

Médecins Sans Frontières – Aral Sea Area Programme

Sida's Support to Tuberculosis Control and Treatment

**Ingela Berggren Palme
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**Department for
Research Co-operation**

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Sida Evaluation 04/13

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Research Co-operation**

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List of Abbreviations

ARI	Acute Respiratory Infections
ASA	Aral Sea Area
CDC	Center for Disease Control and Prevention (Atlanta, USA)
CDD	Control of Diarrhoea Diseases
DOT	Directly Observed Treatment
DOTS	Directly Observed Treatment Short-course
DSSM	Direct Sputum Smear Microscopy
DST	Drug Susceptibility Test
DPT3	Diphtheria, Pertussis and Tetanus vaccination (third dose)
GDP	Gross Domestic Product
GLC	Green Light Committee
HCW	Health Care Worker
HE	Health Education
HP	Health Promotion
ICU	Intensive Care Unit
IFRC	International Federation of Red Cross
IUATLD	International Union against Tuberculosis and Lung Disease
JOA	Jersey Overseas Aid
KK	Karakalpakstan
MoH	Ministry of Health
MDR	Multi-drug Resistant TB
MSF	Médecins Sans Frontières
MSM	Men who have Sex with Men
OSI	Open Society Institute (Soros Foundation)
SCC	Short Course Chemotherapy
SS+	Sputum Smear Positive
TB	Tuberculosis
ToR	Terms of Reference
WHO	World Health Organisation



Facts about Uzbekistan

Population	25,705,000
Inhabitants per square meter	61
Annual Growth Rate	1.8% (1992–2002)
Income per capita and year	450 US\$
Ranking according World Development Report 2004	Low income country (LIC)
Human development index	101/175
Total expenditure on health of GDP	3.6%
External resources on health as % of total expenditure on health	17 %
Foreign aid per capita	6 US\$
Private expenditure on health as % of total expenditure on health	40,8%
Fertility ratel	2,5
Life expectancy	65,6 men, 70,8 women
Under five mortality rate	68/1000
Maternal mortality ratio	60/100,000
Birth attended by skilled health staff	96%
Child immunisation rate: DPT3	97%
Physicians	3,1/1000

Facts about Tuberculosis¹

- Overall, one third of the population is currently infected with the TB bacillus
- Around 8 million people become sick with TB each year
- TB kills approximately 2 million people each year
- 5–10% of people who are infected with TB become sick or infectious during their life
- Less than half of active TB patients are detected by health professionals world-wide
- Left untreated, each person with active TB will infect 10–15 people every year. But people infected by TB will not necessarily get sick with the disease. The immune system “walls off” the TB bacilli which can lie dormant for many years. When the immune system is weakened, the chances of getting sick are greater.
- In 1993, the WHO declared TB a global emergency

WHO and IUATLD launched DOTS (Directly Observed Treatment Short course) in 1995 as a global strategy for controlling TB. The five essential components of DOTS are:

1. Government commitment to a National TB Program
2. Case detection by sputum smear microscopy among symptomatic patients self-reporting to health services.
3. Standardised regimens of short-course (six to eight months) chemotherapy, given under direct observation for, at least, the intensive phase of treatment
4. Regular, uninterrupted supply of anti-TB medicines
5. Standardised recording and reporting system that allows assessment of treatment results for each patient and of the TB control program performance overall.

DOTS corner Area within a health facility used for the distribution and intake of TB drugs

DOTS-Plus includes the five tenets of the DOTS strategy and takes into account specific issues (such as the use of second-line anti-TB drugs) in areas where there is high prevalence of MDR-TB. By definition, it is impossible to conduct DOTS-Plus in an area without having an effective DOTS-based TB control program in place. DOTS-Plus is still under development and testing and pilot projects have opened in Bolivia, Costa Rica, Estonia, Haiti, Latvia, Malawi, Mexico, Peru, Philippines, Honduras, Lebanon, Nepal and the Russian Federation (Arkhangelsk, Ivanovo, Tomsk and Orel Oblasts). DOTS-Plus pilot projects could not start without evaluation and permission from WHO Green Light Committee.

Case detection and diagnosis. Sputum smear microscopy (DSSM) is the most cost-effective method of screening pulmonary TB suspects referring to health services. It identifies sputum smear-positive, highly infectious TB cases. However, it does not identify smear-negative pulmonary TB, TB outside the lungs or TB in children. From a public health perspective this is considered less important as these patients do not transmit disease.

Multidrug-resistant tuberculosis (MDR TB) is a specific form of drug-resistant TB due to a bacillus resistant to at least isoniazid and rifampicin, the two most powerful anti-TB drugs.

Success rate Number of patients that completed full treatment.

Defaulters Patients who do not comply with treatment during two consecutive months.

¹ Information obtained from www.who.int



Posters on TB



Patient record and statistics



Checking sputum for TB



Excellent order in the drug cabinet



DOT – Directly Observed Treatment

Executive Summary

The purpose of this evaluation was to assess the implementation of the MSF Aral Sea Area Program during 1998–2003 focusing on TB control and treatment. The results of the evaluation will feed into a decision as to whether this program will receive further support from Sida and will help to assess from what reasons the support should continue or be disrupted. The evaluation took place in April 2004 and 12 days was spent in Tashkent, Karakalpakstan and Korezm, Uzbekistan.

After the disintegration of the Soviet Union in 1991 the health system in Uzbekistan fell apart and with that the vertical TB program. Appropriate TB drugs were no longer available and TB became one of the major health problems, especially among poor people in the Aral Sea Area.

In co-operation with the MoH of Uzbekistan and WHO, MSF began to implement DOTS (the WHO global strategy for controlling TB) in 1998. In 2003 DOTS was extended to cover all 40 districts in Karakalpakstan, Khorezm in Uzbekistan and Dashoguz in Turkmenistan. At present 4,5 million inhabitants have access to DOTS and over 25 000 patients have been treated in the MSF program. All but two districts will be handed over to the MoH by June 2004.

Due to high numbers of multi-resistant TB (13% of new cases and 40% of retreated patients) a DOTS-Plus Pilot Project was formulated and WHO gave “green light” to start treatment for 100 patients with second line TB drugs in April 2003. The DOTS-Plus pilot project was planned to end in 2005 but due to delay, mainly in the recruitment of patients, the project will be prolonged. There are also preliminary discussions to expand the project and treat more than the initial 100 patients.

Apart from TB treatment the MSF activities have included operational research on the environmental impact on health. This activity is on the way to be handed over to a Canadian Consortium. Another already closed activity is training in ARI/CDD.

The main findings in this evaluation were:

- Successful introduction and implementation of DOTS
- Important knowledge of the present TB epidemic in ASA drawn from the project
- Good integration with MoH and other donors

The main conclusions are:

- TB is a major public health threat in Uzbekistan, particularly in Karakalpakstan
- The successful implementation of DOTS needs a continued “follow-up” phase in order to be sustainable after hand over to the MoH
- DOTS-Plus pilot project is a new, costly but important component of the MSF TB since DOTS can not respond to the high prevalence of MDR TB

Recommendations to Sida:

- Support the MSF annual plan and proposal for 2004
- Take part of the planned mid-term evaluation of the DOTS-Plus pilot project by WHO’s Green Light Committee
- Be prepared to support the MSF TB-project to the end
- Use lessons learnt from this project in other Sida-supported TB-projects and in discussions with multilateral agencies

Introduction

Since 1998 Sida has contributed to the Aral Sea Area Program run by the MSF- Holland in collaboration with the Uzbek government's existing TB service. MSF and Sida are the main contributors to the program. Sida has supported DOTS implementation, ARI/CDD, operational research and the Tashkent MSF office. Sida staff has earlier made an overall assessment of the program but in February 2004 it was decided by the Europe Department at Sida that a technical evaluation of the program should take place before any further support was to be contributed.

The purpose of this evaluation was to assess the implementation of the MSF health program during 1998–2003 in the Aral Sea area. The results of the evaluation will feed into a decision as to whether this program should receive further support from Sida and will help to assess from what reasons the support should continue or be disrupted.

The main focus of the evaluation was on DOTS implementation and the relevance of the proposal for 2004 mainly focusing on MDR TB (DOTS-Plus). A brief assessment of the operational research on environmental health was also included.

Neither ARI/CDD nor the component regarding Information, communication and advocacy were included in the evaluation as expressed in the ToR.

In carrying out the assignment, the team was guided by the Swedish objectives for development co-operation and the following two guidelines: Perspectives on Poverty and the Regional strategy for Central Asia.

The evaluation team consisted of one consultant, Dr Ingela Berggren Palme, epidemiologist and TB specialist, and Dr Britta Nordström, public health specialist, Health Division, Sida.

Methodology



Director of TB regional hospital, Nukus,
Dr. Dashetov

Before departure for Uzbekistan the WHO's TB Program HQ/Geneva was visited. Discussions were held with responsible persons at Sida, Ministry of Foreign Affairs, and MSF in Sweden. Documents regarding political and economic development in Central Asia, general background and specific health information of Uzbekistan, information on TB and the DOTS/DOTS-Plus strategies were obtained from WHO, World Bank, UNDP, Sida and other sources. Documents regarding the MSF project were obtained from Sida and MSF/Holland Uzbekistan.

