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Conceptual Paper

A Health Systems Approach to TB Infection Control in Central Asia

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I. Introduction

USAID has requested that the ZdravPlus Project undertake Central Asia country assessments of TB infection control using a health systems approach. ZdravPlus envisions accomplishing this task in FY09 through the development of three products:

1. Conceptual Paper – it is not intended to be an academic paper but rather a framework and guide for country specific assessments based on ZdravPlus health systems experience in Central Asia, initial interviews with country partners done in August 2008, and initial review of documents.
2. Reference Paper – a literature review summary
3. Five Country Specific Assessments following the framework and guidance contained in the Conceptual Paper.

The basic intent of this Conceptual Paper is to establish a conceptual foundation for assessment of TB infection control in Central Asia bridging international approaches to TB, international health system strengthening approaches, and the health systems strengthening approach developed for the unique post Soviet Central Asian environment. Its starting point is the emerging global consensus on TB control set out in the new framework from the WHO STOP TB Partnership.¹ The underlying framework and organization is the six components in the new STOP TB strategy as well as accompanying guidance on health system strengthening. ZdravPlus is defining TB infection control broadly to include all modes of TB transmission although the country specific assessments will prioritize assessing and developing options for facility infection control including hospital acquired infection. There is a specific infection control section in the Health Systems Strengthening Service Delivery section.

This Conceptual Paper generally consists of background, some hypotheses to guide country assessments, and suggestions on key questions for country assessments. More detailed country-specific environment questions will also be included in the country assessments. Section II of the Conceptual Paper provides Former Soviet Union/Central Asia context; Section III describes a broad health systems approach; Section IV contains input on each of the six components of the STOP TB strategy; and the Conceptual Paper concludes with next steps and some reference materials including a STOP TB checklist with health systems strengthening guidance.

I. The International Context of TB Control in the Former Soviet Union

A. Background

Political Commitment to DOTS in the Former Soviet Union

In the 1990s, after the collapse of the former Soviet Union (FSU), there was a dramatic doubling of TB incidence. In 1994, DOTS implementation began in Central Asia. The importation of DOTS into the post-Soviet context has faced many challenges. There was and remains an old guard of Soviet TB specialists who continue to believe that the Soviet Union had an excellent system of TB control and the only reason it does not work now is lack of money. These TB specialists were not part of the international mainstream of TB control.

¹ STOP TB Global Strategy: See also Guidelines for the management for the programmatic management of drug-resistant tuberculosis, WHO Health Organization ISBN 9241546956. Contributing to health systems strengthening: Guiding principles for National Tuberculosis Programmes, WHO 2008

A good way to understand Soviet TB specialists is to read Thomas Mann's novel, *Magic Mountain*, set in the 1920s in a tuberculosis sanatorium where people sit outside all day in the fresh air, there are frequent x-rays, and doctors still perform lung surgery. This world disappeared in Europe in the 1950-1970s with the triumph of standardized chemotherapy and good public health surveillance. It is interesting to speculate why TB disappeared in the West, but persisted in the Soviet Union including Central Asia. In the 1980s, the Soviet Union still had a significant TB problem with incidence in the range of 50 per 100,000, which has subsequently doubled in the post-Soviet period.

The differences in opinion between Western experts and Soviet TB doctors are fascinating. Soviet TB doctors could never really understand what the fuss was all about concerning DOTS. The main focus of the WHO DOTS approach was on "Directly Observed Therapy," and in the Soviet system not only did they observe them, patients were kept virtually incarcerated in TB hospitals that functioned largely as prisons. So what was the difference? Some aspects of TB treatment in Central Asia and the FSU have changed and some aspects have not. Although TB doctors will tell you that they have implemented DOTS, it remains an open question whether it has only been implemented partially and is overlaid on the substrate of the old vertical system of TB hospitals, sanatoria, etc. to create a new hybrid post-Soviet DOTS.

It is not surprising that post-Soviet TB physicians still think differently about TB. The WHO framework changed the classification of patients. It also recommended replacing mass screening using x-rays with diagnosis through sputum microscopy and also microbiological culture. This Soviet reliance on x-rays and radiological methods for diagnosis and treatment is one of the most important differences between Soviet and international best practice. There was little emphasis on microbiological laboratories carrying out smears and cultures. Soviet TB physicians used different drugs and treatments including surgery.² Few of the older generation read or speak English and so they have not had close contact with latest international guidelines. They do not have continuing medical education. Many trained in prestigious institutes in Moscow. There is a strong persistence of Soviet traditions in the Central Asian vertical TB system, particularly since there have been few new graduates going into TB medicine for more than a decade. The field is still dominated by those who were trained and practiced in the Soviet period. There was and remains a wide gulf in understanding between "pythisotrists" and TB practice. This is borne out by the remaining high rates of TB surgery that still occur in the peak TB institutes and the persistence of sanatoria.

Experience with DOTS in Russia

Given that both the Central Asian vertical TB systems and individual health professionals still look to Russia, the history of DOTS implementation in Russia is relevant to DOTS implementation in Central Asia. When WHO first began to implement DOTS in Russia there a substantial confrontation resulted. There was a long-standing negotiation between the Russian Government and WHO, World Bank, USAID, DFID over a large World Bank project. Eventually, the loan was abandoned because the international tender process required by the World Bank would exclude Russian manufacturers that were not GMP certified by WHO. Interestingly, the prison sector was the most open to collaboration with international organizations. They were desperately in need of support but could not borrow directly from the WB and needed to be part of a wider loan.

Although there was no progress at the Federal level in Russia, there was progress at the Oblast level. There were a series of pilot projects in many Russian oblasts sponsored by different donors. The

² In the World Bank report on TB in Central Asia: Challenges and threats, there is a table comparing TB practice in the Soviet Union and WHO. The WB report is the most comprehensive report and this includes information on epidemiology as well as financing. This study is out of date with information from 1990=2002. The situation has changed significantly with DOTS implementation and the rise of the mdr-TB.

most famous was Tomsk, which had the support of Partners in Health and Merlin. There were also DOTS Plus pilots in Ivanovo and a number of other oblasts. Reform in the Baltic Countries showed that treating MDR TB was indeed possible.

In Russia, with the collapse of the World Bank loan, the compromise brokered was to establish a high level working group that included Russian and international experts. There were sub-groups on all the key technical issues including labs, surveillance, treatment guidelines, etc. The working groups functioned largely on consensus which formed the basis for *prekaz*/administrative orders setting policy for TB control. The key to the success of the high level working group in Russia was that WHO served as the Secretariat to the working group with a very competent staff supported from technical staff in Geneva. The result has been a slow and steady transformation of the Soviet TB establishment in Russia.

The Soviet Vertical TB System

It is important to remember that the Soviet Union had one of the strongest vertical systems for TB control in the world and the influence of this system is still obvious in Central Asia today. It is an open question whether to try to “de-verticalize” the system and shift its functions into the general health system or strengthen the vertical system in the face of a growing TB burden. There are many cross-cutting issues such as laboratories, information systems, surveillance etc., so it may not be productive to view it as all or nothing, but rather a wider continuum of relationships. The broader current of health reform in Central Asia has been to move towards greater integration. The goal is to create an effective platform of PHC that can deliver many of the services provided by vertical systems or vertical programs during Soviet times. This conceptual paper will address the question of integration throughout as it is the most fundamental issue from a health systems perspective.

In the FSU, there existed a strong vertical system for TB control based on an extensive system of TB hospitals controlled by a peak national hospital/research institute. At the heart of system is generally a large TB hospital outside of town. They also had their own supply chain with vehicles. They were responsible for national clinical guidelines and had their own information system. Microbiology labs were the province of the SES during Soviet times. In addition, some of the vertical systems or programs had some specialized laboratories. After the break-up of the FSU, bacteriological laboratories developed in some hospitals.

The collapse of the FSU led to a collapse in health financing and the remaining health budget could no longer support the extensive health infrastructure with more hospitals and hospital beds than any other system in the world. Health financing decreased dramatically with real funding declining by more than 40%. Extensive reform was required in the health system particularly the move from a hospital oriented system based on inputs towards a PHC system that could diagnosis and treat the majority of clinical conditions. This required inverting the health delivery system pyramid, shifting financing and service delivery care into a newly restructured PHC system based on family medicine. The vertical TB system remained isolated from the broad currents of health reform as did other FSU vertical systems including dermato-venerology (for sexually transmitted illnesses), oncology, narcology (for alcohol and drug abuse), mental health, and the emerging HIV/AIDS system. While the rest of the system was moving towards new methods of financing and organization, the TB system remained virtually unchanged.

The vertical TB system was part of a much wider system of social controls in the Soviet Union. There was strong control over the movement of people and a strong system of police surveillance to monitor movement. One could not move to different parts of the country without a *propiski* and registering with the police. As a consequence of the break-up of the Soviet Union and the move towards a more open society, there was a breakdown in the system of tight social control that made

the TB system effective. The most serious breakdown occurred in the prison sector. The dramatic decline in funding led to collapse of prison health services, and the rise of TB in prisons. Post-soviet countries had very high rates of incarceration and the extensive prison system was even more underfinanced than the health system. Prisons and pre-trial detention centers became incubators for TB with poor nutrition, overcrowding, and health services. Regular amnesties of prisoners created an epidemiological pump increasing TB in the communities. In addition, the coordination between the prison and civilian sector deteriorated with the collapse of the system of social controls including strong controls on where people could live. Prisoners who had started TB treatment were often released and then lost to follow-up.

WHO has identified a need for greater coordination of TB programs with primary care and civil society. The rapid scaling up globally of HIV, TB, malaria, and immunization programs has reinforced awareness of the well-known weaknesses in the health systems and the need to develop new strategies with availability of new funds to support a broader strengthening of health systems. There is consensus that strengthening health systems is essential to achieving not only improved TB results but broader health goals including progress on child and maternal mortality. WHO STOP TB has explicitly included health systems in their latest strategy under the belief that sustainable TB control relies on the general health system especially on well functioning PHC. In Central Asia, the home of the Alma-Ata declaration, it's not yet possible to say that TB diagnosis and treatment are well integrated into PHC in any of the five countries.

B. Basic Hypothesis of Conceptual Paper

Although the context is evolving in Central Asia today, ZdravPlus initial interviews with country partners showed that the level of acceptance of DOTS by the vertical TB system remains an open question.

C. Key Questions for Country Assessments

1. What is the level of acceptance of DOTS by the vertical TB system?
2. What ramifications does this have for continued implementation of DOTS and addressing the critical MDR TB problem?

For example:

1. What is the state of infection control in TB facilities and in facilities where TB patients congregate (PHC, detention center)
2. What are the systemic barriers and other obstacles (behavior, patient access, lack of linkages) to facility-level infection control exist and what are recommendations to address them?

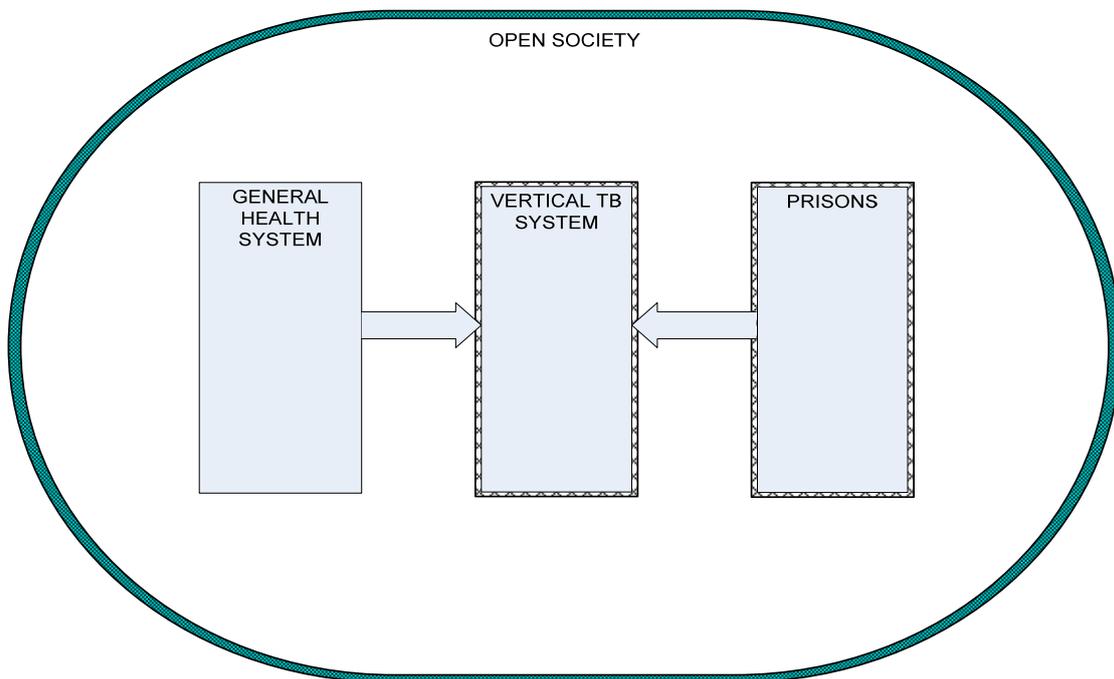
II. Broad Health Systems Approach in Central Asia

A. Background and Options

This section discusses a very broad health systems approach for TB services. As reflected in the chart below, the FSU TB system consisted of closed institutions linked by a strong system of control and characterized as follows:

