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TRIP REPORT:

KAZAKHSTAN AND TAJIKISTAN

JUNE 10-22, 2012

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List of abbreviations

AFB	Acid-fast Bacilli
AIDS	Acquired immunodeficiency syndrome
BCG	Vaccine Calmette Guerin
CAR	Central Asian Republics
CBO	Community-based Organization
DOT	Directly observed treatment intake
DOTS	WHO-recommended TB control strategy
DST	Drug Susceptibility Test
EQA	External quality assurance
GDF	Global Drug Facility
GFATM	Global Fund to Fight AIDS, Tuberculosis and Malaria
GLC	Green Light Committee
HIV	Human Immunodeficiency Virus
IC	Infection control
KNCV	Royal Netherlands TB Association
MDR-TB	Multi-Drug Resistant Tuberculosis
M&E	Monitoring and Evaluation
MoH	Ministry of Health
MoU	Memorandum of Understanding
MSF	Medecins Sans Frontiers
NGOs	Non-government Organizations
NRL	National TB Reference Laboratory
NTP	National Tuberculosis Program
NTBC	National TB Center
PHC	Primary Health Care
PPD	Purified tuberculin test
QHCP	USAID/Quality Health Care Project
TB	Tuberculosis
UNDP	United Nations Development Program
USAID	United States Agency for International Development
WHO	World Health Organization

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Executive Summary and Recommendations

The republics of Central Asia have high incidence of tuberculosis and are among those with the highest burden of multi-drug resistant strains. USAID has launched a new project to support these countries to improve the quality of health care delivery, with special attention to TB and HIV: the Quality Health Care Project (QHCP). The Project is implemented by Abt Associates, Project HOPE and a consortium of other agencies. In August 2011 the consultant was asked to review the situation of MDR-TB in CAR and the diagnostic and clinical capacity in three countries (Kyrgyzstan, Tajikistan and Uzbekistan) and make recommendations to the USAID/QHCP on scaling-up MDR-TB treatment and the role of outpatient PHC. Since then, several consultants have provided input to the QHCP. The present consultant report includes observations in two countries (Kazakhstan and Tajikistan) and conclusions and recommendations regarding priorities for QHCP for country support.

Kazakhstan

The TB incidence and mortality are decreasing, with the 47.2reported incidence decreasing more rapidly in the group 0-14 year's old (13% per year since 2003), indicating rapid reduction in prevalence and transmission. MDR-TB prevalence is very high and is the main risk for the TB control. The main risk factors for MDR are the quality of TB drugs and the availability of drugs over the counter with or without prescription.

There is a major change in national policy for TB control towards international standards of TB care, with plans for restructuring the health system including TB hospitalization. USAID/QHCP and previously the USAID-supported Project HOPE TB project provided long term advocacy and technical assistance at national level and in pilot areas and were major factors for the change.

The most important areas for improvement of policy and guidelines are the criteria for diagnosis in smear negative cases; the criteria for child hospitalization; the use of mass X-ray screening; the hospitalization of smear negative and of drug-susceptible smear positive cases; and TB diagnosis and treatment in cured cases without bacteriological confirmation.

Recommendations to QHCP:

1. Continue providing advocacy and technical support at national level to align policies with the International Standards of TB Care. Support the health system reform and advocate the TB planning model for TB hospitals described by Sanigest if the Ministry of Health agrees with its recommendations.
2. Promote monitoring of the quality of TB drugs provided by the public system and sold in the private market. Advocate ensuring the quality of production (WHO prequalification of laboratories, drug quality testing) and periodic testing of samples after delivery to health facilities.
3. Promote at national level, and implement and document in pilot areas, that physicians request sputum examination for all suspects independent of the duration of cough; that <u>in addition</u>

nursing and non-medical staff identify adults attending for any reason with cough over two weeks for microscopy screening; and that simple information about cough (not linked to TB) is displayed in outpatient facilities and provided to the general population.

4. Use the introduction of GeneXpert as an opportunity to improve the quality of clinical diagnosis, by testing a group of smear negative patients with clinical/radiological diagnosis of PTB, analyzing the proportion confirmed as TB by GeneXpert and discussing the results with the specialists, in selected TB hospitals (OR). The results should be documented and disseminated.

Tajikistan

The country is rapidly moving ambulatory TB care delivery and gradual integration of patient care in general health facilities (PHC). TB mortality, incidence and transmission are probably stabilizing but the gradual expansion of program activities continues increasing the number of reported cases and the case detection rate.

There are a very large number of external partners providing technical and financial assistance in separate or the same geographical areas. Coordination seems good but is ad-hoc, and not systematic or regular. Information regarding the experiences of the different partners providing support to oblasts is not widely available; so that staff can observe and expand successful strategies.

The main problem for the NTP is MDR-TB and insufficient SLDs for treatment. The NTP is actively mobilizing other external resources.

Detection of suspects in PHC is still quite low and has not improved in 2011. The number of suspects examined and positivity are not widely used as indicators or displayed in PHC facilities or laboratories. Detection of suspects in PHC is only done by the Family Physician, missing adults with infectious TB that attend for other reasons and that can transmit TB in the facility and to the community.

Most of the TB transmission takes place before diagnosis and the most infectious sources are persons with cough that do not know that they have pulmonary TB. Studies in multiple countries show that pulmonary TB patients visit health providers several times before they are diagnosed. Persons with cough and pulmonary TB may visit health facilities for other reasons (other diseases, health controls, accompanying children or other family members) in which case the physician will not ask about cough and detect TB. Only a small part of the patients with TB will initially attend specialized TB services because for that they would need to self-diagnose; and that happens late, after they have transmitted the disease to contacts and the community. For those reasons WHO defines case detection as "the activity of identifying infectious cases, mainly among adults attending an outpatient health facility **for any reason** with cough for 2 or 3 weeks or more, through sputum smear examination"[1]. To make a substantial impact in reducing the duration of transmission and provide early treatment the first step is screening outpatients in general health facilities (microscopy for long

[1] An Expanded DOTS Framework for Effective Tuberculosis Control. WHO/CDS/TB/202.297

term cough and medical diagnosis including bacteriology for respiratory symptoms or abnormal lung radiology), the second to inform outpatients and the community regarding the need to consult for prolonged cough and the third to screen special populations (contacts, prisoners, HIV infected, etc).

The laboratory system has improved, with expansion of EQA for microscopy and rationalization of the network. However, the diagnostic and public health roles of the NRL (or rather of the three third level laboratories in development) are not clear. The multiple third level laboratories will represent a large financial load for the country and require professional staff that is already difficult to obtain for one of them (Machiton). The multiple techniques available for culture and DST (L-J, HAIN, MGIT, and GeneXpert) are not prioritized to reduce costs, and the utilization of the results by the specialists to guide diagnosis is not well monitored.

Treatment has improved, with more ambulatory care. However there are barriers to access of patients to DOT (such as the volunteers prohibited to hold TB drugs) and the organization of care and direct observation are insufficiently supervised and monitored, both for FLDs and SLDs. FLDs sales in the private market have been banned and SLDs can only be sold under medical prescription. It is unclear how much these rules are followed.

Guidelines have been produced with support from USAID/QHCP and other partners, and some are in process of approval. They are now more compatible with international recommendations on standards TB of care. However there is still insufficient dissemination and implementation. Regarding IC, the collection of sputum samples is in open air, new guidelines were approved and a responsible officer was designated in the NTP. However the most important interventions such as rapid identification and treatment of sources in outpatient facilities and ample ventilation of areas where undiagnosed patients attend seem to have less priority than technical interventions.

Recommendations to QHCP:

1. Continue collaboration with the NTP in the preparation of guidelines and standard operating procedures (SOP). In particular, advocate for authorization of trained and supervised volunteers to receive drugs from the health facility staff and administer DOT to TB patients.
2. Continue support to rationalize the laboratory network, in particular the use of the multiple techniques for culture and DST; and to establish the NRL public health functions as head of the microscopy network.
3. Develop and implement strategies to accelerate the identification of sources of infection among persons attending health facilities for any reason. Use the indicator of the number of persons examined by microscopy and positivity to monitor case detection activities in PHC and train peripheral laboratory staff to use it in graphs with quarterly updates.
4. Support improvement of DOT provision and intake, by continuing current activities and increasing monitoring, direct supervision and OR. In particular develop the use of alternative methods to the visit of patients to the facilities (other health workers, community volunteers, etc).
5. Prepare and implement a plan of OR to develop national (oblast and central level) staff and to provide information to the NTP as basis for focused interventions. The research projects should

be concrete, inexpensive, require little staff time, and produce rapid results. Some of them may result in publications that would encourage the personnel involved, but this should not be the main objective.

6. Map the TA provided by all external partners to each oblast in the country, including organization, source of funds, and main activities. Update the map quarterly in collaboration with the NTP and share it during partner meetings as a basis for discussion, coordination and exchange of information. The map should be simple and contain only the essential information. Updates from partners can be recorded in separate to distribute to interested persons, including the NTP, oblast authorities and the donors.

Introduction

The republics of Central Asia have high incidence of tuberculosis and are among those with the highest burden of multi-drug resistant strains (MDR-TB). USAID supports a project to improve the quality of health care delivery, with special attention to TB and HIV: the Quality Health Care Project (QHCP). The Project is implemented by Abt Associates, Project HOPE and a consortium of other agencies. In TB, the project aims to help integrate delivery of care into the general health system, including PHC facilities and the vertical, specialized TB system. All countries are implementing treatment of MDR-TB cases using second line drugs, supported by funding from the GFATM and with technical guidance from WHO, GDF and the GLC. A new diagnostic technology, the automated molecular test GeneXpert is being adopted by the countries, mainly to accelerate the detection of resistance to the most effective drug, rifampicin. The introduction of this technology will increase the number of MDR-TB cases detected but also will present challenges to the capacity of the national programs to treat them. Once the technology increases coverage and decreases cost it will improve the quality of diagnosis of smear negative pulmonary, children and extra-pulmonary TB, reducing clinical and radiological over-diagnosis and unnecessary treatment and hospitalization.

