ever increasing demand. The majority of students are female, males specialize in TB surgery. Reasons that students do not want to enter phthisiatry are fear of the risk of infection, low prestige, low salaries and a difficult group of patients to work with.

Then doctors should advance their knowledge at a post graduate institute, or attestation, every five years. These advance trainings have been accounted for to obtain a certain category (or ranking) in medicine, which is directly linked to remuneration scheme and obtain certain posts, but not to doctor's rights to practice. This practice served as an incentive for doctors to obtain higher salaries or apply for a position. We learned that beginning this year (2006) those who do not pass the necessary trainings and examinations will not be attested (or licensed), and will not be allowed to practice. This is

a significant progress towards stimulating health care providers to upgrade their knowledge and increased competition among them.

With assistance of Project HOPE the TB control system has developed its own TB training network (or training centers) and quality cadre of trainers. There are now 11 training centers which are based at NTBC (1) oblast TB dispensaries (9) and KUIS in Karaganda (1).

The training centers do not have an official status. This has its implications:

1. because training programs are not officially recognized and thus courses are not considered to contribute to a postgraduate education, and
2. training centers are not financially supported from either republican or local levels.

These training centers deliver basic DOTS training, advanced DOTS training, and 'peculiarities of TB control' in prisons. Curricula for these trainings have been developed with assistance of Project HOPE, using its own and international expertise, and are fully compliant with WHO recommendations. These curricula have been successfully adapted and introduced at graduate education institutions; however, these curricula need to be constantly updated. Post-graduate institutes also revealed their high interest to adopt DOTS curricula.

Planning of human resources is done by the MoH that puts out tenders for training a certain number of students in a certain specialty each year. This approach ideally should create incentives for higher education institutions to deliver quality trainings using contemporary teaching methods and techniques. Only outstanding students are granted funds from the government, and those who do not get the government funding bear expenses themselves. It is unclear whether the number of new students is linked with current and future demand in defined specialties and whether those who pay themselves are accounted for also.

There is no system in place to track if graduates really start practicing and where. From what we learnt we conclude that a great number of graduates do not join the expected government health sector because of:

- More attractive benefits in the private health sector;
- Reorientation to a different specialty
- Changing sectors (private companies other sectors, private business practices);
- Getting married (females).

There are serious human resources problems:

1. The TB control system is confronted by aging of the existing work force. More than half of the currently employed doctors are at pre-retirement age or are already retired but continue practicing;
2. The system experiences difficulties in retaining the existing staff due to high-turnover and brain-drain (to other countries and sectors of the economy) caused by the low status of the TB specialty, low pay, and out-migration;
3. The system falls short in recruiting new staff to rural and remote areas of the country, due to lack of a sound system of remuneration and incentivisation of potential candidates;

4. Medical students do not want to specialize in TB, as the specialty is not prestigious, perceived as hazardous and not well paid;
5. Poor planning of Human Resources due to a lack of holistic vision and strategy of human resources development at the MoH.

In order to overcome these difficulties Kazakhstan should develop a human resources development strategy:

1. Revise the pay scale of TB personnel and introduce incentive schemes for staff to be relocated to rural and remote areas. For example, provide free accommodation, exemption from public utilities payments, increase rural and remote areas allowances.
2. Devise policies to attract qualified personnel from foreign countries.
3. Increase the status of the TB specialty by marketing the TB specialty as a vital one in saving lives of people, not dangerous to work in, well paid.
4. Introduce contract relationships with students pursuing studies financed by the government.
5. Develop and introduce high quality programs for professional development.

Some of these can be easily implemented without additional funds by efficient use of available resources, for instance diverting money going for construction of new hospitals, rehabilitation of facilities and increasing numbers of beds to better remuneration and incentivisation of health care personnel.

#### 14.5 SERVICE DELIVERY

The TB sub-system is the primary body responsible for implementation of TB control in the country, is clinically responsible for health services delivery at each level and provides technical guidance to lower level and not specialized health care delivery organizations.

Primary health care services have been delegated health promotion, primary and secondary prevention, case finding, screening, and treatment (only continuation phase) activities.

SES, as the main epidemic control institution in the country provides vaccines for mass vaccination, and plays a role to interrupt transmission. It is also responsible for health information, but there is little evidence that it is involved in these activities. The SES has been and still is perceived as a punishment agency, its mission inspecting activities of health care delivery organizations.

HLSC is a separate vertical structure responsible for health promotion and communication.

**Table 12. TB services delivery.**

TB services delivery	Provider	How
Health promotion	HLSC PHC TB system	Information dissemination and counseling

	SES	
Primary prevention – BCG and revaccination	SES Maternity house PHC	Vaccination of newborns and revaccination of children at the age of 6-7 and 11-12
Secondary prevention – contact tracing and chemoprophylaxis	SES TB system PHC	Disinfection, tuberculin diagnostics in children, X-ray, AFB microscopy, vaccination of children, chemoprophylactics
Case finding	PHC TB system	Active case finding through X-ray, fluorography, AFB microscopy, Mantoux (in children) Symptomatic
Screening	PHC TB system	Fluorography, Mantoux (in children)
Diagnosis	TB system	X-ray, fluorography, AFB microscopy, culture
Treatment	TB system PHC	Intensive and continuation phase
Rehabilitation	TB system Sanatoria Specialized sanatoria for children and failed cases	Continuation phase

### ***Health Communication and Promotion***

Four institutions are involved in Health Communication and Health Promotion: HLSC, PHC, NTBC and SES. All these institutions should promote health in the general community, for TB patients and risk groups. However, there are doubts about the effectiveness of their work.

Health communication/promotion activities for TB are limited to the so called “TB month”, which is dedicated to World TB day. During this month institutions organize old style lectures for communities at their dwelling or work places, talks on radio and TV, and disseminate limited amounts of printed materials. A National Conference is organized on this day. Sometimes more innovative approaches are used, like TV and radio shows with quizzes or school competitions.

All these activities lack coordination, continuity and impact assessment due to the absence of a strategic vision and a central coordinating body. Although, HLSC is the primary agency responsible for health communication and promotion in the country, it has not become strong and reputable enough to coordinate health marketing efforts. Moreover, it does not receive adequate financial support from the government to be able to generate and implement its own ideas and activities. In addition to it its technical

capacity the center may also not have the technical capacity for TB and it is very questionable if it is able to deliver technical advice and support to other organizations.

PHC, TB and SES staff have not been trained in health promotion activities, thus they lack the necessary technical skills. This contributes to an apparent lack of interest.

### **Prevention**

TB prevention can be divided into primary and secondary prevention. Primary prevention consists of BCG vaccination of infants at birth, performed at the maternity house and revaccination of 6-7 and 11-12 year old children. Vaccination campaigns are coordinated by SES, with centralized procurement and dissemination of vaccines, mass immunization periods and its own recording and reporting system.

Vaccination coverage, historically, has been around 100% of children under age one being vaccinated.

Secondary prevention focuses on contacts of sources of infection through contact tracing and chemo-prophylactics, disinfection of the nidus of infection. These activities are carried out by PHC, with centralized supply of vaccines by SES, and coordination by TB control system.

Prevention activities have been described in detail in regulatory documents.

### **Case Finding**

TB case finding can be 'active', i.e. the initiative is taken by the health services, or 'passive', i.e. the patients seeks medical care because of symptoms. Active case finding (screening) is regulated by prikaz and uses imaging techniques, like chest X-rays or fluorography, in adolescents and adults and tuberculin skin tests (Mantoux test) in children.

Longstanding international literature has proven that wide scale population based screening for TB is not effective and very costly (Toman 2004) but it can be a cost-effective intervention in well-defined risk groups. Although, Kazakhstan had declared AFB microscopy as a primary method for TB case finding, X-ray and fluorography prevail and are coupled with microscopy. Our discussions with key-informants proved this massive practice, and discovered that X-ray and fluorography are used as the primary methods and microscopy is performed just to follow the guidelines.

Each year Kazakhstan deploys massive screening practices using X-ray and fluorography. PHC and TB control systems are the primary care entities to implement it. Since 1998 the TB control system has been provided with hi-end technology mobile clinics with X-rays and tomographs, which travel to remote areas to perform screening.

Kazakhstan has defined its risk groups. There are around 20 categories of the population that should be screened every year (МЗ РК 2001). The total number of persons screened has steadily increased from 40% in 1998 to 52 % of the population in 2004, with some fluctuations in 1999 and 2000, casting doubt on the definition of risk groups.

The result of the screening practices is difficult to measure as symptomatic cases are also X-rayed and patients identified are included in the reported results. A recent study in Uzbekistan, where 73% of diagnosed cases was reported as a result of screening, showed that in reality it turned out to be 16% (Hasker & Khodjikhonov 2007).

A similar outcome can be expected for Kazakhstan. A total of 7,874,500 persons, or half the population, were reported as having been screened in 2004. Of the cases notified 11,812 (1.5%) were reported as diagnosed through screening. In reality, based on the Uzbek experience the output is more likely to be around 0.5%. Defining risk groups based on better epidemiological criteria will allow (considerable) cost savings.