The field visit included 10 days in Uzbekistan. The National DOTS Centre, the National TB Institute, WHO, KfW and MSF/Tashkent were visited before leaving for the project area in Karakalpakstan. In Nukus, the capital of Karakalpakstan discussions were held with the Deputy minister of Health and the Regional TB co-ordinator before visits to the districts. Districts where MSF still is active as well as districts handed over to MoH were visited both in Karakalpakstan and the region of Khorezm. Dashoguz Velayat in Turkmenistan was not visited due to visa restrictions.

In the visited districts the chief doctor, the responsible TB doctor, other staff and randomly selected patients were interviewed. TB hospitals, laboratories, training centres, and “DOTS corners” were visited. One day was spent in the DOTS-Plus pilot project hospital 12 km from Nukus and the Regional Reference TB Laboratory, equipped and managed by MSF.

The last two days were spent in Tashkent in meetings with the Deputy minister of Health, UNAIDS, USAID, Project Hope, and MSF staff from Amsterdam. Finally, the National TB Laboratory and the National TB Training Centre, managed by CDC was shown.

From this visit the evaluating team got a good picture of the TB situation in Uzbekistan, the MSF project and other donors’ activities in the TB field. We also got an overall idea of the environmental disaster in ASA and the HIV/AIDS epidemic in relation to TB.

The main findings and recommendations were presented to MSF before departure and ideas were exchanged about future development of the project.

Background

General Context

Uzbekistan is located in Central Asia and is doubly landlocked, far from any of the world’s oceans. It has the highest population (26.7 million) of the five countries in the region (the four neighbouring countries are Turkmenistan, Tajikistan, Kyrgyzstan, and Kazakhstan). About 80% of the population are ethnic Uzbeks, and there are large populations of Russians, Koreans, Karakalpak, Tajiks, Tatars and many others. Uzbekistan consists of the Autonomous Republic of Karakalpakstan and 12 regions known as oblasts (Andijan, Bukhara, Jizzak, Ferghana, Kashkadarya, Khorezm, Namangan, Navoi, Samarkand, Syrdarya, Surkhandarya, Tashkent). Each region (oblast) is divided into several districts (rayons).

Since independence in 1991, Uzbekistan has had stable government. In the UNDP/Human Development Report 2003, the country was ranked 101 of 175 in terms of human development. The economy is diversified, and Uzbekistan is self-sufficient in food. Like all former Soviet republics, Uzbekistan is in a period of massive transition in all sectors of society: healthcare, industry, economy, education, and religion. Perhaps agriculture is the only unchanging sector relying heavily on irrigation mono-culture of cotton, rice and wheat. Unfortunately, Uzbekistan inherited from the Soviet Union one of the worst environmental disasters on earth: the desiccation of the Aral Sea and salination of much of the oases of Khorezm and Karakalpakstan, greatly affecting not only agricultural output and economic viability but also the health of its surrounding population.

General Health Care System

Since independence in 1991, Uzbekistan’s health care system has been in decline. Over the 1990s the GDP has declined substantially and the proportion spent on health has been reduced from 6 to 3%. At the same time economic hardships for the population have increased resulting in greater health care needs, which have not been matched by the health care system. This has meant that people have increasingly had to pay for health services and drugs, most disadvantaging those already hit by poverty.

With support from the World Bank, a five step health care reform was initiated in 1992. The features of the new health care system are as follows:

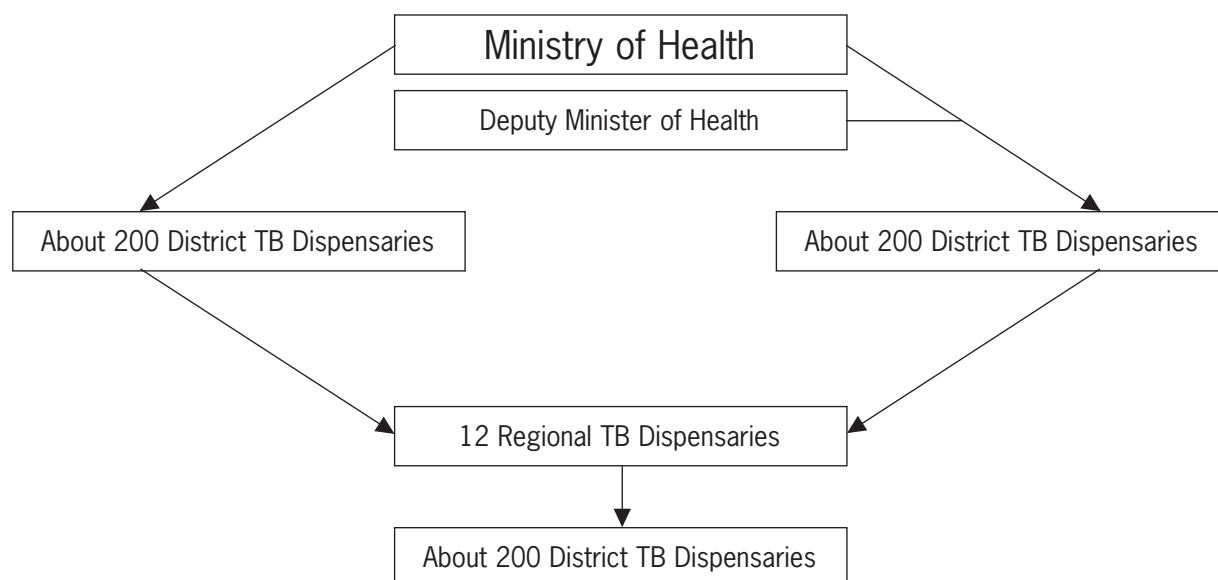
- Strengthening primary health care facilities
- Decentralisation of the health care system
- Development of new financial mechanisms in public health services
- Formation of the system of general practitioner/family doctor
- Reform of Higher Medical Education
- Focus on treatment and prevention of infectious diseases

In general the pace of reform has been extremely slow and many parts of the country are yet unaffected.

TB Services and Control

Since the country was part of the Soviet Union, TB has been a strictly vertical health program based on specific TB institutions. There are presently 102 TB hospitals (14 regional and 30 district hospitals) in the country and traditionally all TB patients are hospitalised several months before moving to ambulatory treatment. The National Scientific-Research Institute of Pulmonology and TB (inpatient clinic with 300 beds, outpatient department, laboratory and department for statistical data analysis and reporting) is responsible for TB services and control directly under the MoH. Since 2001 this responsibility is shared with the Republican DOTS Centre created to manage and co-ordinate the DOTS Program implementation in Uzbekistan (figure 1). Other entities involved in TB control are the Health Institute, the Republican Sanitation Service and the Republican Centre of Drug Supply.

Figure 1. TB in the health structure.



TB Burden

The latest WHO Global report on TB control² Uzbekistan, reports a high burden of TB cases: 20,588 cases in 2002. Only the Russian Federation, Romania and Kazakhstan report higher numbers in the European region. In addition, it is estimated that Uzbekistan in the same year only detected 41% of the expected new pulmonary smear-positive cases. The WHO estimation of new smear positive TB cases for the country is 46/100 000 (corresponding numbers for Sweden is 1–2/100 000 and South Africa 227/100 000).

The burden of TB is highest in poor rural areas (65% of TB cases are in rural areas). However, concentrated epidemics can be found in the large cities particularly in poorer districts. By far, the most affected specific population group is prisoners. According to the Ministry of Internal Affairs the notification rate of new TB cases among prisoners in 2002 was 6% of 25,000 estimated prisoners³.

Another potential highly affected group in the near future is persons living with HIV/AIDS. Like other countries in the former Soviet Union, Uzbekistan has evidence of a significant spread of MDR TB, a factor that greatly increases the likelihood of treatment failure and death due to TB

It is not until the last couple of years that the government of Uzbekistan has openly embraced major health problems like TB and HIV/AIDS. However, three years after the introduction of DOTS by MSF, the government's Republican DOTS centre was founded in 2001. In March 2003, a National Strategic Program on Prevention and Reduction of TB morbidity was signed, followed by order No160 with eighteen detailed action items, which includes a specific directive "To accept DOTS strategy as top-priority and mandatory strategy of TB control". At the end of 2003, DOTS was accessible to 52% of the population and the whole country planned to be covered by the end of 2004. Parallel to the DOTS strategy the old TB control strategy based on long hospitalisations, individual drug regimens and x-ray as the main tool for diagnosis and follow-up remains. For the general population TB is still a heavily stigmatising disease.

The government made an application to the Global Fund in 2003 that was rejected. A new application was submitted in April 2004. The special focus will be on strengthening of the DOTS system, TB in



TB patients with school teacher in the hospital



TB patients at the pediatric ward

² WHO report 2004 Global tuberculosis control

³ Scaling up the response to TB Control in Uzbekistan. The Global Fund application 2004. CCM

prisons, TB in people living with HIV/AIDS, and treatment of drug-resistant TB in Nukus and Tashkent. The TB related budget is presented in table 1 and 2.