In August 2011 the consultant reviewed the situation of MDR-TB in CAR and the diagnostic and clinical capacity in three countries (Kyrgyzstan, Tajikistan and Uzbekistan) and made recommendations to the USAID/QHCP on scaling-up MDR-TB treatment and the role of outpatient care in general facilities. Since then, several consultants have provided input to the QHCP. The present consultant report includes TB program observations in two countries (Kazakhstan and Tajikistan) and conclusions and recommendations regarding priorities for QHCP for country support. The terms of reference are included as Annex I and the travel agenda in Annex II. It should be noted that in Kazakhstan the visit closely followed a very large WHO/EURO mission to review tuberculosis prevention, control and care in the Republic of Kazakhstan (9-18 May 2012) which debriefed and provided recommendations to the Ministry of Health – the draft report should reach the NTP by 20 July. In Tajikistan the consultant reviewed the progress of the NTP and the results of the recommendations to QHCP from the previous visit, and at QHCP in Almaty the progress on the recommendations for regional level from the 2011 mission and the use of indicators.

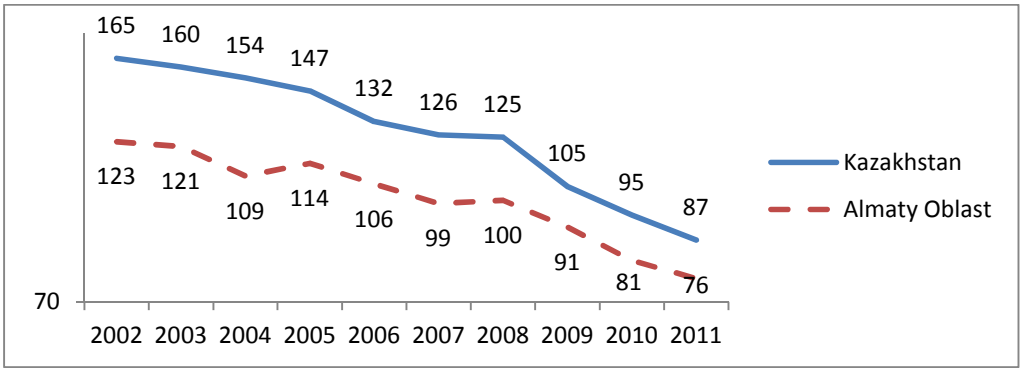
For each country visited the report includes TB epidemiology, program organization, case detection and diagnosis, treatment and prevention and treatment of MDR-TB, field observations, conclusions and recommendations.

Kazakhstan

TB epidemiology

Kazakhstan has a population of 16 million. The WHO estimates 36 000 TB deaths/year excluding HIV (23 per 100 000), an incidence of 24 000 cases including 1% TB/HIV (151 per 100 000) and a case detection rate of 82% for all forms. The reported incidence and mortality are diminishing since 2004. The case notification reported to WHO since 2005 and data from the NTP for 2011 can be seen in Table 1. TB mortality is decreasing (Figure 1).

Figure 1
TB mortality in Kazakhstan and in Almaty Oblast, 2002-2011. Rates per 100 000.



Source: USAID/QHCP

The reported TB incidence has fallen since 2002 in all ages, but more rapidly and since 1999 in children 0-14 (13% per year since 2003), a reflexion of a reduction in TB transmission and possibly of the diagnostic criteria (Figure 2). Reported incidence (new and relapses) diminished from 95.3 to 86.6 per 100 000 from 2010 to 2011. Prisons have much higher rates, but incidence also diminished from 673 to 522 per 100 000 and TB mortality from 94 to 61 per 100 000 in the same period

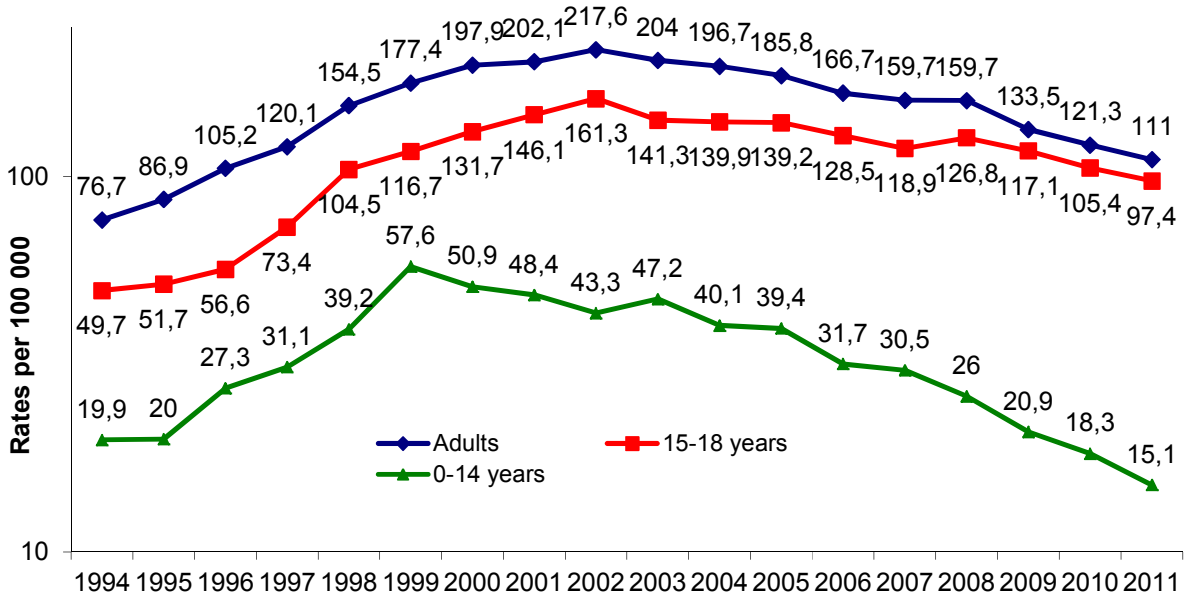
Table 1
Reported TB incidence in Kazakhstan, 2005-2011

	Total New/relapses	New Pulmonary		New EP	Relapses
		New S+	New smear -		
2005	25512	6911	14472	920	3209
2006	23728	6205	11029	3640	2854
2007	24777	6195	12056	3306	3220
2008	23140	6193	10737	2754	3456
2009	20508	5213	9319	2278	3698
2010	19703	4769	8745	2127	4062
2011*	18595	4306	8094	1996	4199

Source: Global TB Report, WHO 2011
* Source: СТАТ СБОРНИК 2011год 15.05.12г_ФИНАЛ (ТВ 07, Table 27)

TB/HIV is a relatively minor problem in the country, with about 1% of the TB cases infected with HIV. The proportion is much higher is special populations (prisons, drug users) and HIV infection in the general population is increasing, but the absolute number of TB/HIV cases is small. In contrast, drug resistance is a major problem and the prevalence is probably increasing. WHO estimates that 14% of newly notified cases and 45% of previously treated cases have MDR-TB. This corresponds to an incidence of about 1900 MDR-TB new and 4200 treated cases in 2010.

Figure 2. Reported TB incidence by age group, rates per 100 000. Kazakhstan, 1994-2011



Source: СТАТ СБОРНИК 2011год 15.05.12г_ФИНАЛ

TB control

Organization and finance

The NTP manager is the Director of the National Center for TB Problems. The NTP current priorities are:

- Improving registration, reporting and analysis of the information
- Updating manuals and guidelines, including IC (supported by the GFATM)
- Supporting operational research on the application of the new guidelines
- Introduction of new technologies (GeneXpert) for detection of MDR-TB
- Increase the use of ambulatory PHC treatment and reduction of hospitalization, which will require some changes in current policy documents and legal basis (e.g. for volunteers)
- Developing a student textbook on TB including the current international recommendations.
- Reducing the sale of first and second line TB drugs in pharmacies and improving the quality-assurance of the TB drugs used by the NTP.

The QHCP is collaborating in all of these strategies at national level through the NTP working groups and directly in the pilot oblasts.

The national program has ample regular financial resources, which cover 90% of the total TB budget. The NTP budget is equivalent to US$7 per capita or $4000 per case notified ($6 500 per new and relapse case, excluding "others"), among the highest in the world. Much of these funds are dedicated to maintain TB hospitalization, hospital maintenance and staff, and some low effectiveness interventions such as mass X-ray screening and palliative care. The main need is for treatment of MDR-TB, in particular second line drugs. The current policy can redirect those resources to more effective interventions, and this is an opportunity for QHCP to increase the quality of TB care and the epidemiological impact of the program. From 2010 to 2011 the number of hospital TB beds has decreased from 14 660 to 13000, this is the first reduction of the number of TB beds in a decade. Sanatorium beds also diminished slightly, from 3667 to 3496: both types of beds are excessive for the total number of cases, even taking into account MDR-TB.

The government is involved in a re-structuring of the health system that includes payment per capita and a new system to finance hospitals instead of payment per number of beds. The reform is in progress since September 2011 and should have major impact on the financing of TB activities. An important contribution was a study carried out by Sanigest International for the Ministry of Health[2], with support from the World Bank, diagnosing the situation of TB hospitals in five oblasts and proposing a restructuring plan. If the recommended plan and methodology is adopted and expanded by the Ministry of Health, the use of TB beds would be more rational and the resources saved could fund TB in primary health care and good quality first and second line drugs for all TB cases.

Case detection and diagnosis

Case detection is mainly from two sources: spontaneous presentation of persons with symptoms to specialized facilities and detection of suspects (two or more weeks of cough) in outpatients in general health facilities (PHC) followed by sputum smear examination. In PHC only the physician requests smear examination, although in some places nurses identify suspects for referral to the physician. There is no systematic non-medical screening for prolonged cough in PHC, little information for persons attending the PHC, and the number of persons examined and the smear positivity -although available- are not used as indicators of case detection. The country maintains the policy of mass X-ray screening, which is costly and was never evaluated regarding the number of infectious cases (smear or culture positive) detected and treated.