Another aspect of screening practices is related to migration and official registration (*propiska*). A significant number of people from rural areas live and work in large cities without having been registered. Once identified as a TB patient they have to be notified and treated at the place of the official registration. It is unlikely that they will go for treatment to the place of their registration, at least for some time, thus continuing transmission of TB. And in case of treatment at the place of detection (mostly larger cities), the dispensaries are likely to run into shortages of drugs as these non-registered persons were not included in the drug quantification of the city/region. The MoH has declared its intention to change this practice and make diagnosis and treatment independent of the *propiska*.

### ***Diagnosis***

Persons with symptoms are supposed to visit the PHC first. If the PHC doctor/nurse suspects TB a sputum smear examination should be done. Suspects for TB should be referred to the TB specialist for diagnosis and treatment. Many patients however still go directly to the TB specialist in the policlinic or dispensary.

Kazakhstan had declared sputum smear microscopy as its primary tool for TB diagnosis, but chest X-rays and fluorography still prevail, although it is often followed by microscopy. Key-informants stated that X-ray and fluorography are used as the primary methods for diagnosis and microscopy is performed just to follow the guidelines.

### ***Treatment***

If TB is confirmed in a patient, he is usually hospitalized and initially treated in specialized TB facilities. After the intensive phase of treatment, usually 2-4 months, patients continue their treatment on an out-patient basis. Around 10-15% of patients stay in specialized facilities for the whole length of treatment. These patients come from socially deprived, alcohol and drug abused, shelterless groups of the society. This number may be much higher given the ALOS and bed occupancy rates.

TB specialists are inclined to keep their patients hospitalized longer than WHO recommends and choose individualized treatment regimens instead of standard regimens, arguing that the WHO recommended strategy is not effective in Kazakhstan. Usually patients stay for 5-6 months in hospital. This widely used practice is a driving force for TB managers to advocate for an increase in systems capacity. Money spent on this could be more effectively used elsewhere in the system.

The TB services and the MoH by keeping socially vulnerable patients hospitalized, take on a role of social protection. Tighter collaboration with the MoLSP that prefers not to recognize the problem, is needed.

NTBC also delivers highly specialized care for severe cases and MDR-TB patients. Admission to NTBC is only on referral from oblast dispensaries, however, criteria for selection and referrals of patients are not clear. Departments for delivery of DOTS Plus therapy are being opened at national and oblast levels beginning from 2001. However, treatment guidelines had been adopted only in 2003. According to key informants this

prikaz needs further improvements in terms of its comprehensiveness, conciseness and concordance with internationally adopted practice.

Continuation phase is delivered through a network of PHC facilities and chemizators, in some rural and remote areas without a health care facility. From what we learnt during our qualitative research and observations, there are great doubts about DOT during continuation phase of treatment, as pharmaceuticals giver doesn't bear full accountability for proper drug intake, patients do not feel self-responsibility, and sometimes due to forgetfulness as a human being.

Our inquiries into existing barriers to achieving better program outcomes uncovered some very interesting aspects, such as:

- Operational problems with continuity of care, particularly transfers of patients from specialized TB facilities to PHC for continuation phase. One of the underlying reasons for that is that existing roles and responsibilities are unclear.
- Adherence to treatment. Patients do not recognize severity of their health state and do not bear responsibility; often they do not reach their designated PHC facility, get lost, default and drop out from the treatment. Long distances to TB health care facilities present another barrier.

A lot of people from rural areas live and work in large cities. We discovered that official registration system and health care management style hinders access and undermines effectiveness of services delivery, because. Firstly, patients diagnosed with TB at the place of “unofficial” living do not get officially notified and treated at this place. No one from TB system, we talked with, would like to register patients in their official notification statistics, as they afraid to be punished for worsening statistics. Secondly, those who have been diagnosed are sent to a TB facility at their official registration place, resulting in patients not being notified and not reaching TB facilities to get treatment. However, those who are able and willing to pay, get their treatment at “unofficial” places.

### ***Rehabilitation***

Rehabilitation services in Kazakhstan are delivered in specialized TB sanatoriums. These facilities are somewhat different from regular TB dispensaries as patients tend to stay here longer because of debilitating disease. There are thirty two rehabilitation centers, two in each oblast on average, with total bed fund capacity of 4334 (Table 13).

**Table 13. Rehabilitation service capacity**

	1998	1999	2000	2001	2002	2003	2004	2005
TB sanatoriums	30	30	30	32	32	32	32	32
Bed fund	3950	4047	4152	4368	4523	4446	4334	4334

Source: Yearly statistical books (НЦПТ РК 2005;НЦПТ РК 2004;НЦПТ РК 2003;НЦПТ РК 2002;НЦПТ РК 2001;НЦПТ РК 2000;НЦПТ РК 1999).

First category adult patients and chronics can be admitted for a 4-months continuation phase of treatment to these facilities. All chronic cases automatically qualify for a continuation phase treatment in sanatoriums. It is not clear what the criteria are for the first category of patients to be referred to these sanatoriums.

Children can also be admitted to sanatoriums for the continuation phase of treatment. The duration is 3-4 months for first and second category patients and 2-3 months for third category patients. Here the criteria for admission are clearer as Prikaz #471 states

that children from socially vulnerable families should receive their continuation phase of treatment in sanatoriums.

The MoH plans to establish a network of somewhat different type of rehabilitation facilities (similar to leprosarium) with the purpose of isolating those patients with chronic TB and MDR TB.

It is very difficult, from what we have seen and heard, to differentiate between who should stay and for how long in a hospital and who should be referred to a sanatoriums. We uncovered that around 10% of patients are being kept in TB dispensaries for continuation phase. Above discussion on rehabilitative TB bed fund capacity and categories of patients qualifying for treatment on continuation phase in rehabilitation facilities contradicts with the earlier justification for keeping in TB dispensaries.

#### 14.6 LABORATORY NETWORK

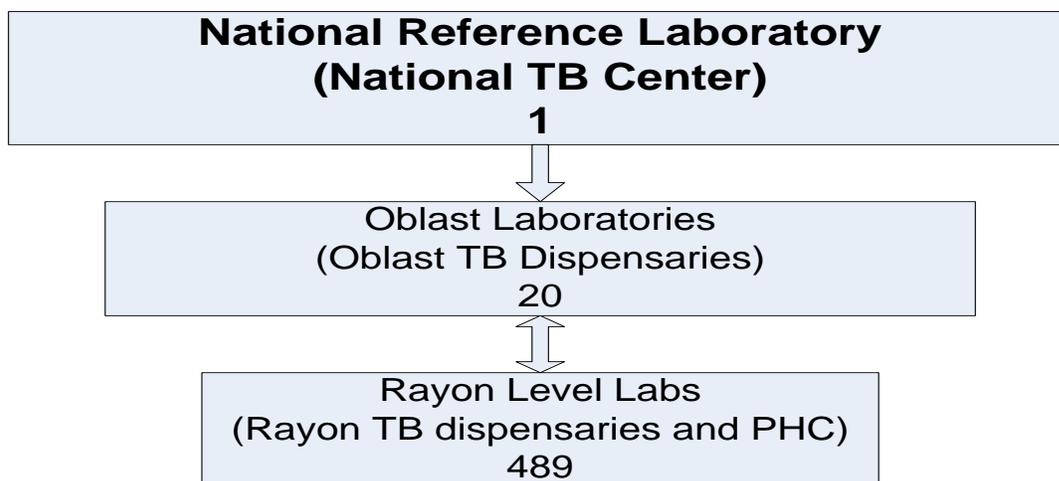
Throughout the country Kazakhstan has established a well defined laboratory network, capable of performing sputum smear microscopy, culture and drug susceptibility tests (DST). The network is organized in three levels: rayon, oblast and national Figure 10.

There are 489 rayon level laboratories, including laboratories of the rayon TB dispensaries and PHC. These lowest level laboratories provide smear microscopy services, although some laboratories (39) can also perform culture.

There are 20 Oblast laboratories, located at the Oblast TB dispensaries. These perform the same diagnostic procedures (smear, culture and DST) as the National Reference Laboratory (NRL) and are involved in quality control, monitoring and training.

The highest level is the National Reference Laboratory at the NTBC. This laboratory performs smear, culture, DST for first and second line drugs. It has a leading role is establishing the laboratory network in the country, upgrading the level of TB laboratory service, monitoring and supervision, and training.

**Figure 10. Laboratory Network Structure.**



These 510 laboratories (3.4 per 100,000 population) exceed the WHO recommended one laboratory per 100000 population. Such deviation can be explained by geographical characteristics of Kazakhstan, but at some places 2 or 3 laboratories in one location can be found. This means that the laboratory network can be further rationalized, which is an objective within the National Health Reforms framework. The structure of the network

enables effective coordination, governance, monitoring and training of lower level laboratories by the higher level laboratories, but obstacles for better performance still remain and there is a room for improvement.

