

LABORATORY ASSESSMENT REPORT
KYRGYZSTAN
November 8 -18, 2004

Marija Joncevska, MD PhD
Regional Laboratory Specialist
Project HOPE CAR



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List of abbreviations

CAR	Central Asian Republics
CDC	Centres for Disease Control and Prevention
CSM	Family Medical Centre
DOTS	Directly Observed Treatment Short course
DST	Drug Susceptibility Testing
DRS	Drug Resistance Surveillance
E	Ethambutol
ECHO	European Commission Humanitarian Office
EQA	External Quality Assessment
FAP	Feldsher Acousherski Punkt
GFATM	Global Found against AIDS Malaria and Tuberculosis
GP	General Practitioner
GUIN	Head Department of Penalty Execution
H	Isoniazid
IUATLD	International Union against Tuberculosis and Lung Diseases
IQC	Internal Quality Control
KfW	Kreditanstald für Wiederaufbau (German Development Bank)
LJ	Löwenstein-Jensen
MDRTB	Multi Drug Resistant Tuberculosis
MoH	Ministry of Health
MoH	Ministry of Justice
NRL	National Reference Laboratory
NTP	National Tuberculosis Programme
NCPH	National Centre of Phthysiatry
PHC	Primary Health Care
QA	Quality Assurance
R	Rifampicin
S	Streptomycin
SES	Sanitary Epidemiological Surveillance
SRL	Supranational Reference Laboratory
TB	Tuberculosis
TOR	Terms of Reference
WB	World Bank
WHO	World Health Organization

Executive summary

The Laboratory assessment mission to Kyrgyzstan took Place from November 8-18 and was conducted by Marija Joncevska, Regional Lab Specialist – Project HOPE; Tatiana Bobkova, Lab Specialist for Kyrgyzstan – Porject HOPE and Totugul Murzabekova, National TB laboratory coordinator. The assessment team visited a total number of 10 laboratories, three in Bishkek City, three in Chui Oblast, three in Dzalal-Abad and two laboratories in penitentiary system

After the official adoption of DOTS strategy in 1998, Kyrgyzstan NTP redesigned National TB laboratory network and reduced the number of microscopy labs from 442 to 117. As a result of this rationalization, only 117 labs were equipped and supplied with all necessary reagents. The other laboratories most likely are still functioning, but out of the official TB laboratory network. Rationalization of laboratory network gave positive results in terms of quality and efficiency of smear microscopy labs. The same approach should be used in establishment of culture laboratory network taking into account the limited human and material resources of TB Program.

Culture examination is currently done in two laboratories in Bishkek NRL (Laboratory at the Republican Institute for TB) and City at TB Dispensary. The plan for expansion of culture laboratory network includes 11 culture laboratories, two of them performing DST (NRL in Bishkek and Oblast TB lab in Osh). New equipment for culture laboratories will be provided through KfW grant.

The NRL established official collaboration for proficiency testing for DST with SRL in Borstel, Germany and has successfully passed one round of testing. According to the official reports, submitted to WHO and Euro TB, MDR TB rates are 13,3% for the new cases an 46% for re treatment cases.

System for EQA for smear microscopy has not been established yet. Rechecking of slides is done only during monitoring visits and is mainly focused on rechecking of positive slides. The old TB Prikaz which is still in power does not include any quality control activity. New Prikaz on QA for smear microscopy is under development (CDC; Project HOPE and NRL) and it will recommend appropriate method for EQA, taking into account: the current situation in the laboratory service, the organizational structure, resources available, recording system and legal issues concerning the integration of the TB lab services into the PHC system

The MoJ decided to establish own network of 10 microscopy labs. The existing laboratories are facing many problems: lack of equipment, staff, and regular supply with reagents. The collaboration with oblast laboratories is still very weak, and needs to be strengthened at least in terms of distribution of basic reagents for work and provision of technical support. There is no laboratory coordinator appointed for prison laboratories and it is uncertain how will quality assurance and monitoring be provided.

Currently all laboratory needs are covered by different donors and international organizations. Central procurement and distribution in the next five years will be ensured through GFATM.

In order to ensure rational use of available resources, NTP should prepare strategic plan for strengthening of laboratory service, based on goals and objectives of the National TB control strategy and in line with ongoing Health Sector reform.

1. Background

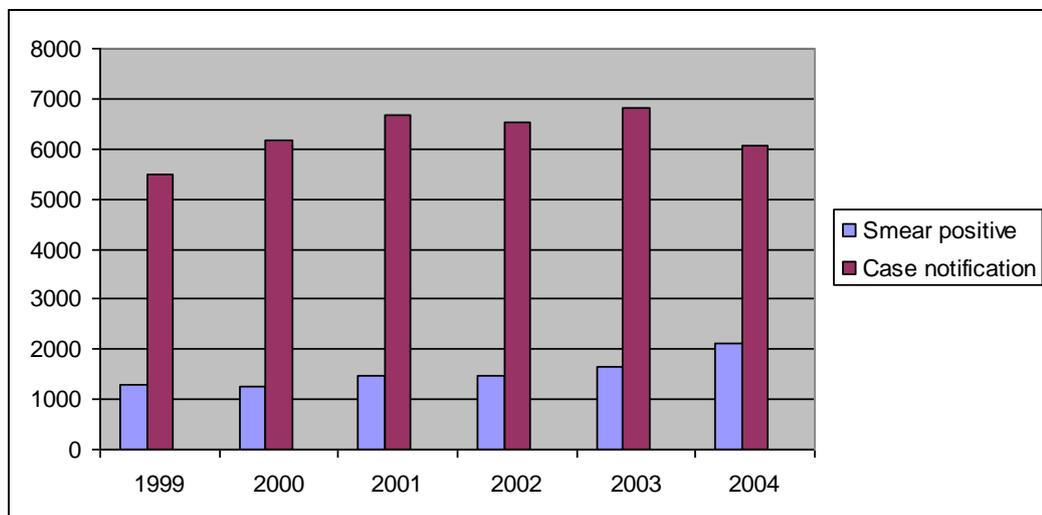
Kyrgyzstan is mountainous, landlocked Central Asian country, bordering China, Kazakhstan, Tajikistan and Uzbekistan. It is divided in seven administrative units – Oblasts and a capital Bishkek. The total population is estimated to 5,081,429 (July 2004 est.).

After the break down of the Soviet Union in December 1991, Kyrgyzstan has distinguished itself as one of the most progressive CIS countries, carrying out market reforms and adopting liberal economic policies.

Kyrgyzstan was the first country in Central Asia to introduce Health Sector Reform (HSR) in 1995, first as a pilot project in Ysyk- Kol and later expanded countrywide, supported by the government and other international financial institutions. The main goals of the HSR were strengthening of Primary Health Care (PHC) and family medicine and reduction of the large specialized hospital care.

The implementation of DOTS strategy started in 1996, first introduced in four Rayons and officially adopted as a national TB control strategy in 1998. In order to support the implementation of DOTS strategy, the NTP prepared the basic working document, officially introduced through the Executive Order – Prikaz N° 285 from 30.08. 2000. National guidelines for smear microscopy are included in this document as an annex No 13.

Fig. 1. Case notification 1999 – 2004



Implementation of DOTS strategy improved case detection and increased the number of TB cases confirmed by smear microscopy. The number of TB cases detected increased by 10% in 2001 and 2002, reaching the highest number of 6803 cases in 2003. In 2004 the NTP reported decrease of the number of cases by 10%, but the confirmation by smear increased up to 44%.

Tab. 1. TB notification rates 2003

Cases	Pulmonary TB			Extra pulmonary TB	Total
	Smear +	Smear -	Subtotal		
New cases	1642	2363	4005	2150	6155
Retreatment cases	628	222	850	-	
Total	2270	2585	4855	2150	7005

1.1 Organizational structure of TB control service

TB Control service consists of 25 TB facilities, organized on three administrative levels:

- Central level, represented by the National Centre of Phthisiology (NCPH), in charge of organization, management and coordination of all TB control activities.
- Intermediate level, represented by Oblast TB Centres and Hospitals, coordinating activities on Oblast level
- Peripheral level, represented by Raion and Inter Rayon TB Dispensaries and TB cabinets, most of them integrated within the PHC facilities - Centres of Family Medicine (CSM)

Each level has appointed TB coordinator.

2. Laboratory Assessment visit

The Laboratory assessment mission to Kyrgyzstan took Place from November 8-18 and was conducted by Marija Joncevska, Regional Lab Specialist – Project HOPE; Tatiana Bobkova, Lab Specialist for Kyrgyzstan – Project HOPE and Totugul Murzabekova, National TB laboratory coordinator. The assessment team visited a total number of 10 laboratories, three in Bishkek City, three in Chui Oblast, three in Dzalal-Abad and two laboratories in penitentiary system. Out of eight civilian laboratories four belonged to PHC and were situated at CSM, and other four at Oblast TB Dispensaries and NCPH.

2.1 TOR for the visit

1. To assess the current structure and functioning of the TB laboratory service in Kyrgyzstan
2. To assess the utilization of laboratory service for diagnosis of TB and review the plan for further rationalization of laboratory network
3. To assess the functioning of the TB laboratory service in penitentiary system and the level of collaboration with the National TB laboratory network
4. To identify priorities for upgrading of laboratory service and give recommendations for quality improvement

2.2 Findings:

2.2.1 Organizational Structure of TB laboratory service

The three level structure is also present in the laboratory service, although the differences in terms of technical functions between intermediate (Oblast) and peripheral (Rayon) level are not clearly defined.

At the Central level, TB laboratory at NCPH is officially recognized as a National Reference Laboratory (NRL), performing smear, culture and DST. On intermediate level, besides seven Oblast reference laboratory for culture, NTP plans to establish additional 11 culture laboratories in Rayons, so called “inoculation points”.

Inoculation points will use media prepared by higher level laboratory, but will perform all other procedures required for culture examination: homogenization, concentration, inoculation and reading of cultures

Third level laboratories are situated at PHC facilities and provide smear microscopy integrated with other general laboratory services.

Laboratory coordinators are appointed at each level, but due to the high turn over of trained laboratory staff, coordination of activities at Rayon level is not present in many Rayons.

2.2.1.1 Organizational structure of TB laboratory service in Penitentiary System

The Penitentiary System in Kyrgyzstan consists of 16 Prisons and pre detention institutions. After being diagnosed, prisoners with TB are treated in two TB colonies and one TB Hospital. In order to improve the diagnosis of infectious cases, the MoJ decided to establish own network of 10 microscopy labs. Currently there are six functioning laboratories for smear microscopy, all located in Chui Oblast. The existing laboratories are facing many problems due to the lack of equipment and trained laboratory staff, as well as irregular supply with reagents and consumables. The NRL has not established any link with Prison laboratories so far and did not provide any technical support. There is no laboratory coordinator for Penitentiary system and it is uncertain how will regular monitoring and quality assurance in laboratory network be implemented .

