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**TB and HIV/AIDS control programmes in central Asia:
health systems' challenges to sustainability**

Thesis submitted to the University of London
for the Degree Doctor of Philosophy (PhD)

by

Altynay Shigayeva



Department of Global Health and Development
Faculty of Public Health and Policy
London School of Hygiene and Tropical Medicine

Supervisor: Professor Richard J. Coker

October 2011

DECLARATION

I, Altynay Shigayeva, confirm that the work presented in this thesis is my own. Where information has been derived from other sources, I confirm that this has been indicated in the thesis.

Signature:

A solid black rectangular box redacting the signature.

Date: October 20, 2011

ABSTRACT

Health systems in central Asia (the former Soviet Union) face challenges to control TB and HIV/AIDS epidemics. Integration of communicable disease control programmes with the broader health system has been recommended to ensure programmes' sustainability. An important constraint for studying sustainability and integration has been a lack of conceptual clarity. Drawing on a critical assessment of published literature, a novel conceptual framework for the analysis of sustainability and integration in health systems has been developed. A sustainable communicable disease programme is defined as continuously effective in reducing a disease problem, responsive and adaptive to changes in the nature of disease epidemics, population needs or the contextual environment. Sustainability of a programme is conceptualised as having five dimensions: leadership, capacity, interactions, flexibility (adaptability) and performance (effectiveness, efficiency, equity). Existing frameworks of integration and health systems have been extended; defining levels of formal interactions between the system components. The research applied a case study approach. The case study was conducted in Kyrgyzstan, and relied on documentary review, qualitative interviews with key informants, and framework analysis.

This study revealed several inter-related factors that affect the potential for sustainability of TB and HIV/AIDS programmes in Kyrgyzstan. Among overarching challenges for sustainability of both programmes are overall weak capacity of the health system and the reliance on international assistance for implementing the efforts to control the epidemics. This thesis highlights the importance of health system's structural and functional arrangements in sustaining the programmes into the future. In Kyrgyzstan, the factors such as fragmentation of governance and financing impede the development of effective interactions at the level of service delivery. In turn, fragmentation of service delivery remains the key impediment for efficiency, effectiveness and equity of disease control interventions. The prospects for sustainability of both programmes are constrained by institutional interests of domestic and international actors, who rarely consider the central question for sustainability that is efficiency of resources allocation and use. Weak disease surveillance and M&E systems emerged as one of the key barrier for development of effective disease control policies in the country and efficient planning of resources. Because of weaknesses of surveillance, this study could not provide the answer whether disease control efforts have resulted in the reduction of mortality and morbidity associated with TB and/or HIV/AIDS.

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LIST OF ABBREVIATIONS

AFEW	AIDS Foundations East-West
AIDS	Acquired Immune Deficiency Syndrome
ALOS	Average length of stay in a hospital
ART	Anti-retroviral therapy
BOMCA	Border Management Programme in Central Asia
CAAP	Central Asia Aids Control Project
CADAP	The Central Asia Regional AIDS Control Programme
CARHAP	Central Asia Harm Reduction Programme
CDC	Centres for Disease Control
CMCC	Country Multisectorial Coordinating Committee
DFID	Department for International Development (UK)
DOT	Directly Observation of Therapy
DOTS	Directly Observed Therapy Short course
EU	European Union
Euro	European currency
FMC	Family Medicine Centre
FSU	Former Soviet Union
GBP	Great Britain Pounds
GDP	Gross Domestic Product
GFATM	Global Fund against AIDS, Tuberculosis and Malaria
GHI	Global Health Initiative
GLC	Green Light Committee
GNI	Gross National Income
GTZ	German Technical Cooperation (Gesellschaft fuer Technische Zusammenarbeit)
GUIN	Department of Execution and Punishment.(a Russian abbreviation)
HAART	Highly active antiretroviral therapy
HIV	Human Immunodeficiency Virus
ICRC	International Committee of the Red Cross
IDU	Intravenous drug use (or a user)
IMF	International Monetary Fund

KfW	Kreditanstalt für Wiederaufbau
M&E	Monitoring and Evaluation
MDRTB	Mutlti-drug resistant tuberculosis
MHIF	Manadory Health Insurance Fund
MOH	Ministry of Health
MOJ	Ministry of Justice
MSF	Médecins Sans Frontières
NGO	Non-governmental organisation
NCPH	National Centre for Phthisiatry
NSP	Needles and syringes exchange programme
OBLAST	An administrative level, next to the national
OOP	Out of pocket payments
OSI	Open Society Institute
OST	<i>Opioid Substitution Therapy</i>
PEPFAR	The President's Emergency Plan for AIDS Relief
PLHIV	People living with HIV
PMTCT	Prevention of Mother to Child Transmission
RAYON	An administrative level, next to the oblast
REAC	Republican Anti-epidemiological commission
RMIC	Republican Medico-Informational centre
SES	Sanitary Epidemiological Services
SGBP	State Guaranteed Benefit Package
SWAp	Sector Wide Approach
TB	Tuberculosis
UN	United Nations
UNAIDS	United Nations AIDS Programme
UNDP	United Nations Development Programme
UNFPA	United Nations Population Fund
UNGASS	United Nations General Assembly
UNICEF	United Nations Children Fund
UNODC	United Nations Office on Drugs and Crime
USAID	United States Agency for International Development

USSR	United Soviet Socialistic Republics
VCT	Voluntary Counselling and Testing
WB	World Bank
WHO	World Health Organization
WTO	World Trade Organization

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For
My mother and sister

CHAPTER 1 STUDY RATIONALE, AIMS, OBJECTIVES AND APPROACH TAKEN

INTRODUCTION

This thesis is focused on health systems' responses to TB and HIV/AIDS epidemics in the central Asia region of the former Soviet Union (FSU). The region is experiencing the fastest growing HIV/AIDS epidemics in the world, substantial burden of TB and exceptionally high rates of multi-drug resistant TB (MDRTB) (UNAIDS, 2010 , WHO, 2010a, WHO/IUATLD, 2008).

The control of communicable diseases of public health importance requires long-term efforts, unless transmission in humans has been interrupted or a pathogen has been eliminated globally (Dowdle, 1998, Fine, Oblapenko, and Sutter, 2004, Heymann, 2006, Moss, 2009, Noordeen and others, 1996). Communicable diseases epidemics evolve as a result of complex relationships among pathogens, social, ecological and health systems, and broader political and economic contexts (Anderson and others, 2004, Anderson, 1991, Atun and others, 2004, Coker, Atun, and McKee, 2004a, Coker, Atun, and McKee, 2008, Heymann, 2005, Woolhouse and others, 1997). These relations are dynamic, changing over time. A key challenge for health systems is to ensure the sustainability of disease control programmes, that is continuously effective programs which are responsive to changes in the nature of disease epidemics (actual or perceived), population needs or contextual environment.

Among many factors that potentially influence sustainability (e.g. social, biological, ecological), contextual factors historically play a role in controlling major endemic diseases. Communicable diseases have been subjected to cycles of political attention, which either put them at the top of public health priorities (Mills, 2005, Unger, De Paepe, and Green, 2003) or kept them in neglect despite their persistence (Raviglione and Pio, 2002). Ideological factors also play a role in shaping responses to communicable disease epidemics. For example, a denial of the HIV/AIDS problem in Turkmenistan (Anon, 2003, Rechel, Sikorskaya, and McKee, 2009), and fierce resistance to the implementation of opioid replacement therapy in Russia (Sarang, Stuikyte, and Bykov, 2007) have been impeding effective responses to HIV/AIDS epidemics in these countries.

During the last decade, there has been increased global political commitment and input of financial resources towards the control of TB, HIV/AIDS and malaria in endemic countries.

However, evaluating the impact of these substantial investments on disease transmission dynamics or public health outcomes has been challenging (Biesma, 2009, Global Fund, 2009). Questions still exist as to whether increased funding or other resource inputs improve the effectiveness, efficiency and equity of disease control programmes. Emerging evidence has shown that it is often not how many resources are available, but how these financial resources are planned, spent and evaluated (Atun and others, 2008 , Floyd and others, 2006).

Empirical research suggests that the arrangements of health systems, within which programmes function, determine programmatic responses to disease epidemics (Atun and Coker, 2008, Coker, Atun, and McKee, 2004a). Integration of communicable disease programmes with the broader health system has been often advocated, particularly in international development discourse, in order to improve health benefits or programme performance. There has also been acknowledgement that the sustainability of communicable disease programmes is likely improved where programmes are integrated with other formal health system functions and are sensitive to the prevailing health culture of the affected populations (Allotey and others, 2008, Atun and others, 2005e, Gruen and others, 2008, Lienhardt and Ogden, 2004, Streefland, 1995).

Despite the contemporary importance of sustainability of communicable disease programmes, there has been a lack of common conceptual understanding of this notion. Similarly, what constitutes a notion of integration in a health system lacks conceptual agreement. Despite frequently used rhetoric on the influence of integration on sustainability (Feenstra, 1994, Segall, 2003, Unger, De Paepe, and Green, 2003, Visschedijk and others, 2003), there is a lack of clarity on the relationships between sustainability and integration concepts. Consequently, there is paucity of empirical evidence. Empirical evaluations of the sustainability of communicable disease programmes that systematically take into account health systems' arrangements are absent.

This research assesses the sustainability of TB and HIV/AIDS programmes within a health system, and explores the role of integration in sustaining these programmes. This PhD thesis aims to address the conceptual gaps outlined above. The most important part of this research has been the conceptualisation of two notions: (i) the sustainability of a communicable disease control programme, and (ii) the integration of a programme with other health system components. The case country used for exploring sustainability questions is Kyrgyzstan, a small low-income country in central Asia.

This chapter further outlines the background to the research questions for this PhD thesis. The chapter outlines the contemporary importance of integration and sustainability concepts as they

relate to the control of TB and HIV/AIDS epidemics in low- and middle-income country settings. Additionally, the background section highlights key challenges in controlling TB and HIV/AIDS in the former Soviet Union (FSU) as has been shown in empirical studies, highlighting remaining gaps. The chapter also set the aims and objectives of this thesis, and briefly presents the approach taken to address the research questions. Lastly, I outline the structure and content of this thesis.

1.1. BACKGROUND AND RATIONALE FOR THIS THESIS

1.1.1. Tuberculosis and HIV/AIDS

The contemporary nature of the HIV/AIDS and TB epidemics poses substantial challenges to health systems. These two communicable diseases caused by different pathogens with different transmission routes are closely linked epidemiologically and clinically, affecting many of the same populations and co-infecting many individuals (Corbett and others, 2003, Maher, Harries, and Getahun, 2005). TB and HIV/AIDS, each separately, are leading causes of mortality and morbidity from a communicable disease. According to the most recent estimates at the time of writing, globally around 9.4 million incident TB cases occur annually and 1.3 million people with TB disease (HIV-negative) die (WHO, 2010a). By the end 2009, there were an estimated 33.3 million people living with HIV/AIDS, and approximately 1.8 million die yearly from HIV/AIDS associated causes (UNAIDS, 2010).

TB is an ancient disease that has affected humans for centuries. TB infection is caused by the bacteria *Mycobacterium tuberculosis*, which is transmissible through airborne droplets. Without any predisposing factors, humans have a strong innate immunity against developing TB disease after infection (Comstock, Livesay, and Woolpert, 1974, Dye and Floyd, 2006, Vynnycky and Fine, 1997). TB is fully curable with effective and inexpensive anti-tuberculosis drugs (Dye and Floyd, 2006, Fox, Ellard, and Mitchison, 1999). However, TB treatment is long, at 6-8 months (Fox, Ellard, and Mitchison, 1999). Human immunodeficiency virus (HIV) infection and its disease sequelae referred as AIDS are caused by a genetically diverse group of RNA viruses (HIV-1, HIV-2 types) that belong to the class *retroviruses* (Carpenter and others, 1997). HIV was confirmed as a causative pathogen for humans in 1983 after its isolation from an AIDS patient. Infection with HIV is progressively fatal. However, with the discovery of combination therapy with antiretroviral drugs, known as HAART (or ART) (Carpenter and others, 1997), HIV-infection has become a potentially manageable chronic condition (Montaner and others, 2006, Simon, Ho, and Abdool Karim, 2006). HIV infection substantially increases

the risk of reactivation of latent TB infection, and causes rapid progression to disease after infection or re-infection (Corbett and others, 2003). TB is the most common opportunistic condition among HIV-positive individuals, even after initiation of ART (Girardi and others, 2004, Havlir and others, 2008) and a major cause of death (Harries and others, 2001, Mohar and others, 1992). One of the main challenges for patients and providers alike has been the diagnosis and treatment of TB and HIV infection, including management of TB/HIV co-infections and co-morbidities (Frieden and others, 2003, Havlir and others, 2008). Diagnosis of TB is often challenging because of suboptimal TB diagnostic techniques (Frieden and others, 2003). TB diagnosis is particularly difficult in HIV-positive persons due to atypical presentation (Havlir and others, 2008, Palmieri and others, 2002). Ensuring patients' compliance with long-term or lifelong treatment, which is often associated with toxicity and side effects, is a difficult task. Clinical management of TB/HIV patients is complicated due to drug interactions, side effects and complications (Maartens, Decloedt, and Cohen, 2009, McIlleron and others, 2007). In weak health systems, inappropriate or erratic treatment and lack of infection control further compound an already complex situation and contribute to the emergence and transmission of MDRTB (Caminero, 2010, Coker, 2004, Coker, Atun, and McKee, 2008, Dorman and Chaisson, 2007), and resistant HIV strains (Este and Cihlar, 2010). Treatment for MDRTB (i.e., TB resistant at least to both isoniazid and rifampicin) is 18-24 months; treatment strategies depend on professional experience and clinical response to treatment is often suboptimal (Coker, 2004).

TB and HIV/AIDS affect persons who frequently face social problems such as poverty, unemployment, a lack of housing or means for transportation. HIV/AIDS and TB epidemics are often associated with a complex nexus of social and behavioural drivers of disease, including epidemics of intravenous drug use (Aceijas and others, 2004, Carrieri and others, 2006, Li and others, 2009, Mathers and others, 2010) and alcoholism (Mathew and others, 2009b). Patients often suffer from co-morbidities with chronic non-communicable diseases such as diabetes, chronic lung diseases, or mental health problems (Freeman and others, 2005a, Lonnroth and others, 2009, Stevenson and others, 2007, Stuckler, Basu, and McKee, 2010, van Zyl Smit and others, 2010). Management of patients with co-morbidities is complicated, presenting clinical challenges due to drug interactions, drugs dosing, and serious side effects (Abdool-Karim and others, 2004, Andrews and others, 2007b, Harries, Zachariah, and Lawn, 2009).