Even though all laboratories have microscopes, there is a need to upgrade from monocular to binocular ones.

It has been reported that to maintain proficiency a number of PHC laboratories do not meet the required standard of 25 tests per week. Careful analysis will contribute to further rationalization.

Smear positive cases diagnosed at PHC laboratories are confirmed at TB dispensaries. From an economists point of view this double checking increases the number of smear examinations, resulting in an inefficient use of resources. More problematic is the double reporting of smear positivity by laboratories causing discrepancies between the dispensary and laboratory reports (Joncevskaja 2004).

#### **14.7 DRUG MANAGEMENT**

Uninterrupted supply with a complete set of high quality drugs is an essential condition for effectiveness of a National TB Program. Meaning that anti-TB drugs should be available 365 days a year in all health facilities involved in treatment of patients.

Interruptions in drug supply of NTP cause treatment failures, development of MDR TB resulting in increased TB burden and financial expenses on this program.

Beginning from 2007 centralized tendering of TB drugs procurement was decentralized. Before then, procurement was done through a centralized tendering process, conducted by the MoH at the national level, but paid for by Oblast Health Departments (OHD) through earmarked transfers from the Republican budget.

Until 2005, the KUIS TB facilities procured anti-TB drugs through the MoH tendering process. Under the new Budget Code though, the MoJ has to purchase the drugs independently, which necessitates a parallel tendering process at the national level and building MoJ drug management capacity.

##### ***Selection of Pharmaceuticals***

Anti-TB drug included into the essential drug list of the Republic of Kazakhstan (Приказы МЗ РК от 7.12.2004 №854, от 22.12.2004 №883, от 23.12.2005 № 636) fully comply with the latest WHO recommendations (WHO Model list, 14th Edition, March 2005). The list includes mono-component and fixed-dose (two, three, four component) first line drugs, including pediatric doses. Second line drugs are also included in the list.

Selection of Anti-TB drugs is performed in accordance with standard treatment guidelines (Приказ МЗ РК от 18.05.2001 №471) which are based on the WHO recommended module of 1994, except for a duration of an intensive phase for first and second category patients. However, these treatment guidelines do not reflect latest WHO recommendation on the use of fixed-dose three and four component anti-TB drugs.

According to the Drug Law of the Republic of Kazakhstan (№522 от 13.01.2004) only drugs registered in the country could be used in a medical practice. The number of anti-TB drugs registered in KZ is sufficient to undertake proper selection process. However, the number of manufacturers possessing GMP (Good Manufacturing Practice) certificate, i.e. satisfying conditions of a good manufacturing practice, is rather limited. As of March 2007, only seven out of forty one (37 mono-component and 4 fixed-dose)

first line medicines had been produced according to GMP, at the same time only ten out of thirty eight second line drugs, registered in KZ, had had GMP certificate.

Pediatric fixed-dose combination pharmaceuticals are not registered in the country.

Anti-TB drugs in blister packages are rarely used; container packs with 1000 pills are widely used instead.

**Recommendations:**

- Bring current standard TB treatment guidelines to conformity with the latest WHO recommendations;
- Give preference to fixed-dose combination drugs (2, 3, 4 FDCs). Use of this pharmaceuticals will decrease a risk of mono therapy and reduce a risk of anti-TB drugs usage for treatment of other illnesses.
- Conduct selection of medicines taking pediatric formulations into account. This will reduce errors during chemotherapy in children.
- Give preference to blister packed drugs. They lighten drugs dispense process, reduce mistakes, and assure hygienic use of medicines.
- Make efforts to attract high quality drugs producers, including producers of FDCs, to KZ pharmaceuticals market.

**Procurement of Pharmaceuticals**

Procurement of pharmaceuticals is a complex multistage process, involving different organizations, ministries and producers of medicines.

In accordance to a new Budget Code, the Ministry of health has moved to a decentralized procurement of anti-TB drugs. Loss of economy of scale and lack of managed quality control of procured medicines may lead to procurement of cheaper and lower quality drugs, thus exacerbating TB situation in Kazakhstan.

Different drugs procurement and distribution systems have their own advantages and disadvantages. Below table gives a comparative analysis of centralized and decentralized drugs procurement for Kazakhstan, taking current context into account.

**Table 14. Analysis of centralized vs. decentralized tendering**

<b>Tendering level</b>	<b>A number of potential vendors</b>	<b>Quality</b>	<b>Price</b>	<b>Personnel capacity</b>	<b>Information on pharmaceuticals market</b>
<b>National Level - Centralized</b>	Sufficient for competitive bidding	A risk of procurement of poor quality drugs is lower	Acceptable	High	Available and rich
<b>Oblast Level – Decentralized</b>	Limited number of vendors or not available	A risk of procurement of poor quality drugs is higher	High	Lower than at National level	Limited

Decentralization of some elements of procurement cycle, tendering process in particular, in a situation of unpreparedness at oblast level, may lead to interruptions in drugs

supply, increased cost on drugs and procurement of poor quality medicines. Effecting economic and clinical effectiveness of the National Program.

In such a ways, procurement of anti-TB drugs by tendering at the national level satisfies program needs the most, provided that the country does not procure pharmaceuticals from international not-for-profit sources such as, Global Drug Facility and Green Light Committee.

TB facilities and general health facilities estimate the number and category of TB patients for the next year, based on the data from previous years, using a methodology established by the MoH order №148 from 21.02.2003. This order contains around 20 spreadsheets, but provides limited explanations to them making it very difficult to conduct quantification.

Availability of sufficient TB drugs stock in health care facilities of oblast and rayon level is stated in the order №471. However, no document contains guidance on how to calculate buffer stock for each level.

Once estimates of health facilities received, the oblast TB dispensary aggregates these projections with its own projected needs and sends these data to the OHD.

### ***Recommendations***

- Develop guidelines on needs quantification;
- Define levels of buffer stock at each level (oblast, rayon, PHC). Take into account quantity of drugs for a complete course of treatment and buffer stock of not less than 6 months for oblast level;
- Reinforce control on information being submitted to the National Center of Expertise of Pharmaceuticals, Medical supplies and technologies about adverse reactions for anti-TB drugs, cases of defective goods (non-compliance with legal documents) etc. Establish feedback system of the National Center of Expertise of Pharmaceuticals, Medical supplies and technologies with NTP and OHDs.

### ***Distribution and Logistic Management Information System***

Distribution and logistic management information system is regulated by MoH order №202 as of 12.03.2003 «On enactment of rules on needs assessment, distribution and keeping of books of drugs procured centrally at the republican budget expense».

The tender winner is contracted to supply anti-TB drugs to the oblast TB dispensaries, which channel these drugs down to the lower level TB and general health facilities.

Distribution of anti-TB drugs is done by the department of treatment and prophylaxis' specialists, taking into account a number of patients, analysis of requests from HDs, and remainders of drugs at applicants disposal.

TB drugs delivered to medical facilities are registered in pharmaceuticals log book approved by MoH order №202. This form allows obtaining data end of the month remainders of drugs. It is not possible to obtain day to day remainders of stocks.

Medical facilities submit anti-TB drug use report on regular basis (month, quarter, half a year, and year). Existing logistic management information system is quite effective. It allows having reliable data on buffer stock and average monthly drug use. However, some facts exist about incorrect running of recording and reporting documentation in general health facilities and/or use of not standard recording and reporting forms.

Anti-TB drugs are stored in proper facilities. However, in general healthcare facilities there were some cases of storing drugs in non original packages and without appropriate markings.

### **Recommendations**

- Standardize anti TB-drugs recording and reporting documentation, which should improve needs quantification and distribution processes;
- Create conditions for proper anti-TB drugs storage in general health care facilities, i.e. original packaging, appropriate marking. This will considerably decrease possible mistakes during drugs dispensing.

### **Drug Use**

Rational drug use is a cornerstone for NTP effectiveness. Availability of standard treatment regimens of chemotherapy is vital for the rational drug use in the framework of NTP. Treatment regimens outlined in existing legislative documents (M3 PK № 471) are not standard. There are no precise directions for the prolongation of intensive phase and the use of daily or intermitting regimen on continuation phase, resulting in the use of different treatment regimens by different providers, and utilization of X-ray slides as a basis a regimen choice.

Moreover, legislative documents do not provide clear guidelines regarding chronic cases. As a result these patients receive drugs as second category patient. Every year quantification of drugs for these patients is done as for the second category, and treatment regimens are empirical.

Existing treatment regimens do not put emphasis on FDSs, resulting in intake of 12 tablets during intensive phase. The use of mono component medicines primarily, bear negative medical consequences, i.e. development of drug resistant forms.

### **Recommendations**

- Develop and establish rational drug use monitoring and assessment system at facilities level, using indicators for the following elements: diagnosis, prescription, proper treatment and adherence to treatment;
- Define guidelines for treatment of chronic TB;
- Train TB specialists, doctors of general health care and midlevel staff in appropriate practice of rational drug use.

To ensure effectiveness of NTP all the above mentioned functions of drug management cycle should work properly. As international practice shows, this cycle functions the most effectively with centralized drug supply system of vertical health programs.