Tab. 2 Structure of TB laboratory network

Technical functions	Number of TB laboratories at different administrative levels						Prison
	National		Oblast		Rayons		
	TB facilities	PHC	TB facilities	PHC	TB facilities	PHC	
Smear	1	-	8	-	-	107	6 10(planned)
Culture	1	-	1 6(planned)	-	5(planned)	-	-
DST	1	-	1(planned)	-	-	-	-

2.2.2 Accessibility and availability of lab services

Before DOTS program has been implemented as a national strategy, smear microscopy was available in all clinical laboratories and TB dispensaries. However, this large network of laboratories did not ensure proper use of smear microscopy for diagnosis and follow up of TB cases. The diagnosis of TB was mainly based on X-Ray examinations and less than 1% of suspects examined in laboratories were found smear positive. The NTP team realized that it would not be possible to maintain such a large network of laboratories and ensure good quality of examinations, therefore started the process of rationalization of TB laboratory network.

The number of smear microscopy labs was significantly reduced from 442 to 107 laboratories in Civilian sector and increased from 5 to 10 in Prison sector. The process of rationalization of lab service so called “Centralization of TB laboratory service” introduced by the NTP supported only 107 labs in terms of provision of equipment, training and central supply with reagents and consumables. It is uncertain whether the other clinical laboratories do not perform smear microscopy any more, or they are still functioning, but out of the official TB laboratory network. The rationalization of laboratory network increased the efficiency of smear microscopy labs and the number of TB cases confirmed by smear increased by 45% (Fig.1 and Tab. 4)

In 2003 a total number of TB suspects examined by smear was 24 662 and the vast majority of suspects, 20 695 were examined at PHC laboratories. The average number of smears for diagnostic examination was 2,9. It is not possible to determine whether the reported number of smear examinations reflects the real number of suspect examined, because there is a large number of suspects, examined and reported several times by different laboratories.

Smear examination is available free of charge for entire population.

Transportation of sputum samples has not been considered as an alternative for further rationalization of smear laboratory network due to the high transportation cost and problems with communications during the winter.

For the time being, culture examination is available only at NRL, but soon it will be available countrywide supported by KfW grant. Each Oblast will have between one and three culture laboratories.

Tab. 3 Use of smear microscopy for case finding in 2003

Suspects examined	24 662
Smears examined	70 817
Smear positive cases found	1886

Tab.4 The effect of rationalization of laboratory network on laboratory performance

Year	1998	1999	2000	2001	2002	2003	2004
No of laboratories	442	442	442	164	124	112	107
Positivity rate	1.6%	1.2%	2.1%	2.8%	3.6%	5%	7.3%

2.2.3 Policies and methods for laboratory diagnosis of TB

2.2.3.1 Smear microscopy

All Raion lab coordinators lab have been trained either on courses organized by CDC or on "on the job training" by senior laboratory staff . The training gave good results which could be observed during the visit of smear microscopy labs. In general the quality of smear preparation and staining was satisfactory. Exceptions were only diagnostic smears of children and some follow up smears, prepared mainly from saliva. All laboratories use Ziehl Neelsen method with acid alcohol as a decolorizing agent. National manual for smear microscopy has not been produced yet as a separate document, but the guidelines for smear microscopy were included as an annex to the Prikaz. The technical procedures presented in this document are not fully in line with the internationally adopted standards and should be revised. However, laboratory technicians trained in smear microscopy received written instruction for smear preparation, staining and disinfection procedures recommended by WHO. These instruction were posted on the wall in all laboratories. Positive slides are kept for one year and negative for one month and then washed and reused several times. There are no slide storage boxes and the slides are kept, wrapped in paper. Many laboratories use immersion oil with poor quality, sometimes using even sunflower oil which damages the lenses of the objectives. Slides are cleaned from immersion oil with alcohol, all laboratories reported shortage of xylene.

Fluorescent microscopy is not used for diagnosis. There are two fluorescent microscopes at NRL, which are used only as light microscopes. Ziess fluorescent microscope at Jalalabad Oblast TB laboratory (Provided by KfW grant in 2002) has never been used. Lab staff has not been trained in fluorescent microscopy, and the reagents required for fluorescent staining are too expensive to be procured by own funds.

2.2.3.2 Culture

Culture examination is currently done in two laboratories in Bishkek NRL (Laboratory at the Republican Institute for TB) and City TB Dispensary. The plan for further expansion of culture laboratory network includes 11 culture laboratories, two of them performing DST (NRL in Bishkek and Oblast TB lab in Osh). Culture laboratories are officially called "inoculation points" which actually they are not since

they are not only inoculating, but also preparing media, incubate cultures and report culture results.

Laboratories use solid LJ medium, and Petroff method for decontamination. Only NRL in Bishkek prepares LJ, other culture lab use locally produced powder based media with a doubtful quality.

The full incubation period for negative cultures is three months; they are checked in 10 days intervals and positive cultures are reported immediately to the hospital department.

Quality of the media at the NRL was good and the growth on cultures reported as positive was with typical morphology for *M. tuberculosis*. Identification is done by biochemical tests: nitrate reduction and sodium chloride tolerance test.

Training in culture examination has not been organized so far.

NRL was almost out of stock of all necessary substances for media preparation.

2.2.2.3. Drug Susceptibility Testing (DST)

All positive cultures are tested for drug susceptibility to all first line drugs (R,H,S,E). Since the beginning of this year the NRL performed a total number of 1287 tests. The method used is a combination of Proportional and Absolute concentration method. Written instructions for DST were not available and the lab specialist performing the test relies on own experience. Drug containing media are prepared with concentrations recommended for Proportional method and the interpretation of the results is done according to Absolute concentration method. Combination of this two methods might lead to over reporting of drug resistance. There was no proper DST training organized for lab specialists at the NRL. Some recommendations were given during the visits of Lab consultants (Sabine Rush and Ron Smithwick). Pure substances of drugs for DST were sent from SRL in Borstel in plastic tubes, without information on the expiry date. There are only small amounts left, but the laboratory sill does not have all necessary information needed for procurement of pure substances of drugs, such as: technical specification, manufacturer and distributor for Kyrgyzstan. The results on DST are reported to EURO TB by the National Program. The data reported for 2003 show extremely high resistance rates. Any mono resistance in never treated cases was between 61% (S) and 14,3 (R) with 13,3% MDR. The high rates reported do not seem to be reliable, due to the fact that confirmed cure in 2003 is as high as 80% and failure rate between 5% and 6%. NRL performs DST from each positive culture and there is a possibility that the report includes not only the results from the initial cultures but also results from the cultures isolated during the course of treatment.

The NRL established official collaboration for proficiency testing of DST with SRL in Borstel (Dr Sabine Rush) and has successfully passed one round of testing. Results were satisfactory: one false sensitive to S and one false resistant to H and R.

In order to obtain some information about the susceptibility to second line drugs, NRL collected MDR strains to be sent to SRL in Borstel for second line testing. However it appeared that there is no possibility for shipment of MDR strains, because there are no official regulations for shipment of contaminated materials and there is no carrier willing to ship the strains.

Tab. 5. Official data on drug resistance 2003 (as reported to Euro TB)

Patients tested	never treated		previously treated	
	638	525	100%	113
Any resistance to H	181	34,5%	83	73,5%
Any resistance to R	75	14,3%	52	46,0%
Any resistance to E	88	16,8%	56	49,6%
Any resistance to S	322	61,3%	92	81,4%
Resistance to H only				
	2	0,4%	3	2,7%
Resistance to R only				
	0	0,0%	0	0,0%
Resistance to E only				
	7	1,3%	0	0,0%
Resistance to S only				
	138	26,3%	10	8,8%
Total mono-resistance				
	147	28,0%	13	11,5%
H + R				
	2	0,4%	0	0,0%
H + R + E				
	1	0,2%	0	0,0%
H + R + S				
	28	5,3%	11	9,7%
H + R + E + S				
	39	7,4%	41	36,3%
Total MDR				
	70	13,3%	52	46,0%

2.2.3.4 Advanced techniques for laboratory diagnosis of TB

The Immunology laboratory at the National TB Institute is using PCR for detection of Mycobacteria in extra pulmonary specimens. The costs of the examination is 125 soms (US\$ 2,8) and is fully covered by the patient. This year, for the last ten months, the laboratory performed 200 tests, 54% were reported positive. The majority of the specimens were pleural fluid. Molecular biology method is also used for detection of Rifampicin resistance. Four hundred tests are done for the last 10 months, but according to the Head of NRL, the results have not been analyzed yet. Tests are free of charge for the patients with positive culture.

Immunology laboratory is also involved in research on the immune status of TB patients, detecting T4 and T8 subpopulation of T Lymphocytes by monoclonal antibodies. There are plans for introducing ELISA method for detection of specific antibodies against M tuberculosis for the purpose of diagnosis. The equipment is already in place, but there are no available funds for diagnostic kits

2.2.4 Quality assurance

The system for Quality Assurance (QA) has not been established yet. The satisfactory level of performance in smear microscopy was mainly result of good quality of the training, regular monitoring and supervision. The professional attitude and enthusiasm of laboratory staff to perform good quality of smear examination was evident in many laboratories as well. However the quality could be further improved through the implementation of regular implementation of External Quality Assessment (EQA). In order to ensure proper implementation, the national team of lab specialist, with technical assistance from partners (CDC, Project HOPE) and other international experts, should prepare National guidelines for Q A, including protocols for Internal Quality Control (IQC), recommended method for EQA and adopt standard monitoring checklists. Special attention should be paid to the selection of appropriate method for EQA, taking into account: the current situation in the laboratory service, the organizational structure, resources available, recording system and legal issues concerning the integration of the TB lab services into the PHC system.

2.2.5 Laboratory workload and staffing

It is difficult to estimate the real workload of smear microscopy examinations due to the separate registration of DOTS patients and chronic patients. Some laboratories register all patient in TB 04 register, but those using two separate registers have much more examinations for chronic patient which are not routinely reported to the NTP. It was not possible to collect the information on the total number of smear examinations done for non DOTS patients, since they are recorded in the same register with other clinical laboratory examinations and reported annually as a total number of examinations done by laboratory. In general workload is high in the majority of laboratories visited, not only for smear microscopy, but also for other clinical examinations. Raion laboratories are usually staffed with only one lab technician. Oblast Laboratories and the NRL are understaffed as well. The official standards for daily workload require 30 smear examinations per technician per day. The proposal for reviewing this regulation will be submitted by the NTP, but in order to ensure optimal workload and good quality of laboratory work, the proposal should include not only standards for smear microscopy, but also the workload related to implementation of QA activities, monitoring, supervision and reporting. There are very big differences in the workload between specialized TB laboratories and TB laboratories at PHC.