An observed misinterpretation of the international recommendations was observed: the physicians request smear examination only for persons with over two weeks of cough. WHO recommends sputum smear examination of TB suspects and the definition of suspect is "any person who presents with symptoms or signs suggestive of tuberculosis, in particular cough of long duration." Case detection is the activity of identifying infectious cases, mainly among adults attending an out-patient

[2] Twinning Arrangement for Investment Planning in the Health Sector. Tuberculosis service restructuring plan for five pilot oblasts: Akmola, Aktobe, Karaganda, Kyzylorda and East Kazakhstan. Sanigest International, December 2011.

health facility for any reason with cough for two or three weeks or more, through sputum smear examination[3]. Diagnosis includes all cases, infectious or not. Therefore physicians should ask smear examination from all patients with symptoms suggestive of TB, independent of the duration of cough. The limit of two weeks and more is recommended for screening adults attending health facilities for any reason, particularly those not attending because of respiratory symptoms – a public health activity.

The reported TB incidence includes many cases not confirmed by bacteriology. The proportion of smear positive among new pulmonary cases is only 35% (versus two thirds expected if there is appropriate clinical and culture diagnosis of the smear negatives) and relapses include a large number of cases with negative bacteriology. In addition to the cases fulfilling WHO definitions, a large proportion of "other retreatment cases" is reported and treated. In this respect there is a significant and continuous progress in quality of clinical criteria and indication of treatment, as the "other" group was 14 600 cases in 2006, 11 482 in 2007, 3 824 in 2010 and 3 308 in 2011. From 2010 to 2011 the proportion of adult pulmonary cases confirmed by smear examination improved slightly (33% to 36%) and the total reported TB cases decreased from 95.3 to 86.6 per 100 000.

Diagnosis of the main sources of infection (smear positive) is backed by EQA of microscopy. Culture is available by several methods, and culture and DST are requested for all cases. However, TB specialists rarely wait for the result of culture before deciding on diagnosis and indicating treatment. As a result, only half of the new pulmonary cases diagnosed are smear or culture positive and there is clinical over-diagnosis, particularly in cases reported as relapses and "other".

Treatment

Treatment is still based mainly on initial hospitalization, particularly for the smear positive cases. The average duration of hospitalization was 107 days in 2010 and 104 days in 2011 (no change), and for children 195 and 193 days. The long and unnecessary hospitalization of children is based on the belief that hospital care provides better nutrition and improved treatment outcomes, it is also influenced by the need to fill beds to maintain hospital budgets (provided on the basis of beds). It does not take into account that children are usually non-infectious, that separation from the family and hospitalization are iatrogenic to the child and that there is no evidence that bed rest contributes to cure in TB patients treated with modern chemotherapy. "Children's TB case management practices undermine the rights of children and add on TB-related stigma and discrimination" (presentation of the WHO/EURO mission to the MoH, 2012).

There is still a large, although unreported, systematic follow-up of cured patients, which is expensive, not cost-effective and can lead to incorrect clinical diagnosis and re-treatment without bacteriological confirmation. Also a large number of patients are maintained in palliative care. These are areas for OR by QHCP, both to find out the current policies and procedures and to develop ACSM strategies to adopt the international standards of care.

[3] Revised international definitions in TB control. **INT J TUBERC LUNG DIS 5(3):213–215**

Table 2
Treatment outcomes in new smear (+) cases. Kazakhstan, 2010

	% success	% death	% failure	% default	% transfer	% Cat IV*
2009	62.4	3.7	8.0	2.9	1.7	21.5
2010	60.8	3.2	6.7	2.4	1.3	25.5

* Change of treatment to Category IV (second line drugs) is equivalent to failure.
Source: СТАТ СБОРНИК 2011год 15.05.12г_ФИНАЛ

Table 3
Treatment outcomes in new smear (+) drug susceptible cases. Kazakhstan, 2010

	% success	% death	% failure	% default	% transfer
2009	79.6	4.7	10.3	3.6	1.8
2010	81.6	4.3	9.0	3.2	1.8

Source: СТАТ СБОРНИК 2011год 15.05.12г_ФИНАЛ

Treatment outcomes are strongly influenced by the high prevalence of MDR-TB and the transfers to second line drugs. Note that even in the drug-susceptible cases (Table 3) there is a very high proportion of failures, suggesting some resistance not detected by the laboratory, inadequate drug intake or most probably poor drug quality. Only a few of the local producers have been prequalified by WHO, and a study on the quality of drugs in November 2011[4] showed problems in drug quality in samples taken from public facilities and two private pharmacies (10% of H and 80% of R and of RH products failed the tests).

Treatment failures have diminished in 2011, when more cases were put on second line drugs. The proportion of new (untreated) cases moved to Category IV is much higher than the prevalence of MDR-TB in untreated cases estimated by WHO (14%), this could be due to decisions on change of treatment based on clinical non-response, bacteriological non-response or resistance other than MDR-TB. The national report indicates 31.9% MDR-TB among new cases and 52.3% in previously treated patients in 2011, versus 14 and 45% estimated by WHO for 2010 (www.who.int/tb/data, June 6, 2012).

Prevention and treatment of MDR-TB

The main elements to prevent MDR are: 1. correct use of multi-drug therapy of good quality under direct observation; 2. prevention of MDR transmission through IC; and 3. reduction of the pool of sources of MDR-TB infection.

1. Currently the treatment with FLDs in the public system has a low proportion of default and transfer-out, but high proportion of failures. Treatment is with recommended regimens, with initial

[4] Survey of the quality of anti-tuberculosis medicines circulating in selected newly independent states of the former Soviet Union. November 2011. WHO/EMP/QSM/2011.2

hospitalization followed by ambulatory DOT (mainly in specialized facilities). Drug supplies are regular. Areas for OR would be the real proportion of patients that took the drugs strictly under observation (DOT) during the whole treatment, the quality of the TB drugs used and the criteria to declare failure and to transfer to Cat. IV. The main risks are poor quality of the TB drugs used and the availability of FLDs and SLDs in the open market, with or without prescription, which can lead to irregular or interrupted TB treatment and use of isolated TB drugs for other infections for short periods (monotherapy if the patient has TB). QHCP studies in Talgar rayon showed that streptomycin, rifampicin, kanamycin and pyrazinamide were available from private pharmacies, in 50% of the cases without the need for medical prescription. It is certain that fluoroquinolones, which are useful for many infections, are also available. Areas for OR would be the reasons for patients purchasing drugs from private market when they are provided free of charge by the public system (e.g. fear of hospitalization, stigma, access to care and delays in treatment, irregular supplies in the public facilities) and the feasibility and impact of corrective measures (ban at pharmacies, education of physicians and general public).

2. IC seems implemented in the specialized facilities (hospitals and dispensaries) and in sputum collection sites, but it has low coverage in the outpatient areas of the PHC facilities. The main intervention in addition to the rapid identification and treatment of sources of infection is natural ventilation, so in summer the environment is better, but in winter with doors and windows closed the air exchange may not be adequate and may require mechanical ventilation. In general there were no signs for general patients attending PHC regarding the importance of declaring cough of long duration, non-medical identification of suspects with cough was rare (only in some in QHCP pilot areas) and there is no request for smears except by physicians.

3. MDR-TB treatment has increased rapidly in the last years. The information available shows that the estimated number of MDR-TB cases is larger than the number detected and that the current financial resources for second line drugs will be insufficient, particularly in view of reduced funding from the GFATM and the introduction of rapid techniques to detect MDR (GeneXpert). However the country has sufficient resources (as mentioned above) if the NTP reprograms them and reduces unnecessary or ineffective interventions (mass X-ray screening, post-cure follow-up, hospitalization).

In 2011 the NTP reported 1688 MDR-TB in new cases (31.9%) and 2543 (52.3%) in re-treatment cases. The respective numbers in 2010 were 1408 and 2099 (www.who.int/tb/data, June 6 2012). Treatment of MDR-TB has similar results to other countries in the world, with between 60 and 70% success.

Field observations and interview findings

The interviews and places visited are included in Annex III. The observations below do not represent a full analysis, but examples useful to evaluate TB care and suggestions for further action.

- There is specialized hospitalization of all smear positive cases, resistant or susceptible, with ambulatory care only after conversion. The use of GeneXpert will allow rapid selection of

susceptible cases for immediate treatment with FLDs by PHC on ambulatory basis, but the policy (and criteria of the specialists) must change.