Inefficiencies of national policies related to drug procurement, imperfection of regulatory framework and existing structures may hinder from effective redesign of drug procurement system in accordance with changes in pharmaceutical market. In order to get a better picture, an analysis of legislative framework is provided below.

TB pharmaceuticals are not included into the list of centrally procured drugs financed by the state budget. They are included into the Free State Guaranteed Benefits Package and are financed from oblasts and cities level budgets and from direct transfers from the republican budget. Thus local authorities are responsible for procurement of TB drugs, and according to the State Procurement Law, the authorized agency (MOH) can not procure and/or act as a central organizer of a bidding process.

Health protection of the citizens of the Kazakhstan is integral part of obligations of the government of the Republic of Kazakhstan to citizens, and is regulated by the Constitution of the Republic of Kazakhstan, Health Protection Law (Правительство РК 1997) and Law on Health System (Правительство РК 2006а).

These regulatory documents guarantee accessibility, continuity, equity, quality of health care services to its citizens, and social protection. Moreover, they secure provision of Free State Guaranteed Benefit Package and supplying by pharmaceuticals and medical and hygienic technologies.

The Government develops unified state policy to protect health of the population and strategies for health system development. Approves and finances targeted (categorical) programs in health system, medical science, and medical and pharmaceutical education.

The MOH implements unified state policy, ensures interagency cooperation in order to implement governmental targeted programs, promotes and supports investments in assets and provision of pharmaceuticals to health delivery organizations and population.

TB is regarded as a socially significant disease, representing a danger to the population, and the provision of therapeutic and social services, and follow up (dispensary observation) is free of charge and on concessionary terms. Types and volumes of services are regulated by authorized government agency (MOH) (Правительство РК 1997). Provision of TB services and pharmaceuticals is included into Free State Guaranteed Benefit Package.

The above mentioned laws are a basis for drug procurement in the republic of Kazakhstan. Specifically:

The Government:

- Introduces orders of provision of state organizations with medical equipment, medical technologies, and pharmaceuticals procured centrally in expense of the republican budget (Правительство РК 2006а)
- Authorized agency (MOH):
- Develops regulations for provision of medical services and pharmaceuticals (Правительство РК 2006а). Moreover, organizes provision of medical services and supply with pharmaceuticals, and medical technologies in emergency situations (Правительство РК 2006а)

At the same time Local government and health authority:

- Approve health care budget, share of funds for health care delivery and medical education;
- Ensure implementation of national programs;
- Protect rights of the population for Free State Guaranteed Benefit Package;
- Provide with free health care, pharmaceuticals and medical technologies in emergency situations (Правительство РК 2006а).

Thus it is not clear who is responsible for procurement of pharmaceuticals for socially significant diseases.

However, the budget code (Правительство РК 2004а) clearly distributes possible expenses among levels of budgets. Chapter 8 states:

- Republican Budget covers expenses for:
  - organization of centralized state procurements;
  - maintenance of criminal suspects and accused;
  - prevention and elimination of emergency situations of global or regional scale (TB could be meant);
  - counteraction to extremely dangerous infections (TB could be meant);
  - activities to protect health of the population, other than expenses covered by local budgets;
  - official transfers to oblasts, cities of the republican level, and the capital.
- Oblasts and cities finance:
  - Provision with Free State Guaranteed Benefit Package, other than those financed by the republican level;
  - Procurement of vaccines, immunobiological and other pharmaceuticals in accordance with state laws.

Interference of budgets with each other is not allowed. Assignment of expenses and receipts from one level to the other could be done by amending the Budget Code.

Hence, the authorized agency (MOH) can not centrally procure pharmaceuticals unless it is designated by the Government as an administrator of a budget program, or the government includes TB drugs into the list of centrally procured drugs.

Consequently, if the government adopts a National TB Program and assigns means for its implementation the ministry of health can easily procure pharmaceuticals for its subordinate health care organizations centrally. In this case the administrator of a budget program can use these funds to achieve aims and objectives of a program. Moreover, State Procurement Law and Regulation on provision of state health care organization with medical equipment, technologies and pharmaceuticals, procured centrally in expense of the republican budget (Правительство РК 2004с) state that an administrator of a budget program can act as an organizer of a centralized bidding process for subordinate health care organizations.

At the same time, State Procurement Law (Правительство РК 2002) states that; - in order to reduce budget expenses and in case of need to procure homogeneous products, works and services by several orderers, other than state organizations subordinate to government agencies, could implement a unified bidding process for procurement of products, works and services. The organizer of the process is determined by the government of the Republic of Kazakhstan. Accordingly, the MOH can act as an organizer of a bidding process for health care organizations.

Recommendations:

- Adopt National TB Program with allocation of the republican budget, or;
- Include TB drugs into the list of centrally procured drugs of Chapter 8 of the Budget Code (Правительство РК 2004b), or;
- Declare TB as an emergency of a regional level, or;

- Amend the State Procurement Law, specifically taking away phrases like: “other than state organizations subordinate to government agencies” throughout the Code (Правительство РК 2004а).

**NOTES:**

It is also possible to procure drugs from one source (GDF) if TB is declared an emergency (Правительство РК 2002) or, if TB drugs are considered as important and strategic.

## 15 HEALTH CARE AND TB FINANCING

The health care system of Kazakhstan is financed from government revenues and formal user-fees primarily. Government budget is formed from payroll tax, and covers guaranteed benefits package expenditures. User fees for not inclusive services became an additional source of funding for health care organizations and were institutionalized in 1995.

Thanks to the rapid economic development and growing public revenues, the government of Kazakhstan has been able to significantly increase health care spending. Between 1999 and 2005, public health care expenditures have grown 4.6 times in nominal terms, 3 times in real terms, or from 2.2% to 2.8% as percentage of GDP (Table 15). The proportion of public expenditures in total (public + household) health care spending has increased from 76.5% in 1999 to 79.1% in 2004, which suggests increased commitment of the state to financial protection of its population from health-related expenditures. Increased proportions of health care expenditures in the total government spending, Republican budget, and local budgets are also evidence of a growing priority of health care on the state agenda.

Although the health system is mainly financed from government sources, there are also substantial but unknown private payments and donor assistance. In addition to official user fees, the public is known to contribute informally for drugs, food etc., and also under-the-table to health care providers. Private health insurance is also allowed in Kazakhstan, however, very little known about the numbers of insured people and their health expenditure. External sources of funding such as donor assistance include large number of projects, financed by the WB, WHO, USAID, DFID, ADB, KfW, UN; however, it is also difficult to estimate real investments as there is no system to track these funds. The WB attempt to calculate external aid revealed more than two million USD going only to TB in 2005.

**Table 15. Health care expenditures**

	1999	2000	2001	2002	2003	2004	2005
Health care spending, in million tenge							
Government	44,825	54,323	62,322	71,120	93,216	136,298	206,599
Household	13,749	18,872	21,426	25,201	30,027	35,986	n/a
Health care spending, in % of GDP	2.2%	2.1%	1.9%	1.9%	2.0%	2.3%	2.8%
Per capita, in tenge							
Government	3,003	3,650	4,194	4,786	6,252	9,079	13,705
Household	921	1,268	1,442	1,696	2,014	2,397	n/a
Health care spending in real terms (1998=100)							
Health care spending, in mln. tenge	49,723	56,590	60,853	65,656	78,658	103,054	n/a
Government	38,052	41,999	45,285	48,478	59,494	81,528	114,958
Household	11,672	14,591	15,568	17,178	19,164	21,525	n/a

Govnmt, as % of total	76.5%	74.2%	74.4%	73.8%	75.6%	79.1%	n/a
Per capita, in tenge	3,331	3,802	4,096	4,419	5,276	6,864	n/a
Government	2,549	2,822	3,048	3,263	3,990	5,431	7,626
Household	782	980	1,048	1,156	1,285	1,434	n/a

Source: (SARK 2005;SARK 2003).

Note: 1) Household health care spending is calculated based on original per capita spending data. 2) Real spending is calculated in the prices of 1998 based on consumer price indices.

Although the health system is mainly financed from government sources, there are also substantial but unknown private payments and donor assistance. In addition to official user fees, the public is known to contribute informally for drugs, food etc., and also under-the table to health care providers. Private health insurance is also allowed in Kazakhstan, however, very little known about the numbers of insured people and their health expenditure. External sources of funding such as donor assistance include large number of projects, financed by the WB, WHO, USAID, DFID, ADB, KfW, UN; however, it is also difficult to estimate real investments as there is no system to track these funds. The WB attempt to calculate external aid revealed more than two million USD going only to TB in 2005 (Godinho & Veen 2005).