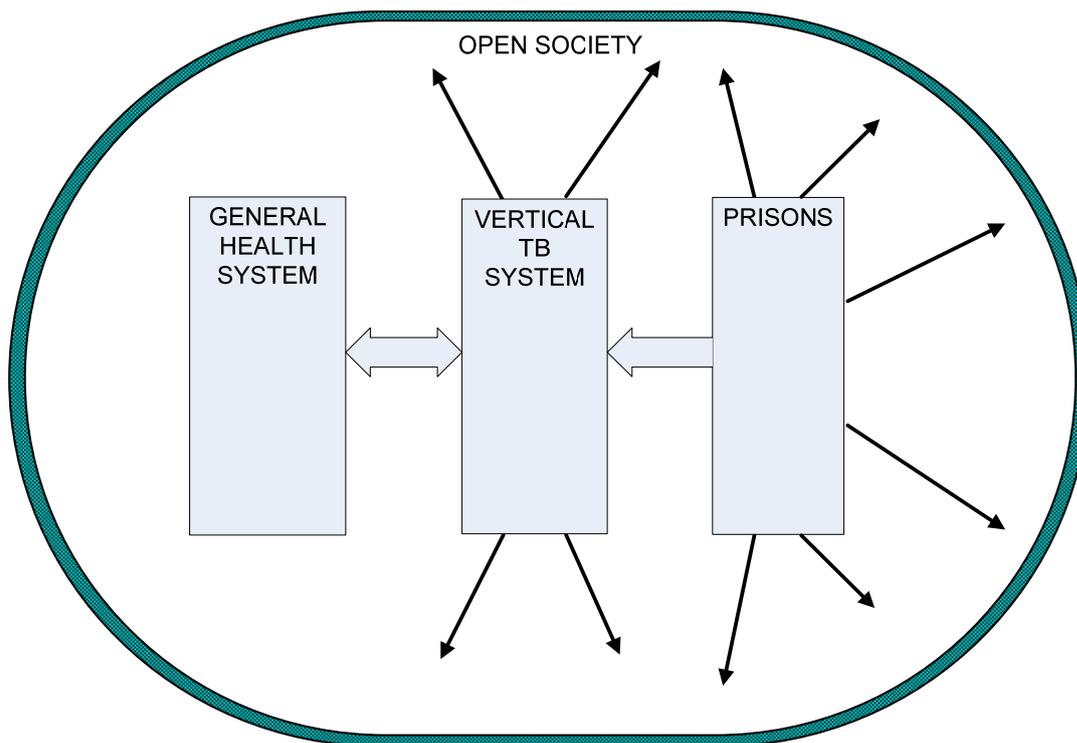
- Complete separation of the general health system and the vertical TB system
- Strong walls around the prisons and vertical TB systems controlling the location and treatment of TB patients

- Strong administrative controls moving TB patients released from prison to the civilian vertical TB system and TB cases identified in the community or general health system to the vertical TB system.



After independence, the situation in Central Asia is reflected in the chart below and characterized as follows:

- Budget collapse, weaker administrative controls and increased human rights resulted in leakage of patients and health system functions from the walls of the prisons and vertical TB systems into open society (the walls started to crumble).
- No broad governance/stewardship or institutional roles and relationships existed to manage this leakage from the prisons and the vertical TB systems resulting in significant and substantial gaps in the overall system conducive to TB transmission
- Initial steps to integrate the vertical TB system into the general health system



A broad health systems approach produces three main options to address TB service problems including high incidence of MDR-TB:

Option 1: Rebuild the Soviet vertical TB system but move diagnosis and treatment protocols towards international standards of clinical practice.

Over the last decade, the donors have largely supported this first option. The focus of funding has been the vertical TB system. Reforms have worked on changing clinical protocols to align with DOTS and regular supply of key first line medications. There have also been deeper changes such as the adoption of the WHO classification for TB cases and the introduction of bacteriologic diagnosis. There has been only limited reform in the structure and organization of TB control which is still dominated by specialized TB institutions separate from the general health care system.

It's possible to continue to support and expand this system. This idea would be to return to the strong system of control of the earlier Soviet period, with what was called the “dispensarization” function. This system and its functions could be strengthened by extending it beyond the Oblast TB hospital into Central Rayon Hospitals and urban polyclinics. The TB vertical program could second personnel to these institutions, extending the reach of the system and carrying out coordination with primary care and public health surveillance.

This option has two main disadvantages. First, the structure of the current vertical TB system is massive with enormous excess capacity, unsustainable fixed costs, and very little financing to invest in variable costs or direct patient care. A further extension of infrastructure will only exacerbate this problem. Secondly, given the extent of leakage of functions creating gaps as well as reductions in administrative controls or increases in human rights with a more open society, it is very difficult to imagine how to put the system completely back into the bottle. Mechanisms and processes will be required to coordinate care across a variety of settings and the community even if attempts to strengthen the old vertical TB system continue. A related issue is the inability of the vertical TB system to perform some functions such as overall governance/stewardship or some broader public health functions which may conflict with their desire to provide curative services which are more

financially lucrative. As discussed in Section II, it is an open question whether the vertical TB system is willing or able to serve a leadership role in coordinating TB services at the PHC level or in the community.

Option 2: Complete integration of the vertical TB system into the general health system

Integration is the buzz word and the presumption is that Central Asia should move towards some type of meaningful integration of TB services. A radical vision of integration would be to abolish the vertical TB system and absorb its functions into the general health system.

Complete integration of the vertical TB system and core TB service functions into the general health system would require at least the following:

- Free-standing TB hospitals are integrated into an oblast, city, or rayon general hospital department, affiliate, or hospital network
- PHC (family group practices/polyclinics) provide the core diagnosis and treatment in the community with the support of specialists located in the general hospitals
- Surveillance and contact tracing is integrated into the SES

The most critical discrete or one-time step in complete integration of the vertical TB system into the general health system is integrating free-standing TB hospitals into an oblast, city, or rayon hospital department, affiliate, or network. TB could be integrated into general hospitals as only TB, a sub-set of infectious diseases or a sub-set of pulmonary medicine. Until general infrastructure is improved including better ventilation, the TB department would probably need to be in a separate building. There are a variety of organizational models possible providing a range of flexibility for the TB entity under a general hospital. Complete integration could be established by creating a department under the general hospitals and less complete integration (more flexibility for the TB entity) through establishing an affiliate or type of network. The general objectives would be to: 1.) Increase efficiency through reduction in excess capacity especially given continually rising utility costs; 2.) Create economies of scale through shared functions including administration, support, and some clinical services; 3.) Reallocate some savings to PHC to strengthen TB services, some savings to general hospitals to strengthen TB services, especially MDR TB services, and also reduce patient informal payment, and the remainder of the savings to address the leakage or gaps in the TB system described above; 4.) Improve overall health sector prioritization given extremely limited resources; and, 5.) Remove any conflicts of interest or inherent tendencies of the vertical TB system to not fully address all TB control functions which might result in their own “sunset” clause.

The most critical continuous or ongoing step in the complete integration of the vertical TB system into the general TB system is strengthening the integration of TB prevention and treatment into PHC including establishing appropriate roles for TB specialists in coordination and supportive supervision. This requires a comprehensive and high priority strategy to improve the capacity and motivation of PHC providers to diagnosis and treat TB. Another continuous step would be integrating laboratories into the hospital or SES bacteriological laboratories and ensuring good access to high quality laboratory services for PHC providers. Transportation of laboratory specimens is a problem long discussed in Central Asia with little result, it would also need to be addressed.

The public health functions would shift to the entity responsible for public health, the SES. They would be responsible for the TB database across all parts of government including civilian and prison sector. SES would carry out epidemiological analysis including regular studies of drug resistance along with wider studies of antibiotic resistance. Most importantly, they would carry out contact tracing of all MDR TB patients and ensure access to diagnosis and treatment for all those who were exposed.

Restructuring and rationalizing the massive vertical TB system infrastructure would create savings which could be reallocated to address critical TB problems. In addition, any problems with the vertical TB system lack of desire to support integration into PHC and provide appropriate specialist supervision would also be resolved. In many ways, choosing this option would resemble the decisions made on restructuring the PHC sector early in the health system reform process. It was believed the old specialist-oriented polyclinic structure with its separation of services for adults, women, and children, domination by narrow outpatient specialists relegating first point of contact or PHC professionals to a dispatcher role did not include an organization structure or culture conducive to developing and expanding the scope of services in PHC. So, a new PHC sector structure was created in many Central Asian countries to establish an organizational structure consistent with the development of PHC. It is likely that Option #2 would eventually provide the same outcome, a general health system approach motivated to reduce TB incidence, strengthen the role of cost-effective PHC, and ensure appropriate access to specialists in departments of general hospitals.

Kyrgyzstan has the most advanced health reforms in Central Asia and two aspects of the Kyrgyz health reform experience shed some light on Option 2 and will be further analyzed in the country specific assessment. One is experience in merging the vertical TB system free-standing TB hospitals and the second is the collapse and integration of the vertical Dermato-Venerology (DV) system which largely treated STIs. Kyrgyzstan merged free-standing TB hospitals into an Oblast Merged Hospital. It is hard to fully evaluate this experience due to conflicting stories, the short-time period before they were again unmerged, and the lack of concrete, objective data available. However, two conclusions have generally been agreed upon by observers: 1.) it appeared to work better in oblasts who had accomplished more general health reform and health system restructuring; and, 2.) there was some time correlation between unmerging the TB hospitals and strengthening of the political position of the vertical TB system due to their being the principle recipient of Global Fund grants.

A more comparable precedent may be the fate of the vertical DV system in Kyrgyzstan. This was once a powerful Soviet vertical system with police powers for carrying out surveillance and treatment of sexually transmitted illnesses. The DV system has disappeared as a separate vertical structure and has been fully integrated into the health system. Although at times the health reforms have been blamed for the collapse of the vertical DV system, it is hard to make that case given other factors contributing to its demise including the system was collapsing under its own weight and the continuous budget reductions, international best practice is generally outpatient treatment of STIs, and it lost out on the large increase in donor funds for HIV/AIDS although treatment of STIs is critically important for HIV/AIDS prevention. The system was needlessly fragmented with the arrival of HIV/AIDS and the development of a new separate vertical HIV/AIDS system structure. The vertical HIV/AIDS system has garnered the lion's share of funding including development of a new vertical laboratory structure doing AIDS testing. Much work would be needed to improve STI treatment either in the old vertical system or the general health system but general health reform and savings from reduced excess physical infrastructure and increased efficiency should enable STI service improvement over time.

The main disadvantage of the complete integration option is this radical step could further disrupt DOTS implementation and a response to MDR TB in the short-term or transition period. However, even here there is an argument for the integration option. The unfortunate status of Central Asia as a world-wide MDR TB hotspot provides some evidence (correlation if not causation) concerning the validity of the charts above which hypothesize that the walls crumbling in the vertical TB system and people and functions "leaking" from both the civilian and prison sectors creates gaps which contribute to the very high MDR TB rates. If this is true, it can also be hypothesized that the radical option is needed to solve the problem.

Option 3: Gradual Integration and Push Out/Pull In

Option 3 consists of two parts:

1. Continue the gradual integration of the vertical TB system which is occurring to a greater or lesser extent in each Central Asian country
2. A push out/pull in or Push/Pull strategy consisting of:
 - Push-out all or most diagnosis and treatment for primary non-MDR TB into the general health system.
 - Pull-in MDR/XDR TB into the vertical TB control system.

Continuing the gradual integration of the vertical TB system would allow development of a step-by-step implementation strategy and plans. This step-by-step approach is consistent with the general health reform process that has been successful in much of Central Asia. It avoids the risks of the radical complete integration option and may help mitigate any further decline in TB services or increases in MDR TB while also recognizing that the existing structure of the vertical TB system is unaffordable and unsustainable in the long-term. It also enables the step-by-step integration and improvement of referrals between the civilian and prison sectors.

Under the **Push/Pull** strategy, primary TB would be largely treated in PHC and the general health system, and the vertical TB system free-standing hospitals would almost exclusively treat MDR/XDR TB cases. Initiating restructuring and rationalization of the enormous excess capacity and high fixed costs contained in these free-standing hospitals would also help increase the variable cost per case required to appropriately treat MDR TB cases by reallocating savings from fixed costs to direct patient care.

The advantages of the Push/Pull strategy are as follows:

- Enables continuing gradual movement toward the long-term objective of integration of the vertical TB system into the general health system
- Addresses the critical MDR TB problem while avoiding further expansion and strengthening of the vertical TB system which would make it harder to integrate in the long-term.
- Enables a potentially major impact on facility level TB infection control by taking a more radical step to separate primary TB and MDR TB cases inside hospitals. Push-out primary TB and pull-in MDR TB will result in infection control and patient separation (which should be occurring but ZdravPlus initial interviews found remains an open question).
- A clear timeframe and plans for full integration of the vertical TB system can be developed as the system is fully integrated at the time the MDR TB problem is largely solved.
- It may create opportunities for further integration of TB and HIV/AIDS services
- An improved referral system from prisons to the civilian sector could be built around the Push/Pull strategy by referring released prisons with primary TB to PHC and released prisoners with MDR TB to free-standing TB hospitals with an appropriate balance of public health and human rights concerns.

There is a large cohort of patients that already have chronic MDR TB and are unlikely to be successfully treated. Given that they are infectious, they cannot be released into the community. Notwithstanding human rights concerns, there is a compelling state interest for providing compulsory treatment segregated from the wider community. Whether they choose to accept treatment or not, people need to be treated with dignity with access to good palliative care in good settings.

The full integration of services might be a long-term vision, but at the moment, the key priority is to solve the MDR TB crisis. This requires scale-up of treatment in the civilian sector and this is most

simply accomplished by using the existing hospital capacity in the TB vertical system for treating MDR TB cases. It also requires strengthening of first line treatment of patients identified with sputum positive tuberculosis (the core of DOTS). For community acquired infections of non-MDR TB, there can be a greater role for community-based treatment in PHC and social support. This system would be much less expensive and probably more effective than the current system of hospitalizing everyone in TB hospitals.