Table 1. Financial contributions to TB control in Uzbekistan 2001–2008⁴

Financial contributions in USD								
	2001	2002	2003	2004	2005	2006	2007	2008
Domestic	1778000	1864000	1997000	2190000	2320000	2350000	2400000	2450000
External	3720000	3220000	4471091	3849091	2461091	900000	900000	900000
Total	5498000	5084000	6468091	6039091	4781091	3250000	3300000	3350000

Table 2. Resources needed for TB control in Uzbekistan 2004–2008⁴

In USD					
	2004	2005	2006	2007	2008
Resources available	6 039 091	4 781 091	3 250 000	3 300 000	3 350 000
Total need	10 983 300	13 186 700	11 622 100	11 444 753	10 502 564
Unmet need	4 944 209	8 405 609	8 372 100	8 144 753	7 152 564

HIV/AIDS

TB is the most common opportunistic infection among HIV-infected persons but HIV testing in TB patients is not regularly done. Only one TB patient with HIV has been detected in ASA and four in Project Hope's TB project sites. The HIV epidemic in Uzbekistan is still in a nascent stage, but Uzbekistan has all the conditions for a rapid spread of HIV infection. According to MoH, injection drug abuse accounts for the majority of HIV infections. Other vulnerable groups are commercial sex workers, prisoners and men who have sex with men (MSM). However, the proportion of heterosexual transmission is growing. The official number of accumulated HIV positive cases in 2003 was 3596 with the highest number reported in Tashkent. Uzbekistan will receive funds from the Global Fund for HIV/AIDS (approved 2003). A major obstacle for the HIV/AIDS preventive work is a discriminative legislation (For example three years in prison for MSM) and lack of understanding among government officials.

MSF Aral Sea Area Program

MSF arrived in the ASA in 1997, concerned that the health of the people was deteriorating as a result of the Aral Sea crisis. As a humanitarian agency, MSF does not usually direct its resources and capacity towards the need for structural development of economics and systems. Rather, the focus is on basic and acute needs of individual people. However, after an extensive health assessment, it was decided to focus on a sustainable implementation of a TB program and also to support ARI/CDD training and conduct operational research on health issues linked to the environmental disaster.

⁴ The Global Fund Proposal for 2005–2009

Objectives and Program Components

The overall objective of the program was to improve health among the ASA population, introduce new methods for the care of TB, increase awareness and understanding of the relationship between health effects and the environment disaster in ASA with subsequent positive implication.

The specific objectives were:

- Implementation of the WHO standardised TB control program, DOTS in a sustainable manner to completely cover the civilian population in three regions.
- Gain better understanding of the relationship between the environmental disaster and human health outcomes
- Increase awareness of health issues in ASA.
- Train health workers in ARI/CDD

The objectives resulted in the following Program components:

- TB control program including DOTS expansion, training, environmental health improvements for DOTS treatment facilities, drug susceptibility testing
- Operational research including studies on the environment and its implication on health
- Information, communication and advocacy
- ARI/CDD healthcare worker skill training- closed 2002 as other agencies took over.

Staff

MSF has one co-ordinating office in Tashkent and one operational office in Nukus, Karakalpakstan. The number of staff working in the MSF DOTS/DOTS-Plus project has increased from 5 expatriates and 12 national staff in 1998 to presently 17 expatriates and 124 national staff. Of the national staff 62 are working under Labour Contracts (MSF) and 60 are under Civil Agreements i.e., working at the DOTS-Plus Pilot Project hospital employed by the MoH but with a 6 times topping up of salaries from MSF. Government salaries for health staff are very low and in the regular system compensated by non-registered payments by the patients. The MSF-topping up is calculated to compensate for this “loss of income”.



MSF team in Nukus

DOTS

Expansion of DOTS

The Aral Sea Area (ASA) Tuberculosis Program was introduced in collaboration with the government's existing tuberculosis service in 1998 with the objective to implement the WHO standardised TB control program DOTS in a sustainable manner to in three regions, Karakalpakstan along with Khorezm in Uzbekistan and Dashoguz Velayat in Turkmenistan.



TB mapping in Khorezm region

Implementation started in two pilot sites in Karakalpakstan (Muynak and Kungrad). These two districts were and are particularly affected by the environmental degradation seen in the ASA. The WHO was a collaborator during the pilot phase in Muynak rayon. In spite of initial resistance, mainly from the medical specialists used to other means of handling TB patients, DOTS was successfully established in a stepwise fashion between 1998 and 2003. After establishing the program the districts were “handed over” to the MoH according an exit strategy starting with the best functioning district. The plan is to withdraw completely from all but two districts by June 2004. These districts, Nukus and Chimbay, are involved in the DOTS-Plus pilot project, see below.

Sustainability was a direct objective for the implementation of DOTS, so that the program would continue after MSF's withdrawal. All phases of the DOTS introduction involved the governmental health system and the program was closely integrated in the existing structure. MSF provided training, laboratories, logistical support and supervision for the program, while local health staff was implementing the various program components.

This integrated approach, together with a plan of rapid hand-over, created a shared ownership of the program between MSF and the government from the start. In March 2003 the MoH adopted DOTS as a national strategy partly due to the positive experiences drawn from the MSF DOTS project.

Regional and peripheral laboratories were equipped for smear analysis. Quality control of sputum smears was in place. Staff was trained but lack of laboratory personnel was on and off a problem. There had not been a large turn over of TB staff



Patients write down their history

At our visit, around 3 months after hand-over, DOTS was working according to guidelines. Responsible authorities expressed confidence in the sustainability of DOTS if drugs and technical supplies were secured. The exiting staff seemed well trained, drugs and technical equipment were still in stock or secured by another donor (KfW, German development bank) for the coming year. However, the N95 respirators provided by MSF were supplemented by surgical masks by KfW. Surgical masks are not protective against TB transmission.

The TB specialists who had been closely working with the introduction of DOTS seemed convinced of its benefits compared to earlier strategies, while others described DOTS mainly as the only mean to receive drugs and therefore acceptable. Continued training and motivation of staff seemed to be less a priority in the districts after MSF left, partly explained by lack of resources.

Monitoring and Evaluation

The MSF/MoH monitoring of the DOTS project is a continuous evaluation of the defined indicators of success (table 3). The success rate of 77% is almost up to WHO recommendation for new SS+ cases (80%), however re-treatment cases represent more than half of the detected cases and have much higher rates of death, default and failure and an overall success rate of only 53%. As the reporting system is improved, the discrepancy between reported cases and estimated cases has been obvious. In Muniak district where the population is limited and it is more difficult to stay undiagnosed, the incidence of new smear+ cases was close to 300/100 000 and all reported cases more than 600/100 000. The MSF overall estimation is that less than 50% of smear positive cases are detected in the existing DOTS areas.

A high degree of stigma, limited confidence in the health care system among TB patients with repeated failures, socio-economic impact of the long hospitalisation, easy available TB drugs at private pharmacies all contribute to the low case detection rate. Parallel systems of registration and reporting are still in place demanding unnecessary time and effort from the HCW.



Patients enjoying tea together



Buying TB drugs without prescription in Nukus

There is an awareness of gender differences related both to diagnosis, treatment and outcome. The case reporting and treatment forms include sex but in the final analysis and presentation gender is not included.

Supervision is an important part of DOTS in order to secure a sustainable performance. Both MSF and MoH supervise DOTS, but not always together. In areas handed over to the MoH visits to the districts by MoH TB supervisors were reduced considerably.

Table 3. Expected and accomplished outputs, effects and impact of MSF DOTS project

Expected outputs/ indicators of success	Achieved results	Achieved effects	Estimated impact
3 regions covered by 2003	Achieved	4.5 million have access to DOTS	Up-to-date with global TB-policy and strategy
> 90% treated with SCC	85%	Shorter treatment time, shorter hospitalisation	Higher cure rate, less defaulting, less MDR
55–70% CDR for SS+	< 50%	Too many patients not diagnosed	Continued transmission
5 to 20% of SS+ detected	Achieved	Quality control system elaborated	Diagnostic tool in place
80% of new SS+ patients completed treatment	78%	For re-treatment cases almost 50% were lost to death, default or failure	Less transmission from new but continued transmission from chronic cases.
> 80% by DOT	Achieved	Better compliance to treatment	Reduced transmission
< 5% mortality rate under treatment	5.5%	4% new cases 15% re-treatment cases	DOTS not effective enough for re-treatment cases
< 10% default rate	Achieved	6% new cases 14% re-treatment cases	Continued transmission from re-treatment cases
< 5% DSSM error rate	Achieved	Good quality of local lab	Accurate diagnosis and follow-up
HE/HP in all TB facilities	Achieved	High awareness of DOTS. Media interest. Political commitment	Patients come for treatment. Reduced stigma
100% of TB HCW trained	Achieved	Increased management skills in 5650 HCW	Increased sustainability
100% coverage of waste facilities in TB facilities	Achieved	Latrines, safe waste compound and elaborated routines	Reduced transmission of TB and other contagious diseases between patients and staff.
Registration and reporting system in place in all DOTS sites, with monthly accurate information	Achieved	Effective epidemiologic surveillance if not 100% accurate	Effective tool for planning and continuous evaluation
Phase out of MSF by 2003	34/40 districts	Government ownership of DOTS increased. Less resources available.	Increased government commitment. Sustainability fragile.