- Why do persons with TB symptoms buy drugs in private pharmacies if drugs are free from the public system? Is hospitalization a deterrent? Do patients know that they may have TB or do they buy antibiotics for undiagnosed infections? Reasons should be explored by OR so an appropriate ACSM strategy can be developed
- The GeneXpert will facilitate integration by rapid identification of MDR and also improve diagnosis by excluding TB in some clinical/radiological diagnosis. The primary consideration for placing the machines should be cost-effectiveness to detect R resistance: a PHC with very few suspects/patients is not desirable, and concentration of samples from various PHC facilities is difficult given the problems of transport of samples.
- A policlinic with 100 physicians and >1000 adult outpatients/day identified ~100 suspects per month for sputum microscopy (0.5% of total outpatients). The positivity was 2%, satisfactory. However most positive smears had large number of bacilli, there were rare scanty results, and there was no information visible to outpatients regarding "if you have cough, tell the doctor (or nurse)". Introduction of the message could be tested and the real proportion of adults with over two weeks of cough be measured by OR. Blind re-reading of an additional sample of smear negative results could be useful to confirm quality, in addition to the current EQA.
- Specialists continue with periodical controls of cured patients, an unnecessary and expensive strategy against international recommendations. Why, and what can be done to change this?
- The Almaty oblast (where QHCP has been most active) is planning a reduction of the hospital based TB care, including upgrade of general health facilities. Implementation of this plan should be adequately documented and used as model for other oblasts and the country.
- It was noted in policlinics that some physicians limit the request of sputum smear examination to patients with two or more weeks of cough. This is not the WHO recommendation (see above).
- In none of the laboratories visited there was a visible graph with the number of persons examined and the positivity; although data was available in the microscopy record. This graphs should be standard in all general facilities, both in the laboratory and accessible to other staff. It is the main indicator of TB case detection at facility and rayon level.
- TB mortality in prisons has decreased rapidly (30% in the last year)
- The country is implementing the last quarter of GFATM Round 6 and is about to start the second phase of Round 8 grants. On income reasons it is no longer eligible for future GFATM support.
- There are delays in the re-planning of USAID support and the finalization of the MoU with different agencies (QHCP, TB CARE) as a consequence of USAID policy revisions. The priorities identified by USAID for QHCP are outpatient care, revision of guidelines and introduction of GeneXpert – drug management is not included although it is a major priority for the country. Simple outcome indicators that can be used at field level and for evaluating support during the life of the projects and model OR protocols are necessary.

- There are waiting lists for treatment with SLD and the introduction of GeneXpert may increase the number of MDR-TB cases identified for treatment.

Conclusions

- TB incidence and mortality are decreasing. Reported incidence is decreasing more rapidly in the group 0-14 years old, indicating rapid reduction in prevalence and transmission. MDR-TB prevalence is very high, and MDR is the main risk for the TB control. The main factors for MDR are quality of TB drugs and availability of drugs over the counter with or without prescription.
- There is a major change in national policy for TB control towards international standards of TB care, with plans for restructuring the health system including TB hospitalization. USAID/QHCP and previously the USAID-supported Project HOPE TB project provided long term advocacy and technical assistance at national level and in pilot areas and were major factors for the change.
- Practical implementation of the changes in policy requires modification of the national norms, including elimination of obsolete prikazes, as well as staff retraining. The main interventions to modify are:
    - Criteria for diagnosis in smear negative cases (new and relapses). The introduction of GeneXpert will facilitate the process. There is some evidence of improvement in the reduction of "other" retreatment cases from over 10 000 to about 3 000 per year (it should be almost none) but the proportion of new cases confirmed by smear or culture is under 50%, with little change.
    - Criteria for child hospitalization. The current practice of long term TB hospitalization is iatrogenic; children are usually not infectious and best cared for in the family.
    - Mass X-ray screening; internationally proved not cost-effective and never evaluated in the country in regard to the detection of sources of infection.
    - Hospitalization of smear negative and of drug-susceptible smear positive cases. GeneXpert will allow classification of cases and immediate start of FLD treatment for drug-susceptible cases at PHC level, without referral to a TB specialist, reducing the delay on treatment.
    - TB diagnosis and treatment in cured cases without bacteriological confirmation, palliative care post-cure.
- The country has ample financial resources for self-sufficiency in TB control and needs only reprogramming those resources to the most effective interventions.
- Smear microscopy is only required in PHC by physicians, usually on persons with cough over two weeks. The number of persons examined by microscopy and the sputum smear positivity are available, but not used as key indicator of case detection or the trends adequately displayed at facility, rayon and oblast level.

- Quality of microscopy seems adequate but expansion of EQA and retraining in some laboratories are an important priority.
- The quality of TB drugs provided by the NTP health facilities is uncertain and not regularly monitored and local production laboratories are not always WHO pre-qualified. Treatment failure in new smear positive drug-susceptible cases is 8% versus an expected 1-2% in good programs.
- TB drugs are sold over the counter in the private market with and without prescription.
- QHCP is providing useful technical assistance at national level through the working groups to improve guidelines and at field level supporting pilot areas.

Recommendations to QHCP

The recommendations below are in order of priority.

1. Continue providing advocacy and technical support at national level to update policies and align them with the International Standards of TB Care, in particular regarding ambulatory care by general health facilities and reduction of child TB hospitalization. Support the health system reform and advocate the TB planning model for hospitals described by Sanigest if the MoH agrees with its recommendations.
2. Promote monitoring of the quality of TB drugs provided by the public system and sold in the private market – drug quality (particularly of R and RH) is currently the most probable cause for treatment failure and development of drug resistance. Advocate that the quality of production be ensured (WHO prequalification of laboratories, drug quality testing) and that TB drugs be periodically tested after delivery to health facilities. Strategies to reduce purchase of TB drugs in private market should be developed on the basis of operational research on the reasons.
3. Improve case detection by promoting at national level and implementing and documenting in pilot areas that:
    a. Physicians request sputum examination for all suspects independent of the duration of cough, following the WHO definition of TB suspect;
    b. Nursing and non-medical staff identify adults attending <u>for any reason</u> with cough over two weeks for microscopy screening;
    c. Simple information about cough (not linked to TB) is displayed in outpatient facilities and provided to the general population.
4. Use the introduction of GeneXpert as an opportunity to improve the quality of clinical diagnosis, by testing a group of smear negative patients with clinical/radiological diagnosis of PTB, analyzing the proportion confirmed as TB by GeneXpert and discussing the results with the specialists, in selected TB hospitals (OR). The results should be documented and disseminated.

5. Develop a plan and instruments to update the knowledge and practices of national program staff in interpretation of TB data for action and supervision. The most practical training methods are exercises using data from CAR countries and developing and implementing OR protocols. Training should be complemented by monitoring and measuring implementation and outcomes.

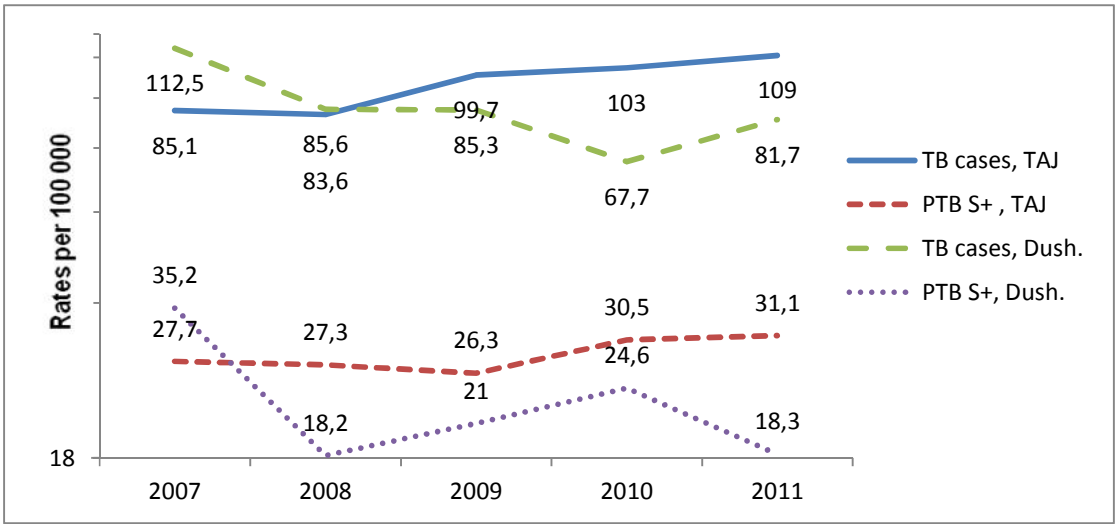
Tajikistan

TB epidemiology

Tajikistan has a population of 7 million. The WHO estimates 28 000 TB deaths/year excluding HIV (41 per 100 000), an incidence of 14 000 cases including 2% TB/HIV (206 per 100 000) and a case detection rate of 44% for all forms. WHO-estimated MDR-TB prevalence is 17% of the new cases and 62% of re-treatments, with a total annual incidence of 4000 and of 1400 among the cases reported in 2010. In that year 710 new and 610 treated cases were identified as MDR-TB and 245 new plus 333 treated cases started SLD treatment.

The country achieved full coverage of the 66 districts in 2007, 16 of those are pilot districts with more intensive support. Notified rates based on data reported to WHO have increased for total and new smear positive PTB since 2007 (Figure 3). In Dushanbe both the total and smear positive rates diminished, with a small increase for all cases in 2011. Rates are approximate, as the estimated population for the country has large variations according to the source of information - from under 7 million (WHO, World Bank) to 7.7 million (World Fact Book) - and is influenced by external and internal migration.

Figure 3
TB notification in Tajikistan and Dushanbe, 2007-2011. Rates per 100 000.



TB/HIV, with about 2% of the TB cases infected with HIV, is not yet a major priority for the country, but the prevalence of HIV in the community is increasing rapidly. The proportion is much higher in special populations (prisons, drug users). In contrast, drug resistance is already a major problem that absorbs a large proportion of the financial resources, which are insufficient.

TB control

Organization and finance

The TB program is structured as a vertical, specialized system, in the process of integrating patient care in the general health facilities. The Director of the TB Center is the head of the NTP. The government policy still supports the use of hospital beds for TB, but these were reduced by closing small facilities, with a target of 1800 by 2015. At present there are 2580 TB beds (but many are empty) and 125 for MDR-TB. Currently about 80% of the TB cases and MDR-TB is under ambulatory treatment from the start, with support from local NGOs and CBOs[5]. The main stated reason is that the hospital facilities are run down and lack funds for food, and not as indicated by international recommendations because it is the best way to treat TB. This policy is favourable to integration in general health care, but risks being abandoned if the country upgrades the TB hospitals before restructuring the system and guidelines.

The NTP has 15 staff for managing and supervising TB control activities at national and 12 at regional level. The government has decided to join the phthisiology and pneumonology specialities, this should help improving differential diagnosis of lung diseases. National TB guidelines closer to the recommended international standards of care have been approved but not all are widely available; guidelines for MDR-TB and drug management are still under discussion and IC guidelines were approved but not yet disseminated and implemented. PHC facilities carry out detection of suspects and ambulatory treatment in the continuation phase, supported by TB Dispensary or PHC physicians and auxiliary staff (feldshers).