Accomplish these objectives requires rectifying long-standing problems in the implementation of DOTS in the post Soviet countries of Central Asia. There has never been meaningful integration of TB services into urban and rural PHC. Real integration requires some form of financial incentives to shift care from the vertical TB system into PHC. To date, treatment functions have been shifted to PHC but corresponding financing has not accompanied this shift in functions. The incentives need to be complemented by an improved infrastructure for bacteriological diagnosis requiring funding. It also requires on-going professional training, continuing medical education, to doctors, nurses, and laboratory workers on methods and guidelines. On the demand side, there needs to be more direct work with patients, providing them with greater social support so that they can complete their treatment in the community.

This is the unfinished agenda that should be the backbone of long-term TB infection control in Central Asia. This approach would prevent new cases from appearing and eventually driven down the rate of MDR TB.

B. Basic Hypothesis of Conceptual Paper

The extreme option of moving back to the old FSU vertical TB system with its accompanying administrative controls is not conceptually or operationally viable or optimal. The other extreme option of substantially accelerated or complete integration of the vertical TB system into the general health system is conceptually the best option but operationally difficult or impossible.

The option of continuing the gradual integration of the vertical TB system into the general health system including a step-by-step implementation strategy and plans is the most viable option. In addition, the Push/Pull strategy could be both a long-term integration strategy (the vertical TB system gradually dissolves with the resolution of the MDR TB problem) and a short-term infection control strategy to ensure separation of patients. Potential to realize this strategy will also be very politically difficult but will be assessed on a country specific level.

The gaps in governance/stewardship and system management across the entire span of TB services that resulted when the walls of the vertical TB system and prisons started to crumble are likely a major contributor to poor TB infection control and increases in MDR-TB transmission. Improving governance/stewardship across the entire universe of TB services and strengthening institutional structure, roles, and relationships to reduce the gaps in system management at all levels will be a priority.

To be clear, the purpose of the country assessments is not to choose among these broad health system options or even develop them much further although this will vary by country. The intent is to use this broad health system analysis to:

- Provide context for assessing how the country specific vertical TB system is evolving
- Provide a framework or guidance to select the most critical questions to ask or program areas to explore given the large task and limited time and resources
- Contribute to developing options for how to establish a step-by-step approach to reform of the enormous vertical TB system without further worsening the TB infection control situation

- To develop ideas and options on how to adapt the health system structure to address the critical MDR TB problem

C. Key Questions for Country Assessments

1. How would each country be characterized on a continuum extending from strongly reinforcing or reestablishing the vertical TB system to integrating TB services into the general health system
2. What is the level of understanding in the vertical TB system that the system is more or less collapsing under its own weight given the unsustainable structure and level of fixed costs?
3. Are the leakages from the system creating gaps that enhance the risk of MDR-TB? Possibly even more than if the large system didn't exist?
4. What is the potential to accelerate pushing out primary TB cases into outpatient care and pulling MDR-TB cases into the system to both separate the cases and improve MDR-TB treatment?

IV. Assessment of TB Infection Control in Central Asia Using STOP TB Strategy

The following sections describe background, general hypotheses for country assessments, and key questions for country assessment for each of the six components of the WHO STOP TB strategy. The sections are ordered exactly as in the STOP TB Strategy.

1. Pursue High-Quality DOTS Expansion and Enhancement

This component of the STOP TB strategy includes five subcomponents which are discussed in the sections below.

a. Political Commitment with Increased and Sustained Financing

As political commitment and financing apply not only to DOTS expansion and enhancement, they are discussed in the Health Systems Strengthening Component and the Prison Subcomponent of the Address TB/HIV, MDR-TB, and Other Challenges Component.

b. Case Detection Through Quality-Assured Bacteriology

D. Background

As mentioned earlier, one of the critical differences between Soviet and WHO/ International best practice was/is the importance of microbiologic diagnosis through microscopy and culture. One of the central changes in DOTS from Soviet clinical practice was to base diagnosis and treatment on sputum microscopy and bacteriologic culture rather than through x-rays. This requires the introduction of good microscopes and good standard methods in PHC. It also requires strengthening the laboratory network for culturing mycobacterium and carrying out drug resistance testing.

Accurate and timely diagnosis of resistance is key to combating the growth of resistance because drug resistant TB must be diagnosed correctly before it can be treated effectively. Case finding strategies depend on level of drug resistance in the community. This all depends on the ability to culture mycobacterium tuberculosis and test it for resistance in a quality assured laboratory.

There are three core competencies needed for DOTS and DOTS Plus:

- sputum smear microscopy,
- microbiologic culture of TB,
- Drug Susceptibility Testing (DST)

Unfortunately, none of these three areas is working well in Central Asia. It is important to emphasize that DST was always important, but it became critical with DOTS Plus and new pilot projects to treat MDR TB. In these cases, it is critical to test for resistance to develop meaningful therapy for drug resistant patients.

In general, donor support to build laboratory capacity has largely focused on the laboratories in the vertical TB system, largely TB hospitals. There has also been focused support to develop a national reference laboratory as part of the Republican TB Institute that can do DST and participate in the global network. There are many additional possibilities for developing bacteriology as part of a wider emphasis on health system strengthening and this will be addressed later in the report.

National Reference Laboratory

It is a bit disheartening to read of the continuing problems in the key peak laboratories in all of the Central Asian countries. As early as 1995, donors identified bacteriological laboratories as central plank for the implementation of DOTS. There has been long-standing and significant donor support through Global Fund, USAID (CDC/Project Hope), World Bank and others and yet the reference labs all still seem to be functioning very poorly. Information about the Kyrgyz National Laboratory in reports from ICRC and Project Hope is particularly troubling. They seem to have virtually no equipment and do not even have an uninterrupted power supply. Is this model working or would other institutional arrangements be more effective?

Laboratory Rationalization

Report after report details problems in the laboratory network. There is overlapping responsibility in the civilian sector between the vertical TB system and the general health care system (oblast and rayon hospitals and polyclinics). A recent report by Project Hope documented many issues in the overall laboratory network with far too many facilities, lack of quality control, and inadequate caseload. There is a need for a more systematic approach to laboratory rationalization. However, if this is not accompanied by changes in payment methods, there is unlikely to be significant progress. Transportation is a critical issue. Over the last ten years, there has been consistent dialogue on the need to establish a reliable laboratory specimen transportation system, not just for TB services but for the entire health system. How to balance ensuring access in rural areas and ensuring laboratories have enough volume to produce high quality results remains an issue. A reliable laboratory specimen transportation system seems to be the answer but it has never progressed beyond dialogue in Central Asia. Establishing a pilot laboratory specimen transportation system is one option.

Case Detection in Primary Health Care

WHO recommends that the primary system of case detection in post-Soviet countries should be based on passive detection of cases through symptoms presenting in PHC. All studies suggest that there are relative low levels of case detection in Central Asia. The capacity of the laboratories that service PHC in the Central Rayon Hospitals and Family Medicine Centers/Urban polyclinics are low. There is very limited capacity and competence for sputum microscopy and bacteriological culture. There has been little investment in training or infrastructure. The labs are often unsafe and of poor quality. There has been little training of microscopists and there high staff turnover.

There seems to be a lack of adequate understanding of the importance of diagnosing TB in the civilian sector. Although there has been some limited training, there are clearly deeper issues at work. Given the large extensive TB structure staffed with TB specialists, PHC providers have a strong incentive to refer any suspected case to TB specialist facilities. Similarly, the poor condition and training of PHC laboratories means that there have limited incentive to carry out sputum microscopy. If passive case detection rates are to increase, this will require rethinking how to integrate TB diagnosis and treatment into PHC.

In the short-run, this may require providing incentives for diagnosing sputum positive cases. Ideally, it would also include improving the diagnostic capacity of polyclinics/family medicine centers. One of the simplest approaches would be to shift TB specialists from TB dispensaries to polyclinics. In theory, they could serve as a resource to the all physicians in the polyclinic similar to other polyclinic specialists.

B. Basic Hypothesis of Conceptual Paper

The whole laboratory backbone of TB sputum collection, microscopy, bacteriology, and drug resistance testing is not functioning well for either DOTS or DOTS plus and this is a critical health system roadblock for controlling MDR TB. The system gap between the vertical TB system and PHC could be particularly significant in this program element. The vertical TB system has no incentive to support development of sputum microscopy capacity in PHC, and PHC has incentives to refer everyone to the vertical TB system and no incentive to develop sputum microscopy capacity. Low case detection in PHC and losing patients presenting with symptoms in PHC could be the result of this system gap.

C. Key Questions for Country Assessments

1. What is the structure and relationships between laboratories with sputum microscopy, bacteriology, and drug resistance testing? Note: past ZdravPlus experience in detailing the complete laboratory structure to contribute to changes in laboratory structure and financing shows the structure is massive and difficult to document. Therefore, answering this question will involve a broad portrayal of the laboratory system structure and relationships not inventorying every laboratory.
2. Can a more systemic approach to laboratory restructuring and planning be developed?
3. What can be done to improve the roles, relationships, and coordination between vertical TB system, general health system and SES laboratories?
4. What can be done to improve the coordination between vertical TB system laboratories and PHC?
5. Can sputum microscopy capacity be established in PHC? If not, why not?
6. Can a system of laboratory specimen transportation be established or piloted?
7. How can patient referrals for laboratory services, reporting of results, and feedback loops be improved?
8. What are the barriers to effective functioning of the National Reference Laboratory?

c. Standardized Treatment, with Supervision and Patient Support

A. Background

Standardized treatment

One of the key differences between Soviet TB clinical practice and WHO/International best practice was standardized regimens. The Soviet tradition of clinical medicine had less standardized regimens and often used up to 8 drugs tailoring the regimen to individual patient characteristics. There were

also differences in the drugs used. The old drug supply system collapsed with the collapse of the FSU. Since many of the drugs were now imported, with strong technical support by WHO and others the countries shifted their clinical protocols to standard WHO practice for first line therapy.

However, many Soviet TB clinical practices may or may not have disappeared. Many TB specialists still believe that patients should receive adjuvant TB drugs, even after technically cured by WHO standards, especially if there is still any radiological evidence of TB. The main difference remains the reliance of radiology as the principal means of diagnosis. Although clinicians will use smear microscopy, it is often done in parallel with radiology. Interestingly, radiology was one pathway for becoming a TB specialist in the Soviet medical education system.

The Central Asian republics continue to rely on ineffective x-ray screening as a method of case finding. Instead they should rely more on identifying the majority of cases through PHC, where the patient presents with cough and fever. With confirmed cases, there should be systematic contact tracing, since the highest risk groups are those who have been in close contact with the incident case. For complex reasons, the system of contact tracing has disappeared and this is one of the key health system problems to be addressed.

Evidence-Based Medicine (EBM)

There are numerous examples of the need for promotion of evidence-based medicine (EBM) in improving TB services. One way to understand the need for a larger role for EBM is to look at the example of continued use of TB surgery. ZdravPlus staff have met physician after physician that was not convinced about the new WHO approach. They still used mainly x-rays for diagnosis (as the sputum microscopy labs remain weak there may be good cause to continue to rely on x-rays). They still use x-ray to monitor the course of treatment. Many still believe in general relapse treatment with several drugs even after cure by WHO definition.

Convincing physicians on the right diagnosis and treatment will not likely be accomplished through diktat but through continuing dialogue on evidence-based approaches to diagnosis and treatment of TB. Although the doctors talk the talk, it is not clear whether their hearts and minds have been won. Engaging with physicians about what works using data from studies and encouraging them to read the new literature (in Russian) is an important step. A more strategic approach is required including strengthening TB professional standards through developing profession organizations, development of evidence-based standards, and CME for TB professionals with new literature.

Part of the problem is a generational issue. The old guard of Soviet physiatrists will continue to believe in Soviet clinical practice. A new generation of TB doctors is needed with broader general practice and pulmonary education, trained in lung disease but also epidemiology, and who know the latest literature on best international clinical practice.

Patient Support

Patient support is one of the most neglected areas of TB control in Central Asia. It is a critical transition issue from the old closed system of TB control (which had many merits from a public health standpoint) to a more open society where people are allowed to move about more freely. The presumption of the old system was that patients would not be compliant and therefore they should be incarcerated. However, with strong social support it becomes much more possible to treat people in the community.

There are many different models of social support including enablers and incentives and there are lessons to be learned from FSU experiences. The patient must come in to have treatment observed and this requirement can be linked to social support. One of the incentives used for patients is food

baskets. Another possibility is to involve community volunteers. In Russia, nurses have been used to follow patients. Some have argued this is stigmatizing behavior since TB patients can be identified. Ideally, it might be possible to integrate social support and PHC for a wide variety of conditions. In rural areas, it may be possible to have feldshers supported by community workers similar to the model developed by Partners in Health in Peru.

A major problem is that there is limited funding for TB services in general and patient support is often one of the first program areas to go. A critical task is to ensure funding of social support. Patient support could be an important place for international donor assistance using NGOs such as the Red Cross and Red Crescent Society. Ideally, some of this funding could be provided by local governments but experience to date has been limited. There may be an important role for sustained donor assistance with matching funds from government to ensure funding for social support. In addition, there is an urgent need to develop models of social support adapted for each country. The introduction of pilot projects showing much higher rates of adherence would help justify this investment.

B. Basic Hypothesis of Conceptual Paper

Changes vary by country and region but TB treatment is not yet standardized, evidence-based medicine is not yet accepted, continuing professional development including access to Western literature is not yet wide-spread, and patient social support is not valued, funded or provided well.