Treatment Results

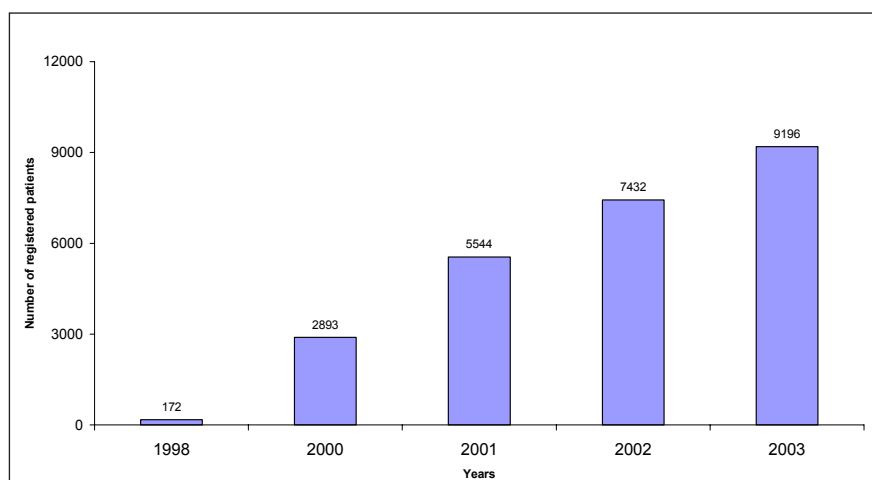
Three regions (4.5 million people) have been covered with DOTS. Over 25 000 patients were treated 1998–2003, 86% pulmonary TB cases, 14% extra-pulmonary cases. Of these patients were 49% new cases, while 51% had been treated earlier (re-treatment cases). Almost half of the registered cases were contagious i.e. had a positive sputum smear.

The overall treatment success was 77%. This is below the global average of 82% (African Region 71% and Eastern Europe 70%)⁵.

In ASA, the mortality during treatment was 4%, treatment failure 11% and default rate 7%. The mortality and default rate in ASA are comparable with the global average but the treatment failure rate is almost 8 times higher. This is probably due to a high level of MDR TB, not responding to treatment. This issue is linked to the back-load of earlier partly treated patients with advanced TB that is a serious challenge to the positive impact of DOTS. Possibly this group includes a high number of resistant strains that do not responding to standard treatment and will continue to be transmitted in the population.

The treatment results differed between the three regions involved so that Dashoguz had the best outcome, while Karakalpakstan both had a higher rate of mortality and treatment failure. The higher failure rate in Karakalpakstan is probably due to a combination of a poorer community and higher level of drug resistance, compared with the other two regions.

Figure 2. MSF DOTS Program in ASA. Patients registered 1998–2003



⁵ WHO report 2004 Global tuberculosis control

Operational research

Operational research on environment and health was included in the MSF program from the beginning due to the very special circumstances the people is living under in the ASA. Very few studies have been carried out in this area. The research focused on:

- Respiratory health and dust in order to determine the relationship between high rates of dust in the air and lung function.
- Exposure pathway completion to determine the human exposure pathway of food contaminant by testing food from various markets in Karakalpakstan.
- Saline water, hypertension and kidney function.
- Demography and migration in the Aral Sea area (ASA)

Researchers affiliated to universities in UK and Canada, have carried out the studies. The studies have resulted in several publications in local and international journals, as well as conference presentations. Presently one MSF staff is responsible for dissemination of the result. This research component will be closed and handed over to the Health and Environment Consortium Canada in 2004. The decision by MSF not to continue the support seems correct since the research has no relation to the TB project that is the main MSF program activity. In addition, the Uzbeki ownership appears to be very limited.

DOTS-Plus Pilot Project

Early in the implementation of the DOTS project in Karakalpakstan, relatively low success rates were noted. Rates of treatment failure were above the 5% threshold where drug resistance and MDR TB should be suspected. Results such as these, combined with the lack of any published data on drug resistance in Central Asia prompted MSF to initiate a Drug Susceptibility Testing (DST) survey. The survey revealed a high level of MDR TB in Karakalpakstan. Table 4 presents the DST survey result compared to results from other parts of the former Soviet Union.

Table 4: Rates of multi-drug resistance in the former Soviet Union

Country	New cases	Re-treatment cases
Estonia ⁶	14.1%	37.8%
Russia (Archangels Oblast) ⁷	13.5%	60.0%
Latvia ⁷	9.0%	23.7%
Russia (Ivanovo Oblast) ⁷	9.0%	25.9%
Russia (Tomsk Oblast) ⁷	6.5%	26.7%
Kazakhstan (Almaty Oblast) ⁸	7.1%	36.4%
Uzbekistan (Karakalpakstan) ⁹	13.2%	40.2%
Turkmenistan (Dashoguz) ⁹	3.8%	18.4%

⁶ New England Journal of Medicine, 344 (17), April 26, 2001

⁷ Int J Tuberc Lung Dis 6(5): 406–14, May 2002

⁸ Personnal communication Helene Cox, MSF Uzbekistan

⁹ Cox H et al. Multidrug-resistant tuberculosis in Central Asia. Emerging Infectious diseases. *In press*

As a consequence of the DST results, a new program component, the DOTS-Plus pilot project proposal 2002–2005, was formulated and accepted by the WHO/Green Light Committee in 2003. The approval of this committee is necessary for access to price-reduced 2nd line TB drugs, and demands that conditions for a proper management of DOTS-Plus is at hand.

The MSF DOTS-Plus pilot project aims to demonstrate the necessity and feasibility of a supported DOTS-Plus Program in ASA. Additionally, the project will establish laboratory and human resource capacity for adequate treatment of MDR TB in Karakalpakstan beyond the timeframe of the pilot project.

The initial plan was to treat a total cohort of 100 patients with confirmed MDR-TB, drawn from Nukus City and Chimbay district in Karakalpakstan. The choice of project sites was based on the intention to gain experience in both urban and rural settings for the potential expansion of the project in the future.



Good nutrition is important. The DOTS-plus hospitalkitchen chef

The DOTS-Plus Hospital

The rehabilitated hospital was inaugurated in September 2003 by the WHO General Director Lee Jong-wook. It is situated 12 km outside Nukus city and includes 25 beds for SS+, 25 beds for SS- patients and 3 ICU beds. The Hospital Management Committee consists of both MSF and MoH members. National medical doctors and nurses are responsible for the direct management of patients. Expatriate positions at the hospital include two medical doctors, a laboratory technician, a nurse and an epidemiologist. None of the expatriate doctors have specific TB training but has email access to international expertise with immediate response. Local physicians are well experienced in TB had have had specific training in DOTS-Plus in Latvia. The facility has localities including a clinical lab, kitchen, laundry, drug storage and an outdoor waste disposal facility. The MSF team in Tashkent provides support and visit the project on at least a monthly basis.



Environmental friendly and safe waste compound in TB hospital



MSF nurse, Karin Fischer-Liddle with two patients in DOTS-plus hospital

At our visit the hospital seemed to function very well. It has well established routines adequate supplies. The risk of transmission is limited by only two patients sharing a room, compulsory wearing of respirators by the staff, ultraviolet radiation and negative pressure in the ICU. There was an ongoing training for the medical and nursing staff on how to handle patients with severe psychological reactions.

The Reference TB Laboratory

A quality laboratory support has been established at the main TB hospital in Nukus city. It has been rehabilitated and equipped by MSF. The lab complies with safety recommendations for TB and has a capacity of handling TB cultures, DST testing and smear quality control. The lab is also fit for DST of 2nd line drugs but has not yet been authorized to do so. One MSF expatriate lab technician is supervising and co-ordinating the work. Quality control is made by supranational laboratory in Germany, and the results have been fully up to standard. No other laboratory within the country provides DST and TB cultures can only be done in one other place, the national TB laboratory in Tashkent.

At present the lab is underutilized and there is an option for further collaboration with the regional TB dispensary.

Monitoring and Reporting

Monthly narrative reports, including statistics are written for internal use and for distribution to relevant authorities. A computerised information system is established for evaluation of case management and internal and external specialists are carefully monitoring clinical developments and outcomes. WHO/GLC intends to follow-up the project.

The epidemiological database is in the hands of MSF and the compiled data is shared with MoH and used for action. The compiling and analytical process of the epidemiological data is entirely done by MSF staff using established scientific methodology. Some of the data have been published in recognised medical journals and will be included in a PhD thesis by the MSF epidemiologist. The clinical data have not been compiled, analysed and presented as yet. The ownership to this database is to our understanding shared between MSF and MoH but will stay with MoH when the pilot project is finished.

Results

At the end of April 2004, 39 patients have been recruited. The recruited patients are all re-treatment cases and have often an advanced disease combined with other health problems. Side effects, especially psychological and the long hospitalisation complicate TB treatment with 2nd line drugs. In spite of the good quality of care, 4 patients have so far defaulted. This is more than expected and MSF have identified and listed possible solutions to be tried. A major improvement would be to provide ambulatory treatment as soon as the patient is no longer contagious i.e. SS-. For the patients that have completed 4 months of treatment 40% are SS-. Two patients have died.



TB cultures



Safe working environment in the laboratory



Computerized data collection

Budget

DOTS TB drugs cost in between 20–40 US\$ per patient but rise more than 500 fold to US\$ 10 000–15 000 per patient with MDR. Second line TB-drugs purchased to reduced prices through WHO's Green Light Committee cost about 2600 Euro per full treatment/patient.

Given the high cost of the DOTS-Plus pilot project over three years, MSF is looking for one or more additional donors for funding. The total budget for the DOTS-Plus pilot project is US\$ 2,800,000.