The TB program is included in the process of reform of the health services, maintaining a TB specialized vertical structure and financial resources and integrating delivery of services in the network of general health facilities to improve access to the population. There is no reform planned for the prison system. Major problems identified are an increase of the migrant population, fourfold increase of HIV prevalence in the general population, increase of MDR-TB, exodus of professionals and poverty.

The national TB budget was US$6 million in 2010 ($0.86 per capita and $785 per reported TB case), with 39% provided from national resources. The GFATM and USAID are the major donors. The GFATM grant Round 6 has finished and there is an RCC extension approved for one year, Round 8 is entering in phase II of implementation, with UNDP as the Principal Recipient. A proposal for R11 is under consideration.

In addition to USAID/QHCP there are a large number of organizations providing technical and financial assistance to the TB program. These include the GFATM, TB CARE I (funded by USAID, implemented by KNCV), Project HOPE, Dialogue, MSF, Red Cross/Red Crescent, Caritas Luxembourg (prisons), and the Aga Khan Foundation; plus WHO, GDF and GLC. Considering the expected GFATM budget reduction, the NTP Director is in the process of soliciting support from UNITAID and TB Reach (IUATLD, funded by CIDA) for second line drugs; expansion of integrated

[5] Blondal, K. GLC/Europe mission, April 1012.

activities and GeneXpert diagnostic technology; and improving the MDR database. Coordination of all these partners is a major role of the NTP and could be improved.

Case detection and diagnosis

The number of TB suspects examined by sputum microscopy and the proportion identified by PHC facilities increased from 2008 to 2010 but stabilized in 2011 at about 39 000 and 47% respectively. The number of persons examined by microscopy represents only 0.55% of the population, so screening of persons with TB symptoms is still underutilized. The positivity of smear examination decreased, suggesting a reduction of prevalence of sources of infection in the community (Table 4). In Dushanbe and Sogd, areas with long term Project HOPE and QHCP support, the proportion of suspects detected by PHC facilities was respectively 68.5% and 57.0% of the total suspects examined in 2011, fairly constant since 2007 and higher than the national average.

Table 4
TB suspect detection for sputum microscopy, Tajikistan 2008-2010

Year	Number of suspects	Smear positive	%	Suspects identified by PHC	
				Number	%
2008	30385	3749	12.3	13363	44.0
2009	37169	3572	9.6	16709	45.0
2010	39554	3780	9.6	19060	48.2
2011*	39140	3484	8.9	18754	47.9

* Several laboratories were closed or did not work in 2011.

The proportion of the pulmonary smear positive cases diagnosed by PHC increased from 16.8% in 2007 to 37.3% in 2011, indicating a gradual integration of TB in the general health system and probably lower delay in diagnosis.

The case notification reported to WHO since 2005 and NTP data for 2011 and for relapses can be seen in Table 5. The data published in the Global TB Reports was revised based on NTP information. The proportion of relapses reported to WHO was very small until 2010, most of them were reported as “other retreatment” and not included by WHO in the total new and relapse incidence. A large proportion of relapse cases are clinical diagnosis in smear negative cases (45% in 2007, 40% in 2010); according to international recommendations relapses should rarely be diagnosed without bacteriological confirmation. Some of the smear negative relapses may be confirmed by culture, but the specialists rarely wait for the results of culture before deciding on the diagnosis.

The proportion of smear positive among new pulmonary cases was 44.5% in 2005 and 53.9% in 2010 – an improvement in diagnostic quality – but only 50.3% in 2011. In the 16 pilot regions sputum samples and other materials are collected for diagnostic culture from all clinical suspects, but the results of diagnostic culture may not reach the clinicians and traditionally the specialists rarely wait for the culture results, even when rapid techniques are available. The registration of the date of

receipt of the culture results would allow comparison with the date of diagnosis and evaluation of the use of diagnostic culture by the clinicians – it appears that large laboratory work and resources are not used to improve diagnosis of smear negative patients.

Table 5
Reported TB incidence in Tajikistan, 2005-2011

	Total New/relapses	New Pulmonary		New EP	Relapses	Smear + relapses (%)
		New S+	New smear -			
2005	5460	1745	2175	1417	123	--
2006	5362	2051	1237	1292	104	--
2007	8081*	2228	2117	1733	2 003*	1 104 (55%)
2008	7996*	2057	2284	1774	1 881*	1 039 (55%)
2009	7482*	1972	2208	1684	1 618*	879 (54%)
2010	7691*	2290	2038	1631	1 732*	1 035 (60%)
2011	7609	2174	2148	1613	1 674*	--

Source: Global TB Report WHO 2011 and NTP reports
* Data revised: in the reports to WHO most relapses were classified as "other" and not included in the total incidence.
Source: Jurkuvenas, Vytautas, May 2011; MDR TB Case Management Assessment: Tajikistan Pilots, USAID/QHCP.

Laboratory

The functions of national reference laboratory are currently carried out by the Machiton TB hospital laboratory, recently completed and receiving technical support from the WHO Supranational TB laboratory of Gauting-Munchen. The head of the laboratory was previously head of the national laboratory in Dushanbe, which is now under rehabilitation. There are some problems with the Machiton laboratory: the staff is insufficient because even with increased salaries it is difficult to find professionals for the posts available (only half the available positions are filled), Machiton is far from the city so transport of samples is more costly and complicated, the use of the multiple techniques available is not always cost-effective and the results are not well registered for analysis (several methods for the same patient, with more DST results than positive cultures).

More important in a country with limited financial resources and emigration of professionals, there will soon be three third level TB laboratories to maintain, with unclear division of responsibilities: the current NLR in Machiton, the refurbished previous NRL, and a new laboratory in Dushanbe donated by the German government. In part this is the result of poorly coordinated external assistance in the past, and there is little that can be recommended now to solve the problem except establishing firm and limited responsibilities and norms for each laboratory.

Some of the key issues to improve are the use of technologies (an algorithm for GeneXpert is under discussion); the reasons for almost 20% of the smear positive samples with negative culture, the information system in the laboratory network, and the EQA of DST to second line drugs. Regarding the information system, the main factors are that computerized reporting is uncertain in a country

with irregular electricity supply, and that the priority information available is not systematically analyzed for the use of the program. For instance, the number of persons examined by microscopy and the positivity are not used as key indicator of case detection or the quarterly trends displayed in the microscopy units – the same should be done with GeneXpert once established; and the information from the laboratory network is available on request to the consultants visiting the country but does not seem to be shared and discussed by the NTP program staff at all levels or routinely discussed by the QHCP staff.

Treatment

TB treatment is according to WHO recommendations. However DOT regularity is doubtful; it has improved significantly in some facilities in the pilot areas but in a country with such a dispersed population it is difficult for patients to access health facilities. Alternative systems of DOT providers have not yet been developed; volunteers when available cannot legally receive and keep the drugs for administration to TB patients so either the drugs are kept in a facility (low access) or with the patient (in practice, self-administration). This invalidates most of the efforts of local NGOs and CBOs to involve the community and train volunteers. With a growing frequency of ambulatory care, ensuring DOT for FLDs and SLDs becomes the first priority to improve treatment.

The supply of FLDs is sufficient and regular; drugs are procured by Project HOPE until 2014 with RCC GFATM funds. SLDs are procured by UNDP with the GLC mechanism, mainly with GFATM funds. The supply is insufficient and periodically newly diagnosed MDR-TB cases must wait for drug supplies.

The treatment outcomes in cohorts of new smear positive patients at national level have had unlikely good results for several years, suggesting that the information is not reliable. The results in Dushanbe seem more logical, taking into account the high proportion of MDR-TB: Success 70.0%, failed 19.0%, died 3.4%, defaulted 5.1% and transferred 2.2% in 2010.

Table 3
Treatment outcome in new smear positive TB cases, Tajikistan*

Year	% cured	% success	% dead	% failed	% lost/transfer
2005	74	83	4	6	7
2006	80	85	5	5	5
2007	78	83	5	6	5
2008	76	83	4	7	5
2009	75	81	4	8	5
2010	76	81	5	11	4

Source: Global Tuberculosis Control. WHO, 2011
* Note the discordance of cure, success, death and failure with the high prevalence of MDR in new TB cases and the stability of results through several years, suggesting inaccurate data.

The government has banned sales of FLD in the private market and mandated medical prescription for the sales of SLDs in pharmacies. It is unclear how well these orders are followed and the MoH capacity to monitor and ensure implementation.

Prevention and treatment of MDR-TB

A recent survey of MDR-TB prevalence (2010-2011) with a wider sample than in the past identified 12.5% MDR-TB in newly diagnosed patients and 53.6% in re-treatments, slightly lower than the previous estimates.

Treatment of MDR-TB is with WHO standard regimens. Only some of the diagnosed cases are approved for and initiate treatment: 52 out of 141 diagnosed in 2009; 245 out of 333 in 2010; and 380 out of 604 in 2011. This compares unfavourably with the WHO estimate of 1320 MDR-TB cases among the TB patients reported in 2010 (710 new and 610 previously treated). This is due mainly to insufficient supplies of SLD but also to the still limited capacity for diagnosis. The introduction of GeneXpert should improve the second factor. The results of treatment are quite good, nearly 70% success rate, and the main risk is the weak implementation of DOT in ambulatory care, due to poor access of patients to DOT providers and lack of an efficient supervision system.

Prevention of MDR-TB starts with effective treatment with FLDs. Again the problem is patient access to DOT, either in health facilities, by health staff, by community volunteers or by duly monitored family members, and the lack of regular supervision of facility staff as a follow-up to training. Incentives to facilitate DOT such as payment of transport or social support are not sustainable and limited to a few pilot areas. However the general situation seems improved in comparison with previous years, the use of the limited resources available is more rational and the requests for external support better founded.