C. Key Questions for Country Assessments

1. What is the level of TB surgery still used?
2. What is the level of practice inconsistent with standard drug regimens?
3. How can evidenced-based medicine be promoted?
4. How to increase professional development and access to Western literature?
5. What social support is currently being provided in each country?
6. What are appropriate general health system roles and relationships in social support?
7. What is the role of local governments and the community in social support?
8. How can funding for social support be increased and linked with overall financing for TB services (See Health Systems Strengthening Financing Section)?

d. Effective Drug Supply and Management System

A. Background

In the Central Asian context with high rates of MDR TB, short-course chemotherapy for patients infected with drug resistant strains may create even more resistance to the drugs in use. This has been termed the amplifier effect of short course chemotherapy. Ongoing transmission of established drug resistance is most likely to be the major cause of increasing drug resistance in Central Asia. Unfortunately, a good understanding does not exist of the relative importance of the key drivers of resistance in the Central Asian context.

Drug Resistance—Primary Use by Population without Prescription

In the crisis period of 1990-1998 the TB drug supply system collapsed. The impact of the crisis was much wider than just TB drugs as a precipitous decline in health financing resulted in a general collapse of the old health system. For TB services, a major consequence of the collapse was that

drugs were no longer provided free of charge in the hospital. This, in turn, led to a collapse of the system of controls for drug prescriptions and people were able to buy drugs directly from pharmacies which were largely privatized in the mid-1990s.

People can access first and second line drugs for TB without prescription. For many of the first line drugs, there is unlikely to be that much use outside suspected TB. The one exception is rifampicin which is widely used for other types of infections. There is an urgent need to stop people from using these drugs except for TB in order to protect the use of cheap first line drugs. There is absolutely no need to use rifampicin except for cleared specified conditions and the same holds true of isoniazid (H) and streptomycin (S).

Ideally, these should be controlled drugs handled similar to opiates and other psycho-active substances. The Central Asian Republics all have controlled drug regulations that are still functioning. Other intermediate steps could be the MOH Drug Department approving and enforcing new regulations on these medications or more widely on antibiotics in general. This would be a simple and cheap solution to part of the problem of antibiotic resistance for TB. In principle, this is a problem with a relatively easy solution and it will be a priority of country assessments to recommend options for regulating access to use of first line TB drugs for other purposes.

Separate Drug Supply System for TB Drugs

The TB institute has developed its own vertical drug distribution system. In general, drugs are procured by the Republican TB Institute and distributed throughout the TB system using their own separate supply chain and information system. On average, this has meant that drugs are less available throughout the periphery as in a resource constrained environment the periphery tends to be a lower priority. Also each level is expected to come and get their drugs.

In Kyrgyzstan, the Republican TB institute has its own warehouses for drugs and laboratory supplies. Oblast TB facilities are expected to get their drugs and supplies by driving to the warehouse and picking them up. Similarly, each level is expected to pick-up their own drugs and supplies. This burden becomes greater at the lower levels of the system and is especially problematic for PHC. Although currently there is, in theory, adequate drugs and supplies, there is no real supply chain delivering drugs to the facilities particularly PHC. The likely consequence is inadequate supply particularly at the PHC level. Per USAID TB Control Project reports (Project HOPE/JSI), there have been some improvements in the logistical information management system (LIMS). However, the LIMS is exclusively for TB drugs to support a vertical system and is not integrated more broadly into the supply chain and issues arise in the relationships between the vertical TB system and the general health system including PHC.

Problems with Drug Procurement

Over the last ten years, there have been many problems in procurement of TB drugs. In Kyrgyzstan and Tajikistan, the procurement problem has been largely solved by using the Global TB Drug Facility (GDF). Although this has assured adequate supply, there remains lack of coordination between the vertical TB system and the MOH Drug Department. For example, in Kyrgyzstan the TB drugs procured by IDA for the Green Light Committee/GFATM have not been registered. They received emergency registration but they should be registered through the normal process. However, this is not the responsibility of GDF and IDA its procurement agency. It is the responsibility of the Republican TB Institute as the Global Fund principal recipient, but they did not carry out this task. In addition, one could argue there should be no need for registration since the drugs have already received WHO pre-qualification. The government should consider waiving the need for registration for those drugs approved through the WHO pre-qualification process, but this would require changes

in legislation. Similar problems are happening for AIDS drugs and technical assistance could be provided to solve this problem.

In Kazakhstan, the situation is more complicated since they have chosen not to use the Global Drug Facility (GDF) and funding is coming from domestic resources not the Global Fund. In 2005, drug procurement was decentralized to the oblast level which created issues due to variation in health budget allocated for procurement and the nature of the tender process impacting quality of drugs. To complicate matters even further, the prison sector is procuring drugs independent of the civilian sector. Based on interpretation of the Law on Procurement, each colony is procuring drugs independently. There have also been allegations of corruption. Many of the drugs procured do not have Good Manufacturing Practice (GMP) certification. The government may want to support domestic manufacturing, but at the very least there should be much higher standards for drugs -- at least the Global Fund standard if not GMP. This is a complex political problem and it would be useful to carry out assessments of the quality of drugs procured and review of manufacturing practices of firms awarded tenders. Supporting GMP certification could potentially be an area for international technical assistance.

B. Basic Hypothesis of Conceptual Paper

Extensive donor assistance exists for drug supply and management including procurement so we do not plan to duplicate this work. Country assessments will focus on three main issues:

1. Specification of institutional roles and relationships in drug supply and management.
2. The relationship between the vertical TB system drug supply and management systems and PHC to ensure access to drugs during the TB DOTS continuation phase in PHC.
3. Selected legal/regulatory issues.

C. Key Questions for Country Assessments

1. What are the current institutional roles and relationships in drug supply and management?
2. How is the amount of drugs needed for TB DOTS continuation phase in PHC determined, procured, distributed, and monitored?
3. Is there transportation or other problems with drug supply for TB DOTS continuation phase in PHC?
4. What political, legal, technical or other barriers exist to further regulating use of first line TB drugs to prevent resistance (e.g., banning use of rifampicin and isoniazide sales in pharmacies).
5. What is the best legal/regulatory mechanism to use in regulating first line TB drugs to prevent resistance?
6. Would the Government consider waiving the need for registration for those TB drugs approved through the WHO pre-qualification process?
7. What other legal/regulatory issues exist related to TB drug procurement?

e. Monitoring and Evaluation System, Impact Measurement

A. Background

Broader Public Health Connection

At the moment, the capacity of the whole system hinges on the vertical TB system led by the Republican TB Institute. It seems strange that the Sanitary Epidemiological Service (SES) and other elements of the public health infrastructure are not more involved in a central public health challenge. This demonstrates the relative weakness of the SES and the need to strengthen general public health capacity in the post-Soviet environment. The best example of the lack of public health capacity and problems with the SES is illustrated by lack of contact tracing. There is great need to identify high risk individuals and have them undergo screening with people who have been in contact the highest priority. This function should be performed by public health officials trained in epidemiology. In fact, the whole epidemiological apparatus is not being involved in TB which explains the lack of any systematic information on the transmission of MDR TB.

What is very evident from this initial review is the clear need for more systematic study on the transmission of drug resistance to TB in Central Asia. It's time to step back and take a broader approach including first understanding the epidemiological situation, and what is causing the high rates of MDR TB in Central Asia. Given the paucity of information, there is a need for a multi-pronged approach including several large scale community surveys of TB similar to those performed in Russia. The large scale surveys could be complemented by more sentinel sites and/or more detailed analysis in selected oblasts. There is also need for good basic public health with more detailed epidemiological mapping including contact tracing -- in essence a public health approach to monitoring TB.

Detailed epidemiological studies on drug resistance covering the whole country are needed. Ideally, there would be a multi-country study of resistance, using a standardized methodology, with strong technical support including peak laboratory capacity, working with the WHO global monitoring process for drug resistance.³ It would create a gold standard baseline for drug resistance which is needed not only for its own sake, but also as a good baseline to be followed-up and used to determine whether interventions are working. A good baseline also has global importance as combating drug resistance is a global public good because infectious diseases have strong externalities as evidenced by the recent scares of XDR TB. Understanding the incidence and prevalence of new cases of drug resistant TB in the community is critical to developing strategies to address the MDR TB crisis.

Country policy-makers and donor partners should consider how to support the development of the public health infrastructure to support community surveillance for TB, but more widely for infectious and non-communicable diseases. From a health systems standpoint, the strengthening of SES capacity to provide the core public health functions of surveillance, epidemiological investigation, and control is critical. This will have important complementary effects for other program areas such as avian flu and global disease surveillance. The SES should become more like the US CDC, carrying out disease surveillance, outbreak investigation, and environmental health. They should have the core epidemiological competencies to take on a greater coordination role in TB. For example, SES could perform the important role of active surveillance compared to mass screening with x-rays. They should be investigating outbreaks in the community and carrying out contact tracing and investigations into the spread of TB in the local community.

Monitoring and Evaluation by TB Institute: Conflict of Interest?

³ See Global Report on TB Surveillance. This report is the standard reference for drug resistance and shows Central Asia doing poorly. As the report indicates there is no national data from most of the post Soviet countries. The WHO program has guidelines on how to perform a proper survey.

Given the Republican TB Institute has become an implementing agency including receiving funds directly from an international organization, one must ask how to monitor the performance of this system? The TB institute is holding all of the data and is monitoring its own performance. One option might include greater monitoring and analysis of TB data by the SES and academic institutions. It would also be useful to have some sentinel surveillance sites to use as another method of checking the reliability of data in the system. How to monitoring and evaluate the TB program is one of many governance/stewardship issues raised in the conceptual paper.

Information System between TB and Civilian Sector

The span of control of the vertical TB system is not broad enough to ensure effective stewardship of comprehensive surveillance, information systems, and monitoring and evaluation. In the civilian sector, the issue is the relationship between the vertical TB information system, the general health system information and statistics system, and the SES information systems. Establishing a system encompassing or linking information from both civilian and prison sectors is a pre-condition for improvement of referrals and treatment management for released prisoners. Finally, a critical information system problem that needs to be addressed is the growing paperwork burden at the PHC level. More and more vertical systems and vertical programs are requiring forms to be completed that often duplicate general health system forms and information. PHC is literally drowning in paperwork at a time when rural human resources crises are emerging due to migration or retirement of PHC professionals who are not being replaced.

B. Basic Hypothesis of Conceptual Paper

As the vertical TB system is gradually integrated into the general health system, individual health services or curative functions should move to PHC and general hospitals, and public health functions should move to SES as the entity responsible for public health. As this is a long-term process, the development of a step-by-step plan is necessary to accomplish the objective of improving surveillance and TB information systems within the civilian sector and across the civilian and prison sectors.

C. Key Questions for Country Assessments

1. Should the SES be responsible for public health surveillance in general and TB surveillance in particular?
2. What options or strategies can be developed to gradually move TB surveillance to the SES?
3. What has been accomplished regarding detailed epidemiological studies on drug resistance? Do country partners desire such studies? What institutions have the capacity to undertake such studies?
4. What is the mapping, roles and relationships for current TB information systems? How can they be improved in the short-term?
5. How can contact tracing be strengthened?
6. How to link or integrate vertical TB system and general health system information systems?
7. How to reduce the burden of paperwork at the PHC level from vertical systems and vertical programs often duplicating the general health system information system?
8. How to link civilian and prison sector information systems?

2. Address TB/HIV, MDR-TB, and Other Challenges

This component of the STOP TB strategy includes three subcomponents which are discussed in the sections below.

a. Implement Collaborative TB/HIV Activities

A. Background

From a health systems perspective, lack of integration of services or coordination between the vertical systems for TB, HIV/AIDS, Narcology, and Dermato-Venereology (STIs) is one of the fundamental weaknesses of the health system. Currently, there is minimal integration or coordination of services between the vertical TB and HIV/AIDS systems. Growth in MDR TB among AIDS patients should be expected. There will be a large cohort of patients coming from the emerging HIV/AIDS epidemics and many of the cohort with HIV will begin developing AIDS.

To date, there has been limited cooperation between the vertical TB and HIV/AIDS systems and this will need to be rectified as the AIDS treatment crisis looms. The population of drug addicts or narcomaniacs is going to be particularly challenging. At the moment, drug addicts are not eligible for MDR TB treatment. This seems like a potentially explosive epidemiological problem. Drug addicts with AIDS are likely to be in the community and at-risk for MDR TB. Once they have it, they could spread it further. It is prudent to ensure that AIDS patients have access to prophylactic treatment for TB.

Given the public health importance of this group as potentially high transmitters, it is likely to be necessary to treat MDR TB in opiate addicted patients in the future. There are human rights issues particularly if they are denied treatment for MDR TB contracted while in prison on a drug offence. The most effective approach, as demonstrated by evidence from Europe and North America, would be to combine TB treatment with substitution therapy (e.g. methadone/buprenorphine). This would require integration of services across the vertical TB, HIV/AIDS, and Narcology systems and currently there is no incentive to combine these services.

Alcoholics make up one of the largest groups of chronic TB patients. Therefore, there is a crucial need to work on developing joint services on alcohol abuse and TB. This is an area that needs active support from the donor community including WHO. There has been some successful work in the FSU using the Minnesota model combined with DOTS and this kind of innovation is sorely needed in Central Asia.

B. Basic Hypothesis of Conceptual Paper

Taking a health systems approach to TB infection control requires addressing integration or coordination between the vertical TB and HIV/AIDS systems and by extension the vertical Narcology system and possibly the vertical STI system.