Donors in the Field of TB

The various donors active in TB meet quarterly. Recently WHO has got a position for a TB specialist and one of his tasks will be to “add oil into the TB coordination among donors and MoH”. MSF has a high credibility because of its successful work in ASA and has probably had a great influence on the endorsement of DOTS strategy in the country. KfW is the main contributor regarding TB drugs and laboratory equipment. Project Hope is working in 10 sites, mainly in Tashkent, Ferghana valley and Samarkand, covering 10% of the population. The project is closing down and it is not decided at this moment, which will be the next implementers of this USAID supported project. The next phase will extend to the whole regions where the project has started in some districts.

Table 5. Donors in the field of TB in Uzbekistan.

Name of agency ¹⁰	Type of Agency	Main technical focus
KfW/EPOS Germany	Bilat development donor	Supply of drug, equipment for treatment in selected regions
USAID	Bilat development donor	Support to and partner of a number of national and international agencies (Project HOPE, CDC, WHO, OSI)
Project HOPE	Bilat development partner	TB diagnosis and treatment in selected regions
CDC	Bilat development partner	Training of lab workers, support for electronic surveillance, support to the Training Center for TB
OSI	International NGO	Support DOTS trainings
MSF-Holland	International NGO	DOTS in Aral Sea Area (until 2004) DOTS-Plus pilot project (from 2003)
WHO	Multilat develop partner	Technical assistance for DOTS implementation
Global Drug Facility	Multilat develop partner	Provision of TB drugs in DOTS areas
National Council of Red Crescent Society of Uzbekistan	International NGO	Health promotion and provision of food parcels to patients in the continuation phase in 5 regions (partly with American Red Cross).
Damien Foundation	International NGO	DOTS implementation in three regions.
Supranational lab in Borstel, Germany	Bilat development partner	Quality control of DOTS-Plus in Nukus, KK
Green Light Committee	Bilat technical partner	Consultant for DOTS-Plus in Nukus, KK
Prison Reform International	International NGO	TB control in Prisons

¹⁰ The Global Fund proposal 2005–2009.

The Swedish Contribution

Sida has been supporting the MSF project from the start in 1998. From 1998 to 2003 totally 2,751,575 Euro has been disbursed, that is 30% of the total budget for the project. The main contributor to the TB project has been MSF's own funds, 64% of total, and the remaining fund has been contributed by Swiss Embassy, Soros foundation, JOA, WHO and UK government. It is worth mentioning that MSF turned down financial support from USAID (two years ago) since the project wanted to secure its independence.

Annual Plan and Proposal to Sida 2004

MSF Holland has applied for new grants from Sida through MSF Sweden covering 2004. The requested amount, 3,540,000 SEK is estimated to be 24,8% of the total budget. The grant will mainly cover MDR TB pilot project in Nukus, Karakalpakstan and a smaller amount will go to DOTS Program in two districts (from where patients will be recruited to DOTS-Plus treatment) and to the co-ordinating office in Tashkent.

Assessment of the Application to Sida

Relevance

Swedish support to the TB project is well in line with the country strategy for Central Asia¹¹ where it is stated that the MSF anti-TB Program should continue to be supported. It is also in line with Sida's main development goal, i.e. poverty reduction. TB is a disease that affects the poorest population with negative impact on social and economic development. To fight TB is included in the Millennium Development Goal, no 6 stating that prevalence and death rate of TB should have halted by 2015.

The DOTS-Plus pilot project is thus highly relevant to the situation in ASA and is in the front line for TB treatment. Possibly the project will have global implications on how to treat MDR TB and on how to supplement DOTS in an environment with high level of resistance.

Feasibility

As the DOTS-Plus still is under testing and development, there has been a close involvement of international TB expertise in the planning and implementation of the project in order to secure the quality. WHO is planning a mid-term evaluation in the end of 2004.

There is no MSF staff in the project with specific TB knowledge. This is on purpose since one objective is to demystify the treatment. The project staff has close e-mail contact on demand with a well-experienced TB consultant. However, the clinical management has been more complicated than expected with concomitant health problems, including mental disorders that could be both side effects from medicines or due to other circumstances. Routines for staff protection are in place and all staff wears respirators when in direct contact with a patient or an infected ward. Clinical examination, pulmonary x-ray and tuberculin testing are conducted regularly on all hospital staff. Regarding impact on the local environment, MSF has constructed appropriate waste compounds in the hospital compound.

¹¹ Country strategy for development cooperation Central Asia January 2003–December 2005. Regeringskansliet, UD

From the present evaluation it is obvious that the Swedish support to the MSF TB Program has been successful but that limitations due to a high level of drug resistance need to be tackled. MSF seems to be an excellent partner to carry out the DOTS-Plus pilot project. MSF has a solid, good reputation based on the work with DOTS and is well aware of its role as partner to the MoH. The MoH and MSF have signed a letter of understanding related to the DOTS-Plus hospital and the hospital has a management committee consisting of both MSF and MoH staff. During internal discussions in the MSF team it was decided that strengthening of MoH ownership would be stressed even more.

Effectiveness

The DOTS-Plus project is a pilot and will treat only a small proportion of all resistant cases and will thus not have a direct impact on the overall TB epidemic. However, it will contribute to formulate a strategy on how to best treat and care for these patients which is desperately needed. In this kind of pilot the costs per patient is very high but since the knowledge gained is expected to be of value not only for the patients treated in this hospital it is acceptable. The pilot could hardly been set up in a less expensive way.

Sustainability

According to the original plan the pilot project was to end in December 2005 after the fulfilment of treating 100 patients. Due to various administrative reasons there are delays and probably the project will continue after 2005. There have also been discussions in MSF to expand the project and include more patients, and in that case the project will continue some more years.

The evaluation team is of the opinion that it is definitively too early for MSF to withdraw from the project in 2005. It would be of great value if the MSF involvement would continue a few years more, both to secure the sustainability of DOTS and further develop the DOTS-Plus. DOTS alone will not solve the TB epidemic in ASA since so many patients do not get cured with the standard DOTS treatment because of resistant TB. A back up treatment with second line drugs (DOTS-Plus) is necessary.

In the Global Fund application for 2005–2009 support to the DOTS-Plus hospital in Nukus is included as well as the establishment of another DOTS-Plus pilot project in Tashkent. However, even if MoH will receive the 15 M US\$ requested from the Global Fund it will not cover the needs. It is therefore advisable that Sida supports the project until the end. It may be seen as an advantage for Sida to be part of a well controlled, transparent pilot project, dealing with a main public health disease affecting the poor population. Important lessons will be learnt and generate impact beyond the immediate implementation useful for Sida involvement within health sector support and multilateral engagements in the field of TB.

Conclusions

- The WHO standardised TB control program, DOTS was introduced in Uzbekistan and Turkmenistan through the MSF DOTS project in ASA. The close interaction between MSF and MoH at all levels during the implementation of the project combined with a planned, rapid hand-over to the local government created a shared ownership from the start. The adoption of DOTS as a national strategy in 2003 is partly due to positive experiences from the MSF DOTS project.
- The MSF program has shown that DOTS is a feasible TB strategy in the ASA region, however its effectiveness is depending not only on whether the program can be sustained with limited governmental resources but also on the impact of an increasing MDR TB. A future challenge is to move from the long hospitalisation of patients to ambulatory treatment closer integrated with the primary health care.
- A full coverage of DOTS in ASA has been attained and so far more than 25 000 TB patients have received treatment. This will reduce transmission and have an immediate impact on the health of the affected population. However, as long as
 - Socio-economic conditions are severe,
 - more than half of patients with contagious TB remain undetected
 - and many patients not get cured through DOTS due to drug resistance,TB will remain a major public health problem.
- Of the three regions involved in the DOTS project, Karakalpakstan has the lowest rate of treatment success possibly due to poor socioeconomic conditions
- The continuous transparent monitoring and evaluation of the project together with a well-elaborated exit plan has facilitated the hand-over of the program to local authorities. However, the government provides limited resources to pay staff, secure transport and have less control of imported drugs and technical equipment, which do make the program vulnerable and sustainability not yet secured.
- The project in ASA has identified two serious challenges to the positive impact of DOTS not really addressed by the international community earlier. These are the great back-load of earlier partly treated patients and the high number of cases not detected. Both are strongly related to an increase of MDR TB, and need the development of an additional strategy to complement DOTS.
- The introduction of DOTS-Plus pilot project based on experiences from DOTS seems reasonable as this is, so far, the only option to deal with a high level of MDR TB. The setting in ASA is a valuable complement to other pilot projects throughout the world. Efforts are made to both take advantage of experiences from other similar projects (especially Latvia) and to secure continuous documentation of good quality on lessons learnt in the MSF project.
- The operational research component of the MSF Aral Sea Area Program has produced information on the interaction between the ASA environment and health. Closing of this component within the present MSF- project is reasonable since it is not immediately related to TB. Operational research linked to the DOTS and DOTS-Plus pilot project is however essential and could possibly be integrated in the responsibilities shared with the MoH. It might also serve as a bridge between the two major TB responsible bodies the new National DOTS Center and the traditional National TB Institute.