Infection control is in general poor, both in TB and in PHC facilities. The IC guidelines have been approved and there is a responsible officer in the central NTP team, but there is little experience in practical application of interventions. Sputum collection is usually carried out in the open air (good) but separation of patients irrespective of infectiousness and use of respirators by staff seems to have a higher priority than identification of sources in outpatient facilities or good ventilation where undiagnosed patients congregate. Exact measurement of air exchange rates should be less important than evident places where air does not flow easily, such corridors of hospitals and dispensaries.

Field observations and interview findings

- Electricity supply is irregular in large parts of the country. When procuring and deploying GeneXpert technology, this should be taken into account so either adequate batteries are procured or electric supply ensured.
- TB CARE I has already defined with the NTP the rayons to start expansion support. TB Reach has a plan of action for one year.
- Four GeneXpert systems have been installed and ten more are planned with UNITAID and TB Reach support. The installation of the GeneXpert provided through QHCP is pending the agreement of USAID to the planned site chosen with the NTP.
- In none of the laboratories visited there was a visible graph with the number of persons examined and the positivity; although data was available in the microscopy record.

Conclusions

- The country is rapidly moving ambulatory TB care delivery and gradual integration of patient care in general health facilities (PHC). TB mortality, incidence and transmission are probably stabilizing but the gradual expansion of program activities continues increasing the number of reported cases.
- There are a very large number of external partners providing technical and financial assistance, in separate or the same geographical areas. Coordination seems good but is ad-hoc, not systematic or regular. There is little information regarding the experiences of the different partners providing support to oblasts so that national or external staff can observe and expand successful strategies.
- The main problem for the NTP is MDR-TB and insufficient SLDs for treatment. The NTP is actively mobilizing other external resources.
- Detection of suspects in PHC is still quite low and has not improved in 2011. The number of suspects examined and positivity are not widely used as indicators or displayed in PHC facilities or laboratories. Detection of suspects in PHC is only done by the Family Physician, missing adults with infectious TB that attend for other reasons.
- The laboratory system has improved, with expansion of EQA for microscopy and rationalization of the network. However the diagnostic and public health roles of the NRL, (or rather of the three third level laboratories in development), are not clear. The multiple third level laboratories will represent a large financial load for the country and require professional staff that is already difficult to obtain for one of them (Machiton). The multiple techniques available for culture and DST (L-J, HAIN, MGIT, and GeneXpert) are not prioritized to reduce costs, and the utilization of the results by the specialists to guide diagnosis is not well monitored.
- Treatment has improved, with more ambulatory care. However there are barriers to access of patients to DOT (such as the volunteers prohibited to hold TB drugs) and the organization of care and direct observation are insufficiently supervised and monitored, both for FLDs and SLDs.

- FLDs sales in the private market have been banned and SLDs can only be sold under medical prescription. It is unclear how much these rules are followed.
- Guidelines have been produced with support from USAID/QHCP and other partners, and some are in process of approval. They are now more compatible with international recommendations on the standards of care. However there is still insufficient dissemination and implementation.
- Regarding IC, the positive observation is that the collection of sputum samples is in open air, the approval of the new guidelines and designation of a responsible officer in the NTP. However the most important aspects, such as rapid identification and treatment of sources in PHC facility and dispensary OPDs and full ventilation of areas where undiagnosed patients attend seems to have less priority than technical interventions (respirators, frequency of air exchange, and separation of patients during treatment).

Recommendations to QHCP

The recommendations below are in order of feasibility and practical importance to improve the quality of TB care and the support provided to the NTP by external technical assistance.

- Continue collaboration with the NTP in the preparation of guidelines and standards operating procedures (SOP). In particular, advocate for authorization to trained and supervised volunteers to receive drugs from the health facility staff and administer DOT to TB patients. Volunteers should be chosen with the patient and be monitored by health staff.
- Support the NTP in the rationalization of the laboratory network, in particular the use of the multiple techniques for culture and DST. The NRL public health function as head of the microscopy network should be developed so that the NRL continues it after external TA is finished; the key elements are data analysis and direct supervision. Note that electronic systems are a disadvantage for easy supervision of facilities, even in countries with regular electric supply. Paper-based registers are much more useful and the basis for the Styblo model of DOTS program organization – that was the reason for basing the program at district level.
- Accelerate the identification of sources of infection among persons attending health facilities for any reason: Physicians should request microscopy when suspecting TB, independently of the duration of symptoms; written signs in outpatient entrance and waiting rooms (brief and visible) should indicate to outpatients that if they have cough they should indicate it to the physician or nurse; non-medical screening systems should be added to the medical activity (for instance, query by nurses or by the admission clerk; and the population must be regularly reminded that " if you cough for long time, consult a health worker". Each of these interventions should be tested in a few facilities and the effect measured, for expansion if successful. Note that the recommendation of detecting patients with symptoms attending health facilities, informing the community and health staff about persistent cough, examination of contacts and persons with abnormal x-rays

and immigrants dates to the 9th Report of the TB Expert Committee, in 1974!. There is more data on this in Toman's Tuberculosis, Case finding.

- Use the indicator of number of persons examined by microscopy and positivity to monitor case detection activities in PHC (data already available in the microscopy units and to QHCP) and train peripheral laboratory staff to use it in graphs with quarterly updates. Note that the numbers are mainly not a measure of the laboratory but of the nursing/medical capacity to detect suspects and the prevalence of TB sources in the community.
- Support improvement of DOT provision and intake, by continuing current activities and increasing monitoring, direct supervision and OR. In particular develop the use of alternative methods to the visit of patients to the facilities (other health workers, community volunteers, etc).
- Prepare and implement a plan of OR, to develop national (oblast and central level) staff; and to provide information to the NTP as basis for focused interventions. The research projects should be concrete, inexpensive, require little staff time, and produce rapid results. Some of them may result in publications that would encourage the personnel involved, but this should not be the main objective.
- Map the TA provided to each oblast in the country, including organization, source of funds, and main activities. Update the map quarterly in collaboration with the NTP and share it during partners meetings as a basis for discussion, coordination and exchange of information. The map should be simple and contain only the essential information. Updates from partners can be recorded in separate to distribute to interested persons, including the NTP, oblast authorities and the donors.

The following were regional recommendations from the 2011 mission that are still valid:

- Introduction of the GeneXpert technology, and revision of the diagnostic algorithms and development of SOP, including treatment of all susceptible smear positive cases by PHC.
- Improving coordination of external support through regular monthly meetings on fixed dates (including NTP staff), with an agenda including at least one or two points for decision and action.

Progress on the 2011 mission recommendations for regional QHCP/CAR

1. In coordination with other partners providing technical assistance to the TB programs, develop and implement an ACSM strategy to promote that the national health authorities:
   - ***The managerial units in the specialized TB institutions, at least in Kazakhstan and Tajikistan, are carrying out the NTP functions and gradually adopting and implementing national integration strategies. If the trend continues, the model can be adequate for CAR countries while TB continues to be a major public health problem.***

- ***Prikazes and guidelines revision are in progress. Mass screening has not yet been addressed, but hospitalization is diminishing and fully ambulatory treatment is expanding.***
- ***TB drug sales over the counter were banned, but implementation seems slow.***

2. Support NTPs to improve detection of the main sources of infection by the PHC system, by:
   - Piloting and expanding non-medical (nurse or administrative staff) detection of suspects in adults attending PHC facilities for any reason. ***Not seen in the sites visited.***
   - Using the number of persons examined by microscopy in the PHC facilities and the microscopy positivity as indicators of case detection. ***Not seen in the sites visited.***
   - Ensuring that all smear positive cases detected are registered for appropriate treatment. ***Operational research, not seen in the sites visited***.
   - Improving the systems of external quality assurance (EQA) of microscopy, piloting and expanding the re-reading of a sample of smears at oblast level. ***In progress.***
3. Support the implementation of rapid methods (GeneXpert) to confirm TB diagnosis and to detect resistance to rifampicin (MDR) so susceptible patients can be treated immediately by PHC. In progress:
   - ***Algorithms in development, focused in detection of MDR.***
   - Support planning, distribution and warehousing of TB drugs, in particular SLD***. In progress. The reduction of GF funding has put pressure on governments to improve the use of national resources and promote alternative sources (UNITAID and TB CARE).***
4. Improve access to ambulatory treatment, by:
   - Piloting, documenting and disseminating experience with DOT by the PHC system***. Documentation not seen in the sites visited.***
   - Testing expansion of DOT through the community or family members, as an extension of the health facilities and patient-linked (DOT providers chosen with the patient and trained). ***In progress, barrier is ban to provide TB drugs to volunteers.***
   - Developing standard operating procedures and guides appropriate for PHC staff. ***In progress***.
5. Support NTP staff, the specialized institutions and PHC staff to improve the quality and use of information by:
   - Identifying and analyzing discrepancies in the data (e.g. low failure rates with FLD versus high MDR prevalence, number of smear positive cases detected by microscopy versus number of reported new and relapse incidence). ***Not yet***
   - Developing protocols and supporting operational research for action, such as finding the proportion of persons with cough over two weeks attending PHC for any reason and the % of smear (+) identified in PHC that was not registered for treatment. ***Not yet***
   - Prioritizing short-term operational indicators for rapid corrective action, such as the smear and culture conversion rate at 6 months for MDR-TB cases. ***Not yet***
6. Improve coordination among the technical assistance partners and with the NTPs, by:

- Regular (monthly) meetings with established agendas including points for decision and action, defining responsibilities and follow-up of results. ***Slow progress, meetings ad-hoc.***
- Document and disseminate pilot area experiences for replication and adoption by the NTP if successful. ***Not seen in the sites visited.***

7. Supporting visits by selected national staff (NTP or Ministries) to model integrated TB control programs to promote adoption of international standards of care. Selected QHCP staff could also benefit from observing these programs, in joint visits. ***Not yet.***

Annexes

Annex I. Terms of reference

Consultation by Dr. Fabio Luelmo; June 10 – 24, 2012

1. Background

The Central Asian Republics are among the countries with the highest burden of multidrug resistant tuberculosis in the world. While international inputs for TB control throughout the region are substantial the MDR situation has been rapidly worsening despite some signs of stabilization of the epidemic in each country.
USAID has launched new Quality Health Care Project implemented by Abt Associates, Project HOPE, and the consortium of other agencies. The project is a broad project which is focused on improving the Quality of care throughout the health system including the PHC, and vertical TB and HIV systems. USAID and the Quality project are working to improve integration and to work as a catalyst to rapidly move the region towards fully ambulatory care which will allow the TB system to focus more fully on MDR TB cases.
Note: In all countries of the region there are more MDR TB cases than there are available quality assured 2nd line drugs, adequate diagnostic capacity, and adequate clinical capacity to manage these cases.