1.1.2. TB and HIV/AIDS epidemics in the former Soviet Union

It is nearly two decades since the USSR collapsed, leading to the establishment of 15 sovereign states. The trajectory of their political, socio-economic and health systems development since then has been different. However, a common feature of most FSU countries is a public health crisis, which has been exacerbated in the 1990s during a rapid political and socio-economic transition from the communist regime. The negative effect of this transition upon epidemics of TB and HIV/AIDS has been profound (Atlani and others, 2000, Atun and Coker, 2008, Coker, Atun, and McKee, 2004b, DeBell and Carter, 2005, Drobniewski and others, 2004, Drobniewski and others, 2005, Rhodes and others, 1999a, Ruddy and others, 2005). TB and HIV/AIDS are colliding with epidemics of chronic non-communicable diseases, alcoholism, intravenous drug use (IDU), and other communicable diseases such as sexually transmitted diseases (STDs), hepatitis B and C (Aceijas and others, 2004, Coker, Atun, and McKee, 2008, Perelman, 2000).

At the time of the inception of this PhD research and to the date of writing, rigorous studies that have systematically assessed health system responses to epidemics of TB and HIV/AIDS in the FSU have been conducted largely in Russia. This research in Russia covered a time period in the early 2000s when international actors had just entered the region, prior to the growing global funding for TB and HIV/AIDS. Notably nevertheless, the research demonstrated that programmatic responses to communicable disease epidemics in Russia have been to a considerable extent determined by the legacy of the Soviet health system's arrangements, and pre-existing ideological, political, social, and cultural factors (Atun and others, 2005c, Atun and others, 2005e, Coker and others, 2003, Floyd and others, 2006, Marx and others, 2007, Tkatchenko-Schmidt and others, 2008).

The Soviet health system was organised hierarchically with strict top-down planning, regulation and management. Health care and social care services were operated separately under different Ministerial jurisdictions. A number of parallel and specialised services existed, each addressing its own speciality, e.g. TB, HIV/AIDS, STDs, mental health, narcology (e.g. substance abuse), oncology, maternal and child health. Each specialised service had also been organised hierarchically on all levels of care provision (including the primary care level), had a separate governance unit, and was financed according to norms based on inputs. The focus was on curative care delivered primarily in inpatient settings; health promotion was weak. The Soviet health system evolved to have extensive physical infrastructure and a high number of health care personnel (Field, 2002). This large health system was substantially impoverished by years of underfunding starting in the late 1960s (Rowland and Telyukov, 1991).

Tuberculosis

TB has been historically a cause of mortality and morbidity in populations living on territories which became part of the USSR (Mishin and others, 2006, Raviglione and others, 1994). Though data are fragmented, the magnitude of TB and other communicable diseases was considerable in 1917 when the Communist Party undertook power. Since the first days of their rule, the fight against communicable diseases was proclaimed as a political priority for the Communist Party (Barr and Field, 1996, Mishin and others, 2006). *'Either the louse defeats socialism or socialism defeats the louse'*, stated Vladimir Lenin in 1919. TB received special political attention. The Soviet ideology postulated that socialism by its very nature gets rid of inequality, unemployment, poverty, and malnutrition. It was clearly recognised by the political elite in the USSR that TB is associated with these societal causes, thus reducing the TB problem was of critical importance. In 1937, it was announced that socialism had eliminated the societal 'roots of the development of tuberculosis' (Boldyrev, Commissioner of Health, 1937; cited in (Mishin and others, 2006).

It is understood that TB was under control during the Soviet period. TB mortality and morbidity have been declining since the 1950s (Mishin and others, 2006, Perelman, 2000, Raviglione and others, 1994, Zhukova and others, 1991). At the beginning of the 1990s, this decline was halted. All former Soviet states witnessed a considerable increase in TB notification and death rates, which doubled or tripled by the middle of the 2000s (Figure 1.1). The estimated TB incidence and mortality in the FSU region remain the highest in the European region (WHO, 2008). Though global data are fragmented, the FSU region has the highest registered rates of MDRTB. Rates of MDRTB among newly diagnosed cases of TB range from 14.1% in Kazakhstan to 22.3% in Baku, Azerbaijan. Roughly 50-60% of previously treated TB patients were MDRTB (WHO/IUATLD, 2008).

The reduction of the TB burden during the Soviet period has been viewed as one of successes of the Soviet health care system and a matter of professional pride for the Soviet school of phthisiatry¹ (Perelman, 2000, Rabuhin, 1960). The TB control system was one of the oldest organisational systems, having its roots in the first Russian TB societies established in the 1890s in Moscow and St. Petersburg (Mishin and others, 2006, Perelman, 2000). The Soviet phthisiatry referred to TB treatment as 'complex measures of medico-social rehabilitation', which encompasses principles of complete clinical recovery, social and psychological support for treatment completion, restoring working and social capabilities (Rubachin, 1970, Mishin,

¹ Derivative from Greek *phthisis* – pulmonary TB

² Available at: <http://data.euro.who.int/hfadb>

2006). An individual approach to TB treatment has been encouraged, depending on the patient's tolerance to standardised regimens (e.g. side-effects), drug susceptibility patterns or concurrent co-morbidities (Perelman, 2000). The evolved Soviet TB control system consisted of a large network of vertically organised TB hospitals and dispensaries. There was separation of TB services under different Ministerial jurisdictions, for example TB services in the penitentiary system were under the Ministry of Justice (MOJ) and TB services in the civilian sector were under the Ministry of Health (MOH). Treatment of TB patients was hospital-based, with continuous rehabilitation in TB sanatoria and repeated hospitalisations.

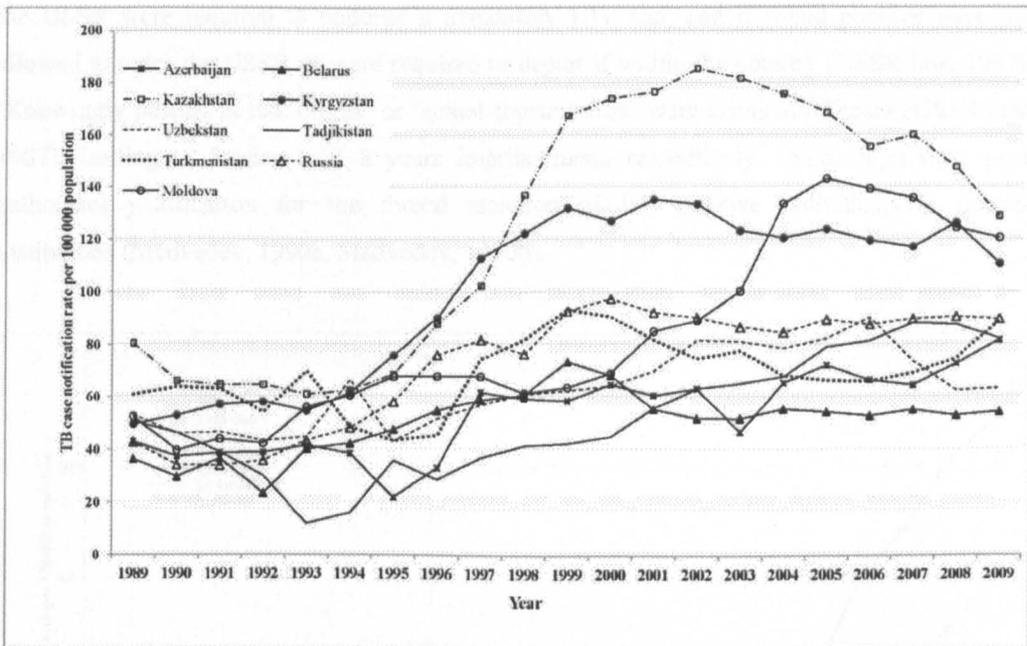


Figure 1.1 TB case notification rate per 100 000 population, selected countries of the former Soviet Union, 1989-2009

Source: European Health for All database, WHO Regional Office for Europe².

It has been documented that the main factors contributing to the resurgence of TB in the FSU has been years of underfunding and decreased attention to the health system overall, including TB services, which started around the end of the 1960s. By the time of the USSR's collapse, the underfunded TB system operated with shortages and interruptions in anti-TB drugs supply; failures to detect TB cases; poor patient management; and treatment interruption and incompleteness (Perelman, 2000, Shilova and Dye, 2001). Coordination and communication between TB services under different jurisdictions were inadequate, most notably between

² Available at: <http://data.euro.who.int/hfad>

civilian and penitentiary sectors, leaving many TB patients undetected and untreated (Coker, Atun, and McKee, 2004b, Coker and others, 2003, Fry and others, 2005, Kimerling, 2000).

HIV/AIDS

The cumulative number of HIV-positive persons that were identified in the USSR (and later FSU) by 1994 reached around 1000 cases among 250 million citizens (Nabatov and others, 2007). The USSR's initial response to HIV cases, which were detected primarily among foreign citizens, was legal and coercive measures (Medvedev, 1990a). All foreigners entering the USSR were required to undergo a mandatory HIV test, and if found positive were not allowed to enter the USSR or were required to depart if within the country (USSR law, 1987). 'Knowingly putting at risk others' or 'actual transmission' were criminal offenses (USSR law, 1987), leading to 5 years and 8 years imprisonment, respectively. Such legislation gave authorities justification for the forced isolation of HIV-positive individuals in special institutions (Medvedev, 1990a, Medvedev, 1990b).

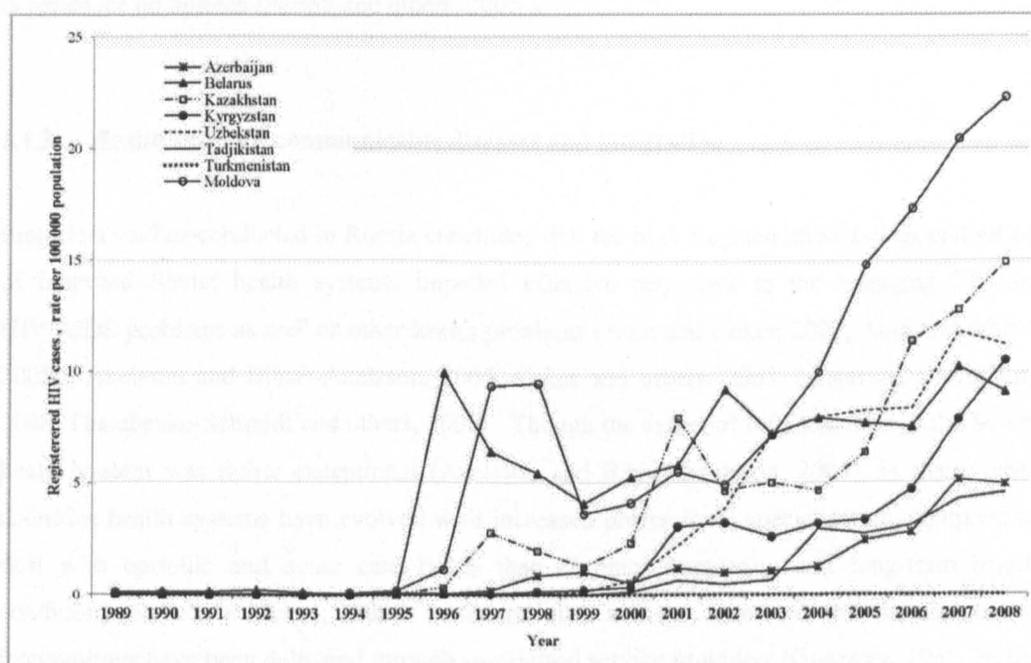


Figure 1.2 Registered HIV cases per 100 000 population, selected countries of the former Soviet Union, 1989-2009

Source: European Health for All database, WHO Regional Office for Europe

In 1994-1999, large outbreaks of HIV associated with IDUs were detected in several cities across the FSU (Carr and others, 2005, Eyzaguirre and others, 2007, Latypov, 2008, Nabatov and others, 2002, Nabatov and others, 2007). It is currently understood that the FSU countries

have experienced a nascent pattern of HIV-1 virus transmission (independent and sporadic transmission) up until the middle of the 1990s, followed by large linked outbreaks among intravenous drug users (Nabatov and others, 2007). Since the middle of the 1990s, number of detected HIV cases has grown rapidly (Figure 1.2). This is understood as a fast growing HIV epidemic, which is likely concentrated among IDUs (Rhodes and others, 1999b).

Both HIV/AIDS and IDU emerged as novel public health, legal and social challenges to the newly formed independent countries and their health systems. In the Soviet period, IDU along with prostitution and a bi- or homosexual lifestyle were illegal; thus the scope of these problems was unknown or unacknowledged.

Stigma and discrimination against people who were substance drug abusers or sexual minorities were imprinted at the very core of communist ideology. Functions of specialised AIDS services, which were established in 1987-1988, were limited to provision of HIV-testing. Services provided by narcological services included treatment of narcotic drug dependency but were based on complete abstinence (complete withdrawal), which is not effective for treating dependence on opioids (Farrell and others, 2005).

1.1.3. Health systems, communicable diseases and integration

Empirical studies conducted in Russia concluded that the high fragmentation and specialisation of inherited Soviet health systems impeded effective responses to the changing TB and HIV/AIDS problems as well as other health problems (Atun and Coker, 2008, Atun and others, 2005b, Axelsson and Bihari-Axelsson, 2005, Coker and others, 2003, Mosneaga and others, 2008, Tkatchenko-Schmidt and others, 2008). Though the extent of fragmentation in the Soviet health system was rather exceptional (Axelsson and Bihari-Axelsson, 2005), in many other countries health systems have evolved with increased professional specialisation, equipped to deal with episodic and acute care rather than chronic, fluctuating and long-term health conditions (Nolte and Mckee, 2008). In several other settings, communicable disease control interventions have been delivered through specialised service providers (Gonzalez, 1965, Mills, 1983, Raviglione and Pio, 2002, Sbarbaro, 2002). In such organisational settings, patients with multiple health problems have to attend several providers or specialists even within one organisation. Patients fall through the gaps within health systems, leading to inadequate treatment compliance, treatment failure, increased morbidity and mortality, the threat of drug resistance, and the potential for onward transmission (Coker, Atun, and McKee, 2008, Willenbring, 2005).