Tab. 6. Annual laboratory workload

Level of laboratory	Annual workload (2003).						
	Smears			Cultures			DST
	Diagnosis	Follow-up	Total	Diagnosis	Follow-up	Total	
National	4380	5000	9380	3677	-	3677	1467
Oblast	11584	12252	23836	475	-	475	-
Rayon	59233	9674	68907	-	-	-	-

Tab. 7. Laboratory staffing

Qualification	Laboratory staff					
	National		Oblast		Rayon	
	Trained	Not trained	Trained	Not trained	Trained	Not trained
MD	5	-	3	1		
Lab technician	2	-	8	-	97	32
Total	7	-	11	1	97	32

2.2.6 Training

Training activities were conducted by CDC lab specialists. Local laboratory staff took part as well and developed sufficient capacity to take over this activity, funded by GFATM. So far nine training courses in smear microscopy have been conducted: one by Project HOPE, six by CDC and two by GFATM. A total number of 115 people have been trained and there are still 33 lab technicians working in smear microscopy, who have not received any training. Smear microscopy examination for diagnosis of TB, as it is recommended by WHO standards is not included in medical school curricula and laboratory technicians receive training at their workplace.

Training activities by CDC will continue with advanced training in smear microscopy and will be mainly focused on implementation of EQA by blinded rechecking method. NTP team plans to establish a training centre at the NCPH which would be situated in the old laboratory building. The funds for refurbishment have not been provided yet, but the training equipment is already included in KfW tender.

2.2.7 Recording and reporting

All smear laboratories use TB04 Register and TB05 sputum request form and fill in as required. Although DOTS strategy has been adopted as a national strategy since 1998, the separation of patients on DOTS and non DOTS is still present. In TB labs where non DOTS (chronic cases) are examined, they are recorded in the separate register. The registration is specimen based and it is not possible to collect information on indicators (positivity rate, effectivity and number of smears per examination). If the patient is diagnosed as smear positive at Rayon laboratory, the examination is repeated in Oblast laboratory, Dispensary and Hospital, so the same patient is reported as a new smear positive case two or three times.

Culture registers, recommended by WHO are not in use and the culture register used, does not contain all necessary information about the patient and the purpose of the examination. All positive cultures are tested for DST and the results are recorded in a separate DST register. There are no request forms for culture examination and DST and the information about the previous treatment is not recorded. Culture and DST results are reported on old reporting forms left from the Soviet time.

2.2.8 Infection control and bio – safety

Bio safety in smear microscopy labs was included in the basic training program and safety measures are implemented in all laboratories visited. Besides, the Prikaz has strict recommendation concerning the use of disinfectants and disinfection procedures in laboratories for smear microscopy. These instructions were posted on the wall in each laboratory visited. Official safety measures for smear preparation also include use of safety boxes with ventilation; which makes the equipping of smear microscopy lab more expensive than necessary.

Laboratories performing culture, except the NRL, do not have basic safety equipment and the staff is not informed about the risk of infection and the high risk procedures in culture preparation.

2.2.8.1 Sputum collection

All facilities visited had properly organized sputum collection. Sputum was collected in sputum collection rooms or outdoors. Nurses trained in sputum collection give instructions to patients, record the sputum sample in sputum collection register and transfer the samples to the lab.

All laboratories reported shortage of sputum containers. Some laboratories still have old reusable sputum containers made of amber glass, but in the most of cases sputum is collected in inappropriate containers, household glassware, drug bottles and other plastic containers.

It is expected a local manufacturer to start soon production of disposable plastic containers using the model developed by CDC. However this is not considered as the best solution of the problem, since the issue of waste disposal has not been elaborated, medical facilities are not equipped with incinerators and there is no plan for disposal of huge amounts of plastics (about 90 000 containers per year)

2.2.9 Monitoring and supervision

During the implementation of previous grant, Project HOPE developed checklist and conducted countrywide monitoring visits together with NRL team. All oblast were visited at least twice a year. Since last year funds for monitoring are available through GFATM and the National team started regular monitoring. The checklists developed by Project HOPE are used only by National level. The priority for the NRL team was preparation of inventory list of equipment and therefore new checklists contain more details about technical characteristics of the microscopes. The content of the new checklist which will be included in the new Prikaz is still not finalized.

Each laboratory has a monitoring register, where the monitoring visits and the recommendations given to the laboratory are registered. A copy of monitoring checklist is provided as well.

2.2.10 Equipment and supplies

The equipment which is in place was provided by World Bank Project (Lomo microscopes for smear microscopy labs), KfW grant (equipment for culture

laboratories), Project HOPE(equipment for NRL) and some other small grants: ECHO, WHO, Red Cross. The equipment provided by KfW in 2002 was almost completely inappropriate for culture laboratories and concerning bio-safety did not satisfy basic safety requirements. Bio-safety cabinets procured are not meant for bacteriological lab, since they prevent only contamination of the specimen and do not protect the person exposed to infectious aerosol produced during the high risk procedures. It is the same case with the centrifuges which do not have safety buckets. The tender for new KfW grant is in process and the specialist from RNL were partly involved in preparing the list of necessary equipment and technical specification. Although there were a lot of funds available for equipping laboratories, no one was used to provide basic small equipment for smear microscopy. All laboratories need: loops, staining bottles, marking pens, slide storage boxes. Reagents and stains for smear microscopy were distributed by NRL to Oblast laboratories and than to Rayon laboratories. Currently the amounts in stock are sufficient only for a couple of months. The biggest problem is immersion oil, which can not be procured locally. Almost all peripheral laboratories do not have appropriate immersion oil and use as a substitute sunflower oil, ricin oil and other oils that can damage the lenses of the immersion oil objective.

2.2.11 Laboratory budget

Laboratory component was often neglected in the NTP budget and the funds for regular supply with reagents and consumables were not always available. The laboratory needs were mainly covered by different donors and international organizations. Central procurement and distribution in the next five years will be ensured through GFATM.

3. Conclusions and recommendations

<p>Organization and coverage</p>	<ol style="list-style-type: none"> 1. The rationalization of laboratory network gave positive results in terms of quality and efficiency of smear microscopy labs. The same approach should be used in establishment of culture laboratory network taking into account the limited human and material resources of TB Program. 2. Laboratory network performance has not been sufficiently addressed and reviewed on Oblast and Raion level. 3. Initial collaboration between NTP laboratories and laboratories functioning within the Penitentiary system has been established, but still has not achieved the required level. <p>Recommendations:</p> <ul style="list-style-type: none"> • Discuss the possibilities for rationalization of TB laboratory service among NTP, international partners and donors taking into account: distribution of laboratories; population coverage and TB burden; workload; equipment; staffing; laboratory performance indicators; infrastructure and possibilities for transportation of sputum samples. • Strengthen the collaboration between laboratories in the network, as well as the collaboration between laboratory doctors and clinicians. Oblast Laboratory Coordinator should be present at Oblast Round Tables and take active part in the cohort result analysis. • Appoint Prison lab coordinator and establish better collaboration with NRL in terms of technical support, monitoring and quality assurance.
<p>Accessibility and availability</p>	<ol style="list-style-type: none"> 1. In order to make the smear microscopy accessible and available for the entire population, NTP program supported general clinical laboratories at CSM at PHC in providing TB diagnostic services. However, the contribution PHC laboratories in case finding activities by smear microscopy as well as in follow up of patients during the continuation phase of treatment is much lower compared to specialized TB laboratories at TB Dispensaries and

	<p>Hospitals.</p> <p>2. Good accessibility of services resulted in high rate of completion of smear examinations by three diagnostic samples, but was not very effective in terms of detection of new smear positive cases.</p> <p>Recommendations:</p> <ul style="list-style-type: none"> • Explore the reasons for underutilization of smear laboratories at PHC, performing less than 20 smears per week (minimum required to maintain proficiency) • In collaboration with TB monitoring team evaluate the selection criteria for TB suspects referred by GPs at PHC • Strengthen External Quality Control by blinded rechecking, focusing on rechecking of smear negative slides. • Organize refresher training in smear microscopy for peripheral laboratories
<p>Policies and technical methods</p>	<p>1. National Guidelines for laboratory diagnosis of TB have not been published yet. Old Prikaz No 285 includes guidelines for smear examination which are not in line with WHO recommended standards and should be revised. However, all laboratories have received written instructions, based on WHO manual and the quality of the smear preparation is satisfactory.</p> <p>2. National policy for culture examination is not defined and culture examination is used much more than necessary for diagnosis and follow up. The quality of cultures in peripheral laboratories is not satisfactory.</p> <p>3. There is no clear understanding of DST for clinical and epidemiological use of the data, which may lead to misinterpretation of DST results and over reporting of drug resistance.</p> <p>Recommendations:</p> <ul style="list-style-type: none"> • NRL in collaboration with technical support from local and international partners should prepare national guidelines for laboratory diagnosis, including: use of diagnostic tests, frequency of examinations, technical procedures, standards for laboratory equipment and reagents, recording and reporting system, quality assurance mechanisms. • In order to improve the quality of culture and

	<p>DST, NTP should introduce these examinations in a limited number of laboratories, which satisfy minimum requirements in terms of staffing, qualification of the laboratory staff, safety and implementation of internal and external quality assurance</p> <ul style="list-style-type: none"> • Opportunities for organization of training courses in smear microscopy (advanced), culture and DST should be discussed with international partners involved in laboratory training activities (CDC, Project HOPE, WHO, SRL Borstel) • In order to get reliable information on the magnitude of drug resistance and the most frequent patterns of resistance, NTP in collaboration with NRL should develop a protocol for Drug Resistance Surveillance (DRS). • Strengthen the collaboration with the SRL in Borstel and take initiative in finding solution for legal obstacles related to the international shipment of cultures for quality assurance of DST.
<p>Quality Assurance</p>	<ol style="list-style-type: none"> 1. Although the quality of smear microscopy observed at the laboratories was satisfactory it could be further improved and contribute much more in case finding activities 2. The system for QA of smear microscopy has not been established yet and rechecking of a limited number of slides during the monitoring visits does not provide reliable information about the elements which need improvement. 3. There is no written protocol for internal quality control procedures for culture and DST 4. Regular exchange of strains with SRL for panel testing of DST proficiency is not functioning due to the problem with international transportation of cultures. <p>Recommendations:</p> <ul style="list-style-type: none"> • Mobilize available human and material resources for implementation of EQA activities for smear microscopy • Develop guidelines and protocols for implementation of Internal and