Recommendations

Recommendations to MSF/MoH

For DOTS to significantly contribute to reduction of the TB burden in ASA

- The detection rate has to improve considerably
- Primary health care needs to be increasingly involved, in order to reduce hospitalisation and make DOTS available close to the patient
- Early ambulatory treatment, especially for children should replace compulsory hospitalisation
- Culture with DST for the basic TB drugs for at least non-new cases should be performed to reduce further failures with DOTS regimens
- A follow-up phase of districts handed over to MoH (2 years) is necessary to evaluate sustainability and supervision in the four remaining districts need to be combined MSF/MoH
- Gender need to be included in the analysis of collected epidemiological data

For DOTS-Plus

- Plan for integrated implementation of DOTS-Plus possibly with support from MSF
- Prolong the pilot project to implement lessons learnt during the first phase before closing the pilot
- Continue the continuous, close, epi-surveillance and report in international publications, as well as to the MoH (establish national counterpart to the MSF epidemiologist)
- Include clinical reports on stages of TB, side effects of drugs to the monitoring and evaluation reports (TB trained expatriate needed?)
- Train local doctors to not only enter data, but also to compile and analyse it for action
- Continue the close observation of possible transmission to staff and between patients using molecular methods to identify possible common strains
- Link operational research to the present operation i.e. DOTS/DOTS-Plus.
- Introduce gender in the analysis of diagnosis, treatment and outcome
- Make use of the present over-capacity at the reference TB laboratory according to suggestions from the laboratory manager

Recommendations to Sida

- Support the MSF annual plan and proposal for 2004
- Take part of the planned mid-term evaluation of the DOTS-Plus project by WHO's Green Light Committee
- Be prepared to support the MSF TB-project to the end
- Follow-up the implementation of recommendations above
- Use lessons learnt from this project in other Sida-supported TB-projects and in discussions with multilateral agencies

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Appendix 1

Terms of Reference for the Evaluation of Médecins Sans Frontières – Aral Sea Health Programme

1. Background

Department for Democracy and Social Development/Health Division Susanne Lokrantz 1 March 2004

Ref. number: 2000–000824

Since 1998 Sida has contributed to the Aral Sea Area Tuberculosis programme run by the Médecins Sans Frontières in collaboration with the government's existing tuberculosis service. The programme started with DOTS implementation in two pilot sites in Karakalpakstan (Muynak and Kungrad). These two rayons were and are particularly affected by the environmental degradation seen in the Aral Sea Area. The World Health Organisation (WHO) was collaborator during the pilot phase in Muynak rayon. MSF and Sida has become the main contributor to the programme and previous decisions and financial allocations are stated below. The division of budgets for the different components and areas are shown in appendix 1.

433/98	SEK 3 325 000
382/99	SEK 2 235 000
250/00	SEK 5 011 000
275/01	SEK 5 382 000
274/02	SEK 4 412 000
516/03	SEK 4 280 000
Total	SEK 24 645 000

The support to MSF has targeted different areas;

1. DOTS implementation – TB Control Programme;
2. Water and sanitation
3. Operational research
4. ARI/CDD Health Care (Acute respiratory illnesses and chronic diarrhoeal diseases) The component was closed down in March 2002 and taken over by the Ministry of Health as several other organizations were giving support in this field.
5. Information, communication and advocacy

The Aral Sea represents one of the world's greatest environmental disasters: once the world's fourth largest sea, it has shrunk to tenth place and continues to dry up. Over-irrigation has caused not only depletion of the sea, but has increased the salinity of the soil and ground water to the point that land is no longer arable and water no longer potable.

For those living in Karakalpakstan, western Uzbekistan, the issues of the Aral Sea and reduced water flows to the region are nothing less than ones of survival. The disaster has led to the collapse of existing livelihoods. Safe drinking water supplies, air quality, nutrition, climate, the economy and health services have been plunged into crisis. Many health indicators, including rates of maternal mortality, respiratory and diarrhoeal disease, remain high and worse than rest of the country. The international emergency relief organisation Medecins Sans Frontieres has been working in Karakalpakstan since 1998 in a humanitarian attempt to address some of the key health issues facing the population, with particular focus on stemming the ongoing tuberculosis. The resultant economic hardship has contributed to conditions ideal for the spread of tuberculosis. *Consequently, very high incidence rates of tuberculosis are found in the southern Aral Sea area. In Karakalpakstan, a region in Uzbekistan the incidence rate of new infectious cases in 2002 was 89 per 100 000 population which is one of the highest rates in former Soviet Union.*

The DOTS implementation programme, administered by MSF has the main objective to implement the WHO standardised TB control programme: DOTS (Directly Observed Treatment, short-course) in a sustainable manner to completely cover the civilian population.

In Karakalpakstan and Khorezm, Uzbekistan and in Dashoguz, Turkmenistan, DOTS has been implemented in individual districts (rayon and velayats) according to schedule and very much ahead of schedule in Khorezm. Dashoguz region in Turkmenistan reached 100% coverage on July 31 2002 and Khorezm region in Uzbekistan reached full coverage on December 20, 2002. The programme is administered from the MSF office in Tashkent. About 75% of the resources are spent in Uzbekistan and 25% in Turkmenistan. In Karakalpakstan 6 new districts were opened, bringing the total to 14 districts/hospitals of a total of 18 opened to DOTS by the end of 2002. In these districts the population can get free tuberculosis treatment under DOTS.

It takes a full year to accurately assess the outcomes of a treatment programme, given the length of treatment and follow-up required. The success rate overall was recently 75,4% which is more or less the same as in 2000. However, there were large improvements in Dashoguz and significant lowering of the rates in Karakalpakstan.

A drug sensitivity testing study was completed in 2002 in Karakalpakstan and Dashoguz to quantify the problem of multi-drug resistant tuberculosis (MDR-TB). Results have revealed high levels of MDR-TB in Karakalpakstan, with 13% of new cases and 40% of retreatment cases affected. This high rate of MDR TB contributes to high failure rates and high death rates.

In addition to the training centres in Nukus, Karakalpakstan and Urgench, Khorezm another training centre was opened in Dashoguz, Turkmenistan during 2002. In total 3301 trainings were conducted in the three training programmes for 11 different training courses for different categories of healthcare workers.

During 2002 under the operational research component, data were collected and analysed to try to determine the relationship between high rates of dust in the air and lung function. It was found that dust may have an impact on the lung function of children. Fine particles are thought to be detrimental to health because they are able to penetrate into the immune system and cause damages. It is likely to be a relationship between dust exposure and asthma. Also food has been tested to try to trace contaminants in the food. High levels of dioxins were detected in food samples particularly of animal origin.

A study was also made locally to determine relationship between the excessive amounts of salts in groundwater and high rate of hypertension and renal functions, however the results of this study was of limited value. There are so far no reliable data on possible health effects associated with the chronic ingestion of dissolved salts in drinking water.

An annual plan and proposal 2004 has been sent to Sida and the forthcoming evaluation is to assess the impact of the support that has been given during the years 1998–2003.

2. Purpose and Scope of the Evaluation

The purpose of the evaluation is to assess the project implementation of MSF during 1998–2003 in the Aral Sea area in Uzbekistan and Turkmenistan. *The overall objective of the evaluation is to find out whether people become healthier as a result of the intervention.*

The results of the evaluation will feed into a decision as to whether this project will continue and receive further support from Sida and will help to assess from what reasons the support should continue or be disrupted.

The evaluation is also to assess possible regional and local differences in the achievements of the project.

Main focus of the evaluation should be on DOTS implementation incl MDR TB (Dashoguz, Karakalpakstan and Khorezm) and a brief assessment of the operational research and environmental health improvements.

ARI/CDD is not to be evaluated, nor should the component: Information, communication and advocacy.

The scope of the evaluation is to:

- To map achievements and dissemination of the project by the Ministry of Health, other donors as well as NGO's incl regional differences. Have any measurable results been achieved in relation to objectives? If not what may be the reason? Possible explanations for this lack of impact (e.g. administration at Ashgabat Log Support Office or other cooperation problems or difficult in environmental conditions).
- To assess the relevance of the work done by MSF in relation to Government's health policy (incl TB).
- To present recommendations for continuation or disruption of the support to MSF.
- To assess the sustainability – What steps have been taken from the Ministry of Health's side to reach sustainability? What resources have been channeled? What indicators show that the Ministry of Health gradually take responsibility for the project?
- To assess the relevance of the proposal for 2004 (received 2004-01-20).

3. Methodology, Evaluation Team and Time Schedule

The Consultant is required to gather information from the various projects through written documentation; e.g. Sida's decisions, MSF's reports, evaluation made by SEKA of MSF and interviews with various stakeholders.

The evaluation should include the following phases:

1. Prior to the mission the consultants shall study all relevant material provided by Sida and interview MSF in Stockholm and Sida personnel. Interviews shall be made with relevant stakeholders in the field.
2. The Consultants are expected to make a mission to Uzbekistan, including Tashkent and the Aral Sea area and a selection of important points such as Muynak, Nukus, Urgench, Khorezm and if possible Dashoguz in Turkmenistan to carry out interviews and other data collection with relevance to the evaluation. The mission should include interviews with key counterparts on different levels (central and regional) and random samples of target groups.

4. Team of Mission and Sida Guidelines

The team shall include two consultants. One TB expert with experiences from low income countries and one expert on public health and programme management with experiences from low income countries. The field trip should be conducted during the April 2004.

In carrying out the assignment, the team shall be guided by the

Swedish objectives for development co-operation and the following

two guidelines: Perspectives on Poverty and the Regional strategy for Central Asia.