Clinical and epidemiological complexities associated with HIV/AIDS, TB and other chronic diseases led policy makers and health professionals in various settings to advocate approaches that can integrate diverse functions of health care and social support systems (Abdool-Karim and others, 2004, Andrews and others, 2007a, Edlin and others, 2005, Freeman and others, 2005b, Kresina and others, 2005, Kuehn, 2008, Li and others, 2009, Matomora, Lamboray, and Laing, 1991, Soto, Bell, and Pillen, 2004, Sylla and others, 2007, Unger and others, 2006b).

Whilst integration is intuitively appealing, there is still a paucity of evidence regarding whether integration of the elements of communicable disease management within health systems actually improves access to services, public health outputs (such as improved detection rates), clinical outcomes (such as deaths amenable to timely and effective health care) (Nolte and McKee, 2003), users' satisfaction with care and social support, or overall programmes' performance (effectiveness, efficiency, or equity) (Atun and others, 2010b, Briggs and Garner, 2006, Church and Mayhew, 2009, Dehne, Snow, and O'Reilly, 2000, Wallace, Dietz, and Cairns, 2009). One of the impediments to empirical exploration of integration has been a lack of common conceptual understanding and agreement of what constitutes integration (Atun, Bennet, and Duran, 2008, Nolte and McKee, 2008).

1.1.4. Sustainability of disease control programmes in low- and middle-income countries

Global Health Initiatives

In low- and middle-income countries, international actors historically play a role in facilitating health system responses to communicable diseases (Mills, 1983, Mills, 2005). During the last decade, global development assistance has changed dramatically with the establishment of new governance, planning, financing and implementation mechanisms for addressing priority communicable diseases (Brugha, 2008, Samb and others, 2009). These novel mechanisms, which are referred to at present as global health initiatives (GHIs), are focused on supporting countries in concerted responses to disease epidemics. At the UN summit in 2000, reduction of the burden of TB, HIV/AIDS, malaria and other communicable diseases was included in the Millennium Development Goals. The UNGASS special session in 2001 declared HIV/AIDS as a development crisis (UNGASS 2001) in need of an emergency response. Under the auspices of the UN Secretary General, the Global Fund to Fight AIDS, TB and Malaria (GFATM) was created initially to respond to the HIV crisis in the African region, later to include TB and malaria. Several major global policy initiatives for the HIV response were initiated such the World Bank's Multicounty AIDS Programme, The President's Emergency Plan for AIDS Relief (PEPFAR), and the '3 by 5' initiative of the WHO.

TB was declared a global health emergency earlier in 1994 (WHO, 1994). After decades of neglect, political attention to TB re-emerged following the resurgence of TB in industrialised countries (Brudney and Dobkin, 1991, Frieden and others, 1995, Shiffman, Beer, and Wu, 2002) and a considerable increase in TB mortality and morbidity in several regions attributable to maturing HIV/AIDS epidemics (Lienhardt and Ogden, 2004, Ogden, Walt, and Lush, 2003, Raviglione, Snider, and Kochi, 1995). WHO began intensive marketing of a TB control strategy branded Directly Observed Therapy, Short Course (DOTS), which was adopted by most countries by the end of the 1990s. The Stop TB partnership was launched in 1998. Policy makers set ambiguous objectives within Stop TB plans (WHO, 2001, WHO, 2006b) to rapidly expand quality DOTS, respond to the emerging challenges of HIV and MDRTB, improve TB diagnostics, and for prevention interventions.

GHIs have been successful in gaining broad political support, appealing for funding, and advocating for the reduction of prices of antiretroviral drugs. Funding directed for priority communicable diseases grew substantially (McCoy, Chand, and Sridhar, 2009, Ravishankar and others, 2009). The increase in spending on HIV/AIDS has been unprecedented in the history of development assistance; annual spending grew from around US\$300 million in the mid-1990s to US\$10 billion in 2007 (Bonnell, 2009). This supportive financial environment allowed the introduction and rapid scale up of novel disease control interventions. These efforts also included provision to countries of considerable resource inputs for delivery of these interventions such as laboratory supplies and medicines.

Sustainability concerns

Rapid inflow of substantial assistance coincided with the proliferation of actors involved in assisting countries to achieve global disease control targets (Balabanova and others, 2010, McCoy, Chand, and Sridhar, 2009, Shiffman, 2008, Shiffman, Berlan, and Hafner, 2009). At country levels, this has created a complex operational environment, in which a growing number of stakeholders seek evidence that investments produce tangible benefits (Victora and others, 2006). Along with searching for results, there have been notable concerns over long-term continuation of TB and HIV/AIDS interventions supported by donors (Bonnell, 2009, McCoy and others, 2005, Schneider and others, 2006). These concerns have led to the revival of two long-standing and related debates in international development for health: one relates to the sustainability of donors' supported interventions (Bossert, 1990, Chen, 1997, LaFond, 1995b) and the other is a debate over the integration of priority health interventions and general health services (Atun, Bennet, and Duran, 2008, Gonzalez, 1965, Mills, 1983, Mills, 2005, Oliveira-Cruz, Kurowski, and Mills, 2003).

A key sustainability concern is related to the substantial reliance on external funding for implementing innovative interventions such as HIV prevention activities, ART or MDRTB management (David, 2009). Such dependence on donors for implementing innovative policies and interventions has raised questions of domestic ownership. Rapid and substantial inflow of foreign currency has implications for countries' monetary policies and inflationary pressures on the domestic economies (David, 2009, Lewis, 2005). It is clear that institutional capacity for transparent management of financial resources is lacking in many countries, and is compromised by wide-spread corruption (Garrett, 2007, Lewis, 2005). Health systems in many countries require resources and time for building and maintaining the overall health system capacity (e.g., human resources, wages, training, drugs, establishment and maintenance of laboratory capacity) that is necessary to deal with diseases such as HIV/AIDS and TB. These necessities go beyond donors' commitment and availability of international resources (David, 2009). For example, ART scale up requires maintaining this level of provision including further scale up of other services in the general health system. Management of complex chronic conditions such as HIV is labour intensive, requiring qualified and well-trained staff capable of dealing with fluctuating patient needs (Buvé, Kalibala, and McIntyre, 2003, McCoy and others, 2005, Schneider and others, 2006, Van Damme and Kegels, 2006, Van Damme, Kober, and Kegels, 2008).

GHIs have been criticised for focusing on measurable targets, establishing parallel 'off budget' financial flows, and isolating donors' investments from domestic public health financial mechanisms. In their assistance efforts, donors have intensively used the non-governmental sector because of its ability to set up projects quickly (McCoy and others, 2005). Substantial funding for HIV/AIDS has been channelled through the non-governmental civil society sector (Bonnel, 2009, Garrett, 2007, Lewis, 2005), without establishing proper mechanisms of accountability for funds use. In some countries, this has created environments for brain drain of scarce skilled personnel from the public health service (Garrett, 2007). Rapid scale up resulted in developing parallel systems of drug supply and delivery of specific interventions. Such approaches have been said to be contrary to solving fundamental weaknesses of public health systems (Ooms, Derderian, and Melody, 2006, Ooms and others, 2008).

To avoid the abovementioned negative effects on health systems, advocacy for the integration of various functions of disease programs and broader health system has been renewed (Buvé, Kalibala, and McIntyre, 2003, Marchal, Cavalli, and Kegels, 2009, Yu and others, 2008). Proponents of integration historically argued that this would improve coverage, access, equity, and efficiency as well as the sustainability of disease control interventions (Atun, Bennet, and

Duran, 2008, Briggs and Garner, 2006, Feenstra and Visschedijk, 2002, Mosneaga and others, 2008, Unger and others, 2006a, Unger, De Paepe, and Green, 2003, Visschedijk and others, 2003, WHO, 1965). This perspective (referred to as horizontal) echoes views, originating in the Alma Ata Declaration (WHO, 1978), where population health is an overall goal and where universal access to basic health services is a human right (Lawn and others, 2008, WHO, 2003). By contrast, proponents of ‘a disease-centred’ (or vertical) approach argued for a rapid response to epidemics through improving delivery of disease interventions, and evaluating benefits through improvements in disease-specific indicators and analyses of cost-effectiveness and efficiency (Lammie, Fenwick, and Utzinger, 2006, Lush and others, 1999, Raviglione and Pio, 2002, Walsh and Warren, 1979).

Neither the vertical nor the horizontal perspectives offer many insights into what integration implies, and have been counterproductive for decades (Farmer and Garrett, 2007, Marchal, Cavalli, and Kegels, 2009, Ooms and others, 2008). There appears to be no consensus on what is meant by ‘sustainability’ in health systems, and what is the relationship between these sustainability and integration concepts.

1.2. AIMS, OBJECTIVES AND APPROACH TAKEN IN THIS RESEARCH

1.2.1. Regional focus on central Asian countries of the former Soviet Union

This research focuses on the central Asian region of the FSU. The region is represented by 5 countries – Kazakhstan, Kyrgyzstan, Uzbekistan, Tajikistan and Turkmenistan. There are no empirical studies on health system responses to changing patterns of population health including to epidemics of TB and HIV/AIDS in this region. Overall, this region remains understudied including in terms of health system reform or patterns of health (McKee and Chenet, 2002, McKee, Figueras, and Chenet, 1998).

1.2.2. Aims and objectives

An overall aim of this thesis is to gain an understanding of the influence of integration on the sustainability of communicable disease control programmes within a health system. To achieve this aim the following study objectives were identified, that allowed the research questions posed in this thesis to be answered (research questions are listed thereafter).

Objectives:

1. To examine existing conceptual definitions of sustainability in health systems and analytical approaches to sustainability;
2. To assess conceptual definitions used to describe integration in health systems;
3. To synthesise existing empirical evidence on the role of the integration of a programme with the broader health system in the programme's sustainability;
4. To explore whether the TB control programme in Kyrgyzstan is sustainable;
5. To explore whether the HIV/AIDS control programme in Kyrgyzstan is sustainable;
6. In Kyrgyzstan, to explore interactions between: a) TB and HIV/AIDS programmes; and b) each programme and general health services;
7. To seek an understanding of the influence (and potential influence) of integration on the sustainability of TB and HIV/AIDS programmes in Kyrgyzstan.

The research questions:

1. How is the sustainability concept defined and how has sustainability in health systems been analyzed?
2. What is meant by integration in a health system? How is the integration concept defined and how has it been analysed?
3. How and whether integration of a health programme with the broader health system influences the sustainability of a programme?

A case study in Kyrgyzstan asked the following research questions:

4. Is the TB control programme sustainable?
5. Is the HIV/AIDS programme sustainable?
6. What is the nature of interactions between TB and HIV/AIDS control programmes at present? What is the nature of interactions between each programme, TB and HIV/AIDS, and general health services?
7. What are the likely implications of the TB and HIV/AIDS programmes' integration for the sustainability of these programmes?

1.2.3. Brief description of the research approach

The research applied a case study approach (Yin, 1994). The key component in this research has been the development of a conceptual framework for the analysis of sustainability and

integration in the health system. Given the conceptual gaps outlined earlier, the study included conceptualisations of notions of sustainability and integration. I also aimed to clarify links between the concepts of integration and sustainability. For these purposes, I conducted a systematic literature review on concepts, definitions, analytical approaches and empirical studies on sustainability in health systems. In order to understand role of integration in sustainability, assessment of the literature included analysis and synthesis of factors that might influence the sustainability of a health programme (or an organisation). Additionally, I conducted a literature review on conceptual and/or analytical frameworks of integration (these included conceptual papers and empirical studies drawing on explicit conceptual frameworks), systematic reviews and meta-analysis of integration initiatives; and reviews (overviews) of conceptual or methodological approaches to integration.

Drawing on a critical assessment of the published literature (Chapter 3), the sustainability of a programme is conceptualised as having five characteristics: leadership, capacity, interactions, flexibility (adaptability to changes in contextual environment or implementation of innovations) and performance. Assessment of the literature on integration (Chapter 4) led to the extension of existing frameworks of integration and health systems (Atun, Ohiri, and Adeyi, 2008), defining levels of integration between the system's components. These levels of integration were defined through the lens of interactions – no interactions, linkages, coordination and integration – between formal programmes' components (or other health system's components). In this research, programmes and health systems are viewed as complex adaptive systems (Atun and Menabde, 2008 -b). For analytical purposes, health systems are defined as having four key components, with each including structural and functional elements: governance, financing, services delivery and informational system (monitoring and evaluation). In developing a conceptual framework for the study analysis (Chapter 5), I draw on earlier work on systematic evaluation of complex health programmes and health systems by Atun and others (2004) and Coker, Atun and McKee (2004). These frameworks were extended to incorporate the abovementioned conceptual developments.

The case study relied on review of published data (official statistical and epidemiological reports), documentary review and qualitative semi-structured interviews with key informants. Data were analysed using a framework approach by Ritchie and Spicer (1994).

1.3. STRUCTURE OF THE THESIS

This opening chapter has presented the background to the research questions that this thesis is addressing and a brief outline of the research approach taken. The following three chapters present the detailed background to this research. Chapter 2 gives a historical perspective on health systems, TB and HIV/AIDS programmes in the FSU, particularly as existed during the Soviet period, and health systems' responses to TB and HIV/AIDS epidemics. This led to the formation of the research questions for this thesis. Chapter 3 presents a systematic review on sustainability in health systems, and chapter 4 outlines the results of the analysis of published literature on integration in health systems. In chapter 5 I introduce the conceptual and analytical frameworks for this study. Chapter 6 details the methodology applied in the case study, outlining ethical considerations, data collection and the analysis process. Chapters 7, 8 and 9 present the results of the case study conducted in Kyrgyzstan. Chapter 7 presents an overview of political, socio-economic, and health system changes that have taken place in Kyrgyzstan since gaining independence. Chapter 8 provides an analysis of the sustainability of the TB programme, and the following chapter presents an analysis of the HIV/AIDS programme's sustainability. In chapter 10, I discuss the findings of this PhD study, outline the limitations of this research, and discuss the implications of this study for understanding the sustainability of communicable disease programmes and the role of integration in this.