	<p>External Quality Assurance for smear, culture and DRS.</p> <ul style="list-style-type: none"> • In collaboration with CDC regional laboratory specialists and Project HOPE lab specialist, organize training in Blinded rechecking method for EQA in smear microscopy.
<p>Laboratory workload and staffing</p>	<ol style="list-style-type: none"> 1. Most of laboratories are understaffed due to the low salaries and high turnover of trained staff. The problem is mainly present at intermediate level laboratories. 2. Official standards for workload per technician in smear microscopy laboratory require 30 smears per day. <p>Recommendations:</p> <ul style="list-style-type: none"> • Ministry of Health and the Oblast Health Department should demonstrate their commitment to support implementation of DOTS principles for case detection, by employing sufficient number of lab technicians to perform smear microscopy according to internationally accepted standards. • A proposal for new regulations concerning the workload in TB laboratories should be prepared by the NTP and submitted to the Ministry of Health. In order to ensure optimal workload and good quality of laboratory work the proposal should include not only the workload related to smear examination, but also the workload related to quality assurance activities, monitoring, supervision and reporting.
<p>Training</p>	<ol style="list-style-type: none"> 1. Oblast and Raion Lab specialist have been trained in smear microscopy on training courses organized by CDC. However due to the high turn over there is still a need for additional basic trainings. 2. There is a need for training in culture, DST and DRS, since a large network of laboratories will receive equipment and will start doing cultures and DST as soon as the equipment is in place. 3. NTP plans to establish laboratory training centre at NCPH. Training plan has not been developed yet and it is not clear how will the training centre be utilized. <p>Recommendations:</p> <ul style="list-style-type: none"> • National Laboratory team should conduct training needs assessment and develop a

	<p>training plan</p> <ul style="list-style-type: none"> • Organize advanced training in smear microscopy and train a team of trainers to conduct training for Oblast and Raion laboratory staff • Explore possibilities for training in SRL for the National Laboratory Coordinator • In collaboration with SRL and other partners train the laboratory staff at NRL in conducting DRS.
<p>Recording and reporting</p>	<ol style="list-style-type: none"> 1. Laboratory register TB 04 and sputum request form TB05 are in use and are filled in properly. However there are a certain number of laboratories in TB Dispensaries which still use separate registers for chronic patients. 2. WHO recommended registers and forms for culture and DST have not been introduced yet and the examinations are registered in a register which does not include all necessary information about the patient and the examination. 3. Each laboratory prepares quarterly reports on number of examinations done, including the results of examinations, but this information has not been used to plan activities for improvement of quality. <p>Recommendations:</p> <ul style="list-style-type: none"> • Register all smear examinations in one register and avoid separate registration of DOTS and non DOTS patients • Introduce WHO recommended forms and registers for culture and DST • Analyze data from laboratory quarterly report at Oblast Round Tables and use the information to identify weaknesses and to plan activities for quality improvement.
<p>Infection control</p>	<ol style="list-style-type: none"> 1. Sputum collection is done properly, in terms of the quality of the specimens obtained, as well, as in terms of safety. The only problem identified is lack of sputum containers. Provision of disposable containers is not considered as a solution in many laboratories due to relatively high cost and the problems with waste disposal. 2. Safety measures for culture examination are in place only at the NRL. Other culture laboratories are not equipped with bio-safety cabinets, use unsafe centrifuges and the staff is not well informed about the risk of infection <p>Recommendations:</p> <ul style="list-style-type: none"> • NRL should organize distribution of disposable

	<p>containers to all laboratories in the network and explore the possibilities for provision of reusable containers for laboratories that can not use disposable ones.</p> <ul style="list-style-type: none"> • Organize training in culture with special attention to biohazards in culture laboratories and minimum safety requirements for functioning of culture and DST laboratories
<p>Monitoring and supervision</p>	<ol style="list-style-type: none"> 1. Standard monitoring checklist are not developed yet. NRL team together with Project HOPE specialist work on adaptation on checklist, previously used by Project HOPE. 2. Monitoring activities will be conducted by NRL team and local lab specialist. Funds will be provided by GFATM <p>Recommendations:</p> <ul style="list-style-type: none"> • Finalize the work on the revised check lists and discuss the content with the other partners involved in lab activities (CDC, Project HOPE) • Include training in conducting monitoring visits in the advanced training program for smear microscopy and train lab monitoring team • Ensure enough funds for monitoring activities
<p>Equipment and supplies</p>	<ol style="list-style-type: none"> 1. The majority of smear microscopy labs use microscopes with poor quality (old Lomo, Mik Med, type 1) 2. Oblast culture laboratories were equipped through KfW grant, but the equipment provided is inadequate in terms of technical characteristics and laboratory bio – safety. Senior laboratory staff from the national team was partially involved in preparing the list of equipment and technical specification for the new KfW tender, which is in process. 3. All laboratories lack small laboratory equipment, such as: loops, marking pens, spirit lamps, staining bottles and slide storage boxes. 4. Reagents for smear microscopy will be provided by GFATM and will be distributed to Oblasts by the NRL. <p>Recommendations:</p> <ul style="list-style-type: none"> • Once the new equipment is in place, provide training and instructions for proper use and maintenance of lab equipment. • Ensure that spare parts and service will be available and affordable for the NRL. (Plan

	<p>budget for maintenance and servicing)</p> <ul style="list-style-type: none"> • Use available funds from GFATM to provide necessary laboratory equipment for smear microscopy labs (small lab equipment) • Prepare the list of minimum requirements for quality of reagents and lab equipment, with technical specification and distribute to all levels of the NTP in order to ensure that the procurement of laboratory supplies from Oblast and Raion budget will be done according to the national standards.
<p>Laboratory budget</p>	<ol style="list-style-type: none"> 1. The current needs of equipment and supplies are mainly covered by donors and other international organizations 2. NTP has not yet developed a strategic plan for upgrading of laboratory service and has not ensured the sustainability in functioning of laboratory service without financial support form external donors. <p>Recommendations:</p> <ul style="list-style-type: none"> • Ensure adequate allocation of the funds available, good coordination of donors and technical agencies involved in supporting of lab service and avoid duplication of equipment and technical assistance • In collaboration with international partners develop strategic plan for upgrading of laboratory service, define priorities and prepare a budget including all components needed for good quality of services.

Annex 1:

List of persons met:

1. Alisherov A.Sh., Director of the NCPH
2. Kalmambetova G., Director of the NRL at NcpH
3. Tumashova A. F., Bacteriologist at NRL
4. Mursabekova T. Bacteriologist, Laboratory Coordinator
5. Moidunova M. M., Head Doctor, Bishkek City TB Dispensary
6. Kochenkova G. Head of Laboratory at Bishkek City TB Dispensary
7. Karpukova G., Laboratory Doctor, Bishkek City TB Dispensary
8. Ashubaeva D.A. Director of CSM N° 1
9. Pilimonova G., Lab technician, CSM N° 1
10. Shakirova Z., Lab technician, Chui TB Hospital
11. Kalieva B, Lab technician, Tokmok CSM
12. Grinenko N., TB specialist at GUIN Medical Department
13. Asanov A., Head of Medical department, TB Colony Moldovanovka
14. Sultankulova , Laboratory technician, Prison TB Hospital, Chui Oblast
15. Arziev I. A., Director of Jalalabad Oblast TB Dispensary
16. Katemirov K., Head of Monitoring Centre of Jalalabad Oblast
17. Zaremba L.D., Laboratory technician, Jalalabad TB Dispensary
18. Bahareмова E., Laboratory technician, Jalalabad TB Dispensary
19. Kasimova. F., Doctor at FMC Suzak, Jalalabad Oblast
20. Yusupova N., Laboratory technician, FMC Suzak, Jalalabad Oblast
21. Turgunbaeva, Doctor at FMC, Suzak Rayon
22. Abdulaeva A., Lab technician, CSM, Suzak Rayon
23. Komissarova V., Lab technician, CSM, Suzak Rayon

Annex II
Data collection forms

Data collection form	
Culture lab	
Present: М Джончевска региональный лабораторный специалист Пр. ХОУП Т. Бобкова лабораторны специалист Пр. ХОУП - Кыргызстан	
Date 9 наоября 2004	
Site Name: референс лаборатория НЦФ г. Бишкек	
Names of the staff and position: Врач Калмамбетова Г. Тумашова АФ. Мурзабекова Т.	
Population Served	Стационар 300 коек
Condition of building	удовлетворительно
Condition of Laboratory	Нуждается в ремонте.
Separate sections for: specimen reception; microscopy; media preparation; culture; decontamination; storage; administrative section	Помещение для культуральных исследований недостаточно. В обной комнате проводится культивирование , приготовление мазков ,просмотр культур и стерилизация посуды.
Reliable electrical supply	да
Reliable water supply	да
Organization of workflow	Из-за недостатка помещения в одной комнате проводятся различные виды работ.
Workload (diagnostic and follow up)	Smear: 6000 в год Culture: 2 375 + 1276 определение лекарственной устойчивости
Number of lab doctors	4
Number of Lab Technicians	3
Number of other staff	2
Total staff trained (where and when)	Базовые тренинги СиДиСи 1998-2004 г Бишкек. Тренинги по культуральному методу 2002 год Бишкек.

Sputum collection procedure (containers, instructions, safety)	В лаборатории не проводится
Reagents and supplies for Ziehl Neelsen (quality, quantity and source)	Фенол, фуксин, метиленовый синий получали централизованно в 1998 -2002 году Реактивы для культурального исследования – вместе с оборудованием для референс лаборатории в 1998 г
Reagents and supplies for fluorescent microscopy (quality, quantity and source)	-
Reagents and supplies for culture	Недостаточно. Используются реактивы неизвестного качества и сроков годности
Laboratory equipment *	да
Media prepared in laboratory , how often?	еженедельно
Quality of media	да
Laboratory glassware *	да
Quality of smears	да
Slide storage	да
Participates in Proficiency Testing? (WHO recommended)	Успешно прошли панельное тестирование в супранациональной лаборатории в Борстеле в 2004 году
Decontamination procedure	да
Media used for culture	Левенштейна - Иенсена
Quality of culture	да
Frequency of culture examinations	За 2004 год 1276 исследований
Use of standard reporting scale	Smear: да Culture: да
Request for Sputum Exam used and filled in properly	Smear: да Culture нет
Laboratory Register used and fill in properly	Smear: да Culture: рекомендованная НЦФ
Bio-safety measures in place?	да
Disinfectants used	Гипохлорид натрия
Contaminated waste disposal	Автоклавирование и замачивание в дезрастворе в соответствии с имеющимися инструкциями.
Number of monitoring visits last 12 months	за 10 месяцев проведено на областной и районный уровень 30 мониторингов (учреждений)
Feedback provided	
Laboratory guidelines and manuals	Smear: приказ 285 Culture: рекомендации НЦФ и ВОЗ

* Fill in the list of necessary equipment and supplies

Preparation and distribution of reagents and supplies	Приобретают на средства грантов. Распределяют в лаборатории областных противотуберкулезных учреждений.
Training activities carried out by lab	В течение 2003-2004 года обучено 116 лаборантов ЦСМ и противотуберкулезных учреждений
Research activities	Изучение лекарственной устойчивости в Кыргызстане.
Reporting (to whom and frequency)	1 раз в год в евро ТБ и ежеквартально в мониторинговый отдел НЦФ
Remarks	