**Table 16. Health care expenditures (republican/local budgets)**

	1999	2000	2001	2002	2003	2004	2005
Health care spending, in mln. tenge	44,825	54,323	62,322	71,120	93,216	136,298	206,599
Republican budget	8,573	7,598	13,892	12,018	19,105	29,224	56,283
Local budget	36,252	46,725	48,430	59,102	74,111	107,074	150,316
Health care, as % of total government spending	9.6%	9.0%	8.2%	8.5%	8.7%	10.3%	n/a
Health care, as % of the Republican budget	n/a	1.9%	2.8%	2.1%	2.5%	2.9%	3.7%
Health care, as % of local budgets	n/a	15.4%	12.3%	15.0%	15.4%	17.2%	19.2%

Source: (M3 PK 2005;M3 PK 2006;SARK 2005)

There is increased level of health care financing and improved overall equity of financing across oblasts – the variation in per capita health expenditures from the local budget has been reduced. If in 2000 the ratio of per capita health expenditures of the biggest and smallest per capita spending oblasts was 7.3, in 2005 it was already 2.1 (Table 17).

**Table 17. Per capita health care expenditures from the local budget**

	2000	2001	2002	2003	2004	2005
Local budget, in tenge	3139	3259	3977	4971	7132	9971
Akmola	3460	3828	4968	6207	8653	11282
Aktyubinsk	2654	3137	3298	4084	7001	9587

Almaty oblast	1389	1541	2315	2724	4915	6786
Almaty	3623	4251	4688	5851	7329	10748
Astana	3794	3645	4496	6038	9251	14190
Atyrau	10100	4701	5036	8124	8552	10839
Jambyl	2000	2459	2943	4962	6175	8822
Karaganda	3022	3075	3738	4464	7182	9941
Kostanai	2455	3044	4036	4576	6377	9534
Kyzyl-Orda	4683	5843	5760	6961	9548	12768
Mangistau	7759	7065	8355	8011	10500	14087
Pavlodar	2830	3617	4780	5476	8575	11337
North-Kazakhstan	2782	3085	3869	4698	7877	11434
East-Kazakhstan	3305	3523	4164	5248	7368	9928
South-Kazakhstan	2391	2135	2859	3424	5497	8061
West-Kazakhstan	3503	4271	5707	7760	8779	12297

Data on household expenditures for health care, collected by the Statistics Agency of Kazakhstan through annual nation-wide household surveys, includes information on per capita household spending on drugs and health care services. It shows that between 1999 and 2004, household health care spending has also grown 2.6 times in nominal terms, or 1.8 times in real terms (Table 18). Over two thirds of household health spending is on drugs (

Table 18). Overall, health care brings a significant financial burden on the poor – 65.8% of poor households that manage to save use their savings for treatment (Table 19).

**Table 18. Household health care expenditures**

	1999	2000	2001	2002	2003	2004
Household health care spending, in mln. tenge	13,749	18,872	21,426	25,201	30,027	35,986
drugs	9,136	12,041	14,338	17,400	20,634	24,306
health care services	4,613	6,832	7,087	7,801	9,393	11,680
drugs, as % of total	66.4%	63.8%	66.9%	69.0%	68.7%	67.5%
Household per capita spending on drugs, in tenge	612	809	965	1171	1384	1619
urban	740	1027	1249	1526	1766	2070
rural	371	532	629	748	916	1059
Household per capita spending on health care services, in tenge	309	459	477	525	630	778

urban	403	610	672	743	900	1100
rural	133	262	245	264	299	378

Source: (SARK 2003).

**Table 19. Health-related deprivations of the poor**

	Total	Urban	Rural
Self-referral to the poor (subjective poverty), in %	44.7	41.6	49.8
Within these had deprivations, in %:			
No money for essential drugs	42.7	47.4	36.0
Cannot pay for a paid doctor's admission	64.2	71.9	53.4
Use of savings for treatment, % of those who saved	65.8	68.0	60.1

Source: (SARK 2003).

Household health expenditure data suggests that there are considerable differences in health care utilization between urban and rural population. Thus, urban population spends two times more money per capita on drugs and three times more on health care services, compared to rural population. In addition, urban poor report higher levels of health-related deprivations than rural poor. The determinants of these urban/rural variations have important implications for health policy. However, they require a special study and go beyond the scope of this report.

Health care funds are pooled at the national and local levels. The national fund allocates money for centralized procurement of certain drugs, including vaccines; equipment and construction; republican programs; and republican level facilities, including higher and continuous medical education. Local budgets finance health care facilities at sub-national level.

An important change in health financing occurred in 2005, following the adoption of the new Budget Code. Under the new budgetary arrangements, the responsibility for health financing is transferred to the oblast level. Health care funds are pooled at oblast level, and allocation decisions are at the discretion of the OHDs. Since then procurement of drugs is also the responsibility of the OHDs.

Kazakhstan has two purchasers of health care services under this arrangement: the OHD and OFD. The OHD is responsible for purchasing health services from state enterprises based on competitive state orders (goszakaz), while the OFD procures services from state institutions.

Provider payment systems are different for health facilities, depending on their organizational form. Health facilities organized as state enterprises are financed based on competitive state orders and paid on per capita (PHC) and DRGs (general profile hospitals) basis and historical capacity based financing (specialized services). Health facilities organized as state institutions are financed based on capacity.

The latter capacity based and previous year's financing (based on budget line-items) resource allocation mechanism creates little incentives to use resources efficiently. More over funds can not be transferred across line-items and savings can not be retained.

TB control system is financed from the Republican and local budgets as shown in Table 20. The republican budget covers targeted transfers, capital investments, procurement of drugs, whilst the local budget pays for all costs of running TB system in an oblast.

**Table 20. TB control public financing**

Republican budget	NTBC Centralized procurement of high-technology and standard equipment Capital investments Training and retraining of TB specialists TB research
Local budget	Remuneration health care personnel Procurement of TB drugs Maintenance of TB facilities Drugs and supplies Meals Current repairs/renovation of the physical plant

The size of the local budget varies across oblasts and depends on the prosperity of an oblast. Godinho et. al. suggest that per capita financing across oblasts in 2001, ranged from 68.2 USD in Atyrau oblast to 9.4 USD in Almaty oblast (Godinho & Veen 2005).

Such variations cause serious concerns about equity of TB health care financing in Kazakhstan.

Unfortunately, we were not able to obtain official data on TB financing for the whole republic, despite several official requests to the MoH. Data from Almaty oblast health department of 2005 suggest that TB health services constitutes only 5% of the total oblast health expenditure, while PHC and inpatient care (excluding TB) consumed 21% and 31% of funds.

**Table 21. Almaty oblast health care expenditure breakdown.**

	2003	2004	2005
PHC	26.0%	18.9%	21.2%
Hospitals	32.5%	25.8%	31.2%
Other specialized hospitals	7.7%	8.9%	7.8%
TB	7.7%	6.2%	5.2%
HLSC	0.1%	0.1%	0.1%
AIDS	0.6%	0.4%	0.3%
SES	4.0%	n/a	n/a
Construction/overhaul	9.7%	11.8%	6.1%
Ambulance	0.7%	0.5%	0.5%

Centralized drug procurement	0.5%	11.9%	5.3%
Centralized equipment procurement	2.2%	7.0%	14.7%
Medical colleges	0.6%	0.4%	0.4%
Admin	1.7%	0.3%	0.4%
Other	6.0%	7.9%	6.8%

Source: Almaty oblast finance department

The TB system budget is increasing year by year in real terms; however it has decreased almost 3 times as a share of total health care spending compared to 2001. Such trend is explained by government's attempts to increase allocative efficiency of health care services by directing of additional funds to PHC in the framework of health care reforms and heavy capital investments and procurement of equipment. This situation suggests that TB control program managers have to think about possible ways of achieving better program results with the resources available or improving the technical efficiency of the program.

Major expenditures borne by the TB system are remuneration with taxation (55%), drugs and supplies (16%), and meals (15%).

**Table 22. Almaty Oblast TB Health Expenditure, real spending in mln tenge**

	1998	1999	2000	2001	2002	2003	2004	2005	2006
Health care	2672	1992	2083	1554	2974	3619	3859	9983	12156
TB BUDGET	140	187	242	216	266	327	242	462	609
Salary	60	65	77	89	124	145	114	247	280
Social contributions	18	14	18	19	24	28	20	43	53
Meals	29	27	36	38	59	68	37	83	91
Drugs and supplies	7	10	10	7	14	26	40	26	99
Equipment and other purchases	3	6	10	7	15	22	8	19	27
Utilities	17	17	35	20	21	24	15	25	31
Other expenses	2	0	2	0,1	0,2	0,6	0,2	2	2,2
Capital investment and overhaul	3	47	54	32	0	0	0	0	3

Source: Almaty oblast finance department

The Republican budget finances the NTBC. Increased funding of NTBC is used for modernization of its infrastructure (i.e. new equipment, laboratory services, and overhaul/renovations), and increased salaries of health personnel.

Allocation of resources to TB institutions is based on historical financing and developed capacity i.e. number of beds, bed-days, number of employed personnel etc., with subdivision by line-items or chapters and adjustments for inflation.

The line-item allocation allows limited or no flexibility to redistribution of resources between items. Health care managers have to invest a lot of efforts and time into

bureaucratic procedures before money from one item is approved to be directed to another item. Usually this takes up to 3 weeks.