CHAPTER 2 HEALTH SYSTEM RESPONSES TO TUBERCULOSIS AND HIV/AIDS EPIDEMICS IN THE FORMER SOVIET UNION

INTRODUCTION

This chapter provides an overview of research evidence on health systems responses to TB and HIV/AIDS epidemics in the former Soviet Union³. The chapter largely summarises the knowledge base at the inception of this thesis in 2007/2008. At that time, there had been no systemic research on health system responses to communicable disease epidemics in central Asia. Indeed, empirical studies on health systems and communicable disease control in the region had been conducted primarily in Russia in the early 2000s. These studies, referenced throughout this chapter, covered a time period prior to the entrance of the GFATM and a substantial increase of funding to address TB and HIV/AIDS epidemics. The studies in Russia concluded that programmatic responses to TB and HIV/AIDS epidemics have been to a considerable extent determined by the legacy of the Soviet health system and prevailing ideological, political, social and cultural factors. This chapter begins by providing a historical background of the Soviet health system, its achievements and failures. This is followed by two sections on the history of TB and HIV/AIDS control in the USSR. Then the chapter provides an overview of the health systems' responses to these epidemics after the disintegration of the Soviet state, as was documented by 2008. The knowledge presented in this chapter led to the formulation of the main research question for this thesis, that is to understand whether and how integration of a communicable disease programme with the broader health system influences the sustainability of the programme.

2.1. HEALTH SYSTEMS IN TRANSITION

2.1.1. Semashko health care system

The Soviet health system is often referred to as the Semashko model, the name of the first Commissar of Health, Dr. Nikolay Semashko (appointed by Lenin in 1918), under whose leadership the principles of Soviet health care⁴ were laid out. Health care was declared a right of the citizenship. Public health and medical care services became a responsibility and a

³ After the disintegration the Union of Soviet Socialist Republics (USSR), 15 new countries were formed: Armenia, Azerbaijan, Georgia, Latvia, Lithuania, Estonia, Moldova, Belarus, Russian Federation and Ukraine, Kazakhstan, Kyrgyz Republic, Tajikistan, Turkmenistan and Uzbekistan.

⁴ Referred in the Soviet literature as the *Soviet socialized medicine*.

function of the state. In theory, these public services were meant to be provided at no cost at the point of delivery (Field, 1990, Lisitsin, 1987).

The ideas of the Soviet health care were influenced by thoughts of German social hygienists, who believed that population health largely depends on social and economic conditions rather than personal or medical care (Field, 1988). Soviet ideology postulated that socialism would get rid of illnesses and premature mortality by reducing poverty, eliminating exploitation of working class, creating better socio-economic conditions and constantly improving the material and moral well-being of the proletariat (Lisitsin, 1987). Health was seen as crucial to the socialist society, however the health of an individual as a personal benefit had less importance (Barr and Field, 1996). Health care was supposed to have balanced preventative, clinical and rehabilitation services, in which prevention was meant to take priority. However, in practice, prevention activities (called *dispansarisation*⁵) had a medical orientation, with a dominant role given to curative services delivered at hospitals. Prevention was limited to population screening and checkups for selected health conditions. Public health and health promotion never fully developed beyond the medical.

Health system: structural and functional arrangements

The health system was centralised, with hierarchical arrangements for governance, financing, service provision and informational systems. The Communist Party, through the USSR Ministry of Health in Moscow, had overall control over the entire health system. The all-republics Ministry exercised its power through the republics' Ministries of Health down to the lowest administrative health units. All health care organisations, irrespective of their place in the organisational hierarchy, had to be in compliance with the rules and norms made by the Ministries of Health, with limited participation in decision-making processes (Rowland and Telyukov, 1991).

Approximately 80% of health system financing came from the government budget. The rest was financed by industrial enterprises for their respective health services (Rowland and Telyukov, 1991). The health system was conceived as an integral component of the overall socio-economic development of the USSR. Thus, planning was undertaken with an aim continuously to strengthen the material base of the health system (Lisitsin, 1987). Health care planning and budgeting were based on norms that determined type, number, and geographical distribution of health facilities, including numbers of beds and health personnel (Barr and Field,

⁵ Derivative from 'dispensary'

1996, Rowland and Telyukov, 1991). 80% of the health care budget was spent on hospital care (Rowland and Telyukov, 1991). By 1989, the USSR's health system had the largest number of facilities, beds and health personnel⁶ in the world. Attention to quality of care and to meeting the changing population's health needs was limited.

Several parallel sub-systems of health care services existed. Broadly, these were residential (or civilian) and occupational services. Occupational health services were established in penitentiary, military, oil and gas industry, railways, law enforcement sectors, and other large industrial plants. These occupational services were under their respective Ministerial jurisdictions. There was also a 'closed' health service reserved for the Communist party elite, their relatives and high-ranking governmental servants (Field, 2002, Schultz and Rafferty, 1990). Health care and social care services were operated separately under different Ministerial jurisdictions.

Further, a number of parallel specialised services, each focusing on a single health condition or specialty (e.g. maternity, cardiology, oncology, neurology, narcology, infectious diseases, TB, STDs, mental health, emergency hospitals, and other), were established. Each specialised service network had a lead institution (or a department) at national and republic levels. Dominant structures were hospitals. Most facilities were divided into care for adults and children. Rehabilitation services (e.g., sanatoria, rest homes) were one of the essential curative services.

Primary care services included a network of polyclinics in urban settings and feldsher's offices in rural areas. Every citizen was assigned an outpatient *polyclinic* according to *propiska* (i.e. residency), with little or no choice of provider (Field, 2002). Normally urban polyclinics were separated into adult and child polyclinics; staffed by therapists, paediatricians, and specialist providers. Polyclinics played an important role in implementing screening activities (i.e. dispensarisation) and providing a first-line treatment of acute conditions and chronic diseases (Tragakes and Lessof, 2003). The coverage of primary services was high; however, primary care evolved to have more a referral function due to weak diagnostic capacities. Coordination of care among polyclinics, hospitals, specialised facilities and occupational networks was weak. Patients could self-refer themselves to specialised facilities or hospitals, avoiding primary care providers, but upon discharge from hospitals were left without continuity of care or follow up.

⁶ 23 711 inpatient treatment facilities with an overall capacity of 3.82 million beds, 132.9 per 10 000 population), 42 816 ambulatories or polyclinics; 1.27 million physicians (44.4 per 10 000 population), and 3.38 million semi-professional personnel (117.7 per 10 000 population); in addition, 2323 sanatoria or rehabilitation facilities providing clinical services with an overall capacity of 608 000 beds (GosKomStat, 1990).

Leaders of the Communist Party proclaimed that the Soviet society would have a new proletariat type of medical doctors (Schechter, 1992). All health personnel were state employees. With the exception of the medical elite working in clinical research or academic medicine in large central institutions, doctors and mid-level health personnel were paid poorly (Field, 2002). The average salary rate of a Soviet physician was equivalent to that of an industrial worker; it was *'on the low side even for the soviet society'* (Barr and Field, 1996, Field, 1988).

Soviet health system: achievements and collapse

Historically, the Soviet health system made tremendous achievements. The USSR's government brought health care to its large population, part of which did not have even basic health care previously or lived in sparsely populated areas and under harsh climate conditions (Tragakes and Lessof, 2003). The Soviet health system at its inception focused on solving immediate health problems and needs. In this regard, the system was highly effective in comparison to conditions that existed in the pre-Soviet period. Health indicators were improving up until the 1960s. Major epidemics of communicable diseases had been controlled through massive efforts. Life expectancy nearly doubled and overall mortality had been reduced, particularly infant mortality (McKee and Shkolnikov, 2001, Mesle, Shkolnikov, and Vallin, 1992, Shkolnikov, Mesle, and Vallin, 1996a, Shkolnikov, Mesle, and Vallin, 1996b). However, in the middle of the 1960s, signs of a health crisis emerged, which continued through the 1990s and the 2000s (Andreev, McKee, and Shkolnikov, 2003, Shkolnikov and Leon, 2006).

Spending on the health system decreased from 6.0-6.5% GDP in the early 1960s to 2-3% in 1991 (Field, 2002, Tragakes and Lessof, 2003). Highly inefficient design and planning combined with chronic under-funding left the large network of health facilities outmoded (Field, 2002, Rowland and Telyukov, 1991, Schultz and Rafferty, 1990). The limited health budget was distributed in a way that ensured that the health care sub-system serving the elite received increased funding. Disparities in resources allocation existed between republics, and urban and rural areas. Underpaid medical personnel often had to function without basic supplies, medicine and diagnostic equipment (Field, 2002, Rowland and Telyukov, 1991, Schultz and Rafferty, 1990). Care was not free of charge. Under-the-table payments to providers were common (Ensor and Savelyeva, 1998).

Health sciences suffered substantially from the USSR's isolation caused by the 'cold war' and political ideology to establish the communist's science (McKee, 2007, Vlassov and Danishevskiy, 2008). Rather than applying internationally accepted approaches to judge the strength of scientific evidence such as randomised clinical trials to determine the efficacy of

interventions, selected experts decided on what health interventions to deliver. Application of outdated clinical interventions, or interventions with questionable efficacy (or effectiveness), was a common practice (Danishevski, McKee, and Balabanova, 2009).

Historically, the USSR was the first nation in the world that made a constitutional pledge to provide free-of-charge and universal access to quality health care for all its citizens (Field, 1990, Field, 2002, Lisitsin, 1987). These early promises, which the Soviet government made to its people, were not realised (Field, 1990).

2.1.2. Health system reforms

Following the disintegration of the USSR, the FSU countries initiated reform of the financing, organisation and delivery of health care (Kulzhanov M., 2007, McKee, Figueras, and Chenet, 1998, Rechel and McKee, 2009, Tragakes and Lessof, 2003). Among common objectives were diversification of funding sources, change of provider payment mechanism, reduction of the size of the hospital sector, strengthening primary care, decentralisation of health care governance and management, and improvement of quality of care (Ensor and Thompson, 1998, Field, 2002, Rechel and McKee, 2009). International organisations have played an important role in the health reform processes in a number of countries. The evidence on the effects of the reform undertaken in the last two decades on health care quality or health system efficiency is sparse (Rechel and McKee, 2009). Likewise, there were no comparative empirical studies on how and whether the reforms addressed the functioning of TB or HIV/AIDS services.

2.2. TUBERCULOSIS CONTROL

2.2.1. Tuberculosis control in the USSR

As I mentioned in the introductory chapter, TB control has been always a high political priority for the Soviet government. A decree to set up a state committee on TB and the establishment of a dispensary system for TB prevention and care was signed in 1918 (Perelman, 2000). Soviet phthisiatry, under the leadership of the Russian school, put considerable efforts into establishing effective TB control measures. These measures were developed in isolation from the international scientific community. Russian phthisiatry takes pride in having developed approaches to TB control and their achievements in reducing the substantial TB burden prior to the 1980s (Sbarbaro, 2002). However, these very approaches, which were effective during the 1960s, resulted in ineffective and inefficient measures when social, economic and

epidemiological conditions started to deteriorate during the Brezhnev era onwards (i.e. the 1970s-1980s). I discuss this further.

Soviet TB control was 'comprehensive'. The cornerstone of control was prolonged inpatient treatment, repeated hospitalisations, post-treatment prophylaxis of relapses and rehabilitation in sanatoria. Some patients were hospitalised for more than 12 months. TB was framed as a disease with the potential for serious complications and sometimes disability (Mishin and others, 2006). Treatment was defined as a complex medico-social rehabilitation with an aim to achieve full clinical and psychological recovery, restoring the ability to work and return to usual social functions (Mishin and others, 2006, Perelman, 2000, Rabuhin, 1960). TB interventions also included repeated BCG vaccinations⁷, preventative treatment with isoniazid, mass population fluorography screening, and screening of children for TB infection using Mantoux test (Coker and others, 2003, Drobniowski and others, 1996b, Kimerling, 2000, Mishin and others, 2006). Preventative treatment of TB disease with isoniazid was applied extensively⁸. This included preventative treatment among those diagnosed or suspected of TB infection⁹, and those who completed TB treatment in order to prevent relapse¹⁰.

Clearly, the complex of interventions outlined above was designed to protect the public health of the Soviet citizens (Kimerling, 2000). Having TB was viewed as a risk to society, thus placing people in hospitals for extended periods was considered a major public health benefit. The cost to patients and their families associated with a long hospital stays (e.g., loss of a job) was of less importance (Kimerling and Banatvala, 2001c). Preventative measures, treatment and dispensary observation after completion of the treatment were mandated by the regulations (USSR_Government, 1960). Though the regulatory framework guaranteed retaining workplaces for TB patients, and social support such as the provision of better housing (USSR_Government, 1960), these were never been fully realised in practice.

TB services: organisational arrangements

In line with the overall health system development, TB services (i.e. *phthisiatry* services) evolved as a large hierarchically organised network consisting of specialised TB dispensaries,

⁷ Mandatory BCG vaccination at birth. Re-vaccination of children at the ages of 6-7 years old and 14-15 years old. Re-vaccination at age 30 has also been recommended if a person has been in frequent contact with TB patients.

⁸ Preventative treatment for 2-3 months, twice yearly (up to 2 years).

⁹ Children and adolescents who had positive conversion in a Mantoux test, or those who were from households of a TB patient with any type of disease. Any person (all ages) who was in close contact with patients (all ages) with active TB confirmed microbiologically or bacteriologically.

¹⁰ All children and adolescents who previously had active TB. Adults who had residual changes in lungs upon completion of treatment, of those with co-morbidities (e.g. diabetes).

hospitals, sanatoria, and outpatient clinics. There was a separation of adult and paediatric TB specialties. The whole TB system was headed by the USSR Central TB research institute in Moscow. This institute was the main TB control policy body in the whole country (Mishin and others, 2006, Perelman, 2000). There were similar TB research institutions in each Soviet republic, and large oblasts. In each administrative unit, TB dispensaries had a central supervisory place in the hierarchy of TB services. TB services existed in occupational health sub-systems, including the penitentiary sector. Along with patients who had active TB disease, the dispensary system managed those suspected of TB infection or disease and those who completed treatment for TB (Coker and others, 2003, Mishin and others, 2006). TB dispensaries monitored all registered persons for years, some remained in the TB system for life (Atun and others, 2006b, Floyd and others, 2006, Mishin and others, 2006).

Though outpatient TB ambulatories existed, treatment was primarily hospital-based. The venue of treatment (i.e. hospital or ambulatory) was decided based on several factors such as severity and extent of disease, housing and economic considerations, various local conditions (e.g., distance), social and psychological elements, and the patient's wishes (Perelman, 2000). General health services were involved only in implementing BCG vaccination and mass population screening activities.