Data collection form	
Culture lab	
Present: :	М Джончевска региональный лабораторный специалист Пр. ХОУП Т. Бобкова лабораторны специалист Пр. ХОУП - Кыргызстан Т. Мурзабекова республиканский координатор по бактериоскопической службе Е. Коченкова лабораторный городской координатор
Date	10 наоября
Site Name:	лаборатория ГПТД г. Бишкек
Names of the staff and position:	Врач Коченкова Е. Карпыкова Г., Лаборант Сеидахматова Алашбаева, Вахидова, Осмоналинва
Population Served	800000
Condition of building	
Condition of Laboratory	Нуждается в ремонте.
Separate sections for: specimen reception; microscopy; media preparation; culture; decontamination; storage; administrative section	Помещение для культуральных исследований недостаточно. В обной комнате проводится и приготовление среды. и посевы, и культивирование. БШБ нет
Reliable electrical supply	да
Reliable water supply	да
Organization of workflow	Культуральные исследования проводятся в здании диспансерного корпуса. Организация бактериоскопических исследований проводится рационально.
Workload (diagnostic and follow up)	Smear: 4000 в год Culture: 475 за 2003 год
Number of lab doctors	2
Number of Lab Technicians	4
Number of other staff	1
Total staff trained (where and when)	Базовые тренинги СиДиСи 1998-2004 г Бишкек. Тренинги по культуральному методу 2002 год Бишкек.
Sputum collection procedure (containers, instructions, safety)	В лаборатории не проводится
Reagents and supplies for Ziehl Neelsen (quality,	Фенол, фуксин, метиленовый синий получают

quantity and source)	от НЦФ
Reagents and supplies for fluorescent microscopy (quality, quantity and source)	-
Reagents and supplies for culture	Нет используется лиофилизованная среда Левенштейна –Иенсена с истекшим сроком годности.
Laboratory equipment *	БШБ нет, центрифуга без охлаждения со стаканами малой емкости.
Media prepared in laboratory , how often?	ежемесячно
Quality of media	Среда лиофилизованная с истекшим сроком
Laboratory glassware *	да
Quality of smears	да
Slide storage	да
Participates in Proficiency Testing? (WHO recommended)	Успешно прошли панельное тестирование по бактериоскопическим исследованиям в 2004 году
Decontamination procedure	да
Media used for culture	Левенштейна - Иенсена
Quality of culture	-
Frequency of culture examinations	За 2003 год 475 исследований
Use of standard reporting scale	Smear: да Culture: да
Request for Sputum Exam used and filled in properly	Smear: да Culture нет
Laboratory Register used and fill in properly	Smear: да Culture: рекомендованная НЦФ
Bio-safety measures in place?	Нет БШБ для культуральных исследований
Disinfectants used	Гипохлорид натрия
Contaminated waste disposal	Автоклавирование и замачивание в дезрастворе в соответствии с имеющимися инструкциями.
Number of monitoring visits last 12 months	90 за 10 месяцев
Feedback provided	
Laboratory guidelines and manuals	Smear: приказ 285 Culture: рекомендации НЦФ и ВОЗ
Preparation and distribution of reagents and supplies	Получают их НЦФ. Готовят рабочие растворы реагентов и распределяют по лабораториям ЦСМ
Training activities carried out by lab	В течение 2004 года 10 лаборантов ЦСМ на рабочем месте
Research activities	-
Reporting (to whom and frequency)	НЦФ ежеквартально БГТУ ФОМС - ежемесячно

* Fill in the list of necessary equipment and supplies

Remarks	
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Data collection form	
Microscopy lab	
Present:	М Джончевска региональный лабораторный специалист Пр. ХОУП Т. Бобкова лабораторны специалист Пр. ХОУП - Кыргызстан Т. Мурзабекова республиканский координатор по бактериоскопической службе Е. Коченкова лабораторный городской координатор
Date 10 ноября 2004 года	
Site Name: лаборатория ЦСМ №1 г. Бишкек	
Names of the staff and position: Лаборант: Пилимонова Г.	
Population Served	70000
Condition of building	удовлетворительное
Condition of Laboratory	удовлетворительное
Reliable electrical supply	да
Reliable water supply	да
Workload (diagnostic and follow up)	1635 за 10 месяцев
Number of lab doctors	1
Number of Lab Technicians	5
Number of other staff	2
Total staff trained (where and when)	Тренинги СиДиСи 2003 год и на рабочем месте в лаборатории ГПТД 2003-2004 год
Sputum collection procedure (containers, instructions, safety)	В лаборатории не проводится
Reagents and supplies for Ziehl Neelsen (quality, quantity and source)	Рабочие растворы реактивов получают в лаборатории ГПТД по мере необходимости
Small laboratory equipment *	да
Laboratory glassware *	да
Number of binocular microscopes (condition and maintenance) *	Нет пользуются монокулярным микроскопом ЛОМО с увеличением x 560
Quality of smears	да
Slide storage	да
Participates in Proficiency Testing? (WHO recommended)	нет
Use of standard reporting scale	да
Request for Sputum Exam used and filled in properly	да
Laboratory Register used and fill in properly	да

Bio-safety measures in place?	БШБ
Disinfectants used	Гипохлорид натрия
Contaminated waste disposal	Замачивание в дезрастворе в соответствии с имеющейся инструкцией
Number of monitoring visits last 12 months	ежемесячно
Feedback provided	
Laboratory manual and guidelines present	Письменные инструкции по приготовлению и окрашиванию мазков и утилизации материала градации бактериовыделения

Data collection form	
Microscopy lab	
Present:	М Джончевска региональный лабораторный специалист Пр. ХОУП Т. Бобкова лабораторны специалист Пр. ХОУП - Кыргызстан Т. Мурзабекова республиканский координатор по бактериоскопической службе
Date 11 ноября 2004 года	
Site Name: лаборатория Чуйской ОПТБ	
Names of the staff and position: Лаборант Шакирова З	
Population Served	Стационар на 175 коек
Condition of building	хорошее
Condition of Laboratory	шоршее
Reliable electrical supply	да
Reliable water supply	да
Workload (diagnostic and follow up)	1621 за 10 месяцев
Number of lab doctors	-
Number of Lab Technicians	1
Number of other staff	1
Total staff trained (where and when)	Тренинги СиДиСи 2004 год
Sputum collection procedure (containers, instructions, safety)	В лаборатории не проводится
Reagents and supplies for Ziehl Neelsen (quality, quantity and source)	Сухие реактивов получают в лаборатории НЦФ
Small laboratory equipment *	да
Laboratory glassware *	да
Number of binocular microscopes (condition and maintenance) *	2 бинокулярных микроскопа Цейс КФ -2 и СЕ Т1 нерабочие ЛОМО МИКМЕД-1 рабочий
Quality of smears	да
Slide storage	да
Participates in Proficiency Testing? (WHO recommended)	Панельное тестирование в 2003 году
Use of standard reporting scale	да
Request for Sputum Exam used and filled in properly	да
Laboratory Register used and fill in properly	да

Bio-safety measures in place?	БШБ
Disinfectants used	Гипохлорид натрия
Contaminated waste disposal	Замачивание в дезрастворе в соответствии с имеющейся инструкцией
Number of monitoring visits last 12 months	2 раза в год
Feedback provided	
Laboratory manual and guidelines present	Приказ 285, методические рекомендации ВОЗ, Письменные инструкции по приготовлению и окрашиванию мазков и утилизации материала градации бактериовыделения

Data collection form	
Microscopy lab	
Present:	М Джончевска региональный лабораторный специалист Пр. ХОУП Т. Бобкова лабораторны специалист Пр. ХОУП - Кыргызстан Т. Мурзабекова республиканский координатор по бактериоскопической службе
Date 11 ноября 2004 года	
Site Name: лаборатория ЦСМ Токмок Чуйской области	
Names of the staff and position: Лаборант Калиева Б	
Population Served	61000
Condition of building	хорошее
Condition of Laboratory	хорошее
Reliable electrical supply	да
Reliable water supply	да
Workload (diagnostic and follow up)	1767 за 2003 год
Number of lab doctors	1
Number of Lab Technicians	1
Number of other staff	1
Total staff trained (where and when)	Тренинги на рабочем месте в лаборатории Чуйской ОПТД 2003-2002 году
Sputum collection procedure (containers, instructions, safety)	В лаборатории не проводится
Reagents and supplies for Ziehl Neelsen (quality, quantity and source)	Реактивы получают в лаборатории Чуйской ОПТД
Small laboratory equipment *	да
Laboratory glassware *	да
Number of binocular microscopes (condition and maintenance) *	ЛОМО МИКМЕД-1 в рабочем состоянии
Quality of smears	да
Slide storage	да
Participates in Proficiency Testing? (WHO recommended)	нет
Use of standard reporting scale	да
Request for Sputum Exam used and filled in	да

properly	
Laboratory Register used and fill in properly	да
Bio-safety measures in place?	БШБ
Disinfectants used	Гипохлорид натрия
Contaminated waste disposal	Замачивание в дезрастворе в соответствии с имеющейся инструкцией
Number of monitoring visits last 12 months	1
Feedback provided	
Laboratory manual and guidelines present	Письменные инструкции по приготовлению и окрашиванию мазков и утилизации материала градации бактериовыделения. Методические рекомендации ВОЗ по бактериоскопии.

Data collection form	
Microscopy lab	
Present: М Джончевска региональный лабораторный специалист Пр. ХОУП Т. Бобкова лабораторны специалист Пр. ХОУП - Кыргызстан Т. Мурзабекова республиканский координатор по бактериоскопической службе Н Гриненко специалист по туберкулезу Метотдела ГУИН	
Date 12 ноября 2004 года	
Site Name: лаборатория тюремной туббольницы для хроничечских больных с. Новопокровка Чуйской области	
Names of the staff and position: Лаборант Султанкулова	
Population Served	350 коек
Condition of building	удовлетворительной
Condition of Laboratory	Нуждается в ремонте
Reliable electrical supply	Бывают перебои
Reliable water supply	нерегулярно
Workload (diagnostic and follow up)	2785 за 10 месяцев
Number of lab doctors	-
Number of Lab Technicians	1
Number of other staff	1
Total staff trained (where and when)	Тренинги СиДиСи в 2004год На рабочем месте КНИИТ в 2002 году
Sputum collection procedure (containers, instructions, safety)	В лаборатории не проводится
Reagents and supplies for Ziehl Neelsen (quality, quantity and source)	Сухие реактивов получали в лаборатории КНИИТ в 1998 г
Small laboratory equipment *	да
Laboratory glassware *	да
Number of binocular microscopes (condition and maintenance) *	Цейс Аксиостар в рабочем состоянии
Quality of smears	да
Slide storage	да
Participates in Proficiency Testing? (WHO recommended)	нет
Use of standard reporting scale	да
Request for Sputum Exam used and filled in properly	Нет бланков
Laboratory Register used and fill in properly	да