C. Key Questions for Country Assessments

1. Building on the institutional mapping exercises done by the CAPACITY Project and work by Project HOPE, what is the current structure and relationships between the vertical TB, HIV/AIDS, Narcology, and STI systems?
2. What targeted work is being done on integrating or coordinating TB and HIV/AIDS services in the civilian and prison sectors?
3. How is TB treatment in opiate and alcohol-addicted people being addressed?

b. Prevent and Control Multidrug-Resistant TB (MDR TB)

A. Background

MDR TB Problem and Global Response

Drug resistance is a man-made phenomenon. From a microbiological perspective, resistance is caused by a genetic mutation making a drug ineffective against the mutant bacilli. This is caused by a

poorly administered treatment regimen allowing a drug-resistant strain to become dominant in a patient infected with TB. The failure to cure TB and development of drug resistance is a sign of health system failure.

From a global perspective, international support was aimed at rebuilding the TB control program and focused on providing good first line therapy. It was felt a strong first line with effective treatment of new cases of primary TB was “the most cost-effective approach to preventing the onset and spread of drug resistance.” WHO was concerned about treating MDR TB without first getting the basics of first-line treatment right through DOTS? DOTS and treatment of new cases was promoted as the main tool for combating MDR TB. As Mario Raviglione, the head of TB at WHO, writes in a preface to the new WHO guidelines for DOTS Plus:

...It was not yet conceivable that already overburdened national programs could undertake the complex, lengthy and extremely costly (often unaffordable) management of drug-resistant, often chronic cases of TB. Basic knowledge about the spread of drug resistance was lacking and there was no standard method of acquiring reliable information.

Unfortunately, DOTS has not been enough in the post-Soviet context. Perhaps if it had been successfully introduced in the early 1990s, just after the break-up of the Soviet Union when the whole health system was collapsing, it might have been successful. Resistance has become so widespread, it is no longer enough. When there are high rates of MDR TB in the community, traditional first line DOTS therapy may not work and may generate drug resistance. Of the 4 drugs, TB may only be resistant to one or two drugs, and this generates greater risk for resistance. Traditional first line DOTS could potentially amplify resistance. There is a need to treat MDR TB and also to make sure that infectious cases are segregated from the community including those that have failed treatment (or are not eligible).

Beginning in 1997, WHO and the International Union Against Tuberculosis and Lung Disease (IUATBL), began to systematically study and report standardized information on drug resistance from surveillance systems or surveys conducted since 1994 for some 35 countries. This information confirmed what many had feared, that drug resistance was widespread globally, and there were critically high levels in the FSU with Soviet Central Asia as one of the global hot spots. Each time the report is released, the situation in the FSU is worse. In the latest report, Uzbekistan and Azerbaijan competed as to which had the higher rate of MDR TB and all of the Central Asian Republic had very high rates.

In post-Soviet countries, there is substantial capacity to treat MDR TB. Unlike low income countries in Africa, post-Soviet countries inherited and had/have a large vertical TB system with an extensive infrastructure including hospitals and sanatoria. Therefore, the region has been able to develop successful pilot programs treating MDR TB in Russia (Tomsk, Ivanovo etc.) and the Baltic States and this experience formed the basis of DOTS Plus. It was mainly the experience in Tomsk, the Baltic States, and Peru that persuaded WHO a complementary strategy based on treating MDR TB was needed to attack the emerging problem of drug resistant TB.

There were many barriers to expanding pilot projects in treating MDR TB. The most pressing was the high cost of second-line TB drugs. There was a need to figure out a way to bring down prices of these drugs similar to the price reductions that have been seen for once expensive anti-retroviral therapy for AIDS. WHO worked with many other organizations including USAID, CDC, and Partners in Health/Harvard Medical School to create novel international partnerships of the Green Light Committee (GLC) and the TB Global Drug Facility (GDF). The GLC assesses proposals for management of drug resistant TB ensuring the projects are technically sound and not a risk for

producing additional drug resistance. Approval of the proposal gives the country access to the GDF which procures high quality drugs at the lowest cost. This is then paid for by the Global Fund and GLC approval is a pre-condition for approval of Global Fund proposals on MDR TB.

GLC also assists countries in developing MDR TB programs and provides regular monitoring of project implementation. For example, they recently carried out a monitoring visit in Kyrgyzstan which revealed systematic problems throughout the program, which will be discussed further in the country assessment.⁴

GDF is also hosted in WHO and is a novel mechanism created as part of the STOP TB partnership. The GDF successfully negotiated lower prices of drugs with providers and has also developed a healthier market by creating more stable demand. In addition, it has helped countries develop improved policies on drug procurement.

The novel mechanisms of the GLC and GDF should be nurtured in Central Asia. The GDF can not only give the countries access to low cost drugs, it could be a source of technical support for procurement. There is also a need for greater harmonization of Central Asian pharmaceutical regulation with new global best practice through the WHO pre-qualification program. Currently, there are problems with the quality of first and second line TB drugs in the Central Asia market. Many of the drugs are not produced by GMP certified manufacturers and the government continues to purchase from non-GMP providers. Kazakhstan would likely benefit from using more centralized procurement with support of the GDF. In Kyrgyzstan, there is a problem requiring emergency registration of GDF-procured drugs without following standard procedures, and this issue should be resolved in a more satisfactory manner.

The overall response to the problem depends on what is believed to be the cause of the high rate of MDR TB. The general view of many clinicians and policymakers is that MDR TB was born in the time of turmoil between 1990, when the Soviet Union collapsed, and 2000 when the economy began to recover. During this time, there were no drugs in the civilian sector or even film for x-rays. There was overcrowding in prisons and poor nutrition, accompanied by the collapse of prison health services making prisons incubators for MDR TB. It was then pumping out into the community with regular prison amnesties, where people with MDR TB were released into the community without completing treatment. The whole system had broken down.

After a decade of decline, post-Soviet economies began to improve and there were improvements in health financing and general standard of living. This meant there was scope for improving TB control. In most cases, it has resulted in improvements in the prison sector and at least partial restoration of the vertical TB control system although it remains vast with enormous amounts of unaffordable excess capacity. Even though services are now improving, there is the long legacy of failure and thousands of people with chronic, multi-drug resistant TB. It is not clear what to do with them which raises the question of human rights as well as the need for TB palliative care for infectious MDR TB patients who fail or who are not eligible for treatment.

B. Basic Hypothesis of Conceptual Paper

The problem with MDR TB can't be encapsulated into one section of a health systems framework as it is overarching and impacted by all TB-related functions. Country assessments will address it in all components. Questions on MDR TB in this section will include gathering information on country partners' opinions on what should be done and mapping the current response.

⁴ The assessment was carried out by Tim Holtz, a TB expert from US CDC

C. Key Questions for Country Assessments

1. What is the opinion of country stakeholders on the most appropriate response to MDR TB?
2. What are the current responses (mapping) including donor-supported projects?

c. Address Prisoners, Refugees, and Other High-Risk Groups and Special Situations

A. Background

Initial Assumption

Entering the initial interviews with country and donor partners, the ZdravPlus overall hypothesis was that the major driver of the MDR TB explosion was prisoners released into the community. Identification of problems in the civilian sector and realization that prison programs are developing in some countries mitigated that opinion slightly. However, it's still fair to say that without extensive epidemiological evidence on exactly what is happening in the transmission of MDR TB, any problem definition driving programmatic responses needs to conclude that release of prisoners with MDR TB and lack of appropriate referral and treatment is a major if not the biggest problem in MDR TB. Anecdotal evidence from Kyrgyzstan includes an interview with a rayon level TB specialist who has a small sample of MDR TB patients and stated she believed around 50% of the patients had come from prison, around 30% from the community, and around 20% health workers or long-term caregivers.

Definitions

Although it varies by country, in general the prison system consists of four different physical structures which could contain prisoners with TB:

1. Detention centers (may called be holding centers, Russian name xxxx): Intended to detain prisoners for only a few hours.
2. Jails (Russian name SIZO): Detains prisoners through the investigation, prosecution, and sentencing process.
3. Prison colonies: Incarcerated after sentencing
4. TB prison colonies: If a prisoner is identified with TB they may be moved to a separate TB prison colony.

Coordination across Prison Physical Structures

From a systems approach, the potential for leakage or gaps across these four prison system physical structures is very large. A quick summary of the Kyrgyzstan situation demonstrates the need for mapping of the physical structure, reporting structure, roles, relationships, and coordination across all the prison sector physical structures:

- The jails, prison colonies, and TB prison colonies are under the Ministry of Justice and the general assessment is that conditions, TB screening, and TB treatment has improved.
- Detention centers remain under the Ministry of Internal Affairs. Prisoners are supposed to be detained for only a few hours but there are anecdotal stories of detention for weeks or months. If this is true, detention centers could be pumping TB into more reformed jails and prison colonies and hampering the general improvement in these physical structures.
- If screening identifies TB, a prisoner is transferred to a TB prison colony where ICRC is managing the provision of TB services. The physical separation of prisoners with TB is appropriate and addresses a number of problems. However it has also created some issues, for example, anecdotal reports of prisoners purchasing spear positive sputum samples due to a desire to be transferred to the TB prison colony where conditions are better.

Capacity of Prison Health Services and Relationship between Prison and Civilian TB Services

Two general opinions emerged from initial interviews with donor/project partners:

1. Dedicated support to TB services in prisons can result in significant improvements in a fairly short period of time. This is due not only to the obvious ability to control the environment but also to a more practical, less ideological approach to TB treatment. Basically, if allowed to work in the prison sector at all a directive is given to fix the problem.
2. While prisons were driving the TB problem 5-10 years ago, over the last five years the problems in the civilian sector have increased substantially and now rival the prison sector. A corollary to this opinion is that Global Fund operating mechanisms increasing the power of the vertical TB system have reduced the urgency for reform or integration of TB services.

Political, strategic, and technical questions arise concerning the relationship between prison and civilian TB services. Some stakeholders advocate for strengthening the relationship and some believe they should remain completely separate. In Kazakhstan, there is some discussion of integrating the prison service with the rest of the health service. Many caution against this approach since the prison sector still functions as a truly vertical society with its own completely different culture. The prison health service sees the urgent need to improve their services. This includes more training but also better laboratory services, critical if prisons are going to take on a greater role in diagnosing and treating MDR TB.

Even if prison and civilian TB services remain separate, linkages are possible to continue to improve TB services in prisons. For example, the importance of improving diagnostic services for TB prison colonies has been recognized, there is the broader question of how to support all the other prison colonies, jails, and detention centers. A closer affiliation with the civilian sector particularly for diagnostics would allow sharing of expensive radiological and bacteriological equipment and staff between the prison and civilian sectors. In addition, some variation in standardized treatment could be considered, for example, mass x-ray screening may be more appropriate in prisons than in civilian populations. The Health System Strengthening Human Resources section addresses the possibility of integrating or linking continuing medical education in civilian and prison sectors.

Pilot and Scale-Up MDR TB Treatment

There was consensus among stakeholders in initial interviews that piloting and scaling up MDR TB treatment in prisons is urgently needed.

Referrals

Improving the TB patient referral system and process between prison and civilian health sectors is essential. ZdravPlus work on this task will be incorporated into the country assessments including the following summary experience and lessons learned:

- There is agreement among all stakeholders that the prison to civilian referral system and process needs to be improved.
- Productive dialogue with major stakeholders including Government, MOH, Ministry of Justice, Ministry of Internal Affairs, local governments was possible.
- Improvement of the legal/regulatory base was generally possible.
- Implementation and enforcement of the legal/regulatory base was difficult due to various barriers including sector capacity.
- The police are an important player in ensuring released prisoners are referred to the civilian health sector although human rights factors must be considered.
- The vertical TB system reported issues with released prisoners with TB refusing treatment.

- Coordinating mechanisms at the local level including involvement of local governments facilitate improved referral.
- Social support is extremely important for released prisoners in adhering to treatment at the PHC level.

Other High Risk Groups

One of the groups highlighted as high risk for TB were external migrants particularly those working illegally. There is a large migrating community from Tajikistan, who work seasonally in Russia and Kazakhstan. Given they are working illegally, it is hard to reach them in Russia or Kazakhstan, so it is probably best to check them regularly in Tajikistan when they are back. Supporting diagnosis and treatment of migrants may be a good role for the international community (IOM/ICRC) given the sensitivities and reluctance of migrant workers to seek care.

B. Basic Hypothesis of Conceptual Paper

Segregation and treatment of prisoners with TB inside prisons and a good referral system and process for released prisoners to arrive at and receive treatment in the civilian sector is a critical issue in addressing the TB problem and will be a priority for assessment to the extent possible given the sensitivities of obtaining information about the prison system.

C. Key Questions for Country Assessments

1. Which Ministry is responsible for all four physical structures of the prison system, in particular are they all responsible to the same Ministry?
2. What is the status of coordination across the four physical structures of the prison system?
3. Which donors/projects are working on TB in prisons and what are the results and lessons learned?
4. What options are available for improving DOTS treatment and scaling up DOTS-Plus pilot programs in the prison sector including discussion of the following two options:
 - Improve capacity of the prison sector to diagnose and treat MDR TB
 - Contract out prison services to international NGO providers
5. Map the referral system and process for TB patients from the prison to civilian sector -- what is the status of improvements to the referral system and options for continued improvement?
6. Anecdotally, released prisoners refusing treatment in the civilian health system has been identified as a problem – how to further assess and identify options to address this problem?
7. Are there problems with migrant workers and what options are available to solve them?

3. Contribute to Health Systems Strengthening

This component of the STOP TB strategy includes three subcomponents and a number of elements which are discussed in the sections below. A section on legal/regulatory framework was added and governance/stewardship was added to system-wide policy.

a. Actively Participate in Efforts to Improve System-Wide Policy, Human Resources, Financing, Management, Service Delivery, and Information Systems

1. Political Commitment, Policy, Stewardship/Governance

A. Background

General Political Commitment

In the STOP TB strategy, political commitment is one of five elements of the first component (Political Commitment with Increased and Sustained Financing). It is included in this section of the ZdravPlus Conceptual Paper as we believe it is overarching and relates to all components of the STOP TB strategy. The political commitment of the vertical TB system to DOTS is discussed in Section III of the Conceptual Paper. At this point we have no information on the political commitment of the President's Administration, Government and other very high level officials. As a starting point, this paper hypothesizes that at the highest political levels there is relatively high and growing levels of general political commitment to solving the TB problem especially given very high rates of MDR-TB. However, it is possible that this political commitment is more oriented to demanding any kind of solution to the problem than commitment to any specific strategy or methodology including DOTS.