2. Goal and Approach

Kazakhstan: Review country data, available relevant reports, and current Quality Health Care project activities. Provide recommendations related to continuation of ongoing project for the 3rd year of the project and identify any additional priority recommendations for field teams to focus on together with the National partners. Meet project team during initial briefing to review trip priorities and expectations.
Review the current situation related to TB control program including linkages between inpatient and outpatient/PHC treatment and make recommendations related the role of outpatient/PHC treatment. Assess current country capacity to expand out-patient treatment and provide recommendations on the way forward.

Tajikistan: Review and follow up on TB program activities progress to meeting recommendations provided during the consultant's previous site visit. The review should include consideration of the current gap in capacity to cover the current number of MDR patients and the availability of quality assured 2nd line drugs, diagnostic capacity, and clinical capacity to treat MDR cases.

3. Required Products

- Debriefing USAID Regional Mission on initial findings and recommendations;
- Within 2 weeks upon completion of mission in the country, the consultant should prepare report with findings and recommendations.

- Deliverables: Trip report with recommendation due within two weeks of the conclusion of the consultation visit.

Annex II. Travel Agenda

June 10	Arrival to Almaty
June 11	Briefing in QHCP office, Meeting with QHCP TB team Review of reports and NTP data
June 12	Travel to Taldykurgan city, Almaty Oblast Visit Almaty Oblast Health Department and Almaty Oblast TB Hospital
June 13	Visit Almaty Oblast PHC facilities and policlinic. Travel to Almaty
June 14	Travel to Talgar District. Visit Regional TB hospital and PHC facilities Meeting with partners (PIU GFATM, TB CARE)
June 15	Meeting with NTP Director. Debriefing QCHP team.
June 16	Document review, preparation of Kazakhstan report
June 17	Travel to Dushanbe, Tajikistan. Document review, Tajikistan
June 18	Meeting with QHCP team, Meeting with NTP Director
June 19	Travel to Vakhdat rayon. Meeting with Rayon Health Administration and PHC manager. Visit Republican TB Hospital in Machiton
June 20	Visit Dushanbe PHC facilities. Meeting with partners (Dialogue, Project HOPE, MSF)
June 21	Meeting with partners (PIU GF, NTP). Meeting with NTP Director Debriefing with USAID and QHCP team
June 22	Travel to Almaty. Debriefing with USAID, QHCP
June 24	Departure from Almaty

Annex III. Persons interviewed and institutions visited

Place	Institution	Persons interviewed
Almaty, Kazakhstan	USAID/QHCP	Tom Mohr, Deputy Chief of Party Bakhtiyar Babamuradov, Regional TB Technical Director Tsogt Gombogaram, Senior TB Advisor Liza Myglina Elena Arbuzova
	USAID	Arman Toktabayanov, Regional TB Advisor, Office of Health and Education
	TB CARE I	Svetlana Pak, Regional Director TB CARE I (KNCV) Maria Idrissova, Regional Senior TB Adviser Bela Kim, Regional Laboratory Officer Guinara Kaliakbarova, Regional Technical Officer
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IV. Draft model protocols for operational research studies

The outlines below do not constitute full protocols; these must be developed for each study. However they can be useful to guide studies in areas of interest in the CAR. For each study it is useful to search the web for publications on the subject. The Quality Health Care project has carried out several studies of this type (see Background information provided to the USAID Advisor Sevim Ahmedov, February 2012). It is useful to maintain a list of the studies done with specific indication of actions taken (including date, place and expansion of coverage) and the results.

Question: What is the real proportion of adults attending general health facilities for any reason that present cough of two weeks or more? (Denominator for screening for cough in OPD) (Quality of case detection)

- Select 2-4 PHCs with MD, with total OPD >50 per day. They can be two types: urban and rural.
- Define the population to study, e.g. adults (15 or older) attending for any reason and the questions (e.g. age; sex; reason for consulting (respiratory illness, treatment of TB, other reason); is this the first visit this week (or for that reason); presence of cough (any duration); duration of cough in weeks.
- Prepare the register. Best is if the answer is yes/no or a number, with a column for each and crosses easy to add.
- Define actions to follow (e.g. ask smear microscopy of persons declaring cough over two weeks, with follow the normal procedures including registration. Note if the MD also requests microscopy, no need to collect twice.
- Put one staff (or trained volunteer with initial supervision) in addition to the normal facility staff to query all persons attending for any reason and fill out the register. For a reasonable accuracy the total persons interviewed should be at least 1000 (assuming 2% with cough over two weeks), this can be achieved in two weeks work in 2 facilities. If information will be separated by urban/rural or the number of positive cases identified will be used for analysis the total should be higher.
- Analysis should include the proportion of adults (may need counting or estimation of total attendance), % of males/females, % with cough, number and % with cough of 2 or more weeks, number which provided at least one sample, number and % of positive.
- The results can be compared with the average of the previous month for those facilities when only the MDs requested microscopy, and with the data from the microscopy register and total outpatient load in other facilities.

References:

1. Santha T. et al. Comparison of cough of 2 and 3 weeks to improve detection of smear-positive tuberculosis cases among out-patients in India. INT J TUBERC LUNG DIS 9(1):61–68. It is more complex study; the report can be requested from F. Luelmo.
2. Baily GVJ et al, Bull. WHO 37: 875-892, 1967
3. Larbaoui D, Tubercle 51:403-411, 1970

Question: Which is the impact of interventions to increase/accelerate the detection of suspects with cough over two weeks? (Quality of case detection)

- Select PHC facilities to implement one selected intervention, such as written signs where general outpatients enter the facility, or training the registration clerk to ask about cough
- Record the number of persons that attended the previous month and the number and proportion of suspects identified for microscopy
- Implement the intervention
- Record the number of persons that attended and the number and proportion of suspects identified for microscopy in the month after the intervention. Compare and discuss with the facility staff the results and, if successful, the feasibility of improving and expanding the intervention to other facilities.

Question: What is the proportion of smear positive cases detected by microscopy that are registered for diagnosis and treatment? (Quality of case detection and diagnosis)

- Count the smear positive cases for diagnosis in a rayon or oblast during one quarter. Compare with the number of smear positive new cases plus the smear positive relapses reported in the same quarter.
- Select in one or more microscopy records a list of persons (e.g. 20) with positive smear results for diagnosis in the previous month(s)
- Check how many of them have been registered (diagnosed as TB) and indicated treatment as new, retreatment (or MDR-TB) cases.
- Explore the reasons for diagnosed patients no starting treatment, and the delay.
- The study may be complemented by registering the date of positive microscopy and the date of starting treatment (treatment delay)

Question: What is the proportion of smear positive among the new and the relapse cases diagnosed? (Quality of diagnosis)

- Data available from regular reporting; estimate proportions, draw trends and compare different oblasts

Question: What is the proportion of smear negative pulmonary cases diagnosed where culture results were available to the MD at the time of decision? (Quality of diagnosis, use of laboratory)

- In a specialized facility, select a consecutive number of smear negative PTB patients (stratified as new or relapses). From the personal history, identify if the culture results (LJ, rapid tests, GeneXpert) were available to the MD or the decision to start treatment was done on clinical-radiological basis.
- A complement can be the classification of the second group in those in which the diagnosis was later confirmed by culture and those in which culture results were negative or never received (i.e. the proportion in which the clinical diagnosis coincided with the laboratory diagnosis).

- ***Question: What is the quality of clinical diagnosis of PTB in smear negative patients?***

  - Select a sample of smear negative PTB patients (separate for new and relapse) recently diagnosed in a specialized facility
  - Test them with GeneXpert
  - Discuss the proportion of positive and negative results in clinical sessions within the facility
  - Collect the information (without identification of the facilities) for training of other staff

- ***Question: What is the quality of the TB drugs (particularly of R and RH) provided by the public system? (Quality of treatment)***

  - In collaboration with the NTP obtain support from an external institution (such as GDF quality-assurance mechanisms) and funding to test an adequate sample of TB drugs collected from PHC or dispensary facilities, a few months after delivery but still within the period of validity.
  - Test them and compare with international standards
  - Collaborate with the authorities (Ministry of Health) to ensure drug quality at the moment of procurement and later monitoring.

  Reference: Survey of the quality of anti-tuberculosis medicines circulating in selected newly independent states of the former Soviet Union. November 2011. WHO/EMP/QSM/2011.2 (Sample too small for a country)

- ***Question: What is the quality of the TB drugs (particularly of R and RH) sold in private pharmacies? (Quality of treatment)***
  - In collaboration with the NTP obtain support from an external institution (such as GDF quality-assurance mechanisms) and funding to test an adequate sample of TB drugs procured from private pharmacies.