Soviet phthisiatry: TB treatment philosophy

Broadly, there have been two principal features of the Soviet TB treatment philosophy. The first was an individualised approach to treatment. Though a standard combination therapy with first-line drugs was included into treatment protocols, TB physicians were encouraged to decide treatment regimens for each individual patient (e.g., doses, duration of therapy, or the introduction of second line anti-TB drugs). In theory, drug regimens were to be tailored depending on drug susceptibility patterns, pharmacokinetics of the drugs, tolerance to drugs and response to treatment, or concurrent illnesses (Mishin and others, 2006, Perelman, 2000, Rabuhin, 1960). In addition to TB chemotherapy, there was the use of pre-chemotherapy interventions such as surgical interventions and adjunct therapy¹¹ (Drobniewski and others, 1996b, Mishin and others, 2006, Perelman, 2000, Rabuhin, 1960).

Another feature of the Soviet phthisiatry has been over-reliance on chest x-ray for screening for TB, confirming TB diagnosis and determining treatment outcomes. According to the Soviet phthisiatry, TB diagnosis made based on bacteriology is a diagnosis made too late (Kimerling,

¹¹ Immunomodulators, corticosteroids, vitamins and physiotherapy.

2000). Though multiple TB diagnostic strategies were used including microbiological and bacteriological investigation, their role became secondary, albeit unintentionally (Drobniewski and others, 1996a, Kimerling, 2000). Classification of TB cases was on clinical criteria based on localisation¹², extent and activity of pathological processes, excretion of mycobacteria, complications, and residual changes in affected organs (Mishin and others, 2006). History of previous treatment was not taken into the account. Thus, categories mixed new cases and patients who had previously received treatment (Coker and others, 2003, Drobniewski and others, 1996a, Drobniewski and others, 1996b, Kimerling, 2000).

Fundamental issues of the Soviet approaches to TB treatment and care

Approaches to TB control outlined in the previous section had taken shape by the late 1960s (Perelman, 2000). These hardly changed for decades. The tradition of mass population fluorography screening (Golub and others, 2005) and long treatment of TB patients in hospitals and sanatoria (Sbarbaro, 2002) had been commonly applied in industrialised countries up until the 1960s-1970s. Starting around the 1970s, however, a shift to outpatient treatment occurred in most countries globally after empirical studies demonstrated benefits of ambulatory treatment. Outpatient treatment had been shown to benefit to patients' morale and recovery (Wier, Taylor, and Fraser, 1957). Treatment in ambulatory settings was as effective as in specialised inpatient settings, and did not lead to any increase in TB transmission (Fox, Ellard, and Mitchison, 1999).

With the deterioration of the health and social systems (which had began towards the end of the 1960s), the very underlying principles of Soviet phthisiatry led to ineffective and inefficient approaches to control. The first principle problem relates to TB diagnosis and clinical management. The secondary role of bacteriological confirmation and the lack of considerations of previous treatments had not been taking into account the likelihood of drug resistance (Drobniewski and others, 1996a, Kimerling, 2000). Though in theory tailoring of TB treatment was based on drug susceptibility results, the Soviet TB system could not diagnose nor monitor drug susceptibility patterns. Years of under-investment had weakened the diagnostic capacity of clinical (including radiological and fluorography) and bacteriological laboratories. Misdiagnosis of TB had likely been taking place, missing patients with TB or putting persons without TB through additional tests and treatment in hospitals (Balabanova and others, 2005). Individualised treatment approaches combined with irregular drug supplies likely led to erratic treatment and, more important, the emergence of drug resistance.

¹² Three groupings: 1) TB intoxication in children and adolescents, 2) pulmonary TB and 3) extra-pulmonary TB.

Another principal issue of Soviet TB control has been inefficiencies rooted in the health system's structural arrangements. By 1989, the Soviet health system had at least 18 TB research institutions, 4756 TB facilities¹³ (of these 1068 were TB dispensaries) with an overall over-capacity of 205 900 beds. The system employed 22 461 TB physicians (GosKomStat, 1990). These translated into one TB doctor per four new TB cases¹⁴ and two beds per one new TB case. Atun and others (2006), in their economic evaluation of costs associated with a 3-year follow up of TB patients in the Soviet TB system, showed that long-term management was not justified for either economic or clinical reasons. Around 60% of the total cost was accounted by hospital care, and nearly 40% of the total cost was incurred after 12 months of care. Furthermore, management of bacteriologically unconfirmed cases accounted for nearly half of total expenditure. TB inpatient facilities did not have instituted infection control precautions. Practices of prolonged and repeated hospitalisations have likely contributed to infecting those who did not have TB.

Prolonged hospitalisation and associated public health laws contributed to making TB a stigmatised disease (Kimerling and Banatvala, 2001b). TB was seen by the public as a dangerous, infectious and threatening condition (Dimitrova and others, 2006).

2.2.2. International TB control strategy in the FSU

In the middle of the 1990s, a number of international organisations initiated pilot DOTS projects in civil and prison sectors in most FSU countries. The five components of the DOTS strategy are political commitment, detection of new TB cases using sputum smear microscopy and confirmation of diagnosis using bacteriological testing¹⁵, uninterrupted supply of high quality anti-tuberculosis drugs, treatment of drug-susceptible TB using standardised first-line drug regimens under direct supervision (DOT), and a standardised reporting and recording system including the evaluation of treatment outcomes for each patient (WHO, 1994).

WHO recommendations for management of drug-susceptible TB are based on research evidence. Recommended treatment regimens¹⁶ can achieve high cure rates >90% within 6-8 months of treatment (Dye and Floyd, 2006, Fox, Ellard, and Mitchison, 1999, Frieden and

¹³ Including TB dispensaries, hospitals, ambulatories.

¹⁴ In 1989, the USSR had documented 114 500 newly diagnosed TB patients, and a total of 582 400 cases in the TB registry (all under dispensary observation in the TB system). This makes a TB bed capacity of 1.8 TB beds per one new TB case.

¹⁵ An emphasis on bacteriological confirmation has been put in early 2000s. Initially, WHO has been promoting only sputum microscopy.

¹⁶ 6-8 months courses with isoniazid, rifampicin, ethambutol and pyrazinamide are standardized short course (SSC) chemotherapy regimens recommended by WHO within DOTS strategy.

others, 2003). DOTS (i.e., sputum microscopy and standardised treatment) has also been shown to be a cost-effective intervention in various settings (Borgdorff, Floyd, and Broekmans, 2002, Dye and Floyd, 2006, Murray and others, 1991). However, there has been less evidence regarding the effectiveness of the DOT component (Zwarenstein and others, 1998) of the DOTS strategy.

DOTS implementation in the FSU

The introduction of DOTS in the FSU was an important TB control policy innovation. The intent was, through DOTS implementation, to improve the effectiveness of TB management and prevention of the development of MDRTB. Importantly, one intention was improvement in efficiency of TB control by decreasing unnecessary lengthy hospitalisations and long-term follow up of treated TB patients (Atun and Coker, 2008, Coker, 2001a, Floyd and others, 2006, Marx and others, 2007, Mosneaga and others, 2008). International recommendations also included shifting TB treatment to outpatient settings, establishing community-based TB care. Internationally, evidence consistently suggests that removal of structural barriers for access to care, and building health services around patients' lives, and not vice-versa, bring better care outcomes and reduces TB-associated stigma (Farmer, 1997, Harper, 2010, Noyes and Popay, 2007).

Several pilot projects in Russia and Ukraine have shown feasibility, high cure rates and cost-effectiveness of DOTS for drug-susceptible TB in FSU context (Atun and Olynik, 2008, Balabanova and others, 2006b, Bumburidi and others, 2006, Jacobs and others, 2002, Kherosheva and others, 2003, Mawer and others, 2001, Migliori and others, 1998, Mosneaga and others, 2008, Ruohonen and others, 2002, Vassall and others, 2009a). However, there has also been strong opposition from national stakeholders to dramatic changes in TB treatment philosophy (Atun and Olynik, 2008, Schwalbe, 2008). Nevertheless, by 2003, all FSU countries had declared their commitment to reach global targets of TB control, and adopted DOTS (Schwalbe, 2008). Substantial technical and financial assistance has been provided by the WHO and donors to establish nation-wide programmes based on the DOTS pillars.

Research in Russia has demonstrated that large-scale reforms of the TB care system have not taken place, however. Despite scarce domestic resources for TB control in the FSU (Mosneaga and others, 2008), the introduction of DOTS was not leading to any noticeable reduction in TB beds (Marx and others, 2007). This is because financial mechanisms and regulations on clinical case management have encouraged the retaining of a large inpatient network for TB care (Atun and others, 2006b, Atun and others, 2005e, Floyd and others, 2006, Marx and others, 2007).

The health system's response in Russia was driven by incentives to ensure high TB bed occupancy rather than clinical need (Atun and Coker, 2008, Atun and others, 2005e, Floyd and others, 2006). TB patients continued to undergo lengthy and repeated hospital stays (Marx and others, 2007). TB hospitals shouldered the substantial burden of necessary social support for vulnerable population groups because of a lack of systemic reforms to ensure that social and medical care needs were met outside of TB hospitals (Atun and others, 2005c, Atun and others, 2005d, Kimerling and Banatvala, 2001c).

The fragmentation of elements of the vertical TB programmes and specialisation associated with this fragmentation has created substantial barriers for completion of TB treatment and management of concurrent conditions such as HIV or substances dependency (Schwalbe, 2008, Wolfe, 2007). Though primary care providers were involved in follow up of TB patients in demonstration sites, health reform efforts to actively involve primary care within TB control have been limited. On a large scale, primary care providers were not prepared to take these new responsibilities (Mosneaga and others, 2008).

DOTS-plus or MDRTB management in the FSU

Implementation of the pilot DOTS projects in the FSU has also demonstrated high rates of MDRTB. This was evident from the first trials conducted in Russia comparing DOTS and traditional TB management approaches. These demonstrated that the effectiveness of standardised short course therapy, as recommended by the WHO, was not substantially different than Russian's individualised approaches (Mawer and others, 2001). In several later studies, patients with resistant strains had poor treatment outcomes using DOTS regimens (Bonnet and others, 2005, Cox and Hargreaves, 2003, Cox and others, 2007, Cox and others, 2004, Espinal and others, 2000, Kimerling and others, 1999). In the early 2000s, international organisations began several pilot DOTS-Plus projects. Aside from these few pilots, the overall international messages of what to do with MDRTB and other so-called 'chronic' cases were not clear and often confusing (Cox and Hargreaves, 2003). For years, international stakeholders working on the ground in the FSU were promoting a shift away from an individualised treatment approach to a simplified treatment approach. But MDRTB is, however, a complex disease to treat. Management of MDRTB, and other poly-resistant TB, requires an individualised approach tailored to drug-sensitivity patterns. Treatment of MDRTB lasts 18-24 months, is expensive and results in lower cure rates as compared with drug-susceptible TB (Coker, 2004, Drobniewski and Balabanova, 2002, Mukherjee and others, 2004).

MDRTB was not new in the FSU region when international organisations began their activities in the 1990s. Rates of MDRTB among previously treated cases in Russia in the period 1984-1994 ranged from 22% to 33% (Toungousova, BJune, and Caugant, 2006). MDRTB among new cases was also detected in the same period, suggesting on-going transmission. However, as of the end of the 2000s, the magnitude and changes over time were not fully known.

The position of the WHO and international TB community regarding the response to MDRTB in low- and middle-income countries had been unclear up until 2006. The WHO had been recommending a careful approach to initiating treatment of MDRTB and making treatment of drug-susceptible TB a primary focus. A rationale for such recommendations was an assumption that well-performing DOTS would decrease the burden of MDRTB (Dye and others, 2002). Moreover, there were concerns that MDRTB would draw financial and human resources away from DOTS (Sterling, Lehmann, and Frieden, 2003). Concerns also were raised that irrational use of second-line drugs would lead to the emergence of completely resistant TB strains. Early international responses included forming the Green Line Committee (GLC) in 2000. The GLC is a GHI which was formed to provide technical assistance for pilot DOTS-plus sites, to ensure rational use of second-line drugs, and the purchasing of quality second-line anti-TB drugs at concessionary prices (Gupta and others, 2002). To be eligible to start pilots, countries had to meet criteria showing proper TB management within the DOTS programme. By the middle of the 2000s, however, it became clear that, with few exceptions, countries could not reach WHO targets for TB control (i.e. 75% case detection rate, and 85% treatment success). Even worse, TB mortality and morbidity was not falling as projected (Dye and others, 1998), including in those well-performing countries that achieved the set DOTS indicators. MDRTB and HIV/AIDS were understood to be key threats to successful TB control. The Global Plan to Stop TB 2006-2015 called national TB policy makers to address the challenges of MDRTB, HIV/AIDS and others (WHO, 2006a, WHO, 2006c). When an outbreak of XDRTB¹⁷ was reported in South Africa, the WHO called for an emergency response to MDRTB and emerging XDRTB (WHO, 2007). Within this plan, targets were set to achieve universal access to MDRTB diagnosis and treatment by 2015.

In addition to calls for an emergency response to MDRTB, there is renewed debate regarding human rights, legal and ethical questions relevant to imposing coercive measures on patients refusing treatment such as involuntary detention and isolation (Amon, Girard, and Keshavjee, 2008, Boggio and others, 2008, Coker and others, 2007, London, 2009, Selgelid, Kelly, and

¹⁷ XDRTB – extremely drug resistant TB, MDRTB and in addition resistant to any fluoroquinolone, and at least one of three injectable second-line drugs (capreomycin, kanamycin, or amikacin).

Sleigh, 2008). For example, a paper co-authored by staff members of the WHO (Boggio and others, 2008) argues for application of the Siracusa principles (UN, 1984) and justification of compulsory measures as a last resort when other measures of voluntary treatment have failed. In the FSU context, given the legacy of compulsory and punitive measures and the state's control over individual (especially marginalised groups), the result of this debate may add additional impediments to the development of community-based TB care.

As discussed previously, aside from health system responses to TB in Russia in the early 2000s, further developments in health system responses to TB epidemics remain under-explored empirically. What is known is that with GFATM grants, several FSU countries, including those in central Asia, have been provided substantial resources for treatment of MDRTB patients (TheGlobalFund, 2009).