Bio-safety measures in place?	БШБ нерабочий
Disinfectants used	Гипохлорид натрия
Contaminated waste disposal	Замачивание в дезрастворе в соответствии с имеющейся инструкцией
Number of monitoring visits last 12 months	1 раза за год
Feedback provided	
Laboratory manual and guidelines present	методические рекомендации ВОЗ, Письменные инструкции по приготовлению и окрашиванию мазков и утилизации материала градации бактериовыделения

Data collection form	
Microscopy lab	
Present:	М Джончевска региональный лабораторный специалист Пр. ХОУП Т. Бобкова лабораторны специалист Пр. ХОУП - Кыргызстан Т. Мурзабекова республиканский координатор по бактериоскопической службе Н Гриненко специалист по туберкулезу Метотдела ГУИН
Date 12 ноября 2004 года	
Site Name: лаборатория туберкулезной колонии для вновьвыявленнх больных с. Молдовановка Чуйской области	
Names of the staff and position: Лаборант Погановская (отсутствовала)	
Population Served	800
Condition of building	удовлетворительной
Condition of Laboratory	Нуждается в ремонте
Reliable electrical supply	Бывают перебои
Reliable water supply	Воды в здании нет
Workload (diagnostic and follow up)	3058 за 10 месяцев
Number of lab doctors	-
Number of Lab Technicians	1
Number of other staff	1
Total staff trained (where and when)	На рабочем месте КНИИТ в 1998 году
Sputum collection procedure (containers, instructions, safety)	Проводит лаборант в отдельном помещении
Reagents and supplies for Ziehl Neelsen (quality, quantity and source)	Сухие реактивов получали в лаборатории КНИИТ в 1998 г
Small laboratory equipment *	-
Laboratory glassware *	-
Number of binocular microscopes (condition and maintenance) *	Цейс Аксиостар нет объектива x100 Для работы используется монокулярный микроскоп ЛОМО с увеличением x 560
Quality of smears	нет в наличии
Slide storage	нет
Participates in Proficiency Testing? (WHO recommended)	нет
Use of standard reporting scale	да
Request for Sputum Exam used and filled in properly	Нет бланков
Laboratory Register used and fill in properly	да
Bio-safety measures in place?	нет

Disinfectants used	Гипохлорид натрия
Contaminated waste disposal	Замачивание в дезрастворе в соответствии с имеющейся инструкцией
Number of monitoring visits last 12 months	1 раза за год
Feedback provided	-
Laboratory manual and guidelines present	Письменные инструкции по приготовлению и окрашиванию мазков и градации бактериовыделения

Data collection form	
Microscopy lab	
Present:	М Джончевска региональный лабораторный специалист Пр. ХОУП Т. Бобкова лабораторный специалист Пр. ХОУП - Кыргызстан К. Кантемиров зав центром мониторинга Жалалабадского ОПТД
Date 16 ноября 2004 года	
Site Name: лаборатория ЦСМ с. Сузак	
Names of the staff and position: Врач Касимова Ф. Лаборант Юсупова Н	
Population Served	70000
Condition of building	хорошее
Condition of Laboratory	хорошее
Reliable electrical supply	да
Reliable water supply	нет
Workload (diagnostic and follow up)	1389 за 2003 год
Number of lab doctors	1
Number of Lab Technicians	1
Number of other staff	1
Total staff trained (where and when)	Тренинги НЦФ и пр. ХОУП 2003 год
Sputum collection procedure (containers, instructions, safety)	В лаборатории не проводится
Reagents and supplies for Ziehl Neelsen (quality, quantity and source)	Рабочие растворы реактивов получали в лаборатории Сузакской туббольницы по мере необходимости
Small laboratory equipment *	да
Laboratory glassware *	да
Number of binocular microscopes (condition and maintenance) *	Цейс –Аксиостар в рабочем состоянии
Quality of smears	да
Slide storage	да
Participates in Proficiency Testing? (WHO recommended)	нет
Use of standard reporting scale	да
Request for Sputum Exam used and filled in	да

properly	
Laboratory Register used and fill in properly	да
Bio-safety measures in place?	нет
Disinfectants used	Гипохлорид натрия
Contaminated waste disposal	Замачивание в дезрастворе в соответствии с имеющейся инструкцией
Number of monitoring visits last 12 months	2
Feedback provided	
Laboratory manual and guidelines present	Письменные инструкции по приготовлению и окрашиванию мазков и утилизации материала градации бактериовыделения и Меодические рекомендации ВОЗ

Data collection form	
Microscopy lab	
Present:	М Джончевска региональный лабораторный специалист Пр. ХОУП Т. Бобкова лабораторный специалист Пр. ХОУП - Кыргызстан К. Кантемиров зав центром мониторинга Жалалабадского ОПТД
Date 16 ноября 2004 года	
Site Name: лаборатория ЦСМ с. Октябрьское Сузакского района	
Names of the staff and position: Врач Тургунбаев Лаборант Абдуллаева А Комиссарова В.	
Population Served	60000
Condition of building	удовлетворительное
Condition of Laboratory	Нуждается в ремонте
Reliable electrical supply	да
Reliable water supply	нет
Workload (diagnostic and follow up)	360 исследований за 2003 год
Number of lab doctors	1
Number of Lab Technicians	2
Number of other staff	1
Total staff trained (where and when)	Тренинги НЦФ и пр. ХОУП 2003 год
Sputum collection procedure (containers, instructions, safety)	В лаборатории не проводится
Reagents and supplies for Ziehl Neelsen (quality, quantity and source)	Рабочие растворы реактивов получали в лаборатории Сузакской туббольницы по мере необходимости
Small laboratory equipment *	да
Laboratory glassware *	да
Number of binocular microscopes (condition and maintenance) *	ADVANCED RESERCH в рабочем состоянии Увеличение x 600
Quality of smears	да
Slide storage	да
Participates in Proficiency Testing? (WHO recommended)	нет
Use of standard reporting scale	да
Request for Sputum Exam used and filled in properly	нет

Laboratory Register used and fill in properly	да
Bio-safety measures in place?	нет
Disinfectants used	Гипохлорид натрия
Contaminated waste disposal	Замачивание в дезрастворе в соответствии с имеющейся инструкцией
Number of monitoring visits last 12 months	-
Feedback provided	
Laboratory manual and guidelines present	Письменные инструкции по приготовлению и окрашиванию мазков и утилизации материала градации бактериовыделения и Методические рекомендации ВОЗ

Data collection form	
Microscopy lab	
Present: М Джончевска региональный лабораторный специалист Пр. ХОУП Т. Бобкова лабораторный специалист Пр. ХОУП - Кыргызстан	
Date 16 ноября 2004 года	
Site Name: лаборатория Жалалабадского ОПТД	
Names of the staff and position: Лаборант Заремба Л.Д. Бахрамова С.	
Population Served	Стационар на 225 коек
Condition of building	хорошее
Condition of Laboratory	Нуждается в ремонте
Reliable electrical supply	да
Reliable water supply	да
Workload (diagnostic and follow up)	9089 за 2003 год
Number of lab doctors	-
Number of Lab Technicians	2
Number of other staff	1
Total staff trained (where and when)	Тренинги СиДиСи 2003 года и НЦФ и пр. ХОУП 2003 год
Sputum collection procedure (containers, instructions, safety)	В лаборатории не проводится
Reagents and supplies for Ziehl Neelsen (quality, quantity and source)	Реактивы получали в лаборатории НЦФ и приобретали на бюджетные средства туббольницы по мере необходимости
Small laboratory equipment *	да
Laboratory glassware *	да
Number of binocular microscopes (condition and maintenance) *	Цейс –Аксиостар в рабочем состоянии -2 Цейс – люминисцентный -1
Quality of smears	да
Slide storage	да
Participates in Proficiency Testing? (WHO recommended)	Панельное тестирование 2003 года
Use of standard reporting scale	да
Request for Sputum Exam used and filled in	да

properly	
Laboratory Register used and fill in properly	да
Bio-safety measures in place?	да
Disinfectants used	Гипохлорид натрия
Contaminated waste disposal	Замачивание в дезрастворе в соответствии с имеющейся инструкцией и автоклавирование
Number of monitoring visits last 12 months	2
Feedback provided	
Laboratory manual and guidelines present	Письменные инструкции по приготовлению и окрашиванию мазков и утилизации материала градации бактериовыделения и Методические рекомендации ВОЗ

ANNEX III

Laboratory equipment, reagents and supplies

List of laboratory reagents, supplies and equipment

Culture lab

Reagents	Need	In place	In process (ordered/planned)	Additional needs	Remarks
L-Asparagine	150,0	200,0			
Aniline	70,0	-			
BrCN	150,0	500,0			
Disodium hydrogen phosphate Na ₂ HPO ₄ anhydrous	150,0	200,0			
Glycerol	1500,0	200,0			
Hydrogen peroxide 30%	150,0	1000,0			
Magnesium citrate	150,0	100,0			
Magnesium sulphate , Mg SO ₄ , 7 H ₂ O	150,0	250,0			
Malachite green	20,0	400,0			
N acetyl cysteine	-	-			
N Naphtylethylene - diamine	2,0	-			
Potassium dihydrogen phosphate anhydrous	300,0	100,0			
Sodium citrate	60,0	200,0			
Sodium glutamate	-	500,0			
Sodium hydroxide NaOH	300,0	5000,0			
Sodium hypochlorite	2000,0	2000,0			В месяц
Sodium nitrate	60,0	200,0			
Sulfanilamide	10,0	500,0			
Tri sodium phosphate	-	200,0			
Tween 80	60,0	-			
Laboratory glassware					
Beaker 100ml	2	5			
Beaker 250 ml	2	5			
Beaker 600 ml	2	5			
Erlenmeyer flask 2000ml	2	5			
Beaker 1000ml	2	5			
Erlenmeyer flask 1000 ml	2	-			
Erlenmeyer flask 250 ml	2	-			
Erlenmeyer flask 500 ml	2	-			
Funnel 1000 ml	1	2			
Funnel 250 ml	1	5			
Funnel 50 ml	1	5			
Glass pearls	100,0	200,0			
Glass tubes16 X 100	100	100			
Glass tubes16 X 160	100	100			
Measuring cylinder 10 ml	1	-			
Measuring cylinder 100 ml	1	5			
Measuring cylinder 1000ml	1	5			
Measuring cylinder 25 ml	1	2			
Measuring cylinder 500 ml	1	5			
Pipette 10ml	10	100			