- ***Question: What is the X-ray screening effectiveness***
  - Obtain the number of persons examined in the last year with Mass X-ray screening

- Obtain the number of patients with smear positive PTB (not already on treatment) identified
- Calculate the prevalence and the estimated cost per source of infection identified
- Find out how many of those patients completed treatment or retreatment
  Do the same for culture positive patients

- ***Question: What are "other": retreatments?***

  - Select a sample of retreatments reported as "other"
  - Classify them according to the bacteriology at the time of diagnosis and the type of patient (chronic, clinical suspicion, etc)
  - Discuss if those persons should have been included as TB patients and action taken, selected for IPT or no action indicated.

- ***Question: What are the outcomes of initial treatment in cohorts of new smear positive patients in oblasts without eternal support in comparison with pilot areas (e.g. Dushanbe)?***

  - Select a sample of patients from cohort for FLD treatment already reported
  - Review the outcome of each patient according to the national definitions
  - Discuss and document

- ***Question: What are the reasons for patients buying drugs in the private market?***

  - Select a sample of new TB patients recently diagnosed, and from them how many had purchase drugs in the private market in the last year
  - Ask about the reasons
  - Discuss and propose appropriate strategies, according to the most common reasons

V. Draft model exercises for staff training

- **Review the quality of microscopy reports during direct supervision**

- Collect data from microscopy registers from different oblast PHCs and TB dispensaries (e.g. photocopy ten pages or a quarter)
- For all suspects (diagnosis) and patients (control) results, count how many are scanty, and now many with 1, 2 or 3+. Discuss the distribution: some scanty suggests careful reading of samples. Check if the results for each positive patient have are the same load (number of crosses) suggesting copying, if the second sample was more often positive (normal), what proportion of patients was added by the third sample.
- For diagnosis, count how many provided all three samples: if only the physician requests smears usually suspects provide all samples, if there is also screening of persons with cough that do not attend for respiratory symptoms it is normal that some will give only the spot sample and not come back (even for the result), two samples should be rare unless the second is delivered by another persons than the patient. Discuss the findings. Can this be rapidly done during direct supervision by a non-bacteriologist?
- Compare the positivity in PHCs and dispensaries. Discuss the reasons.
- Compare the PHC positivity in different oblasts. Does this reflect differences in TB prevalence in the community? Discuss.

Reference:
B. Mabaera et al. Making pragmatic sense of data in the tuberculosis laboratory register. **INT J TUBERC LUNG DIS 12(3):294–300**

- **Calculate and analyse indicators**

– Read Chapter 4 (pages 25-33) of Module G: Monitor and Evaluate TB Control and do the exercises.
– Repeat the exercises using data from CAR oblasts. Discuss the results and possible corrective interventions.

Reference:
Management of Tuberculosis – Training for District TB coordinator. WHO/HTM/TB/2005.347G

- **TB epidemiology**

– Project slowly the presentations on epidemiology and impact in unit 17 of the TB workshop in Russia (request by email from F. Luelmo) and discuss the conclusions – do they apply to the situation in CAR?

Reference:
F. Luelmo. Presentations in TB training workshops in Russia, WHO/Russian Federation.

- **TB epidemiology**

– Obtain data from several CAR oblasts, by quarter or year, to fill the table below. Put the data in Excel.
– Prepare graphs on trend of number of suspects, PTB+ cases diagnosed, total PTB and total new and relapses. Use numbers and rates per 100 000. Plot the data in arithmetic scale and in semi-logarithmic scales: what are the differences and advantages of each?
– To reduce time, data can be analyzed independently (e.g. groups of two participants do suspects, another group notifications, another rates)

Year or quarter							
Suspects examined							
Smear positive							
% smear positive							
Notified TB (new/rel.)							
Notified TB (new)							
Pulmonary TB							
PTB smear (+)							
PTB: % smear (+)							
TB cases <15 years							
TB rate / 100 000							
PTB smear + rate							

– Compare with the trends in Peru (population 24 million, DOTS implemented in 1989) - see following page. Discuss.

PERU	1990	1991	1992	1993	1994	1995	
Suspects examined	128 243	165 117	267 817	332 574	382 865	459 754	
Smear positive	----	----	31 072	39 396	35 291	33 916	
% smear positive	----	----	11.6	11.8	9.2	7.4	
Notified TB (new/rel)	----	40 580	52 552	51 967	48 601	45 310	
Notified TB (new)	38 946	----	----	----	----	----	
Pulmonary TB	35 565	38 076	48 932	47 192	43 082	39 899	
PTB smear (+)	24 023	23 074	32 132	35 646	33 925	28181	
PTB: % smear (+)	67.5	60.6	65.7	75.5	78.7	80.4	
TB cases <15 years	----	----	6 357	6 311	6 096	4 983	
TB rate / 100 000	183.3	192.0	243.2	233.5	215.7	196.8	
PTB smear + rate	116.1	109.2	148.7	161.1	150.5	139.4	

PERU		1995	1996	1997	1998	1999	2000
Suspects examined		459 754	641 626	766 319	914 436	1 065 254	1 156 797
Smear positive		33 916	34 758	35 464	35 460	31 392	26 187
% smear positive		7.4	5.4	4.6	3.9	2.9	2.5
Notified TB (new/rel)		45 310	43 850	----	----	----	----
Notified TB (new)		----	38 807	38 568	38 828	35 710	34 280
Pulmonary TB *		39 899	33 384	33 081	33 422	29 971	28 598
PTB smear (+) *		28181	23619	24451	27 707	24 527	22 580
PTB: % smear (+) *		80.4	80.4	83.1	82.9	81.8	79.0
TB cases <15 years *		4 983	4 827	4 240	4 272	3 812	4 057
TB rate / 100 000		196.8	162.0	158.2	156.6	141.5	133.6
PTB smear + rate		139.4	111.9	112.8	111.7	97.2	88.0

* From 1991-95 new cases **plus** relapses

Reference: Peru NTP data, 1990-2000. National Tuberculosis Programme, Peru. Tuberculosis en el Peru, Informe 1998

Annex VI. Comments to QHCP (Almaty) examples of tuberculosis indicators for PHC

1. Suspicion of tuberculosis among patients with cough (process indicator) - a description, tools

Absolute number of suspects (persons with cough over 2 weeks attending for any reason, clinical suspects selected by the physician) examined by microscopy. At facility level it can be compared with the outpatient attendance, at rayon and oblast level it can be compared with the population. Source: microscopy register. Frequency: quarterly (monthly in very large labs) and annual. It should be complemented by the positivity of microscopy.

2. Compliance with the diagnostic algorithm in patients with suspected pulmonary tuberculosis (process indicator) - there is a description of tools.

It is difficult to decide on compliance with an algorithm: which are acceptable and unacceptable deviations? A simpler indicator would be the proportion of diagnosed patients (new pulmonary, EP, relapses) that had confirmation by smear or by smear or culture.

3. The quality of sputum - the material collected: % of the samples with a mark of the Laboratory of "saliva" (process indicator)

It is interesting for the laboratory but not critical for the program, as patients with negative smears can be diagnosed as TB. The question is: As per national guidelines, does the laboratory examine also these poor specimens or not?

4. Performing a standard protocol sputum collection (process indicator)

Is this a measurable indicator? Can it be collected in regular supervision/reporting or does it need studies? Not a priority

5. The percentage of persons who provided 3 samples of sputum for diagnosis (process indicator).

This is useful, but not critical. It needs acceptable limits (e.g. >90%)

6. Proportion (%) of persons with a positive smear result among those tested for TB (results indicator)

Essential, as complement for #1 above. They should be together.

7. The average time elapsed from the time the patient with symptoms of tuberculosis in the PHC agencies prior to the treatment of tuberculosis (process indicator). The standard for patients with positive sputum smear is 7 days; and for patients with negative sputum smear 28 days)

Useful. This requires a rapid survey, which can be done during supervision. However it depends on the national guidelines and availability if GeneXpert. If GeneXpert is used, only smear positive patients susceptible to R should initiate immediate FLD treatment.

8. Percentage of full examination of TB contact - the standard 100% (process indicator)

What is the definition of full examination? International standard is query about symptoms (cough) for adults and clinical examination of children.

9. Percentage of coverage of "TB risk group" on screening for tuberculosis (process indicator).

Unclear definition of TB risk group. Each group should be well defined and analyzed separate. "Poor" and "malnourished" are not risk groups. General population is not a risk group. Household contacts, HIV-infected, diabetics, prisoners are examples of risk groups.

10. The presence in the establishment of primary health care, infection control precautions when working with persons with a cough (provision of masks at the entrance to the institution, receive queue, isolation from other visitors institutions) (process indicator).

Very expensive and impractical for general facilities (policlinics) which are the most common place for TB transmission in health care environments; not done in most countries. It could be appropriate for TB facilities in a very high MDR risk country. Note that to provide a mask you must ask about cough; and that the proportion of cough (any duration) in outpatients is about 20% (i.e. a mask would be necessary for each five persons). Isolation is not recommended, because most people with cough of two weeks or more (90%) do not have TB and would be put in close contact with infectious persons.

11. Number of missed doses during the continuation phase of treatment (per patient) (process indicator) - a description, tools.

Yes, but it needs operational studies in addition of the review of treatment cards during supervision.

12. The presence of a functioning TB patients support groups of in the primary health care (process indicator)

If patients are cured, it is not essential. If there is high default, it may be very important but the impact must be measured. It is not a measure of quality

Additional:

13. Drug supply regularity in the facility. E.g. number of days without drug supply in the period.

14. Monitoring and evaluation: at least #1 and 6 should be plotted and the quarterly trends shown in the walls; in addition to bar graphs with the number of new smear positive and smear negative PTB, EP and relapses diagnosed; and line graphs of conversion and success in new smear positive PTB.

15. ACSM. Presence of simple clear messages in view of persons attending general health facilities: TB can be cured, TB treatment is free of charge; if you cough consult a health provider (with no mention of TB)

Reference: The use of indicators for communicable Disease control at district level. WHO/CDS/TB/2001.289.

VII. Documents consulted

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