2.3. HIV/AIDS PREVENTION AND CONTROL

2.3.1. USSR's response to HIV/AIDS and substances dependency

The potential of an HIV/AIDS epidemic had not been a serious concern for the Soviet Government or for the USSR's Ministry of Health (Feshbach, 2005, Medvedev, 1990a, Medvedev, 1990b). HIV/AIDS had been considered a 'western' disease and confined to risk groups that officially were non-existent in the USSR. Illicit drugs use, prostitution and sexual minorities were illegal. Thus these problems were not acknowledged. The response of the USSR government to the first HIV/AIDS cases was denial. Soviet propaganda had been labelling HIV/AIDS as a microbiological weapon developed by the USA to attack the world (Feshbach, 2005, Seale and Medvedev, 1987).

HIV/AIDS control

In 1987, the USSR's government issued a decree that later was put into the law on prophylactic measures against HIV (TheUSSRLaw, 1990). This law embedded severe penalties, coercion and punitive actions against people living with HIV/AIDS. Liabilities for 'knowingly putting at risk others' included 5 years, and 'actual transmission' 8 years, imprisonment (TheUSSRLaw, 1990). The human rights of people with HIV were not considered. In practice, those children infected with HIV/AIDS in large nosocomial outbreaks in Elista and Volgograd were isolated in a special hospital (Medvedev, 1990b).

Following this decree, specialised HIV/AIDS services were established in all Soviet republics and charged with conducting HIV testing. HIV policy included mandatory testing for all foreigners entering the USSR and Soviet citizens returning from international trips (those who spent a month or more in a foreign country).

Such a legal environment generated stigma and discrimination against PLWHIV. The punitive policies created an environment of fear among the Soviet population, who were ignorant about the risk of HIV transmission, including among medical professionals and those at risk of HIV (Feshbach, 2005, Field, 2004). Those most at risk of acquiring HIV were viewed as 'social ills' who have no place in the socialistic society (Feshbach, 2005). As in many other places, HIV/AIDS was seen by some as a punishment for a sinful way of life (Field, 2004). Such a climate prevented people from wishing to know their HIV status.

Treatment of substance dependence

The Soviet government had established specialised narcology services in 1976 for treatment of alcoholism and other substance dependency (any chemical dependency) (Mendelevich, 2006). The narcology services were established as a sub-division of specialised psychiatry services (Elovich and Drucker, 2008, Rhodes and others, 2006). Upon request, information about registered patients was provided to the law enforcement agencies. By 1989, these services evolved into a network consisting of narcology dispensaries, hospitals and outpatient rooms (GosKomStat, 1990). Up until 1990, treatment of substance dependency and chronic alcoholism were compulsory in narcology hospitals or dispensaries (Latypov, 2008). The approach to treatment was aimed at complete abstinence. Detoxification and psychotherapy were the main interventions. Though detoxification is an important initial step in opioid dependence treatment, it is not effective on its own in ensuring long-term abstinence because of high relapse rates (Degenhardt and others, 2010, Farrell and others, 2005). Psychotherapy was rooted in hypnoid-based therapy, when a patient is manipulated to believe if he drinks or uses drugs within a certain period, he will die (in Russian referred as *kodirovka*). These Soviet psychotherapy approaches had no evidence base, as Elovich and Drucker noted when they called them '*therapy worthy of Rasputin*' (Elovich and Drucker, 2008).

2.3.2. HIV/AIDS prevention and control efforts in the FSU

Soon after the collapse of the USSR the first signs of the HIV/AIDS epidemic started to emerge. In the middle of the 1990s, large outbreaks of HIV among IDUs were detected in several cities

in Ukraine, Russia, Moldova, and Kazakhstan (Carr and others, 2005, Eyzaguirre and others, 2007, Latypov, 2008, Nabatov and others, 2002, Nabatov and others, 2007). Over the following decade, the number of detected HIV cases grew rapidly. Though the HIV/AIDS epidemic in the region is understood as the fastest growing IDU-driven epidemic in the world, the real magnitude is not known fully. HIV surveillance systems in the FSU region are generally weak and inadequate in identifying new patterns or reaching risk groups (Bernitz and Rechel, 2006).

Both HIV and IDUs emerged as new and alien problems to post-Soviet states, given pre-existing policies and the social framing of both conditions. In the middle of the 1990s, several international agencies and NGOs had initiated their activities in area of HIV/AIDS control. UNDP set up a thematic group on HIV/AIDS. By the mid-1990s, all states developed national AIDS plans. At the same time, several international NGOs under the auspices of the Open Society Institute (OSI) initiated pilot harm-reduction projects, including needle-exchange and syringe programmes (NSP) and promotion of opioid substitution therapy (OST) (Sarang, Stuikyte, and Bykov, 2007). At this time, neither the WHO nor the World Bank (WB), both key international policy makers in the area of health at the time, had endorsed harm-reduction interventions (Schwalbe, 2008). Several other pilots on STD syndromic management and prevention, and health education, were also initiated to which national governments were receptive in general (Schwalbe, Lazarus, and Adeyi, 2008).

The OSI's advocacy as early as the mid 1990s for harm reduction in the FSU, which had been facing an increasing use of opioids, was based on considerable research evidence. Injection (and sharing contaminated equipment) is one the most effective ways of transmitting the virus. Both, NSPs and OST have been shown to significantly reduce injecting risk behaviour (e.g., sharing injecting equipment) (Donoghoe, 2006, Gibson and others, 2002, Gibson, Flynn, and Perales, 2001, Tilson, 2006, Wodak and Cooney, 2006). OST has been associated with lower rates of HIV seroconversion (Farrell and others, 2005 , Gowing and others, 2004, Gowing and others, 2008, Sorensen and Copeland, 2000, Tilson, 2006), and decreases rates from illicit-drug-related overdose deaths (Caplehorn and others, 1996, Mattick and Degenhardt, 2003). OST has been shown to improve the chances of retaining drug users, who often face multiple comorbidities, on any treatment, and to suppress heroin use in contrast to detoxification (Amato and others, 2005, Mattick and others, 2003). In fact, OST has offered an opportunity to retain HIV-infected IDUs on ART treatment and improve adherence (Donoghoe, 2006). Harm reduction (as a complex of interventions) among IDUs prevented larger HIV epidemics in western Europe (Donoghoe, 2006).

In 2001, all FSU states signed the 2001 UNGASS declaration on AIDS to implement extensive prevention and treatment measures, and the 2004 Dublin Declaration on Partnership to Fight HIV/AIDS in Europe and Central Asia (Schwalbe, 2008).

It should also be noted that over the last decade, governments facing IDU-driven HIV/AIDS epidemics have been confronted with conflicting recommendations. On the one hand, there are signed UN conventions¹⁸ on narcotic drugs, psychotropic substances and precursors, which require the signatory nations to limit production, export, import, trade, manufacture and possession of drugs exclusively to medical and scientific purposes. The 1988 Convention Against Illicit Traffic in Narcotic Drugs and Psychotropic substances in particular requires countries to make criminal offenses, under the domestic law, actions such as possession of drugs for personal consumption or publicly inciting or inducing others to use illicit drugs (Bewley-Taylor, 2004, Bewley-Taylor, 2005). On the other hand, there have been recommendations for public health approaches to drug control and promotion of harm reduction (Wolfe and Malinowska-Sempruch, 2004). These advocate reducing punishment for drug users, and reducing sanctions against possession of drugs.

Implementation of international recommendations on HIV/AIDS prevention, treatment and care

In fact one of the major impediments for implementation of HIV prevention, treatment and care among IDUs, an important risk group in the FSU, has been the legislative environment. The USSR, and consequently most FSU states, have historically been countries with strict 'zero tolerance' policies on drug use. As was noted by Latypov (2009), the inherited legal system gives drug users basically three options –to get clean, go to prison, or hide in the 'under-world' more often associated with criminal activities. In the FSU context, particularly as relates to the central Asian region, Russia has substantial influences on drug control policy. Russia has banned opioid substitution therapy. The legacy of the Soviet ideology of social exclusion and labelling persons with high risk behaviour as 'asocial' and the 'ills of the society' persists in post-Soviet times, contributing to persistent stigma and discrimination (Balabanova and others, 2006a, Tkatchenko-Schmidt and others, 2008).

In several sites in the FSU, effective models of integrated prevention, care and community support for IDUs, prisoners, and sex workers have been implemented within international

¹⁸ The 1961 Single Convention on Narcotic Drugs, the 1971 Convention on Psychotropic substances, the 1988 Convention Against Illicit Traffic in Narcotic Drugs and Psychotropic substances. Under these UN conventions, countries may introduce strict, zero tolerance legislation. Among countries with zero tolerance policies are the USA, Japan, Sweden, and the FSU.

initiatives (Sarang, Stuikyte, and Bykov, 2007). These projects for HIV prevention among risk groups have been implemented by international agencies, to a large extent, through civil society organisations. There has been a position among international stakeholders that NGOs are better able to reach high-risk groups (Schwalbe, 2008). Despite these successes, piloted models have not been institutionalised into mainstream health and social support systems (Atun and others, 2008). The coverage of harm reduction interventions for risk groups remains low, and likely has limited or no effect in reducing HIV transmission (Aceijas and others, 2007, Bobrova and others, 2007b, Matic and others, 2008, Sarang, Stuikyte, and Bykov, 2007).

Political commitment for the scale up of harm reduction interventions has been inadequate (Atun and others, 2008, Godinho and others, 2005a). Financial resources for the HIV/AIDS response generally from domestic sources have been limited (Matic and others, 2008, Tkatchenko-Schmidt and others, 2008). Though civil society has been involved in the delivery of interventions and advocacy in many FSU sites, their involvement in policy and operational decisions has been limited (Sarang, Stuikyte, and Bykov, 2007).

The legacy of the Soviet health and social systems, which were highly fragmented, has created barriers for addressing the multiple health and social problems facing PLWHIV or those at risk of HIV. Financial mechanisms, which were planned and allocated to each specific service separately, have not been taking into account the changed epidemiological context (Atun and others, 2008, Atun and others, 2008). Strict regulatory mechanisms governing delivery of interventions only within individual specialties has prevented the implementation of comprehensive HIV prevention and treatment programmes (Bobrova and others, 2007b, Tkatchenko-Schmidt and others, 2008, Wolfe, 2007). For example, in Ukraine prescription and management of opioid substitution therapy has been permitted only by narcology specialists, preventing the expansion of integrated harm reduction interventions (Bruce and others, 2007). Coverage of ART among IDUs has also been low (Aceijas and others, 2006b). An important impediment has been limited capacity of specialised AIDS centres. These specialised services have retained the exclusive right for HIV diagnosis and ART delivery (Bobrova and others, 2007b, Wolfe, 2007).

CHAPTER SUMMARY

In summary, empirical research and international policy makers have raised concerns over sustainability of historically vertical TB and HIV/AIDS control programmes, which have been unable to respond to new challenges such as MDRTB or IDU. TB control has been entrenched in traditional highly vertical models and a long history of powerful professional association, which has resulted in a resistance to respond to either new epidemiological challenges or evidence of marked inefficiencies. By contrast, public health responses to HIV control have been constrained by legal and social legacies that penalise those on the margins and thus limit models of control. Responses in the USSR to the public health challenges of TB and HIV, moreover, highlight a long neglect of evidence to inform policy and practice.

Through GHIs, a number of evidence-based innovative TB and HIV/AIDS interventions have been introduced in the FSU region. However, most of these innovations have operated on a pilot basis, and their implementation was financially dependent on external support. Given considerable fragmentation of inherited health systems and the impediments this caused for implementing TB and HIV/AIDS control efforts, there has been growing advocacy for integrating vertical programmes into the broader health system.

As I outlined in the introductory chapter, there are no agreements on what the notions of 'sustainability' and 'integration' entail, including as relates to communicable disease control programmes. The next two chapters (Chapter 3 and 4) provide an assessment of existing conceptual definitions and analytical approaches to sustainability, and integration and health system.

CHAPTER 3 SUSTAINABILITY

INTRODUCTION

This chapter presents a systematic literature review of peer-reviewed literature on concepts, definitions, analytical approaches and empirical studies on sustainability in health systems. In order to understand role of integration in sustainability, the assessment of conceptual frameworks and empirical studies included a synthesis of factors that might influence the sustainability of a health programme (or an organisation).

The literature review included conceptual and/or analytical frameworks, reviews (overviews) of conceptual or methodological approaches to sustainability, systematic reviews on sustainability in health systems, and empirical studies. The detailed methodology of the systematic literature review, search strategy, and the process of selecting papers and studies are presented in the Appendix 2 (sections A2.1 and A2.2.). Briefly, the literature search included searches of Medline (from 1980), Embase (from 1980), and the Cochrane library (from 1980). The initial search was performed in October 2008 and updated in January 2011. The search was limited to the English language and papers accessible through the University of London library services. I also reviewed bibliographies of selected papers to identify further publications. The search strategy included key terms related to the concept of sustainability including 'sustain*', 'resilience*', 'viability*', 'institutionalisation*', 'routinisation*', 'durability*', 'stability*', 'persistence*', 'continuation*'. The search was restricted to MeSH and Emtree headings under 'health care', 'health services', and key terms 'health program*', 'health intervention*', 'health system*'. A number of frameworks and empirical studies assessed are outlined in section 3.3. and section 3.4., respectively ('Conceptual frameworks', 'Empirical studies on sustainability in health systems').

I begin this chapter by presenting an overview of the origins of the sustainability concept and theories that explain sustainability. I then present how sustainability is defined and understood as applied to health systems. Further, I provide the results of an analysis of conceptual frameworks and empirical studies. The findings outline the main characteristics of a sustainable health programme, including the role of integration in sustaining health programmes. The review presented in this chapter served as a basis for developing the conceptual framework applied in this thesis, which is presented later in Chapter 5. Further discussion and critique of existing conceptual frameworks is presented in Chapter 10, the Discussion.

3.1. THEORETICAL BACKGROUND

3.1.1. Sustainability concept and its roots

Sustainability is a neologism drawn from '*sustain*', which is defined in dictionaries as 'to supply with sustenance', 'nourish', 'to make something to be kept up, prolonged or carried on' (Oxford English Dictionary). The notion of sustainability has a long history in intellectual thinking. Its roots may be found in the writings of the nineteenth's century economists¹⁹ who emphasised that the environment needs to be protected from unfettered economic growth in order to preserve human welfare (Goffman, 2005, Goodland, 1995, Hueting and Reijnders, 1998). In the 1970s²⁰, these thoughts were further extended in environmental and economic literature (Goodland, 1995, Korten, 1981). The sustainability concept has emerged in systems theories as applied to ecological systems. The concept was originally used to express the state of an ecosystem, in which levels of harvest in agriculture, fishery, and forestry are maintained within the capacity of ecosystems, that is recoverable (Kajikawa, 2008).