5. Reporting

A draft report shall be presented to Sida, Europa/Kerstin Gyllhammar and Health division/Susanne Lokrantz latest 3/5 2004. Sida is to make comments on draft report within two weeks whereafter the final report shall be received by Sida latest 28/5 2004. The evaluation shall be written in English and should not exceed 25 pages, excluding annexes. Format and outline of the report shall follow the guidelines in Sida Evaluation Report – a Standardised Format (see Annex 1). Subject to decision by Sida, the report will be published and distributed as a publication within the Sida Evaluation series. The evaluation report shall be written in Word 6.0/95 for Windows (or in compatible format) and should be presented in a way that enables publication without further editing.

A separate summary and a completed Data Work Sheet shall be submitted to Sida along with the (final) draft report (annex 2).

Appendix 2

Time Table

Date	Activities	Place
Monday 12 April	Arrived in Tashkent in the evening	Tashkent
Tuesday 13 April	MSF office DOTS National Program National TB Institute	Tashkent
Wednesday 14 April	KfW WHO Travel to Nukus by plane	Tashkent
Thursday 15 April	Deputy Minister TB regional hospital, DOTS corner DOTS-Plus hospital	Karakalpakstan Nukus
Friday 16 April	TB dispensary, DOTS corner TB hospital Nukus City	Chimbay district Nukus
Weekend 17–18 April	Khiva	Khorezm region
Monday 19 April	TB dispensary, Training Centre, DOTS corner TB dispensary	Korezm, Urgench Gursen district
Tuesday 20 April	TB dispensary, DOTS corner	Muynak district
Wednesday 21 April	DOTS-Plus hospital MSF staff Laboratory	Nukus
Thursday 22 April	UNAIDS WHO Deputy Minister of Health	Tashkent
Friday 23 April	USAID Project Hope National Reference laboratory National Training Centre MSF staff	Tashkent
Saturday 24 April	Travel to Sweden in the morning	

Appendix 3

People Met

MSF

Ms Josje Reinartz	Operational Director, MSF Holland
Dr Lucy Blok	Head of Medical Department, MSF Holland
Ms Micky van Gerven	Head of Mission, Tashkent, Uzbekistan
Dr Muriel Ramirez-Santana	Medical Coordinator, Tashkent, Uzbekistan
Mr Anthony Kolb	Operational Research Coordinator (environment), Tashkent
Dr Fozil Khasanov	Medical Liason Officer, Tashkent
Mr George Holloway	Financial Controller, Tashkent
Ms Dildora Nishanova	PR Assistant, Tashkent
Mr Tim Liddle	Project Coordinator, Nukus, KK, Uzbekistan
Dr Oliver Sofranek	Medical Team leader DOTS-Plus, Nukus, KK
Ms Karin Fischer-Liddle	Team Leader DOTS Program, Nukus, KK
Dr Dora Tomnicova	Medical Doctor at DOTS-Plus hospital, Nukus, KK
Mr Vladimir Solorsanu-Pena	Administrative-Logistical Coordinator, Nukus, KK
Ms Claudia Stephan	Lab technician, Manager DOTS-Plus laboratory, Nukus
Ms Helen Cox	Epidemiologist, DOTS-Plus Project, Nukus, KK

MOH

Tashkent

Dr Gulnoz T Uzakova	Director of Republican DOTS Centre
Dr Ubaydullaev Abdulla Mukharramovich	Director of TB Institute, Tashkent

Karakalpakstan

Dr Atadjan Karimovich	Deputy Minister of Health, KK
Dr Dashetov	Director of TB regional hospital, Nukus
Dr Tigai Zinaida	Director of TB DOTS Plus hospital
Dr Koral	Supervisor for Muynak district, Dept Dr at TB hospital

Dr Seytbaev Sharafat	Director of TB hospital, Nukus
Dr Allmuratova Tazagul	Chief Doctor, Chambai district, Nukus City
Dr Taisha	Responsible for ambulatory DOTS-Plus, DOTS-Plus hospital
Dr Amanbay Mambetkadirov	Coordinator for health and DOTS in Muynak district
Dr Berdibek Reimov	Head of TB dispensary in Muynak district
Khorezm	
Dr Thaisia Zueva	Regional Chief Doctor
Dr Atajanov	Head of Regional TB dispensary and DOTS
Dr Zakir	Head of TB in Gurlen district

WHO

Mr Arun Nanda	Representative in Uzbekistan
Dr Beichtigor Babamuradov	National Program Officer
Dr M Grzemska	TBS, HQ Geneva
Ms Karin Bergström	Program Officer

UNAIDS

Dr Aziz Kh Khudayberdiev	Program Officer
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KfW

Ms Akhcalovna Mavluda	Head of Mission, Uzbekistan
Dr Mukhameda Kazim Sobitovich	Health Consultant (EPOS)

USAID

Mr Andreas Tamberg	Health Advisor, Uzbekistan
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Project Hope

Dr Bibigul Alimbekova	TB Programme Manager, Uzbekistan
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Appendix 4

Reasons for the Emergence of MDR TB in Uzbekistan

Drug resistance arises due to the improper use of antibiotics in chemotherapy of drug-susceptible TB patients. This improper use is a result of a number of actions, including not giving the right drugs, with the right dose, during the right time, and lack of direct observation of patients. Essentially, drug-resistance arises in areas with poor TB control programs.

Before the disintegration of the Soviet Union, TB drugs were available free of charge through TB dispensaries and in state drugstores. The distribution of TB drugs was controlled, and drugs were not available without prescription. Since independence, commercial drugstores receive TB drugs both from the government company and from private suppliers. Current laws in Uzbekistan states that licensed pharmacies have the right to sell all drugs including TB drugs. It is also stated that TB drugs must be supplied free of charge and only by prescription. The reality is that laws requiring prescription are not enforced and in KK, both first and second line TB drugs can be purchased without prescription.

Declines in health care spending have resulted in intermittent shortages of first line anti-TB drugs making it impossible to comply with the recommended treatment. It is estimated that close to 50% of patients had their treatment interrupted due to problems with drug supply before DOTS. Outside DOTS, patients are often requested to purchase drugs themselves after they leave hospital for the continuation phase at home. It is likely that many patients can not afford all drugs and therefore purchase what they can, when they can, resulting again in interruptions.

Self treatment or treatment by non-TB physicians is a continuous problem. This is probably related to the stigma of being labelled a TB patient as well as the ease with which TB drugs can be purchased outside of the TB system.

Many of these reasons for the development of MDR TB have been effectively dealt with though the introduction of DOTS with standard treatment regimens and an assured drug supply. It is clear that it is not the DOTS Program itself that has generated the high level of drug resistance seen in KK but rather the absence of an effective control Program for many years. However, DOTS alone will not hamper the spread of MDR strains already in circulation. Therefore an additional strategy, DOTS-Plus, has been developed and pilot projects have been established in several of the ‘hot spots’ for MDR TB around the world.

Treatment for MDR TB requires the use of less effective and more expensive anti-TB drugs than DOTS and is more difficult to manage. The need for such treatment in resource poor settings has been disputed. It has been argued that MDR TB is too expensive and too difficult to treat in all but the most developed countries. However, established DOTS-Plus pilot projects have obtained good cure rates challenging the view that the disease is treatable in some settings but not treatable for those who have the misfortune to live in impoverished settings.

Appendix 5

MSF Operational Research Summary

Since mid-1999 Médecins Sans Frontières' Aral Sea Area Programme has run an Operational Research Programme collecting objective scientific data on health and environment in the Republic of Karakalpakstan and the Khorezm Viloyat to foster an improved understanding and awareness of the relationship between the environmental disaster and effects on human health. The programme will close this month having completed a number of studies in collaboration with local and international researchers. Since mid-2002, the programme began to focus on advocacy and risk communication—feeding back research results to policy makers and the public. Key research and follow-up activities have included:

Aral Sea Area Respiratory Disease and Dust Study (ASARD)

Motivated by concerns over increased dust storm activity, contamination of dust with pesticide residue and increased lung disease, MSF in collaboration with researchers from in the U.K. and local scientists undertook an ambitious study into the relationship between air quality, particularly dust content, and respiratory disease among children in Karakalpakstan.

Preliminary findings indicate that dust deposition rates across the region are high with sites located near the former shore of the sea being the worst affected. For these northerly regions the former Aral Sea bed is most important source of dust. The situation elsewhere is more complex where local sources (agricultural fields, abandoned irrigation grounds, overgrazed dunes, and unpaved roads) and more distant sources to the south and south-west represent significant sediment providers, particularly in the early summer when agricultural fields are ploughed. The proportion of small dust particles (up to 10 micrometers in diameter or PM10), that are most detrimental to health, varied by site from 14% to 53%. No tested for pesticide residues were detected in analyzed samples.

Compared to children in the UK, children in the study areas had much lower lung function. However, the prevalence of wheeze was similar to that reported in other parts of Uzbekistan and low by European standards. The prevalence of other respiratory symptoms suggestive of chest infection is common but varies significantly between areas. Evidence of a dose-related impact of dust levels on lung function was found. These associations were statistically significant for all measures of dust exposure but were most marked for levels of winter dust exposure and level of PM2.5 exposure. However, this link was the inverse of what was expected, i.e., children living in higher dust deposition areas actually had *better* overall lung function and respiratory health.

Results were presented at workshops in Nukus and Tashkent in June 2003 by the key UK researchers and a summary article was published the same month.¹ Analysis of the rich database collected by these researchers continues in an attempt to confirm the findings.