Policy Dialogue and Development

Although it will be analyzed in the country assessment, opinions from initial interviews leaned toward the conclusion that the TB policies were generally good although often not being fully implemented or implementation was causing unintended consequences. However, there does seem to be a general belief that ongoing policy dialogue processes are not that effective in increasing ownership or addressing underlying differences in opinion between Western experts and the vertical TB system. Although Technical Working Groups exist and are generally functioning in each country, their scope is generally technical issues not broader policy or governance topics.

Country Governance/Stewardship

At the heart of political commitment is good governance/stewardship for TB control. At the moment, the governance of TB sector is controlled in each country by the vertical TB system. Although they are critical for managing technical implementation of TB policies, there is a broader question of whether they are best suited to govern TB control. In theory, the governance of TB should be vested at a higher level than the vertical TB system headed by the Republican TB Institute as many of the gaps related to TB services spread across the entire health sector (as hypothesized in Section III on a broad health systems approach). The current governance arrangements tend to fortify the vertical nature of the TB system and program. To date, there has been limited coordination with other parts of the health sector including general hospitals, PHC and public health and also other ministries particularly the ministry responsible for the prison sector.

The Global Fund appears to have reinforced the status quo by making the National TB Institutes the principal recipients of the Global Fund grants. This may have made the National TB Institute less accountable to the overall objectives of the Ministry of Health and even the Government. It could explain why integration of TB services into the general health system has progressed very slowly and the vertical TB system has remained outside the broader currents of health reform which emphasize strengthening PHC.

Governance will remain a key theme through this assessment. We believe that the lack of overall governance/stewardship of TB control is the fundamental road-block to improving TB control in the region. From a health systems perspective, governance arrangements need to be reengineered to put the MOH and the general health system in charge. This would include rethinking the role of the SES, and improving coordination between prisons, police, health, and social services. It requires a meaningful architecture of cross-government work, cross-health sector work, and improved methods of financing for TB services not based on hospital infrastructure.

Donor Governance and Collaboration

There is a need to rethink governance arrangements for international support for TB control, specifically how to support the role of the Government and MOH in improving overall governance/stewardship. Kyrgyzstan represents a good example of what is currently wrong and how it can be fixed. In Kyrgyzstan, there is a Government Plan entitled Manas Taalimi and a sector-wide approach (SWAp) supported by both joint financiers pooling budget funds and parallel financiers providing technical assistance and operational support to implement Manas Taalimi. The notable and ironic exception to this general policy is the Global Fund. As Manas Taalimi/SWAp encompasses the entire civilian health sector, it is a natural mechanism to address cross-cutting issues. As other Central Asian countries are also moving to develop and implement broad health sector strategies, more opportunities should present themselves to incorporate governance/stewardship into a broader framework. In addition, a mechanism like the Russian-style High Level Working Group might be useful especially if WHO or another donor or consortium take on the Secretariat function.

MDR TB

It is important to stress these gaps in governance/stewardship of TB control lie at the heart of the MDR TB. MDR TB is man made phenomenon and it is due to treatment failure. This failure is understandable given the collapse of Soviet Union, and the collapse of the walls surrounding the vertical TB system and the prison system. The collapse of coordination between these two systems and limited development of coordination with the general health system lies at the heart of the MDR TB problem in Central Asia. Solving the MDR TB problem requires clear leadership from the Government and MOH supported by a coordinated international donor community.

B. Basic Hypothesis of Conceptual Paper

The mandate, scope, or span of control of the vertical TB system is not broad enough to encompass governance/stewardship requirements within the civilian sector and MOH leadership is needed. Governance/stewardship arrangements across civilian and prison sectors must be improved. Given the broad scope or span of control needed both within the civilian sector and across prison and civilian sectors it's hard to imagine how to significantly improve governance/stewardship without more involvement of both the Government and MOH. Donor governance and collaboration should align with broader governance/stewardship as well. TB policy in Central Asia is relatively good but policy dialogue processes increasing ownership and capacity need to be strengthened.

C. Key Questions for Country Assessments

1. Is there highest level political commitment to solving the TB problem? Political commitment to what? At the highest political levels what is perceived to be the major priority?
2. Is TB policy well-documented and publicized? If not, can this be improved?
3. What policy dialogue processes exist? How well are they working and how can they be improved?
4. How can governance/stewardship arrangements be improved or reengineered to improve governance both within the health sector and across the prison and civilian sectors?

2. Legal/Regulatory Framework

A. Background

General legal

First impressions from initial interviews are of a relatively good legal/regulatory framework that does not contain adequate enforcement mechanisms.

Human Rights

There are many thorny issues associated with TB particularly around the issue of compulsory treatment. Given that TB is infectious disease, there is a compelling state interest to ensure that an infected individual is not a risk to the community. It is a serious problem when a prisoner is released who has not completed his course of TB treatment. Or when a civilian starts and then decides to stop treatment.

In Kyrgyzstan, there is no legal framework to ensure mandatory continuation in the civilian sector. This poses a grave risk to the public's health and to the spread of the MDR TB. In Kazakhstan, they have a stricter legal regime. They are able to ensure treatment and to monitor prisons through the Ministry of Interior/police. There is scope for mandatory treatment and they are hoping to enforce their powers under new revisions of the sanitary code.

There is a need to balance public health with human rights. Although the state has a compelling interest to mandate treatment, they cannot presume that patients will be non-compliant until they have shown evidence that they are non-compliant. The Soviet supposition is that you will not be compliant and therefore you should be locked up in a TB hospital. There will indeed be cases where people should be locked up but the vast majority of patients want to get better and do not want to infect their families. There needs to be some balance between individuals' rights and the states interest in maintaining the public health. Where the line is drawn on the public health vs. human rights debate also depends on the availability of TB services or palliative care in humane settings.

The international community is also grappling with finding an appropriate balance between public health and human rights in TB control and there is no clear direction to reply upon. For example in the U.S., New York took a harder line on quarantining TB patients while South Carolina developed a step-by-step process with more enforcement powers as patients progressed through the steps. Providing examples of how other countries around the world manage this dilemma including background information and model laws balancing public health and human rights could be an important contribution to productive dialogue.

B. Basic Hypothesis of Conceptual Paper

All the Central Asian countries would benefit from greater thinking about the whole legal framework underpinning TB control. Dialogue on public health vs. human rights is a debate worth having and likely has broader ramifications for democratization beyond TB control.

C. Key Questions for Country Assessments

1. Based on mapping and documentation of the legal/regulatory framework, what improvements can be suggested?
2. Are there issues with enforcement mechanisms for the legal/regulatory framework?
3. What forums for dialogue on the balance between public health and human rights would be productive?
4. What do stakeholders believe to be the specific issues in the public health and human rights debate? What suggestions do they have for resolution? Are they interested in more information on international experience?

3. Human Resources

A. Background

Workforce Planning

Initial interviews revealed that very few medical students have chosen to become TB doctors over the last ten years. It is clear that availability of doctors to provide TB services will emerge as a major problem as the old TB specialists start to retire. See PAL section for more discussion.

Undergraduate Medical Education

The process of introducing DOTS into undergraduate medical education has begun but needs to be strengthened. In addition, more work is needed to incorporate evidence-based medicine into the foundation of medical education as well as building capacity to critically review literature and a culture of professional development and life-long learning.

Postgraduate Medical Education

Strengthening postgraduate medical education or continuing medical education (CME) could significantly contribute to a transition bridging the gap to longer-term workforce planning and improvements in undergraduate medical education. Most Central Asian countries have either already converted or began the process of converting the FSU postgraduate medical education system into a CME system. TB and laboratory specialists have received training from various donor programs over the last fifteen years. In general, DOTS has been incorporated into PHC CME programs. Developing a single channel to deliver all training to PHC professionals rather than separate, costly and inefficient vertical training programs has been a priority and usually an accomplishment through the Post-Graduate Institute and Family Medicine Training Centers at the oblast level. However, there remains a need for vast amounts of training at every level of the system and a priority intervention is regular training or updates on the latest guidelines for the diagnosis and treatment of TB.

Linkages between Civilian and Prison Sectors in CME

The idea of linking civilian and prison sector CME for health professionals received a generally positive reception in initial interviews with country partners. Prison sector health professionals badly need ongoing training and CME. Although there are many barriers to integrating or linking the civilian and prison health services, there may not be that many barriers to a joint CME program for civilian and prison health professionals.

B. Basic Hypothesis of Conceptual Paper

Developing a strategy for TB service workforce planning is essential. Work should continue to incorporate EBM in general and DOTS in particular into undergraduate medical education. Improving the CME system for TB and PHC professionals is a priority and it may be possible to develop a joint civilian and prison CME program for health professionals.

C. Key Questions for Country Assessments

1. Is there a strategy and process in place for workforce planning for TB services?
2. What is the status of introduction of DOTS into undergraduate medical education?
3. How many medical students entered a TB specialty over the last few years?
4. What training has/is occurring for TB and laboratory specialists?
5. Has DOTS been incorporated into retraining or CME for PHC professionals?
6. What is the potential for development of a joint civilian and prison CME program?

4. Financing

A. Background

Level of TB Financing

Some Central Asian countries are initiating national health accounts (NHA) TB subaccounts. The country assessments will follow up on the status of NHA as well as access and document information to the extent possible on level of TB financing, its proportion in relationship to the total health budget, and its allocation across health sub-sectors.

General Health Financing Reform Strategy

ZdravPlus believes that inverting the pyramid of the vertical TB system is needed just as inverting the pyramid of the general health system was/is needed. The extensive excess capacity in the TB hospital sector should be restructured or downsized with efficiency increases or savings allocated partially to direct patient care in remaining TB hospitals or general hospital departments and partially to PHC. This can not be accomplished without TB financing reform and changing the current provider payment systems for TB services.

It must be emphasized that the traditional FSU method for paying for TB services has generally not changed in the post-Soviet context. In the FSU, hospitals were paid based on the number of beds. If the number of beds were reduced, the budget was reduced. Therefore, there is a strong incentive to maintain the extensive infrastructure of the vertical TB system. In the general health system, there have been reforms in the provider payment systems moving from infrastructure of input-based payment toward output-based payment including PHC per capita payment system and case-based hospital payment system. As long as TB funding remains tied to physical infrastructure, there is little incentive for the vertical TB system to move away from a hospital-based system.

Kyrgyzstan has developed and is implementing a TB financing reform strategy consisting of two main phases:

1. Reduce excess capacity and increase efficiency within the vertical TB system through TB financing reform
2. Incorporate payment for TB services into the State Guaranteed Benefit Package (SGBP). Payment is currently infrastructure or input-based and outside the SGBP and should convert to output-based matching the SGBP benefits after restructuring of the vertical TB system.

Specific elements of TB financing reform in Kyrgyzstan include:

1. Government and MOH legal/regulatory framework for program budgeting such that TB services are treated as a program not infrastructure which enables reinvestment of savings
2. A new budget formation process for each TB facility as follows:
 - The budget is formed based on cases treated
 - The case classification system is based on the DOTS groups
 - Cost accounting is done to create a relative weight for each group in the case classification system
 - Each TB hospital budget is based on the expected number of cases in each group times the relative weight for each group calibrated to the total level of the TB budget (average cost per case).
3. The provider payment system in Phase I is a global or chapterless budget with the amount of the global budget determined by the number and type of cases treated. The Phase I provider payment system is not a case-based hospital payment system but rather a case-based hospital budget formation process.
4. TB facility-level assessment of revenues vs. expenses under the new budget formation process and global budget leads to development of rationalization and restructuring plans. These plans are both within facility and across the vertical TB system including hospital mergers.
5. Convert salary payment to a contract basis enabling bonuses and other salary distributions from facility restructuring savings.

One relative weight or payment differential is that the payment is three times higher for chronic or MDR TB than for primary TB. Analysis and implementation of this new TB financing system in Kyrgyzstan demonstrates that the **Push/Pull** strategy discussed above is a viable option. Hospitals

treating mostly primary cases of TB do not cover their fixed costs under the new budget formation process (revenues below expenses) while hospitals treating many chronic cases of TB do better. Therefore, the restructuring strategy currently under development leans toward merging or integrating into general hospitals TB hospitals treating largely primary TB and consolidating TB hospitals treating more chronic and MDR TB.

Kazakhstan has also requested assistance on TB financing reform and it is possible a system with basically the same parameters can be developed in Kazakhstan. It is probably premature to initiate TB financing reform in Tajikistan or Uzbekistan as general hospital financing reform including a case-based hospital payment system matching payment to hospitals with the SGBP is still in the dialogue phase and has not yet been implemented. It is important that TB financing reform be added on top of general financing reform and be consistent with the health financing functions of collection of funds, pooling of funds, and health purchasing including linkages to the SGBP.