In general, the system is designed in such a way that no possible saving could be achieved, as money left at the end of the year is pooled back to the oblast level health care budget, and health care managers are punished for under-spending, and sometimes budgetary cuts for next year could be introduced. This creates perverse incentives to use all available funds without paying close attention to efficiency.

Present resources allocation mechanisms create strong incentives to increase the capacity and keep patients hospitalized for long periods of time. The perceived fear of losing control over funding explains the recent tendency of constructing new hospitals, increasing the number of beds, procurement of hi-tech equipment and opposition to the integration of TB services into the PHC.

One possible way to overcome this obstacle is to finance TB institutions based on global budgeting (chapterless financing) and allow health care facilities to retain savings. This will improve operational effectiveness and efficiency, increase health care managers' responsibility for cost-effective health care delivery, while savings could be used for remuneration of staff or other purposes. Budget formation, bookkeeping and reporting could stay without changes.

Cost effectiveness of some expenditure casts doubt. Currently, considerable funds are invested in the construction of new TB facilities: both TB hospitals and sanatoria, whose necessity is not substantiated by projections of future hospitalization or rehabilitation needs (at least none were presented to the team during fieldwork). For instance, in the last three years, about 25 new TB facilities/buildings for TB control have been constructed in Kazakhstan with a total of 1,330 beds. Allocations from the Republican budget in the form of targeted transfers to local budgets totaled 1,716,330 and 4,006,730 thousand tenge in 2004 and 2005 respectively, or 42.7% and 44.4% of total MoH transfers to local budgets for construction and re-construction of health care facilities. At the same time, it is clear that once constructed, these new facilities will levy extra burden on the regional budget.

## 16 HEALTH INFORMATION SYSTEMS

The Health Information System (HIS), its infrastructure and information flow have been inherited from soviet times. Data are routinely collected for medical, statistical and reporting purposes and covers such areas as, health system's structure and capacity, health services delivery, health status of the population, financing and accounting.

Previously data have been collected at facility, rayon, oblast and republican levels and have been recorded and stored on paper. Since 1996 MoH, having contracted Medinform Company, started the development and integration of an electronic system for the collection of data.

Soviet forms on health information had been revised and a new prikaz on primary medical documentation of health care organization was adopted in July 2005. This is a four volume document regulating collection of each and every piece of data.

With the introduction of DOTS as the national TB control strategy in 1998, the MoH adapted the WHO standard forms without revision or elimination of the old soviet forms. For reasons of different case definitions this led to maintaining a double recording and reporting system, increasing the paper work and workload.

The assessment identified more than 20 medical recording and reporting forms ([Annex III. Recording and reporting forms](#)) in TB health system, but this is not a complete set as others still serve different purposes such as reporting on capacity, financing etc.

In 1999 CDC developed and introduced the Electronic Surveillance and Case Based Monitoring System, which contained data on individual patients from form TB-01. This system had been gradually introduced in all oblasts. However, in 2003, due to perceived weaknesses of the TB-01 form, the use of this system was suspended.

A decision was made to revise the form and develop a National Electronic System for TB (called Register). A revised form was expanded to include data on drugs, side effects, drug resistance, chronic illness etc. Development, testing and implementation of the system were delegated to Medinform. In February 2003, the MoH approved the new TB-01 form and the National Electronic System for TB. This is the only electronically collected and stored information system in TB service, so far.

Over time the MoH has realized that this electronic system does not allow to analyze entered data and therefore initiated the development of an application for data analysis. This is being implemented by Medinform with the assistance of CDC.

The data flow system is well defined and arranged into different levels. Paper forms are entered into a computer at a facility level and transferred to the rayon level and on a monthly basis transferred on a floppy-disc or CD to the oblast TB dispensary, which consolidates the data from all facilities into one data set and sends this quarterly electronically to Medinform. Medinform pools the data from all oblasts into one data base and submits this once in a quarter to the NTBC.

To implement the HIS TB organizations have been equipped with PCs, but there are problems with availability of computers at the rayon level in remote areas. Even if computers are there, computer literacy is very low, which hinders wide and successful implementation of the system country wide.

Slow diffusion and even unavailability of internet technologies in remote areas contributes to late submission of data and forces people to travel distances to submit paper forms increasing costs.

During the assessment we used official NTBC, MoH and WHO data sets to analyze systems structure and capacity, service delivery and utilization, and TB epidemiology. We encountered several problems with accuracy and interpretation of the same data in different parts of official NTBC and MoH reviews of the TB epidemic. (i.e. number of new cases in tables 24 and 36, number of patients diagnosed through X-ray and sputum microscopy table 8, 8a, and 11) (НЦПТ РК 2005;НЦПТ РК 2004;НЦПТ РК 2003;НЦПТ РК 2002;НЦПТ РК 2001;НЦПТ РК 2000;НЦПТ РК 1999).

A well organized data flow system in electronic format helps to timely collect data sets, but policy and decision makers did not put in place a data quality assurance system and a way of transforming data into meaningful information. The WHO Recording and Reporting system has an inbuilt quality assurance process and its quarterly reports provide meaningful information for management purposes. In all its simplicity it is superior to the complicated merging of former soviet process oriented and DOTS outcome oriented system.

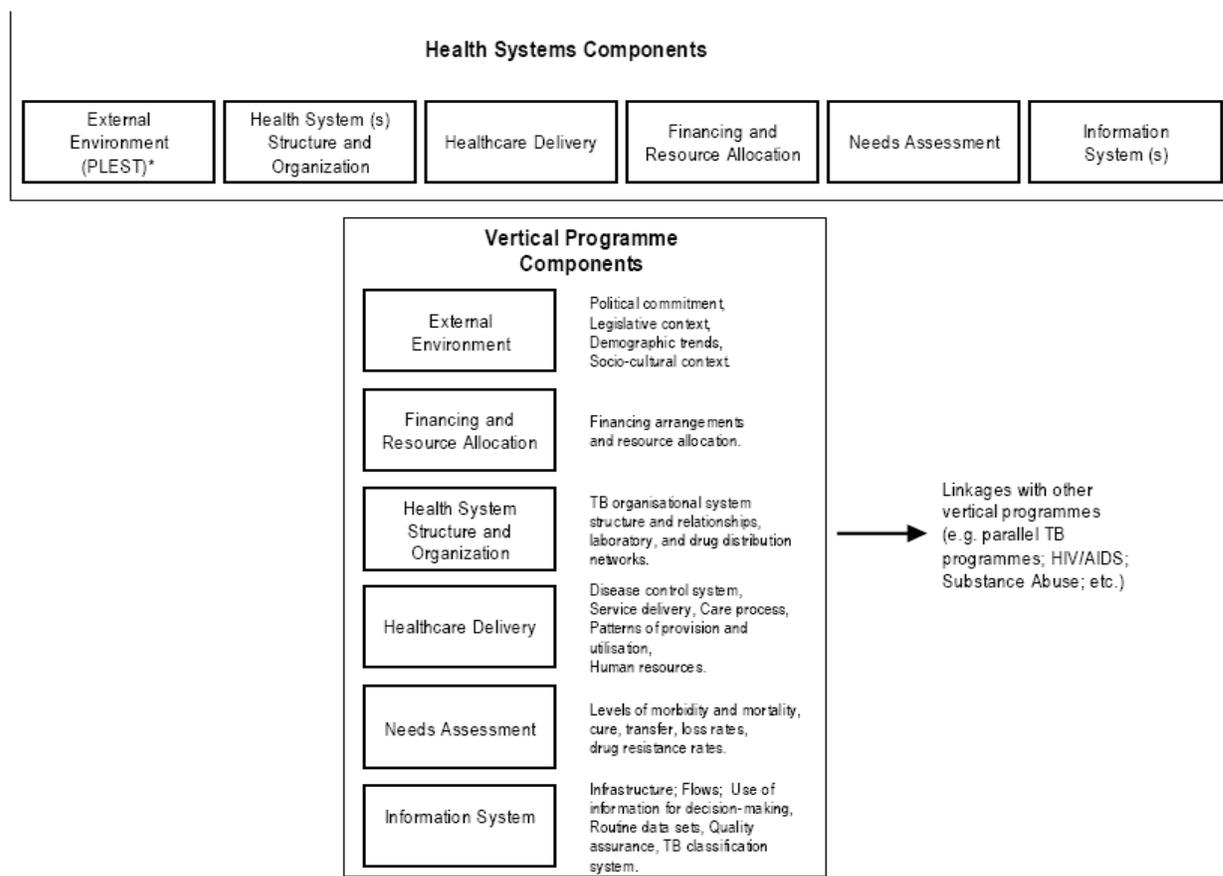
## PART IV. ANNEXES

### ANNEX I. ASSESSMENT FRAMEWORK AND TOOLKIT

A framework utilized for this assessments is largely based on the framework developed, field tested and validated by Atun et al. (Atun & Coker 2003). The framework has two elements: horizontal and vertical. The horizontal element assesses the macro context and health system within which the TB program is embedded from various perspectives: political, legal, social, demographic, economic, technological, financing, organizational arrangements, resource allocation, and provision of services. The vertical element evaluates TB specific components of the program such as epidemiology, service delivery, drug supply, diagnostics, laboratory networks and treatment.