Pipette 1ml		100			
Pipette 5ml	10	100			
Reagent bottles 1000ml	13	5			
Staining bottles 100ml	3	10			
Equipment					
Bacteriological incubators	6	6			
Blender (mixer)	1	1			
Fluorescent microscope	-	2			
Inspissator	2	1			
Ph meter	1	-			
Teaching microscope	2	-			
Balance	1	1			
Centrifuge	2	2			
Distillator	1	1			
Glassware washing machine	1	-			
Horizontal autoclave	-	-			
Light microscopes	-	-			
Magnetic stirrer plate	1	-			
Ovens/Hot air sterilizers	2	2			
Refrigerators	3	2			
Safety cabinets Class I	3	-			
Safety cabinets Class II	-	1			
Vertical Autoclaves	2	2			
Supplies					
Analytical balance	1	-			
Freezer – 86 ⁰ C	1	-			
Aluminum foil	4 упак	-			
Autoclave tape	6 пач	-			
Centrifuge tubes disposable	3000	300			
Cotton	1,0	1,0 кг			В месяц
Glass pipette cises	2	-			
Measuring spoons	3	2			
Pasteur pipettes	250	-			
Pipette tips	1	-			
Rubber teats	5	5			
Slide container for sending slides	-	5			
Trays for containers	1	-			
Tube rack for 16mm tubes/10	20	30			
Tube rack for 16mm tubes/20	20	30			
Tube rack for 16mm tubes/48	20	20			
Turbidity meter	1	1			

Additional equipment and reagents for DST lab

Equipment/Reagents	Need	In place	In process (ordered/planed)	Additional needs	Remarks
Freezer – 86 ⁰ C	1	-			
Analytical balance 0,0001 sensitivity	1	-			
Pure substances of TB drugs:					
Ethambutol	1.0	Очень маленькое количество			Качество, срок годности и содержание активного вещества неизвестно – нет маркировки
Isoniazid	1.0	Очень маленькое количество			Качество, срок годности и содержание активного вещества неизвестно – нет маркировки

Rifampicin	1.0	Очень маленькое количество			Качество, срок годности и содержание активного вещества неизвестно – нет маркировки
Streptomycin	1.0	Очень маленькое количество			Качество, срок годности и содержание активного вещества неизвестно – нет маркировки

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List of laboratory reagents, supplies and equipment

ГПТД г.Бишкек Кыргызстан

Smear microscopy lab

Reagents	Need	In place	In process (ordered/planned)	Additional needs	Remarks
Basic fuchsin	70.0	100.0			
Ethanol 95 % technical grade	100.0	6000.0			В месяц
Hydrochloric acid concentrated	200.0	1000.0			
Methylene blue chloride	70.0	100.0			
Phenol	100.0	1000.0			
Immersion oil	400.0	400.0			
Xylene	400.0	-			
Auramine O	-	-			Люминесцентная микроскопия не проводится
KMnO4	-	-			
Methylated spirit		-			
Disinfectant (Sodium Hypochlorite)	1000,0	2 000.0			В месяц
Glassware					
Staining bottle 100ml	3	2			
Funnel 50ml	2	4			
Measuring cylinders 100 ml	1	2			
Beakers 250ml	1	4			
Beakers 500ml	1	2			
Equipment					
Binocular microscope	1	4			
spirit lamp	1	1			
Bucket for waste collection	1	1			
Sputum transportation box	-	-			
Slide storage boxes	2	-			
Timer	1	1			
Staining rack	1				
Slide rack	1				
Wire loop holders палочки деревянные		100			
Scissors	1	2			
Forceps	1	4			
Marking (diamond) pen	1	20			восковые
Supplies					
Lens tissue paper	1 упак	-			Используется вата
Filter paper	500,0г	1000.0 г			
Adhesive labels	5000	-			
Wooden applicators	5000 шт	100			

Nickel- chromium wire 1mm	-	-			Металлические петли не используются
Sputum containers	-	200			В лаборатории мокрота не собирается
Microscope slides	5000	4000			
Gloves	100	100			В месяц
Face masks	300	-			марлевые

List of laboratory reagents, supplies and equipment

Culture lab

Reagents	Need	In place	In process (ordered/planned)	Additional needs	Remarks
L-Asparagine	-	-			Среда для посева готовится из лиофилизированной среды производства КНИИТ
Aniline	-	-			
BrCN	-	-			
Disodium hydrogen phosphate Na ₂ HPO ₄ anhydrous	-	-			
Glycerol	-	-			
Hydrogen peroxide 30%	-	-			
Magnesium citrate	-	-			
Magnesium sulphate , Mg SO ₄ , 7 H ₂ O	-	-			
Malachite green	-	-			
N acetyl cysteine	-	-			
N Naphtylethylene - diamine	-	-			
Potassium dihydrogen phosphate anhydrous	-	-			
Sodium citrate	-	-			
Sodium glutamate	-	-			
Sodium hydroxide NaOH	50.0	2000,0			
Sodium hypochlorite	200.0	2000,0			В месяц
Sodium nitrate	-	-			
Sulfanilamide	-	-			
Tri sodium phosphate	-	-			
Tween 80	-	-			
Laboratory glassware					
Beaker 100ml	1	5			
Beaker 250 ml	1	5			
Beaker 600 ml	1	5			
Erlenmeyer flask 2000ml	1	5			
Beaker 1000ml	1	2			
Erlenmeyer flask 1000 ml	1	5			
Erlenmeyer flask 250 ml	1	5			
Erlenmeyer flask 500 ml	1	5			
Funnel 1000 ml	1	5			
Funnel 250 ml	3	5			
Funnel 50 ml	3	5			
Glass pearls	100.0	-			

Glass tubes16 X 100	100	-			
Glass tubes16 X 160	100	2000			
Measuring cylinder 10 ml	1	2			
Measuring cylinder 100 ml	1	5			
Measuring cylinder 1000ml	1	2			
Measuring cylinder 25 ml	1	5			
Measuring cylinder 500 ml	1	4			
Pipette 10ml	5	100			
Pipette 1ml	5	100			
Pipette 5ml	5	100			
Reagent bottles 1000ml	3	5			
Staining bottles 100ml	3	5			
Equipment					
Bacteriological incubators	1	1			Большой емкости самодельный
Blender (mixer)	1	-			
Fluorescent microscope	-	-			
Inspissator	1	1			
Ph meter	1	-			
Teaching microscope	-	-			
Balance	1	1			
Centrifuge	1	1			Без охлаждения и малой емкости
Distillator	1	-			Воду привозят из ГПТБ
Glassware washing machine	1	-			
Horizontal autoclave	1	1			
Light microscopes	1	2			
Magnetic stirrer plate	1	-			
Ovens/Hot air sterilizers	1	2			
Refrigerators	1	-			
Safety cabinets Class I	1	-			
Safety cabinets Class II	-	-			
Vertical Autoclaves	-	-			
Supplies					
Analytical balance	-	-			
Freezer – 86° C	-	-			
Aluminium foil	1	-			
Autoclave tape	2	-			
Centrifuge tubes disposable	600	300			
Cotton	2000,0	2000,0			В месяц
Glass pipette cases	2	-			
Measuring spoons	3	1			
Pasteur pipettes	10	-			
Pipette tips	1	-			
Rubber teats	5	5			
Slide container for sending slides	10	-			
Trays for containers	2	2			
Tube rack for 16mm tubes/10	2	-			
Tube rack for 16mm tubes/20	5	5			
Tube rack for 16mm tubes/48	10	10			
Turbidity meter	-	-			

List of laboratory reagents, supplies and equipment

ЦСМ № 1 г.Бишкек Кыргызстан

Smear microscopy lab

Reagents	Need	In place	In process (ordered/planned)	Additional needs	Remarks
Basic fuchsin	-	-			Реактивы для окрашивания получают из лаборатории ГПТД по мере необходимости
Ethanol 95 % technical grade	100.0	500,0			
Hydrochloric acid concentrated	-	-			
Methylene blue chloride	-	-			
Phenol	-	-			
Immersion oil	200.0	100.0			
Xylene	200.0	-			
Auramine O	-	-			Люминесцентная микроскопия не проводится
KMnO4	-	-			
Methylated sprit		-			
Disinfectant (Sodium Hypochlorite)	1000,0	2 000.0			В месяц
Glassware					
Staining bottle 100ml	3	-			
Funnel 50ml	2	-			
Measuring cylinders 100 ml	1	-			
Beakers 250ml	1	-			
Beakers 500ml	1	-			
Equipment					
Binocular microscope	1	-			Микроскоп монокулярный ЛОМО
spirit lamp	1	1			
Bucket for waste collection	1	1			
Sputum transportation box	-	-			
Slide storage boxes	2	-			Приспособленные коробки
Timer	1	1			
Staining rack	1	1			
Slide rack	1	1			
Wire loop holders	-	-			
Scissors	1	1			
Forceps	1	4			
Marking (diamond) pen	1	5			восковые
Supplies					
Lens tissue paper	1 упак	-			Используется вата
Filter paper	500,0г	1м			
Adhesive labels	5000	-			
Wooden applicators	2,500 шт	50			
Nickel- chromium wire 1mm	-	-			Металлические петли не используются
Sputum containers	2,500	30			Приспособленная посуда для многократного использования
Microscope slides	2,500	1000			
Gloves	100	20			В месяц
Face masks	300	-			марлевые

List of laboratory reagents, supplies and equipment

Лаборатория Лаборатория ЧОПТБ

Smear microscopy lab

Reagents	Need	In place	In process (ordered/planned)	Additional needs	Remarks
Basic fuchsin	50,0	100			Реактивы для окрашивания получают из лаборатории ЧОПТБ по мере необходимости
Ethanol 95 % technical grade	100.0	1000,0			
Hydrochloric acid concentrated	100,0	100,0			
Methylene blue chloride	50,0	100,0			
Phenol	-	500,0			
Immersion oil	200.0	200.0			
Xylene	200.0	-			
Auramine O	-	-			Люминесцентная микроскопия не проводится
KMnO4	-	-			
Methylated sprit		-			
Disinfectant (Sodium Hypochlorite)	1000,0	1000.0			В месяц
Glassware					
Staining bottle 100ml	3	5			
Funnel 50ml	2	2			
Measuring cylinders 100 ml	1	2			
Beakers 250ml	1	-			
Beakers 500ml	1	-			
Equipment					
Binocular microscope	1	1			Микроскоп Ломо МикМед 1
spirit lamp	1	1			
Bucket for waste collection	1	1			
Sputum transportation box	-	-			
Slide storage boxes	2	-			Приспособленные коробки
Timer	1	1			
Staining rack	1	1			
Slide rack	1	1			
Wire loop holders	-	-			
Scissors	1	1			
Forceps	1	2			
Marking (diamond) pen	1	4			восковые
Supplies					
Lens tissue paper	1 упак	-			Используется вата
Filter paper	200,0г	1,0 м			
Adhesive labels	2500	-			
Wooden applicators	2500 шт	50			
Nickel- chromium wire 1mm	-	-			Металлические петли не используются
Sputum containers	2500	100			Приспособленная посуда для многократного использования
Microscope slides	2500	500			
Gloves	100	20			В месяц
Face masks	300	-			марлевые

List of laboratory reagents, supplies and equipment

ЦСМ г.Токмок Чуйской области

Smear microscopy lab

Reagents	Need	In place	In process (ordered/planned)	Additional needs	Remarks
Basic fuchsin	-	-			Реактивы для окрашивания получают из лаборатории ЧОПТБ по мере необходимости
Ethanol 95 % technical grade	100.0	1000,0			
Hydrochloric acid concentrated	-	-			
Methylene blue chloride	-	-			
Phenol	-	-			
Immersion oil	200.0	200.0			
Xylene	200.0	-			
Auramine O	-	-			Люминесцентная микроскопия не проводится
KMnO4	-	-			
Methylated sprit		-			
Disinfectant (Sodium Hypochlorite)	1000,0	1000.0			В месяц
Glassware					
Staining bottle 100ml	3	-			
Funnel 50ml	2	-			
Measuring cylinders 100 ml	1	-			
Beakers 250ml	1	-			
Beakers 500ml	1	-			
Equipment					
Binocular microscope	1	1			Микроскоп Ломо МикМед 1
spirit lamp	1	1			
Bucket for waste collection	1	1			
Sputum transportation box	-	-			
Slide storage boxes	2	-			Приспособленные коробки
Timer	1	1			
Staining rack	1	1			
Slide rack	1	1			
Wire loop holders	-	-			
Scissors	1	1			
Forceps	1	2			
Marking (diamond) pen	1	2			восковые
Supplies					
Lens tissue paper	1 упак	-			Используется вата
Filter paper	200,0г	1,0 м			
Adhesive labels	2500	-			
Wooden applicators	2500 шт	50			
Nickel- chromium wire 1mm	-	-			Металлические петли не используются
Sputum containers	2500	50			Приспособленная посуда для многократного использования
Microscope slides	2500	200			
Gloves	100	20			В месяц
Face masks	300	-			марлевые

List of laboratory reagents, supplies and equipment

Тюремная туб больница
с.Новопокровка.