¹ Wiggs G. *et. al.* 2003. The dynamics and characteristics of aeolian dust in dryland Central Asia: possible impacts on human exposure and respiratory health in the Aral Sea basin. *The Geographical Journal* Vol.169/2. pp. 142–157

Exposure Pathways Completion (EPAC): The Role of the Food Chain

This study investigated dioxin and pesticide contamination in common Karakalpak foods to assess dietary exposure to these Persistent Organic Pollutants (POPs). The study aimed to complement previous work by other local and international researchers that has shown high levels of pesticides and dioxins in breast-milk of women living in the Aral Sea Area. MSF partnering with the WHO European Centre for Environment and Health and collaborative laboratories in Italy and Germany performed analysis on 36 food samples collected from markets in Nukus, Chimbay and Kanlikul districts.

In samples of beef and mutton, fish, chicken, eggs, milk products, cotton oil, bread, onions, carrots, potatoes and rice, analyses detected residues of several organochlorine pesticides and dioxins, including the most toxic dioxin, 2,3,7,8-TCDD. DDT and DDE were also detected, but the ratio between DDE and DDT indicates that DDT was not used recently. A major concern is the high level of dioxins found—levels 3 times higher than WHO recommended limits based on local food consumption patterns. Food samples of animal origin contained especially high levels of dioxins. How these and other chemicals found their way into local food must be explored further.

Since publishing the findings,² MSF has been advocating among donors and government for further health risk assessments, monitoring, improved pesticide management, and legislative reform. In addition, in cooperation with the Karakalpakstan Ministry of Education and Ministry of Health and the international NGO Counterpart, MSF has developed a lesson plan with associated posters and materials for 9th grade science teachers on the sources, fate and health risks associated with environmental chemical contamination. One hundred teachers will be trained in use of these materials by local trainers in May 2004.

Drought Related Research

During the 2000 and 2001 growing seasons, Karakalpakstan and Khorezm Viloyat endured one of the worst droughts in recent memory suffering substantial rice, cotton and other crop losses, increased livestock disease, and drinking water scarcity. Given the already poor nutritional status of much of the population, worries over the impact of the drought on food security and thus human health were widespread. To monitor the situation, MSF conducted operational research related to food security and water supply from mid-2000, including: a Price Monitoring Survey, Focus Group Discussions on Dietary Knowledge and Behavior, a Dietary Habits Assessment Survey, a Rapid Nutritional Status Assessment and a Household Water Needs Assessment. Reports are available on each of these studies.

Over the years, these studies have been widely circulated by MSF to donors and NGOs developing nutrition and water supply programs in the area. In more than one instance, they have directly contributed to successful funding applications.

Demographic Dynamics in Karakalpakstan

In August 2001, MSF initiated research into out-migration and changing population dynamics. Initially a census-style survey was conducted in a 600-household rural-urban migrant settlement in Karakalpakstan's capital, Nukus, during 2001. During the spring 2002 and 2003, additional qualitative and quantitative field work was conducted in Chimbay, Bozatau and Muynak districts. In total over 2600 households were interviewed using a questionnaire similar to that used in Nukus. This research aimed to characterize the timing and nature of past or planned migrant moves, migratory motivations,

² Muntean N. *et al.* 2003. Assessment of Dietary Exposure to Some Persistent Organic Pollutants in the Republic of Karakalpakstan of Uzbekistan. *Environ Health Perspect* 111:1306–1311.

and collect data on social networks, basic demographic characteristics, and health and socioeconomic indicators.

MSF finalized a survey report in December 2003 and has shared it with local NGOs and international donor and research organizations interested in migration issues. In addition in early 2005, research results will be formulated into a chapter in a book to be published by the Washington DC-based Kennan Institute on the issue of migration and displaced persons in the Former Soviet Union.

Lasting Impacts

The central contribution of Operational Research to the MSF-Aral Sea Area Programme has been to lend legitimacy to program advocacy efforts. These efforts have continually aimed to focus international donor and local government attention toward effectively addressing the chronic health and development problems facing the local population. The combination of research and advocacy has motivated several concrete outcomes. For example:

- Motivated by a 2001 MSF review of donor activities in the Aral Sea area and a major advocacy effort by MSF during the annual European Bank for Reconstruction and Development (EBRD) meeting held in Tashkent in May 2003, major donors working in the area organized a working group to revitalize cooperation on initiatives in Karakalpakstan. As a result, UNDP established a donor coordination unit in the Karakalpakstan Cabinet of Ministers in April 2004 to operationalize this renewed interest.
- During the last nine months, MSF has been handing over the Operational Research programme to a consortium of academics and NGO representatives in North America to handover Operational Research activities. This Health and Environment Consortium (HEC) has already helped MSF to follow-up on several research activities and is actively pursuing proposals for new interventions based on existing research results as well as new research initiatives.

For further information, contact:

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Appendix 6

MSF Budget History

MSF Uzbekistan: Funding Summary 1998-2003 (Euro)

MSF	SIDA	Swiss Embassy	Soros	JOA	WHO	UK Embassy	Total Expenditure
5 807 394	2 751 575	261 821	114 411	72 674	8 821	6 557	9 023 253
					1 Euro equals	2,20371 HFL	

1998 (Euro)

Project	Total Expenses	SIDA	MSF
Karakalpakstan	517 782	299 041	218 741
Explo in Central Asia	6 293	-	6 293
PSA Karakalpakstan	6 076	-	6 076
Total	530 150	299 041	231 109

1999 (Euro)

Project	Total Expenses	SIDA	Soros	MSF
PSA Central Asia	30 027	-	-	30 027
Karakalpakstan TB-ARI-CDD	440 009	160 537	114 411	165 061
Explo mission Central Asia	4 180	-	-	4 180
Dashouz/TB Program	260 393	93 501	-	166 892
Operational Research Aral Sea Area	100 493	56 289	-	44 204
Total	835 102	310 327	114 411	410 365

2000 (Euro)

Project	Total Expenses	SIDA	UK Embassy	MSF
Karakalpakstan ARI - CDD - TB	520 937	239 616	-	281 321
Food & Water and health status surveillance	26 777	-	-	26 777
Dashogouz - TB Program + Ashgabad Office	508 887	180 605	-	328 283
Operational Research	133 881	79 412	6 557	47 912
Khoresm	160 708	17 244	-	143 464
Ferghana	44 711	-	-	44 711
Ferghana	23 718	-	-	23 718
ICD	138 635	81 454	-	57 182
Access to Essential Drugs Campaign	35 908	-	-	35 908
Total	1 594 163	598 329	6 557	989 277

2001 (Euro)

Project	Total Expenses	SIDA	WHO	MSF
Coordination Costs	355 204	76 221	-	278 983
FWSS	11 145	-	-	11 145
Karakalpakstan TB Project	337 816	191 986	-	145 830
Drought Karakalpakstan	41 033	-	-	41 033
Dashouz TB Project	291 806	143 343	-	148 463
Asgabad Office	69 094	-	-	69 094
Operational Research Activities	88 798	56 723	8 821	23 254
Khoresm TB Program	142 269	75 818	-	66 451
Ferghana	66 459	-	-	66 459
Ferghana Health Education Program	27 369	-	-	27 369
Information and Communication Activities	69 397	40 274	-	29 123
Access to Essential Drugs Campaign	47 963	-	-	47 963
Environmental Health Improvements	23 925	-	-	23 925
Total	1 572 278	584 365	8 821	979 091

2002 (Euro)

Project	Total Expenses	SIDA	Swiss Embassy	MSF
Ferghana Valley Health Education Project	73 186	-	-	73 186
Information & Communication Department	8 420	-	-	8 420
Rehabilitation TB Dispensary	171 525	-	171 821	(296)
Coordination Tashkent	410 669	38 365	-	372 304
Karakalpakstan TB Project	458 925	171 410	-	287 515
Environmental Health Improvements	117 153	-	-	117 153
Dashoguz TB Project	324 125	143 894	-	180 231
Ashgabat Support Office	191 096	-	-	191 096
Operational Research	45 061	40 577	-	4 484
Khorazm TB Project	210 480	93 267	-	117 213
MDR	72 960	-	-	72 960
Total	2 083 600	487 513	171 821	1 424 266

2003 (Euro)

Project	Total Expenses	SIDA	JOA	Swiss Embassy	MSF
Tashkent Coordination	419 879	40 000	-	-	379 879
Ashgabat Log Support office	119 319	-	-	-	119 319
Dashoguz DOTS	252 845	130 000	-	-	122 845
Karakalpakstan DOTS	328 907	170 000	-	-	158 907
Khorezm DOTS	187 530	92 000	-	-	95 530
MDR TB Pilot	1 013 012	-	72 674	90 000	850 338
Operational Research	71 048	40 000	-	-	31 048
Turkmenistan explo	15 420	-	-	-	15 420
Total	2 407 960	472 000	72 674	90 000	1 773 286

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- 04/01 Sida's Support to Regional Development Plans in Lithuania, Part II**
Dan Hjalmarsson, Carl Fredriksson
Department for Europe
- 04/02 Private Sector Development Support in Action: Sida's Approach, Working Methods and Portfolio in Russia and Ukraine**
Carl Fredriksson, Dag Hjalmarsson, Paul Dixelius
Department for Evaluation and Internal Audit
- 04/03 Programa de Reforço da Capacidade Institucional (RCI) do Ministério da Educação em Moçambique 1998–2002**
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