The five elements of the DOTS strategy can be found within these horizontal and vertical elements. For example, the political commitment needed to support and sustain an effective TB control program may be at both the horizontal level (e.g. through the Ministry of Health and key stakeholders with responsibilities for health policy) and/or in the vertical element (e.g. in the clinical leadership of regional TB control program). Similarly, whilst case detection is fundamentally an issue addressed by the vertical health system elements, there may be horizontal elements that impact upon how such activities are conducted.

**Figure 11. Framework for Assessment of Health System Components and Tuberculosis Program.**



The toolkit has a predefined modular structure to undertake comparative or longitudinal assessment or benchmark the findings. Each module looks into a specific area and has a predefined set of key generic questions or themes for each module to enable the user to capture necessary information rapidly. Asked questions are wide ranging and can be dropped out or added depending on country, health system and program context and sensitivity. It allows flexibility according to the area in question, context and resource availability.

Both the system and program levels are split into six modules covering relevant areas of assessment:

- External environment
- Health system structure and organization
- Healthcare delivery
- Financing and resource allocation
- Needs assessment
- Information systems

**External environment:** Allows to examine how outer content of the larger economy and health system, such as policies, economic situation, legislation etc., impact on TB policy and what kinds of challenges the overall macroeconomic environment presents for TB control; Looks at political commitment, specifically with respect to existing policy (on TB and the general health system), the extent of institutional engagement, and the extent of coordination among various governmental actors, the donor community, and other stakeholders.

**Health system structure and organization:** Focuses on the delineation of organizations involved in the planning, management, provision, and monitoring of TB and general health services. The TB program and its direct and indirect relationships with the general health care system, other specialized programs such as HIV/AIDS, and TB service provider networks outside of the civil sector (e.g., penitentiary system, armed forces) are considered, with an emphasis on challenges that could be addressed through policy-related activities.

**Healthcare delivery:** Examines a number of service delivery issues at the primary and secondary/tertiary care levels, taking into consideration the laboratory network and special issues such as MDR-TB, TB/HIV co-infection, and TB in prisons. Policy-relevant issues relating to quality of care and human resource capacity are considered

**Financing and Resource Allocation:** Looks at how the National TB Program and the implementation of TB control policies are financed. Considers data such as sources of funding and funding flows throughout the TB and general health systems as well as resource allocation issues (e.g., between geographical units such as oblasts, different levels of care). Provider payment and incentives are also considered in the context of how funding can affect service delivery.

**Needs assessment:** Examines general health status of the population and tuberculosis epidemiological data to relate findings to other modules of the framework.

**Information Systems:** Considers the extent of the development of a monitoring and surveillance system for tuberculosis in the country, the actors involved, and how data are used both for policy development and for service improvement at the local and facility

levels. Issues such as the existence of a double recording/reporting system; data quality; TB/HIV co-infection and MDR-TB data; and the exchange of data and information between the specialized TB system and the general health system are explored.

Within each of these modules, multiple methodologies, information sources and routine data sets are used, allowing triangulation of gathered information. As such, the toolkit calls for the use of qualitative and quantitative methods. By using multiple data sources and methods of analysis the toolkit attempts to yield more rigorous and robust information.

To ascertain necessary and important information, and allow in-depth and rigorous analysis of obtained data the assessment are carried out in three stages:

- Stage I, secondary research, collection and review of regulatory documents, quantitative data, and published literature;
- Stage II, primary research, additional data generation to elucidate information obtained at stage I and provide more details on health system and tuberculosis program by employing mainly qualitative method of data collection;
- Phase III, in-depth data analysis and presentation of findings and recommendations.

**Stage I: Secondary research**

The first stage entails gathering and review of the country’s health system and program context and content data based on published quantitative and qualitative literature as well as project-generated documents, such as relevant quarterly reports and assessments/trip reports related to other project components (e.g. labs, drug management, IEC/BCC). TB and related statistics from such sources as the WHO and UNDP (specifically Human Development Report) are examined at this point. The team also collects and reviews key policy and legislative documents pertaining to tuberculosis control and the general health system. These documents include national health laws, government decrees, prikazes/regulations of the Ministry of Health and other ministries, and legislation/regulations at the local level. The Table 23 below lists sample categories of documents that are collected during this stage.

**Table 23. Sample Categories of Documents**

	Document Type	Examples
Project-generated	Administrative documents	Quarterly reports, trip reports, etc.
	Quantitative data documents	Cohort analysis spreadsheets, etc.
	Technical documents	Assessment reports, studies, reviews, etc.
Non-project-generated	Government documents	Orders, laws, strategic planning documents, etc.
	Quantitative documents	Statistics from the Ministry of Health, Republican Medical Information Centre, NTP, and General Health Care Statistics
	Technical/planning documents from other projects	Assessments or technical reports

	Published technical documents from donor/lender organizations	World Bank, WHO, UNDP etc.
	Documents produced by HLWGs and TWGs	Work plans, strategic documents, etc.

At this stage, the goal was to obtain comprehensive information on the context, current processes and mechanisms for tuberculosis program in order to identify gaps, biases and time lags in the data collected. This aided planning of the areas of the assessment which received particular focus and identification of key informants for interviews.

In addition to the above exercise, the team worked closely with a country office to identify potential key informants, assuring multi-agency multi-level representation, and to fix dates and time for interviews.

### **Stage II: Primary Research**

The aim of this stage was to elucidate information obtained at Stage I and provide more details on the tuberculosis program and the health system. Qualitative data predominated at this stage but routine quantitative data was also collated to bridge the gaps identified during the first stage, especially in the areas of financing and epidemiology.

#### **Data Collection**

Face-to face interviews were used to collect necessary data. The assessment employed a semi-structured topic guide for data collection. This type of questionnaire provided a mainstreamed discussion at the same time allowing flexibility and helped to uncover the most important nuances and explore them in much more details.

Both qualitative and quantitative data had been collected and used for triangulation during this stage. The data included routinely collected data on:

- Inputs indicators: e.g. financing of the health system and National TB Program, TB control system institutional structure, human resources in the TB control system;
- Process indicators: e.g. patient flow, resource allocation and costs of services;
- Output and outcomes indicators: e.g., case detection rate, case notification rate, death rate, DOTS coverage, TB microscopy coverage, cure rate, treatment success rate.

Supplemental epidemiological data were examined as necessary using such sources as the TB register, NTP and the MoH data, WHO estimates of incidence, census statistics, and special surveys.

#### **Sampling**

Key informants were selected using purposive sampling technique. The team worked closely with country office to draw a preliminary list of informants assuring multi-level multi-agency representation of informants. After a first list of potential informants had been drawn up we applied snowballing technique. The list was consulted with the interviewees by asking if there are other relevant knowledgeable people who they thought should be interviewed. The team, however, was prepared to allow flexibility in their schedule as timing of interviews was subject to last minute changes and additional candidates were advised.

The multi-level multi-agency representation was crucial to eliminate bias and assure robustness of results. Respondents had wide but not necessarily deep knowledge to give a picture of how different domains fit together, while others with more specialized knowledge were required in order that certain areas can be probed further to procure more in depth information over a narrower spectrum. Table 24 provides categories of respondents.

**Table 24. Categories of Informants**

1. Policymakers	Ministry of Health (MoH) (national, regional, local) GUIN (Chief Department for Punishment Execution), usually under the Ministry of Justice or Ministry of Interior Ministry of Defense/National Guard Ministry of Labor and Social Protection National TB Program
2. Purchasing agency (ies)	MoH Social Fund MoF
3. Managers	NTP TB dispensaries (urban, rural) Subnational health administration and providers (hospitals, polyclinics, medical centers) (urban, rural)
4. Clinicians involved in service delivery	TB doctors General practitioners Lab workers Social/outreach workers
5. Training institutions/Clinicians involved in training	TB Research Institute Medical schools Institute of Advanced Medical Studies National Medical Academy Postgraduate and continuous training institutes
6. International Agencies	USAID Projects and programs funded by these and/or other donors
7. Institutions and organizations involved with TB/HIV co-infection	HIV/AIDS Centers (national, subnational)

8. Institutions involved in monitoring and surveillance	NTP SES GUIN
9. Institutions involved in health promotion and social mobilization	Health Promotion Centers (national, subnational)

Most interviews had been arranged before the field visit, to ensure data collection was implemented during a short period of time.

### ***Field Work***

The policy team was accompanied by country team manager for each interview, and USAID representative and a local counterpart for high level interviews. The duration of each interview was around one hour allowing enough time to explore all topics in-depth. All interviews were hand written.

Interviews were carried out in Russian language to obtain detailed and nuanced information.

After each working day the team met together to draft a short summaries of interviews, discuss findings and observations, and to amend the topic guide as necessary.