PHC Financing

The current TB financing arrangements in most countries are that the money flows through the TB institute directly and exclusively into the TB vertical program. There is no additional funding for PHC from country budget, donor funds, or savings from efficiency increases including TB hospital restructuring. The problem with the current arrangements is “unfunded mandates.” PHC is asked to take on yet an additional function or responsibility with no additional funding, when the current PHC per capita rate remains pitifully low. In theory, funds for TB services at the PHC level should flow through the PHC per capita payment rate. In addition, money should flow to providers or NGOs for social support. Because of the governance of the system and the way the money flows, this does not happen since it is not in the best interest of the vertical TB system. The country assessments will consider two aspects of PHC financing:

1. The Core PHC Per Capita Payment Rate – dialogue on how to adjust the PHC per capita payment rate to account for the increase in functional responsibilities related to TB services
2. Pay-for-Performance – in theory, pay-for-performance for TB services is possible and it may even be ideal given the need for innovative solutions to the TB control problems. A pay-for-performance amount could be added to the PHC per capita rate based on specific indicators. Or payment for performance could be given to the entire hospital, PHC, and public health team. Donor money could be used to properly incentivize the system to improve TB diagnosis and treatment as is currently being piloted in Kyrgyzstan with the GAVI HSS proposal that includes an element of performance-based financing for improving immunization. ZdravPlus believes that pay-for-performance will be most effective if it is added on top of a reformed general health financing system using the mechanism of new provider payment systems rather than implemented in parallel or fragmented in a haphazard manner.

Other Specific Financing Issues

Other specific financing issues need to be addressed although ZdravPlus believes it is difficult to address secondary or next generation issues when core TB financing reforms have not yet been accomplished. New payment systems for laboratory services across the general health system, vertical TB system, and SES as well as across the civilian and prison sectors (fee schedules) will be considered in the country assessments. In addition, the priorities for capital investment should be considered.

B. Basic Hypothesis of Conceptual Paper

A better picture of country and donor TB financing and funds flows should be developed. Country strategies to reform TB financing are needed including encouraging restructuring of TB hospitals and shifting resources to PHC.

C. Key Questions for Country Assessments

1. What documentation or picture is available on the total TB budget, relative contribution of countries and donors, and allocation between the vertical TB system and the general health system including general hospitals, PHC, and SES?
2. How ready is the country for implementation of broader TB financing reform? What specific activities have occurred to date?
3. Is the PHC per capita payment rate being specifically increased for PHC to perform the functions of diagnosis and continuation phase treatment? If not, why not?
4. Would some type of pay-for-performance be possible for TB services?
5. What are the other specific health financing issues and how are they being addressed?

5. Management

A. Basic Hypothesis of Conceptual Paper

This section will address health facility-level management as compared to system-level management contained in the Governance/Stewardship section. It is hard to improve health facility-level management without changing financial incentives faced by TB facilities and increasing facility autonomy.

B. Key Questions for Country Assessments

1. What is the general status and capability of TB facility management?
2. Do TB facilities believe they need more autonomy to improve facility management?
3. What changes in financial incentives do TB facilities believe will enable them to improve management?
4. What are TB facility priorities for health management training?

6. Service Delivery

A. Background

Four main general health system and TB service delivery topics are included in this section – health facility infection control, the relationship between TB service delivery in the vertical health system and general health system, a health systems approach to the reform of laboratory services, and palliative care.

Health Facility Infection Control

There are many possible sources or interactions contributing to poor TB infection control. A general framework on the possible routes of transmission of primary and MDR TB would include:

1. ***Prisoner-to-Prisoner:*** Prisoners with active TB could be transmitting it to other prisoners due either to undetected cases or poor separation of cases in detention centers, jails, and prison colonies. It could also include transmission of MDR strains to non-MDR patients in prisons.
2. ***Prison-to-Community:*** Prisoners with active TB are released from the prison to the community. They do not access appropriate treatment in the civilian health system and they infect others with TB. Anecdotally, this is a big problem in Kyrgyzstan.
3. ***Civilian Patient-to-Civilian Patient within TB hospital:*** assuming that TB patients in TB hospitals actually have TB, the main issue here is non-resistant TB cases being infected with MDR strain in hospitals.
4. ***Civilian Patient in TB Hospital-to-Community:*** Patients with active TB released from vertical TB system due to problems with treatment process or leaving against medical advice.

5. ***Treatment Failure of DOTS in PHC or Community:*** Patients stop taking their medications and transmit TB or develop resistant strains.
6. ***Health professionals acquiring TB/MDR TB:*** Also includes other high risk transmitters such as long term care-givers and teachers and involves TB obtained in course of performing their job or a related function.

Prisoner-to-community, civilian patient in TB hospital-to-community, and treatment failure of DOTS in PHC or community are comprehensive TB infection control problems requiring a broad health systems approach and addressed by all sections of this Conceptual Paper. This section addresses the narrower TB infection control issues of civilian patient-to-civilian patient within TB hospital, prisoner-to-prisoner, and health professionals acquiring TB/MDR TB. Specifically hospital or health facility acquired infection.

Infection control is a particularly obscure part of Soviet medicine. Historically, infection control was the responsibility of the SES and managed through a series of generally ineffective normatives. They did not use bacteriologic diagnosis and pre-operative antibiotics were not used to prevent wound infections.

The Conceptual Paper hypothesizes that hospital or health facility acquired infection control should encompass two levels or types of activities described below.

1. General Hospital or Health Facility Infection Control

There is no reason to believe that TB hospitals shouldn't observe the same universal precautions, hygiene and wound care procedures that other hospitals should observe in order to prevent all types of hospital acquired infections.

The most sustained approach to change basic hospital infection control has been in Naryn Oblast in Kyrgyzstan with the support of the Swiss Tropical Institute. They have worked with WHO and former SES physicians to create a new regimen of infection control focused on systematic hand washing, pre-operative antibiotics, and systematic reporting of data on infection control such as wound infections. The approach has been very cost-effective and should be extended to all hospitals including TB hospitals. There have also been several ad hoc projects on infection control, but there has been little other systematic work with the exception of the Swiss project.

2. Specific Hospital or Health Facility TB Infection Control

Even before the advent of MDR TB, specific TB infection control policies and procedures have always been important to protect health professionals and should have been in place and functioning. One could assume that these procedures have been well-established and improved over time in the vertical TB system and also applied as TB services began to be integrated into the general health system including PHC. However, this assumption may not be valid. The topic is very delicate and difficult to investigate. Anecdotally, we have been told that TB transmission to health professionals is occurring, but it is hard to get any real facts. Laboratory specialists are at high risk and basic infection control procedures should be in place in all laboratories.

The advent of MDR TB has placed a premium on controlling the internal transmission from MDR TB patients to primary non-MDR TB patients. Initial interviews revealed that the importance of segregating patients is generally understood and there are regulations/procedures in place. However, they are often not fully enforced and to be fair it is a difficult task in any type of communal living space. It is not so easily to segregate patients, and sometimes there is merit in having separate

physical facilities although separate organizational structures are not needed. There is reason to suspect transmission might be occurring. There is little segregation of patients and they can often mingle on the grounds or during meals. Interviews told of groups eating together, smoking and playing chess on the grounds.

Prisons have additional burdens in specific facility level TB infection control. First, unlike a TB hospital it is not reasonable to suppose that all prisoners have TB and solving the problem of undetected cases requires a comprehensive and systemic approach. Secondly, the still very poor conditions and overarching objective of incarceration and protecting society probably undermine most attempts to segregate TB patients in detention centers, jails, and prison colonies. Over time, issues related to TB-AIDS co-infection will also emerge. Transfer to a separate TB prison colony seems an appropriate approach to segregating TB patients. Both Kazakhstan and Kyrgyzstan appear to be making progress in TB infection control in prisons but it's a difficult job and a long, slow road.

Relationship between TB service delivery in the vertical TB system and general health system including general hospitals, PHC, and SES

As these service delivery relationships are an underlying theme of a health systems approach to TB infection control and incorporated throughout the Conceptual Paper, they will not be discussed further here. This section is a placeholder for the country assessments to portray or illuminate the specific service delivery relationships between the vertical TB system and the general health system including general hospitals, PHC, and SES.

A health systems approach to the reform of laboratory services

Civilian Sector

Historically, most bacteriological laboratory capacity in the FSU was based in the SES laboratory network. In the post Soviet period, there has been growth of bacteriological laboratories in hospitals including TB hospitals. The best location for specialized laboratory capacity particularly outside the capital is an open question. Given the need to restructure, reform, and upgrade laboratory capacity in the health system in general, it may make sense to develop a wider strategy for strengthening bacteriological lab capacity rather than focusing exclusively on vertical TB system laboratories. Specifically, why are oblast level bacteriology labs needed in the general hospital, vertical TB system, and SES? These facilities are generally located fairly close to each other, the fixed costs of maintaining three entities is high, and quality will suffer as it is likely none of them will have sufficient volume to ensure quality laboratory services.

A health system-oriented approach is needed to reform the structure of laboratories and the roles and relationships between the general health system, all vertical systems, and SES. It should incorporate all facilities in the general health system including oblast and rayon hospitals and polyclinics. Some countries have attempted to introduce microscopy to even lower levels such as SVAs (PHC providers). Field visits suggest that their volume is too low to ensure high quality standards. DOTS requires improved microscopy with more centralized laboratories that are probably best located at Central Rayon Hospitals in rural areas and in polyclinics in urban areas. Restructuring and consolidating the entire civilian sector laboratory structure will require introduction of a transportation system to shift to movement of laboratory specimens rather than people. This is particularly true for conditions with public health ramifications including TB. The risks related to losing people to or in the health system are higher if they are referred to another facility than if laboratory specimens are collected and transported.

What is new is the need to develop capacity for drug sensitivity testing for MDR TB which lies at the heart of developing and scaling up treatment programs for MDR TB. This requires reorganization of laboratory services with greater specialization and larger volumes. There will need to be DST capacity

in both the civilian and prison sectors. It is also worth considering expansion into the oblasts and whether this function should go to a new oblast bacteriological laboratory that also supports testing for antibiotic resistance for a wide range of diseases of public health importance.

Prison Sector

The prison sector has specialized TB colonies and it is an open question whether they should have bacteriologic laboratories. All of the prisons have a need for access to TB services including microbiological services and x-ray diagnosis but that does not mean they need to own and operate their own laboratories. They could send specimens to the civilian sector. TB is but one example of the need for access to high quality laboratories as prisoners have many other health conditions including AIDS and hepatitis.

It can be argued that prison laboratory services are essential particularly for TB prison colonies that are planning to undertake DOTS Plus treatment given the need for extensive testing including drug susceptibility testing (DST). There is also a need for access to laboratory services for all other prison colonies, jails, and detention centers. In Kyrgyzstan, ICRC has equipped the prisons with a mobile fluorography unit that travels between jails and prison colonies testing all of the patients. There is also a need to ensure access to sputum microscopy for all prison facilities including quality control.

Given the vertical nature of the prison sector and the difficulty in inter-sectoral funds transfers between the prison and civilian sector, the emphasis to date has been on building the capacity of prison health services. There have been significant improvements in prison health service capacity in Kazakhstan (Karaganda Oblast) and Kyrgyzstan (Chui Oblast) with international support including technical assistance from ICRC, MSF, KNCV, Global Fund etc.

Palliative Care

There will be many patients with MDR TB that will fail treatment or might not be able or eligible to be treated. If they have infectious MDR TB, they are a threat to public health. There is a compelling state interest to segregate these patients so that they do not infect others. However, if their liberty is taken away they must have the right to decent standards of living and palliative care. There is a fairly large cohort of patients with chronic MDR TB. Interestingly, the post-Soviet system may be particularly well equipped to deal with this problem by converting current inpatient capacity or by using old TB sanatoria.

This could be a high priority for donor assistance. It would allow the country to segregate high risk patients in a humane manner. One could imagine the management of this function contracted out to an international NGO like ICRC. In summary, balancing protecting public health and protecting human rights is a critical overarching issue (See Health Systems Strengthening Legal Section).

B. Basic Hypothesis of Conceptual Paper

There appear to be significant issues in hospital or health facility level infection control both in general and specifically related to TB. Hospital or health facility level infection control procedures generally do not fall into the category of a major health systems problem. It is probably more appropriately categorized as a health facility management problem and should be addressed as such with clear policies and procedures (regulations), communication, capacity building, operational mechanisms, and internal controls.

The ability of PHC to provide TB services is still weak. This is due more to a lack of development of TB services in PHC than an inherent inability of PHC to deliver these services. A health systems approach is needed to reform laboratory services due to the linkages across the general health system,

SES, vertical TB system, and prison sector. A specific strategy for palliative care needs to be developed to improve TB services and address human rights issues.

C. Key Questions for Country Assessments

1. Is there a strategy for hospital or health facility level infection control? What hospital or health facility level general infection control improvements are occurring in the country? Are these general improvements applicable to TB services? Can they be implemented for TB services?
2. What specific hospital or health facility level TB infection control strategies, programs, plans, or hospital or health facility level work is being implemented in the country including segregation of MDR TB patients? What improvements can be made?
3. How to improve prison level TB infection control including segregation of patients?
4. Assess the relative contribution of the following factors in strengthening the integration of TB services into PHC:
 - Time – as it is a new function being incorporated into PHC does it just need time to develop?
 - Capacity – is more capacity-building, training, and introduction of quality improvement processes needed?
 - Financing – are there incentives for PHC to incorporate TB services?
 - Specialist Supervision and Coordination – are the TB specialists in the vertical TB system supportive of the role of PHC and providing supervision and coordination or are they resentful, still encased in a vertical system mentality, or even hoping PHC fails in order to hasten going back to the old system?
5. Is the environment conducive to dialogue on a health systems approach to reforming laboratory services?
6. How to establish and strengthen a system of palliative care?

7. Information Systems

Monitoring and Evaluation System and Impact Measurement in Section IV.1.e addressed information systems and it will not be further discussed here although the country assessments may further consider how to classify surveillance, information systems, and monitoring and evaluation.

8. Health Systems Strengthening Guidance from WHO and Other Sources

Some work has been done by WHO and other donors to identify health systems issues playing a key role in causing drug resistance (table below) and create a STOP TB Checklist with health systems strengthening guidelines (attached as Appendix A). This guidance will be utilized in the country assessments.