In their seminal work *The Limits of Growth*, Meadows et al. warned that future economic development is constrained by the world's population growth and depletion of natural resources (Meadows and others, 1972). Meadows et al. made a key conclusion, which built the basis for a modern understanding of sustainability: '*it is possible to alter these growth trends and establish a condition of ecologic and economic stability that is sustainable into the future.*' This work has stimulated debates and concerns over the patterns of economic, social and environmental developments globally, in both industrialised and low-income states (Dovers, 1996, Goodland and Daly, 1996, Korten, 1981). The World Commission on Environment and Development, often referred to as 'the Brundtland Report'²¹ (WCED, 1987), put these concerns onto the international policy arena in 1987, shaping a notion of *sustainable development*:

'Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs' (WCED, 1987).

The report has been met with political consensus on the urgent need for sustainability. The idea of sustainable development was endorsed by nearly all nations at the 1992 UN conference on Environment and Development in Rio de Janeiro, Brazil (UN, 1992). In 1997, the sustainable

¹⁹ Thomas Malthus (1878), and JS Mill (1848) cited in Goodland (1995).

²⁰ Modern neo-malthusianism: Daly, 1973, Ehrlich and Ehrlich, 1990s.

²¹ By the name of Gro Harlem Brundtland, a Chair of the World Commission on Environment and Development at the time.

development agenda was reaffirmed at the United Nations General Assembly session (UNGASS) (UNGASS, 1997). Brundland's report broadened the notion of sustainability to encompass a wide range of human values (Kajikawa, 2008). Sustainability is understood as simultaneous promotion of economic development, environmental protection and social well-being²² (Koehler and Hecht, 2006). Embedded within these pillars of sustainability are broad aspirations and values of humanity – entitlements to health, wealth, justice, peace and security (Kemp and Martens, 2007).

Agreement on conceptual or operational definitions of sustainability has never been reached (Kemp and Martens, 2007). There is an emerging understanding that sustainability encompasses both spatial (i.e. intra-generational equity) and temporal perspectives (intergenerational equity, or a trade-off between short-term gains and long-term concerns) (Huetting and Reijnders, 1998, Kajikawa, 2008), interconnectedness and interdependence of multiple domains (i.e. economy, social, political, environmental systems) (Martens, 2006), and multiple interactions of actors within and across these domains (Kemp and Martens, 2007, Martens, 2006, McMichael, Butler, and Folke, 2003).

Some authors have criticised the elusive character of sustainability. Others have accepted that sustainability is a complex, contested and ambiguous notion, which is impossible to put into a precise and all-encompassing definition. In principle, defining sustainability has a subjective character where human factors play a key role: *'defining sustainability is ultimately a societal choice about what to develop, what to sustain, and for how long'* (Parris and Kates, 2003). Different ideas exist regarding sustainability for actors in various sectors (e.g., health, agriculture, education), cultures, contexts, and in different timeframes; thus sustainability may have a variety of objectives (e.g., environmental or social sustainability) and a variety of trend goals (e.g., equilibrium, growth, or reduction) (Kajikawa, 2008).

3.1.2. Systems thinking and sustainability

In the development literature, sustainability is often misinterpreted as an end goal, which is very long-term and thus elusive and abstract. As mentioned above, sustainability has its roots in ecological systems theories. By contrast, systems' thinking offers explanations of sustainability as a system's property or characteristic, rather than an end result (Fiksel, 2003).

²² A most popular view on sustainability is represented by a set of three pillars, referring to the economy, the environment and society, or alternatively termed *People, Planet, Profit* (or 'P3' – *People, Prosperity, Planet*).

According to complex systems theories, a system's *resilience* is a critical characteristic of a system, which is essential for a system's sustainability (Dovers, 1996, Fiksel, 2006, Folke and others, 2002, Holling, 2001). There are two broad perspectives on resilience. The first, based on an understanding of nature and society as systems functioning near equilibrium (Holling, 1973), is inspired by system dynamic and catastrophe theories (Forrester, 1961, Thom, 1975). In this discourse, resilience is understood as a degree and a speed of how a system can withstand threats, disturbances or catastrophic events, and return to a steady equilibrium or a stable state (Fiksel, 2003, Mayer, 2008). Based on this understanding of resilience, sustainability has been defined as (for example): *'the ability of a natural, human or mixed systems to withstand or adapt to, over an indefinite time scale, endogenous or exogenous changes perceived as threatening'* (Dovers, 1996).

The other view of resilience, which builds on the theory of complex adaptive systems, emphasises adaptive capacity and possibilities of multiple equilibriums (Brand and Jax., 2007, Fiksel, 2006, Gunderson, 2000). In this case, the theory emphasises non-linear interactions among the system's agents under constantly changing conditions where uncertainty, shocks, and surprises are inevitable. In complex adaptive systems, resilience²³ incorporates notions of adaptation, self-organisation and learning. It is focused on how to persist through continuous development in the face of change and how to innovate and transform into new and more desirable configurations (Fiksel, 2003, Fiksel, 2006, Folke, 2006, Folke and others, 2002). In this discourse, sustainability is viewed as a socially instituted process of adaptive change, in which innovation is a necessary element (Kemp, Parto, and Gibson, 2005).

In theory, features of resilient systems include a strong resource base, diversity, cohesion, efficiency and adaptability (Fiksel, 2003, Fiksel, 2006, Folke, 2006, Folke and others, 2002). Diversity implies seeking broadly comprehensible options in knowledge and learning rather than those dependent on of specialist expertise and the existence of multiple structural and functional components to protect against site-specific threats (Folke and others, 2002, Kemp and Martens, 2007, Kemp, Parto, and Gibson, 2005). Cohesion is referred to unifying forces, communication channels, interconnected and interrelated system components that support each other. Efficiency is key in sustainability discourse (thinking about needs of future generations), and is defined as functioning with modest consumption of resources. Adaptability implies flexibility in strategic, managerial, operational processes in response to new pressures, and the emergence of new knowledge and technologies (Fiksel, 2003).

²³ Vulnerability is the opposite of resilience (Folke et al. 2002)

3.2. DEFINITIONS AND PERSPECTIVES ON SUSTAINABILITY IN HEALTH SYSTEMS

Attention to sustainability in health systems emerged in the early 1980s because of concerns over the continuation of interventions after the end of external funding. These concerns were related to interventions in industrialised countries (Altman, 1995, Bracht and others, 1994, O'Loughlin and others, 1998, Scheirer, 2005, Shediak-Rizkallah and Bone, 1998) as well as donor-initiated projects in low- and middle-income countries (Chen, 1997, Lafond, 1995a, Stefanini, 1992).

My literature search identified several research areas that provided conceptualisations of sustainability in health systems. These areas include research in health promotion, community development, international development, diffusion of innovations, organisational studies (organisational learning, organisational sociology, organisational innovation and change), and studies of complex systems. Research from these various disciplines or stakeholders (e.g. international agencies) tend to have different views on sustainability (Greenhalgh and others, 2005, Gruen and others, 2008, Hanson, Salmoni, and Volpe, 2009, Savaya, Spiro, and Elran-Barak, 2008, Shediak-Rizkallah and Bone, 1998). To define sustainability phenomena, various terms are used such as 'routinisation', 'institutionalisation', 'integration', 'maintenance', 'viability', 'longevity', 'stability', 'durability', 'continuity', 'adaptability' or 'resilience' (Gruen and others, 2008, Savaya, Spiro, and Elran-Barak, 2008, Shediak-Rizkallah and Bone, 1998). The differences in definitions relate to two aspects. The first is a focus on *what is being sustained* (e.g., resources, or organisation or organisational goals). The second is *what level(s) of a component of a health system* is being considered, either a health intervention/innovation, a health service organisation (or a group, coalition), a system's functional or structural component (e.g. funds, or human resources) or the overall health system. Selected examples of definitions are presented in the Table 3.1.

3.2.1. Sustainability of health interventions

Definitions of the sustainability of interventions (often referred as projects or programmes) from a public health perspective emphasise maintenance of benefits to stakeholders over time (Hanson and others, 2005, Mancini, 2004, Pluye and others, 2004, Shediak-Rizkallah and Bone, 1998, Swerissen and Crisp, 2004). These benefits (that is *what is to be sustained*) were defined as improvements in health (Hanson and others, 2005), continued control over a health problem

through maintaining sufficient level of effectiveness, accessibility, acceptability or coverage of interventions (Nelson and others, 2007, WHO, 2002).

Similar definitions were found in international development discourse. Early definitions were focused on continuation of a project or benefits brought by the donor's project, with an emphasis on financial self-reliance (Bossert, 1990). This focus on a single investment, post-project financial mechanisms and overemphasis on quick results were said to '*do little to promote it [sustainability] and may be well doing much to prevent it*' (Brown, 1998, Lafond, 1995a, Stefanini, 1992). Such narrow definitions were replaced with a focus on sustaining institutional capacity generated by the donor aid (Bossert, 1990, Stefanini, 1992). Similarly, research on community development takes a broader view, defining sustainability as community capacity building for addressing needs and health of community members (Hawe and others, 1997).

Diffusion of innovations theories are concerned with how to bring innovations into long-term viability within an organisation (Goodman and others, 1993, Greenhalgh, Kyriakidou, and Peacock, 2004, Yin, 1981). In this literature, continuation of innovations is defined as processes in organisational settings that lead to an innovation becoming a routine practice (Yin, 1981) or '*an integral part of, the organisation in which it housed*' (Goodman and others, 1993). These processes are termed as *routinisation or institutionalisation* rather than *sustainability* (Greenhalgh, Kyriakidou, and Peacock, 2004, Johnson and others, 2004).

Several researchers view the sustainability of a health intervention (or a programme) as a multidimensional concept, which includes several aspects of *what to sustain* outlined above: continuing benefits to stakeholders, institutionalisation of interventions within organisational settings, and maintaining capacity of implementing entity (e.g., a community or an organisation) (Cassidy, Leviton, and Hunter, 2006, Johnson and others, 2004, Nelson and others, 2007, Shediac-Rizkallah and Bone, 1998).

Table 3.1 Selected definitions of sustainability in health systems

Health interventions (area of research or a focus)	
Diffusion of innovations	<p>'Routinization that is when new practices become a routine element in the organization's activities and loses its distinct identity.' (Yin, 1981)</p> <p>'Institutionalisation implies that the program becomes embodied within, an integral part of, the organization in which it housed.' (Goodman and others, 1993)</p>
Development assistance	<p>'Sustainability is the ability of a health project or programme to deliver health services or sustain benefits after major technical, managerial and financial support has ceased.' [USAID, cited in (Lafond, 1995a)]</p>
Health promotion and public health perspective	<p>'Sustainable safety promotion programmes deliver lasting improvements in the health status of individuals or the communities they target.' (Hanson and others 2005)</p> <p>'Sustainability is 'a process of ensuring an adaptive prevention system and a sustainable innovation that can be integrated into ongoing operations to benefit diverse stakeholders.' (Johnson and others, 2004).</p>
Community-based health interventions	<p>'Sustainability is the capacity of programs to continuously respond to community needs.... The key element of sustainability is providing continued benefits, regardless of particular activities delivered or the forma (institutionalization vs independence) in which they are delivered.' (Mancini & Marek, 2004)</p> <p>'Maintaining adequate service coverage that will provide continuing control of a health problem, continuing to deliver benefits over a long period of time, becoming insitutionalised within an organization, and continuing to respond to community issues' (Nelson and others 2007)</p>
Health services/organizations	
Development assistance	<p>'Program sustainability exists when elements essential to a program's effectiveness continue to operate over time, within a stable organization, at stable or increased organizational and service capacity.' (Cassidy, Leviton, and Hunter, 2006)</p> <p>'Sustainability of a health system is defined as a capacity of the health system to function effectively over time with minimum external input.' (LaFond, 1995c)</p>
Focus on capacity or performance	<p>'Sustainability is defined as the maintenance of system of care over time, including the services, infrastructure, goals and philosophy.' (Stroul and Manteuffel, 2007)</p> <p>'A health service is sustainable when operated by an organizational system with the long-term ability to mobilise and allocate sufficient and appropriate resources (manpower, technology, information and finance) for activities that meet individual or public health needs/demands.....The system is sustainable when it has the capacity to initiate desired changes, or adapt to changes in demand or in environmental conditions while ensuring resources and desired outputs'. (Olsen, 1998)</p>
Focus on adaptability	<p>'Sustainability is 'the long term ability of a system to respond to external pressures, and to adapt to external constraints without detriment to its functioning' (Whittaker and others, 2004).</p> <p>'Sustainability is not only the long-term survival of project related changes, but also continued effectiveness and capacity to adapt or replace interventions or programmes within context that constantly changes.' (Bowman and others, 2008)</p>
Focus on interactions	<p>'The ability of a project to continue to function effectively, for the foreseeable future, with high treatment coverage, integrated into available health care services, with strong community ownership using resources mobilised by the community and government.' (WHO, 2002)</p>

3.2.2. Sustainability of health organisations, services, or coalitions

The *what* to sustain in definitions of sustainability of health organisations (or an institution, health service, coalitions) includes the organisation's longevity or viability (Cassidy, Leviton, and Hunter, 2006, Rog and others, 2004), maintenance of organisational capacity, goals and philosophy (Stroul and Manteuffel, 2007), bringing benefits to users of services or meeting population needs and demands (Alexander and others, 2003, Brinkerhoff, 1992, Humphreys and others, 2008, Knippenberg and others, 1997, LaPelle, Zapka, and Ockene, 2006, Olsen, 1998).

Definitions from perspectives of organisational learning, organisational sociology and systems theories view an essence of sustainability as continuously meeting the changing needs of stakeholders or the ability to perform in a changing contextual environment. This perspective emphasises notions of adaptability or responsiveness to change (Greenhalgh and others, 2005, Olsen, 1998, Whittaker and others, 2004). Several authors do not separate the sustainability of a certain intervention from the organisation's sustainability (Cassidy, Leviton, and Hunter, 2006, Nilsen and others, 2005). In this view, the important thing is not to sustain an intervention indefinitely but the ideas, cultures, beliefs or principles underlying innovation or overall organisational goals (Virani and others, 2009, Weiss, Coffman, and Bohan-Baker, 2002). For example: *'it is not only long-term survival of project-related changes but also continued effectiveness and capacity to adapt or replace interventions in the context that constantly changes'* (Bowman and others, 2008).