### ***Validating Results***

In order to safeguard the validity of results, the team used a triangulation technique. That is, comparing findings with a number of sources. We used four types of triangulation, as suggested by Mays & Pope (Mays & Pope 1995; Pope & Mays 2000).

- variety of data sources in a study.
- several different researchers or evaluators.
- multiple perspectives to interpret a single set of data.
- multiple methods to study a single phenomenon.

Any discrepancies between the field work findings and data reported in studies had been documented and carefully analyzed. Follow-up phone-calls were made to get details as necessary.

### ***Ethical and Cultural Considerations***

Prior to the assessment the team obtained permission from the MoH, and other appropriate agencies, in order to conduct the assessment. Finally each agency issued an official letter to the team, which addressed their workers, explaining the goals of the assessment and calling for providing all possible support to the team.

The team adhered to professional ethics, including informed consent of the interviewees, their right to privacy and protection from harm. The team had also been aware of and sensitive to local traditions.

### ***Stage III: Data Analysis and Theory Development***

The purpose of this stage was to systematically analyze obtained data that evolved a coherent narrative that captures the structures, inputs, processes, outputs and outcomes and interlink them together.

Analysis at this stage entailed studying field notes and summaries of interviews. This process helped to identify key concepts and recurrent themes that interlink modular components of TB program and health system elements.

The assessment conclusions and recommendations are shared with the Project HOPE Consortium leadership for their review and input. HC leadership approves the final version of the report and makes it available for distribution to stakeholders.

## ANNEX II. TB BED FUND CAPACITY SCENARIO PLANNING

Kazakhstan has an excess number of TB beds (Godinho & Veen 2005; WB 2005). We will prove it by a scenario planning exercise and evidence published elsewhere in the literature.

We developed 4 scenarios for the years 1998 – 2004 to test if the TB services have enough beds to satisfy the existing demand. These are a favorable, unfavorable and worst case scenarios, and a scenario based on a reported breakdown by categories of patients. We used data of the Almaty oblast 2005 cohort, as we believe that Almaty oblast presents the best practice performance site in the country. For the calculation of bed days we used the conversion rates (category 1 patients – 74%, category 2 patients – 62 %). Data were taken from many sources and were triangulated.

**Table 25. TB bed capacity scenarios**

Scenario		Cat I	Cat 2	Cat 3
1. Favorable*	Intensive phase	2 months	3 months	2 months
	Prolongation phase	1 month	1 month	
2. Unfavorable*	Intensive phase	4 months	5 months	2 months
	Prolongation phase	1 month	1 month	
3. Worst	Intensive phase	4 months	5 months	
	Prolongation phase	1 month + 10 % stay for a full period at hospital	1 month + 10 % stay for a full period at hospital	
Breakdown as reported by JSI**		55%	30%	15%

Favorable scenario 1: represents the most desirable case management with shortest intensive phase and 1 month of continuation phase stay in hospital. No 3 category patients

Unfavorable scenario 2 – most lengthy stay for intensive phase and 1 month continuation phase in hospital.

Worst case scenario 3 – during field interviews we discovered that around 10% of patients are from socially vulnerable groups of society (shelterless, alcohol and drug addicts, deprived) and that they are being kept in hospitals for a full continuation phase for social support reasons. So we took the longest period of stay and added 10% of total cases for a full length of continuation stay in hospital.

Scenario 4 – we break down all patients by groups as reported by JSI as part of the drug management assessment of Almaty oblast in 2005 and apply this to the first and second scenarios for the year of 2004.

Table 26 presents outcomes of our calculations.

**Table 26. Bed fund capacity and real demand.**

	1998	1999	2000	2001	2002	2003	2004	2005	scenario 4, based on the year 2004
Available TB beds in reality	13330	13350	13490	13522	13525	13977	14169	16900	14169
Favorable Scenario 1 demand for beds	7323	5107	6817	6645	6992	6829	6888	6657	6847
Excess of beds	6007	8243	6673	6877	6533	7148	7281	10243	7322
Unfavorable Scenario 2 demand for beds	12678	9283	12108	11854	12482	12190	12244	11834	11398
Excess of beds	652	4067	1382	1668	1043	1787	1925	5066	2771
Worst Scenario 3 demand for beds	13863	10153	13241	12963	13368	13331	13389	12942	-
Excess of beds	-533	3197	249	559	157	646	780	3958	-

Our calculations reveal that the TB system historically has had an excessive bed fund, with more than double the supply/demand difference if the favorable scenario is applied, and 5 to 43 percent excess if the unfavorable scenario is applied.

The worst case scenario, most probably depicts a real case management practice. Patients do stay for the longest possible period in hospitals and those from vulnerable groups use beds for social reasons. Even in this case the system has around 31 percent of unnecessary beds.

What is the most striking is that whilst the number of notified cases decreased, the number of beds in 2005 increased by 20 percent compared to 2004. At the same time the supply of TB beds is 2.5 times higher than the real demand for TB beds if the favorable scenario is applied. In case of the unfavorable scenario the number of available beds is still 1.4 times higher than it is needed.

Moreover, TB specialists are inclined to keep their patients in hospitals for longer than internationally recommended standards and choose individualized treatment regimens, arguing that the WHO recommended strategy does not prove to be effective in Kazakhstan settings. Patients usually stay for 5-6 months in hospitals. These widely used practices drive TB managers to increase systems capacity and hinder access to health services of those in need.

In addition to the above mentioned facilities, we were informed that the MoH plans to establish a network of somewhat different type of rehabilitation facilities (similar to a leprosarium) with the purpose of isolating patients with chronic TB and MDR TB.

It seems to be difficult to differentiate between who should stay and for how long in a hospital and who should be referred to a sanatorium. Around 10% of patients are kept in the TB dispensaries for the continuation phase. The discussion on the TB bed fund capacity for rehabilitation and the categories of patients qualifying for treatment on the continuation phase in these rehabilitation facilities contradicts the earlier justification for keeping patients in TB dispensaries. As we have seen from our worst case scenario calculations (section [TB Control System Structure and Capacity](#)) the system in 2005, with its 16900 beds, has already 23 percent over capacity of beds, and adding 4334 beds in the sanatoria the system has 8292 (64%) unnecessary beds.

Our interviews and the above calculations strongly suggest that the TB system uses increased financing as a window of opportunity to build capacity of TB services delivery facilities. The result is an unnecessary infrastructure and inefficient use of funds. Considering that health systems resources are always scarce, one might suggest to redirect savings from needless investments to other aspects of TB control i.e. quality of care, incentivisation and remuneration of health care personnel.

Another point of concern is the cost effectiveness of specific interventions. Although, Kazakhstan had declared AFB microscopy as a primary method for TB case finding, X-ray and fluorography prevails. Our discussions with key-informants indicated that X-ray and fluorography are used as the primary methods of diagnosis and that microscopy is performed just to follow the guidelines.

The general practice of mass fluorography screening has a very low input-output efficiency. Each year Kazakhstan performs a large scale screening using X-ray and fluorography through the PHC and TB control services. From 1998 TB control services have been provided with hi-end technology mobile clinics with X-rays and tomographs, which travel to remote areas to perform screening. But the effectiveness is poor. For instance, in Almaty oblast, a mobile fluorography unit identifies less than 10 TB suspects per 1000 screenings of which less than 3 are subsequently confirmed as TB cases. A similarly low detection rate is reported in permanent fluorography units in polyclinics.

There are around 20 categories of people who should be screened each year (МЗ РК 2001). The total number of people to be screened, out of the total population, has been steadily increasing from 40% in 1998 to 52 % in 2004 (with some fluctuations in 1999 and 2000). Out of 7,874,500 people screened in 2004 less than 2 percent has been diagnosed with TB.

Another aspect of screening practices is directly related to migration issues and official registration (propiska). We know that a significant number of people from rural areas live and work in large cities without registration. This make them lost for health care facilities both at their official registration and real inhabitation.

The logical question is whether it is worth it? And the answer is no!

**ANNEX III. RECORDING AND REPORTING FORMS****Table 27. Recording forms**

PHC	Diagnostics Service	TB Facility	SES
F#025/y TB-05	TB-04 TB-05 TB-06	F#035 F#030-4/y F#058/y F#089/y F#060/y F#003/y F#004-1/y F#004/y F#066/y F#078/y TB-01 TB-05 TB-06	F#1 TB-2

**Table 28. Reporting forms**

Time/Level	Facility	Rayon	Oblast	Republican	MOH	National Statistical Committee
Quarter	TB-01 TB-03	TB-07 TB-08	TB-07 TB-08	TB-07 TB-08	Report to the office of the Prime-Minister	
Year	-	F#33 zdrav F#8	F#33 zdrav F#8	F#33 zdrav F#8 Statistical Report "Statistical review of TB in KZ"	Report to the government Statistical Report "Health of the population of KZ and functioning of health organizations"	Statistical Reports on: "Activities of health organization in KZ" "Financial and economic activities of health care organizations"

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