Smear microscopy lab

Reagents	Need	In place	In process (ordered/planned)	Additional needs	Remarks
Basic fuchsin	50.0	-			Реактивы для окрашивания получают из лаборатории ЧОПТБ по мере необходимости
Ethanol 95 % technical grade	200.0	500,0			
Hydrochloric acid concentrated	-	-			
Methylene blue chloride	50.0	-			
Phenol	1000.0	-			
Immersion oil	400.0	50.0			
Xylene	400.0	-			
Auramine O	-	-			Люминесцентная микроскопия не проводится
KMnO4	-	-			
Methylated sprit	-	-			
Disinfectant (Sodium Hypochlorite)	1000,0	1 000.0			В месяц
Glassware					
Staining bottle 100ml	3	-			
Funnel 50ml	2	-			
Measuring cylinders 100 ml	1	-			
Beakers 250ml	1	-			
Beakers 500ml	1	-			
Equipment					
Binocular microscope	1	1			Микроскоп «ZIESS» Aksiostar
spirit lamp	1	1			
Bucket for waste collection	1	1			
Sputum transportation box	-	-			
Slide storage boxes	16	-			Приспособленные коробки
Timer	1	1			
Staining rack	1	1			
Slide rack	1	1			
Wire loop holders	-	-			
Scissors	1	1			
Forceps	1	4			
Marking (diamond) pen	1	2			восковые
Supplies					
Lens tissue paper	3 упак	-			Используется вата
Filter paper	200,0г	0.5 м			
Adhesive labels	3500	-			
Wooden applicators	3500 шт	50			
Nickel- chromium wire 1mm	-	-			Металлические петли не используются
Sputum containers	3500	50			Приспособленная посуда для многократного использования
Microscope slides	3500	500			
Gloves	100	20			В месяц
Face masks	300	-			марлевые

List of laboratory reagents, supplies and equipment

Туберкулезная колония с.
Молдовановка

Smear microscopy lab

Reagents	Need	In place	In process (ordered/planned)	Additional needs	Remarks
Basic fuchsin	70.0	-			Реактивы для окрашивания получают из лаборатории ЧОПТЬ по мере необходимости
Ethanol 95 % technical grade	100.0	500,0			
Hydrochloric acid concentrated	200.0	-			
Methylene blue chloride	70.0	-			
Phenol	1000.0	-			
Immersion oil	400.0	100.0			
Xylene	400.0	-			
Auramine O	-	-			Люминесцентная микроскопия не проводится
KMnO4	-	-			
Methylated sprit		-			
Disinfectant (Sodium Hypochlorite)	1000,0	500.0			В месяц
Glassware					
Staining bottle 100ml	3	-			
Funnel 50ml	2	-			
Measuring cylinders 100 ml	1	-			
Beakers 250ml	1	-			
Beakers 500ml	1	-			
Equipment					
Binocular microscope	1	1			Микроскоп «ZIESS» Aksiostar
spirit lamp	1	1			
Bucket for waste collection	1	1			
Sputum transportation box	-	-			
Slide storage boxes	20	-			Приспособленные коробки
Timer	1	1			
Staining rack	1	1			
Slide rack	1	1			
Wire loop holders	-	-			
Scissors	1	1			
Forceps	1	4			
Marking (diamond) pen	10	1			восковые
Supplies					
Lens tissue paper	4 упак	-			Используется вата
Filter paper	200,0г	0,5 м			
Adhesive labels	5000	-			
Wooden applicators	5000 шт	50			
Nickel- chromium wire 1mm	-	-			Металлические петли не используются
Sputum containers	5000	50			Приспособленная посуда для многократного использования
Microscope slides	5000	300			
Gloves	100	20			В месяц
Face masks	300	-			марлевые

List of laboratory reagents, supplies and equipment

Лаборатория Жалалабадской ОПТБ

Smear microscopy lab

Reagents	Need	In place	In process (ordered/planned)	Additional needs	Remarks
Basic fuchsin	150.0	200,0			
Ethanol 95 % technical grade	2000.0	2000.0			
Hydrochloric acid concentrated	500.0	100,0			
Methylene blue chloride	150.0	200,0			
Phenol	2500.0	1000,0			
Immersion oil	1000.0	-			Используется подсолнечное масло
Xylene	1000.0	-			
Auramine O	-	-			Люминесцентная микроскопия не проводится
KMnO4	-	-			
Methylated sprit	-	-			
Disinfectant (Sodium Hypochlorite)	1000.0	1000.0			В месяц
Glassware					
Staining bottle 100ml	3	5			
Funnel 50ml	2	2			
Measuring cylinders 100 ml	1	2			
Beakers 250ml	1	3			
Beakers 500ml	1	3			
Equipment					
Binocular microscope	2	3			2 Микроскопа «ZIESS» AksioStar и 1 «ZIESS» люминисцентный
spirit lamp	1	1			
Bucket for waste collection	1	1			
Sputum transportation box	-	-			
Slide storage boxes	40	-			Приспособленные коробки
Timer	1	1			
Staining rack	2	2			
Slide rack	2	1			
Wire loop holders	-	-			
Scissors	1	1			
Forceps	1	2			
Marking (diamond) pen	10	4			восковые
Supplies					
Lens tissue paper	10 пач	-			Используется вата
Filter paper	500.0	20 м			
Adhesive labels	10000	-			
Wooden applicators	10000	50			
Nickel- chromium wire 1mm	-	-			Металлические петли не используются
Sputum containers	10000	100			Приспособленная посуда для многократного использования
Microscope slides	10000	500			
Gloves	100	20			В месяц
Face masks	300	-			марлевые

List of laboratory reagents, supplies and equipment

Лаборатория ЦСМ с. Сузак
Жалалабадской области

Smear microscopy lab

Reagents	Need	In place	In process (ordered/planned)	Additional needs	Remarks
Basic fuchsin	25.0				Реактивы для окрашивания получают из лаборатории Сузакской Туб больницы по мере необходимости
Ethanol 95 % technical grade	100.0	-			
Hydrochloric acid concentrated	70.0	-			
Methylene blue chloride	25.0	-			
Phenol	400.0	-			
Immersion oil	150.0	100,0			
Xylene	150.0	-			
Auramine O	-	-			Люминесцентная микроскопия не проводится
KMnO4	-	-			
Methylated sprit		-			
Disinfectant (Sodium Hypochlorite)	1000,0	500.0			В месяц
Glassware					
Staining bottle 100ml	3				
Funnel 50ml	2				
Measuring cylinders 100 ml	1				
Beakers 250ml	1				
Beakers 500ml	1				
Equipment					
Binocular microscope	1	1			Микроскопа «ZEISS» Aksiostar
spirit lamp	1	1			
Bucket for waste collection	1	1			
Sputum transportation box	-	-			
Slide storage boxes	2	-			Приспособленные коробки
Timer	1	1			
Staining rack	1	2			
Slide rack	1	1			
Wire loop holders	-	-			
Scissors	1	1			
Forceps	1	2			
Marking (diamond) pen	2	4			восковые
Supplies					
Lens tissue paper	1 упак	-			Используется вата
Filter paper	200,0г	1,0 м			
Adhesive labels	1500	-			
Wooden applicators	1500 шт	50			
Nickel- chromium wire 1mm	-	-			Металлические петли не используются
Sputum containers	1500	100			Приспособленная посуда для многократного использования
Microscope slides	1500	200			
Gloves	100	20			В месяц
Face masks	300	-			Марлевые

List of laboratory reagents, supplies and equipment

Лаборатория ЦСМ с. Октябрьское
Жалалабадской области

Smear microscopy lab

Reagents	Need	In place	In process (ordered/planned)	Additional needs	Remarks
Basic fuchsin	10.0				Реактивы для окрашивания получают из лаборатории Сузакской Туб больницы по мере необходимости
Ethanol 95 % technical grade	100.0	-			
Hydrochloric acid concentrated	30.0	-			
Methylene blue chloride	10.0	-			
Phenol	100.0	-			
Immersion oil	40.0	100,0			
Xylene	40.0	-			
Auramine O	-	-			Люминесцентная микроскопия не проводится
KMnO4	-	-			
Methylated sprit		-			
Disinfectant (Sodium Hypochlorite)	500,0	500.0			В месяц
Glassware					
Staining bottle 100ml	3				
Funnel 50ml	2				
Measuring cylinders 100 ml	1				
Beakers 250ml	1				
Beakers 500ml	1				
Equipment					
Binocular microscope	1	1			Микроскоп ADVANCED RESEARCH с увеличением x 600
spirit lamp	1	1			
Bucket for waste collection	1	1			
Sputum transportation box	-	-			
Slide storage boxes	2	-			Приспособленные коробки
Timer	1	1			
Staining rack	1	2			
Slide rack	1	1			
Wire loop holders	-	-			
Scissors	1	1			
Forceps	1	2			
Marking (diamond) pen	2	4			восковые
Supplies					
Lens tissue paper	1 упак	-			Используется вата
Filter paper	200,0г	0,5 м			
Adhesive labels	1500	-			
Wooden applicators	1500 шт	50			
Nickel- chromium wire 1mm	-	-			Металлические петли не используются
Sputum containers	1500	100			Приспособленная посуда для многократного использования

Microscope slides	1500	200			
Gloves	100	10			В месяц
Face masks	300	-			марлевые