Health Providers:	Drugs:	Patients:
Inadequate Regimens	Inadequate supply Poor quality	Inadequate Drug Intake

<p>-Poorly funded TB program;</p> <p>-Poorly managed TB program;</p> <p>-Inadequate lab capacity to implement DOTS and DOTS Plus</p> <p>-Inadequate public health surveillance including screening of high risk groups, contact tracing, and epidemiological analysis</p> <p>-Lack of information systems (TB registry, cohort analysis, prison/civilian interface)</p> <p>-Inappropriate guidelines for MDR TB</p> <p>-Inadequate training of providers on TB protocols;</p> <p>-No supervision of TB treatment with external monitoring of performance.</p>	<p>-Unregulated drug market with access of population to first line anti-TB drugs (e.g. rifampicin</p> <p>-Poor quality of first-line drugs (no GMP certification)</p> <p>-National and decentralized procurement not achieving optimal outcomes</p> <p>-Vertical supply chain with inadequate links to providers outside vertical system</p> <p>-Poor quality</p> <p>-Unavailability of certain drugs</p>	<p>-Poor adherence (or poor DOT)</p> <p>-Poor Adherence to DOTS Plus</p> <p>-Lack of support for prison-civilian re-entry).</p> <p>-Lack of information</p> <p>-Stigma</p> <p>-Lack of social support (funding, food, transport, etc.).</p> <p>-Social barriers</p> <p>-Substance abuse</p>
<p>Supply-side factors:</p> <p>A vertical system with limited integration in the core of health service provision.</p>	<p>Public/private:</p> <p>GLC/GDF new international innovation</p>	<p>Demand-side factors</p> <p>Very neglected in the post-Soviet context</p>

b. Share Innovations that Strengthen Systems, Including the Practical Approach to Lung Health (PAL)

A. Background

The Finnish Lung Health Project has been implementing PAL in Kyrgyzstan for a number of years achieving progress in promoting integration of pulmonary medicine services. PAL has also been integrated into CME for PHC professionals. PAL may be well suited for implementation in Central Asia for the following reasons:

2. Human Resources: Given the paucity of medical students becoming TB specialists, a viable human resources strategy could be integrating TB into the broader pulmonary medicine specialty which may be more attractive to medical students.
3. Maturity of Medical Specialties: The extensive structure and specialties in the FSU health system could be an advantage as pulmonary medicine already exists as a distinct and viable specialty.
4. Health Delivery System Restructuring and Integration of Vertical TB System: free-standing TB hospitals could be integrated into general hospital pulmonary medicine departments.
5. Reduce conflict between TB specialists and other health professionals: recent dialogue between TB specialists and PHC professionals about PAL were productive, possibly due to

raising the dialogue above long-standing debates and conflicts to discuss a program and services new to everyone.

B. Basic Hypothesis of Conceptual Paper

It is possible that PAL is a strategy for TB services uniquely suited to Central Asia.

C. Key Questions for Country Assessments

1. What are general impressions about PAL in the general health system including PHC and the vertical TB system
2. Could TB be integrated into pulmonary medicine in medical education?
3. Could the vertical TB system be gradually integrated into general hospital pulmonary medicine departments?

c. Adapt Innovations From Other Fields

A. Basic Hypothesis of Conceptual Paper

Adapting approaches that have been applied in other priority public health fields and building on some of the common systems that are already in place is possible in Central Asia.

B. Key Questions for Country Assessments

1. Based on the STOP TB Strategy list and innovative ideas, what are some approaches in other priority public health fields that can be adapted to TB?

4. Engage All Care Providers

This component of the STOP TB strategy includes two subcomponents which are discussed in the sections below.

a. Public-Private and Public-Private Mix (PPM) Approaches

A. Basic Hypothesis of Conceptual Paper

Given the enormous excess capacity existing in the civilian vertical TB system and coverage of the entire population by PHC providers, there isn't a great role for private providers in the civilian sector. Contracting prison TB services to private firms or NGOs could be a viable short-term solution (see prisons section). Private pharmacies should be engaged in regulating sale of first line drugs and possibly to extend the TB drug distribution system into rural areas.

B. Key Questions for Country Assessments

1. Are there any private providers currently providing TB services in the civilian sector?
2. Is there potential to use private pharmacies to extend the TB drug distribution system?

b. International Standards for Tuberculosis Care

A. Basic Hypothesis of Conceptual Paper

The relevance of International Standards for Tuberculosis Care (ISTC) for Central Asia is not clear and will be analyzed as part of the country assessments.

B. Key Questions for Country Assessments

1. Is there a role for ISTC in Central Asian countries?

5. Empower People with TB, and Communities

This component of the STOP TB strategy includes three subcomponents which are discussed together below.

- a. **Advocacy, Communication, and Social Mobilization**
- b. **Community Participation in TB Care**
- c. **Patients' Charter for Tuberculosis Control**

A. Background

Given the importance of patient social support, this section overlaps with the Standardized Treatment with Supervision and Patient Support section. ZdravPlus initial interviews did not extensively address this component although we believe it is very important in the Central Asian context. It is also more likely to vary by country than other components due to social and cultural factors so each country assessment will establish its own framework to assess this component. In addition, country assessments will build on the ZdravPlus collaboration with Project HOPE on improving interpersonal communications skills and counseling and also health promotion linked to service delivery improvements and involving community-based organizations.

B. Basic Hypothesis of Conceptual Paper

Advocacy, social mobilization, community involvement, and patient rights including generally increasing population rights and responsibilities and reducing stigma are a critical element of the overall TB framework and strategy in Central Asia

C. Key Questions for Country Assessments

1. What advocacy, social mobilization, community involvement and patient rights activities are currently being implemented? What role do they play in overall TB control?
2. What appear to be the most effective health promotion and community involvement mechanisms?
3. What can be done to reduce stigma?

6. Enable and Promote Research

This component of the STOP TB strategy includes two subcomponents which are discussed in the sections below.

- a. **Programme-Based Operational Research**

A. Background

ZdravPlus initial interviews did not address this component.

B. Basic Hypothesis of Conceptual Paper

Given the extent and availability of international research it is not a priority in Central Asia. However, Central Asia inherited from the FSU a medical science tradition and structure which may still be functioning. It is important to assess whether the medical science establishment is supporting old or new research and TB treatment methods. Limited support for applied research could improve

research methodology and contribute to medical leadership ownership and acceptance of evidence-based medicine and DOTS.

C. Key Questions for Country Assessments

1. What types of operational research are currently being performed by which stakeholders? Is any operational research being done in the prison sector?
2. What options are available to improve operational research methodology and focus? How can it be more directly connected to DOTS implementation?

b. Research to Develop New Diagnostics, Drugs, and Vaccines

This sub-component is beyond the scope of this assessment and is not seen to be generally relevant for Central Asia.

VI. Conclusions and Next Steps

This work was prompted by concerns that after more than a decade of investment by USAID, World Bank, Global Fund for AIDS, TB, and Malaria (GFATM), and NGOs like ICRC and MSF in improving TB control in Central Asia, the situation seems to be worse rather than better given the rise of MDR TB. The limited improvements in TB control have not been commensurate with the investment by the international donor community. Most of this investment has gone into strengthening the vertical TB system. The idea was to get a fresh perspective using a health systems approach, building on more than a decade of experience in the implementation of health reform supported by USAID/Zdrav projects. USAID/Zdrav projects have worked in close collaboration with the World Bank, WHO and other donors/projects to support the strengthening of PHC. This approach is consistent with and informing broader global thinking on health systems strengthening and the integration of vertical programs into general health systems.

The initial scoping has indeed found many health system problems that are barriers to progress in TB control. These problems lie at the heart of the critical issue of MDR TB transmission, and they will need to be resolved if progress is going to be made on stopping MDR TB and decreasing the burden of TB. Options addressing the extremes or book ends of incorporating a broad health systems approach and developing comprehensive data on the nature and source of drug resistance should open up the middle of developing strategies, plans, and specific activities for continuous improvement of TB control in Central Asia.

One Book End--Broad Health Systems Approach

Our initial premise is that strengthening the vertical TB system is not enough and there needs to be greater integration with the general health system. However, complete integration of TB-related functions into the general health system or abolishing the vertical TB system in the short-term is probably too radical. Developing an overall strategy and specific plans for gradual, step-by-step integration of the vertical TB system into the general health system appears to be the best option. To recognize the seriousness of the MDR TB problem we are proposing consideration of a **Push/Pull** strategy. Non-MDR TB should be more rapidly pushed into the general health system through greater integration of diagnosis and treatment into PHC. MDR TB should be pulled into the vertical TB system such that it becomes a MDR TB system that segregates patients, attempts to treat them, and keeps them in palliative care sanatoria for those it cannot treat.

The Other Book End—Better Data on Drug Resistance

ZdravPlus believes that extensive surveillance or a large study is beyond the scope of our task. However, we'd suggest three options (or a combination of the options) for improving the baseline data on drug resistance:

1. A large multi-country drug resistance study (see Section IV.1.e Monitoring and Evaluation System and Impact Measurement)
2. Given the complexity of the situation, drilling down in a region of each country could provide information on both the nature and source of drug resistance and insight into specific problems and solutions. The oblast selected should probably contain a high proportion of the prison colonies.
3. Update the 2002 World Bank Report on TB.

The 2002 World Bank report on TB is currently the standard reference. Updating it could be a useful first step in bringing together all of the key information on MDR TB rates, other health indicators, supply-side information such as doctors and hospitals, and also financing. It would also update the story as much has changed in Central Asia since the report was published. Since 2002, there has been the widespread adoption of DOTS with high coverage and treatment cure rates; the DOTS Plus pilot project in Kyrgyzstan with ICRC and MSF, and the growth of drug resistance as documented by the new Global TB Drug Resistance monitoring regularly showing Central Asia as one of the hot spots of global drug resistance.

Next step—County Assessments

The health system assumptions and the specific elements of the conceptual framework described above will be used in the country assessments in each Central Asian country. Although much of the country assessment format and process will be developed by ZdravPlus consistent with the unique Central Asian environment, it will be informed by research on available situational assessment templates used in other countries.

Using the framework in this Conceptual Paper, each country assessment will identify existing problem areas and develop recommendations or a menu of options to address them. It will also map current institutional structure, roles, and relationships and propose improvements to address the gaps in comprehensive system management for TB control. Finally, the country level situational assessment process will also be the mechanism for follow-up to the USAID Regional IC Project activities including development of national IC concepts.

Appendix A

STOP TB Checklist

HSS Guidelines on Health Systems

Weaknesses in Health Systems:	CAR Checklist per country
Governance/Stewardship	Important problem
-Weak capacity for health policy analysis, priority setting, sector policy development	Weak in all countries:
-Poor coordination between different parts of ministries of health, for example between different public health programs (e.g. AIDS and TB) and/or between departments responsible for public health, curative and diagnostic services, drug supply and other logistics, information systems, etc.	Weak: Kazakhstan has better SES, better links with Ministry of Interior
-Decentralization with increased sub-national/local autonomy. Unclear role of the center without sufficient authority to coordinate and ensure adequate disease control measures	Very important for Social assistance
-Weak health sector regulation without resources for enforcement	Yes, particularly for Drug registration
Limited engagement with civil society in design operation, and accountability of health system	Yes, limited engagement with civil society service providers. This is needed for social assistance, but also working with high risk groups, and also treating MDR TB.
Limited role of the private sector	Not particularly important
Health Financing	Important problem. Progress needed
-Budget too low to pay for core TB services Per capita spending on TB program	We need to do this, but we presume that is quite a lot of money in the system
-Limited overall budget for health services Percentage of health budget	We need to measure this
-Unfair financing: people have to pay for TB services Household survey on OOP of family with TB	Important question
Weak capacity for tracking financing flows	Yes
Weak mechanism for strategic purchasing	Yes
Health workforce	Capacity to make real progress
Lack of basic information on the number, Composition, and geographical distribution of Health providers,	No. We have this
Quality of services	We have cure rates. Real questions on quality of diagnostic services
Competence of the workforce	Question of competencies of primary care, laboratory workers
Poor quality of medical education	Yes, TB needs to be updated
Incentives for good performance	No
Medical products: drugs and diagnostics	Important issue, big room for improvement
Weak regulation and enforcement of medical products	Yes. Rumors of very poor quality drugs. You can buy first line drugs without prescription
Weak system of procurement	Yes particularly in Kazakhstan
Weak system of distribution	It sort of works, but depends on everyone driving to pick things up. Not really much of a supply chain
Weak system for encouraging rational use	EBM is very weak. However, free drugs and

	public procurement makes this less important
Health information systems Including Monitoring and Evaluation	Overall quite good
Poor quality of vital statistics	Quite good
Weak general system of disease surveillance and case notification	Good, but TB operates through separate system
Lack of data on health care utilization	This information is available
Limited skills for analyzing data at service and supervisory levels	There is capacity in the SES and also through donor TA projects like ZdravReform
Limited capacity for health systems research and operational research	There is capacity in the system and support is available. In Kyrgyzstan, there is the WHO Centre for monitoring and evaluation.
Service Delivery	Important problem. Need for more integration into primary care
Lack of information on health financing linked to services	Yes. Real problem we hope to solve
Lack of integration of service delivery between different levels of the system and different public health programs	Yes. Big headache. TB and AIDS don't talk. There is also no links with the narcologists who treat opiate addiction and alcohol.
Lack of comprehensive policy on who does what for TB services between the vertical system and general system	There is no comprehensive policy. No one is in charge
Limited use of quality standards and evidence based medicine	Yes, big problem
Poor systems of referral	Yes
Lack of engagement with the private sector	Not particularly important

Box 1: **STOP TB policy paper: Contributing to Health System Strengthening**