Relatively recently, there has been growing recognition of complexities surrounding sustainability in health systems, calling for system-based solutions (Alexander and others, 2003, Altman, 2009, Gruen and others, 2008, Humphreys, Wakerman, and Wells, 2006, Sarriot and others, 2004, Sibthorpe, Glasgow, and Wells, 2005). Drawing on complex system theories and ecological sustainability perspectives, Gruen et al define a health programme (or health interventions) as a component of complex systems (Gruen and others, 2008). From this perspective, sustainability encompasses notions of alignment, connectivity, adaptation, and equilibrium.

3.2.3. Sustainability of health systems

There are limited conceptual developments related to sustainability of an overall health system. However, it is understood that the *what* of sustainability in any health system includes attaining the health system's goals, which are improved health status of the population, protection against health-related financial risks, responsiveness to needs and satisfaction of consumers'

expectations (Atun and Menabde, 2008 -b, de Savigny and Adam, 2009, Frenk, 1994, Hsiao, 2003, Murray and Frenk, 2000, Shakarishvili and others, 2010). It is also agreed by the authors of conceptual frameworks for health systems that among intermediate objectives are notions of effectiveness, efficiency and equity.

In the context of low- and middle-income countries, sustainability of health systems is perceived to entail self-sufficiency that is functioning without external assistance. Thus, a capacity to mobilise, manage, allocate and use resources efficiently whilst retaining effectiveness of services are the key for sustaining health systems (Berman, 1995, Lafond, 1995a).

3.3. CONCEPTUAL FRAMEWORKS

Through my literature review I identified 26 conceptual frameworks for analysis of sustainability in health systems (Appendix 2, A2.3). Seventeen were frameworks related to the sustainability of a health intervention (or a programme), six were aimed at analysis of sustainability of health organisations (e.g. health services or a coalition), and three were frameworks for the analysis of health system sustainability.

Sustainability is difficult to conceptualise and evaluate, particularly because it concerns a future state. There is a need to consider a balance between meeting the short-term and the long-term needs of a population's health (Altman, 2009). As suggested by Alexandre et al. , one approach to analysing sustainability is by proxy fashion on the basis of observable qualities and characteristics, which are presumed to be precursors of sustainability (Alexandre and others, 2007). In this review, identified frameworks were assessed asking the following questions: (i) what are common characteristics or capabilities which are assumed to be attributes of a sustainable health programme (or an organisation, not limited to a single intervention), and (ii) how are health systems and the broader context acknowledged?

All frameworks (Appendix 2, A2.3) address the questions of what is being sustained and what factors determine sustainability. Among these factors, authors outlined the characteristics of an intervention (if this was a question of the framework), attributes of organisational settings and the broader contextual environment. In this analysis of the frameworks, these attributes of sustainability are grouped into five broad characteristics: 1) capability to govern, lead, and manage; 2) resources and capability to plan and implement activities; 3) ability to adapt to changing internal or contextual environment; 4) capability to build relationships and interactions

inside/outside programmes; and 5) ability to bring results or attain goals (relates to the *what* of sustainability).

Capability to govern, lead and manage (I term this as '*leadership*') is conceptualised as one of the central capabilities and skills of stakeholders, which unites other aspects of sustainability. Included here are competencies such as vision and setting attainable organisational goals, strategic financial and organisational planning, resource mobilisation, community mobilisation, strategic use of monitoring and evaluation (Alexander and others, 2003, Bossert, 1990, Brinkerhoff, 1992, Gruen and others, 2008, Hanson and others, 2005, Knippenberg and others, 1997, Mancini, 2004, Olsen, 1998). Leadership is also conceptualised as commitment, taking responsibility and ownership for actions, engaging others and handling conflicts (Alexander and others, 2003, Johnson and others, 2004, Olsen, 1998). Leaders also have a role in creating an environment for continuously supporting the development of the skills of those working in an organisation (Hanson and others, 2005, Mancini, 2004).

Resources and capability to plan, implement, evaluate activities ('capacity'). All frameworks included *capacity*, however definitions of what capacity encompasses varied. In general, capacity included structures and processes (e.g., planning, execution, evaluation) related to financing, human resources (including managerial), medicines and technologies, physical infrastructure, and monitoring and evaluation capabilities (Bamberger, 1990, Humphreys and others, 2008, Johnson and others, 2004, Knippenberg and others, 1997, Nelson and others, 2007, Olsen, 1998, Pluye, Potvin, and Denis, 2004, Shediak-Rizkallah and Bone, 1998, Stefanini, 1992). Funding was defined as essential for sustainability in several frameworks. This aspect of capacity included stakeholders' abilities to analyse funding needs, mobilise sufficient funds, evaluate and use funds efficiently (Knippenberg and others, 1997, Lafond, 1995a, Mancini, 2004, Sarriot and others, 2004, Stefanini, 1992, Torpey and others, 2010).

Ability to adapt, renew or be flexible ('flexibility/adaptability') is conceptualised as an attribute of the sustainability of development projects (Bamberger, 1990, Stefanini, 1992); innovations in health care settings (Greenhalgh, Kyriakidou, and Peacock, 2004); and organisations (Alexander and others, 2003, Humphreys and others, 2008, Olsen, 1998) (Bowman and others, 2008, Gruen and others, 2008, Hanson and others, 2005, Johnson and others, 2004, Mancini, 2004, Pluye, Potvin, and Denis, 2004). It was referred to in two aspects. The first is the ability to identify and recognise changes in contextual environment, organisational setting, in a health problem or its determinants, or in performance. Then in response, sustainable organisations possess a willingness and ability to change or modify strategy, priorities, or functioning whilst retaining overall organisational mission and performance (Alexander and others, 2003, Bamberger, 1990,

Gruen and others, 2008, Hanson and others, 2005, Humphreys and others, 2008, Mancini, 2004, Olsen, 1998, Pluye, Potvin, and Denis, 2004). The second aspect is the capability of stakeholders to value, learn, assimilate and apply new knowledge (Greenhalgh, Kyriakidou, and Peacock, 2004, Gruen and others, 2008, Johnson and others, 2004, Olsen, 1998, Pluye, Potvin, and Denis, 2004).

Capability to build relationships and interactions inside and outside an organisation ('interactions') is included as a determinant of sustainability in several frameworks. Definitions of what these relationships imply differed and were often vague. For interventions, these relations were defined as their integration into domestic or routine administrative structures and functions (Bossert, 1990, Shediak-Rizkallah and Bone, 1998). Others defined interactions as building a broad political support base from the government or influential stakeholders (Alexander and others, 2003, Bamberger, 1990, Mancini, 2004). In community-based research, interactions were referred to as linkages and support from community members (Alexander and others, 2003, Bowman and others, 2008, Mancini, 2004, Nelson and others, 2007, Sarriot and others, 2004). Some authors outline how interactions likely influence sustainability. Coordination or collaboration with various stakeholders was defined as important for effective implementation of health interventions (Bossert, 1990, Greenhalgh, Kyriakidou, and Peacock, 2004, Johnson and others, 2004, Mancini, 2004, Sarriot and others, 2004), ensuring efficient use of health system resources or resource inputs to an organisation (Gruen and others, 2008, Hanson and others, 2005, Humphreys and others, 2008, Olsen, 1998).

Ability to bring results or attain goals ('performance') is included as an attribute of the sustainability of health programmes (Bowman and others, 2008, Brown, 1998, Johnson and others, 2004, Nelson and others, 2007, Pluye, Potvin, and Denis, 2004, Sarriot and others, 2004, Shediak-Rizkallah and Bone, 1998, Stefanini, 1992, Stephenson, Tsui, and Knight, 2004), institutions (Brinkerhoff, 1992), health services or organisations (Knippenberg and others, 1997, Mancini, 2004, Olsen, 1998), and health systems (Berman, 1995, LaFond, 1995c). This dimension of sustainability was defined as relating to the *what* of sustainability. For example, it was defined as either adequate service coverage (Nelson and others, 2007), adequate level of care quality, accessibility, acceptability (Olsen, 1998), or performance, which encompassed notions of effectiveness, equity and efficiency (Berman, 1995, Knippenberg and others, 1997, LaFond, 1995c, Olsen, 1998).

Contextual factors as determinants of sustainability are included in most frameworks. Among components of contextual environments included in the frameworks are broad political, socio-cultural, and economic factors (Bossert, 1990, Greenhalgh, Kyriakidou, and Peacock, 2004,

Mancini, 2004, Olsen, 1998, Sarriot and others, 2004), including the concept of human development (Sarriot and others, 2004). I did not identify any frameworks for sustainability that build on an explicitly outlined health system framework. Only some authors included the prevailing health system's characteristics into their frameworks. These were, for example, financial resources available for health, or social and health care financial mechanisms (Hanson and others, 2005, Mancini, 2004, Olsen, 1998); regulatory and legislative base (Greenhalgh, Kyriakidou, and Peacock, 2004, Humphreys and others, 2008, Nelson and others, 2007); or organisational arrangements of the health system (Olsen, 1998).

3.4. EMPIRICAL STUDIES ON SUSTAINABILITY IN HEALTH SYSTEMS

92 empirical studies and 4 literature reviews met eligibility criteria and were accessible for the review. 58 studies were conducted in industrialised countries (the majority in the USA and Australia), 34 were in low-middle income countries (no particular regional priority). Most studies (n=55) focused on the assessment of sustainability of a health intervention or a project. 36 explored sustainability of organisations (health services, coalitions/partnerships, or complex health programmes). I found one study by Lafond (1995a) which studied the sustainability of a health system. The majority of studies in both settings were concerned with the continuation of interventions, projects, health reform initiatives, or functioning of established organisations (e.g., community-based coalitions or NGOs) after the end of external funding, technical assistance or a research trial (Appendix 2, A2.4).

A dominant focus of studies conducted in industrialised countries was prevention of chronic diseases and promotion of healthy behaviours (Table 3.2). Additionally, areas explored included clinical managements of chronic diseases, tobacco control and mental health. Most studies conducted in low- and middle-income countries were focused on prevention and control of communicable diseases, and maternal and child health (Table 3.2). Other areas explored in both settings were innovations or development of primary care services, and initiatives within broader health reform efforts.

Table 3.2 presents a summary of study designs as defined by authors. Studies were case studies, descriptive narratives of experiences, evaluation studies (including economic evaluations), surveys and of quasi-experimental design (before and after intervention, or exposed and not exposed to an intervention). Several studies developed quantitative indicators or indices for measuring benefits or outcomes produced by the programme as a proxy for sustainability

(Amazigo and others, 2007, Glisson and others, 2008, Mancini, 2004, McDermott and others, 2003, Sarriot and others, 2008, Stephenson, Tsui, and Knight, 2004).

Table 3.2 Summary of reviewed empirical studies on sustainability in health systems

Country setting	All	High income	Low- and middle-income
All studies reviewed	92	58	34
Level of health system			
Interventions (projects)	55	39	16
Health organisations (services, coalitions, complex programmes*)	36	18	17
Health system	1	0	1
Health (research) area			
Health promotion in communities	24	24	0
Chronic diseases management	8	8	0
Tobacco control	3	3	0
Mental health	5	5	0
Communicable diseases control	20	1	19
Maternal and child health	4	0	4
Reproductive and family health	2	1	1
Primary care services	11	8	3
Other health system reform initiatives	8	2	6
Other	5	4	1
Study design			
Case study, single	12	9	3
Case study, multiple	13	10	3
Evaluation reports	19	13	6
Multimethod evaluations	10	3	7
Description (narrative)	8	2	6
Survey (including cross-sectional)	12	11	1
Quasi-experimental			
Before and after intervention	4	2	2
Exposed and not exposed to intervention	5	3	2
Economic evaluation	5	1	4

Factors determining sustainability

Assessment of empirical studies identified a number of factors that influenced sustainability of interventions or organisations. In this review, these factors are classified as in previous reviews (Gruen and others, 2008, Scheirer, 2005, Shediak-Rizkallah and Bone, 1998), which grouped factors as being related to an intervention, the organisational setting and a broader external environment. Additionally, factors in organisational settings are grouped into five characteristics of sustainability as identified in section 3.3, 'Conceptual frameworks.'

(i) *Characteristics of interventions (in studies on health interventions sustainability)*

Attributes of interventions (innovations) which were found to influence sustainability are 'fit' or compatibility with organisational strategies, objectives and practices (Bossert, 1990, Fuller and others, 2005), (Greenhalgh and others, 2005, Pluye and others, 2005, Pluye and others, 2004, Scheirer, 2005). Other factors outlined in empirical studies fall within factors presented in the next sub-section.

(ii) *Attributes of the organisational setting (implementing intervention)*

Leadership. The majority of empirical studies emphasised the importance of leadership. Some studies found that the presence of individual charismatic leaders ('champions') was important (Crone and others, 2006, Edwards and Roelofs, 2006, Goodson and others, 2001, Scheirer, 2005). Other studies concluded that sustainability depends on the leadership's competencies as relates to collective efforts, norms and organisational culture. These competencies included managerial expertise in strategic and financial planning, fundraising, building trust and strategic relations outside the organisation, and generating political support (Baum and others, 2006, Bossert, 1990, Jana and others, 2004, Mancini, 2004, Nelson and others, 2007, Plochg and others, 2006, Savaya, Spiro, and Elran-Barak, 2008, Stevens and Peikes, 2006, Stroul and Manteuffel, 2007, Toledo Romani and others, 2007). Other traits of leadership found in the studies include a long-term vision for how to address a population's health problems (Alexander and others, 2003, Feinberg, Bontempo, and Greenberg, 2008); a vision on the value of innovations (Barnett and others, 2004, Bradley and others, 2005, Evashwick and Ory, 2003, Whittaker and others, 2004); the ability to avoid competing objectives, and to provide clarity in the roles and responsibilities of subordinate personnel/departments (Bailie and others, 2006, Wakerman and others, 2005).

Capacity. The availability of adequate funding, infrastructure and commodities, qualified and trained staff were identified as factors influencing sustainability (Evashwick and Ory, 2003, Gruen, Weeramanthri, and Bailie, 2002, Hoelscher and others, 2004, McKenzie and others, 2003, Mihalopoulos and others, 2005, Nilsen and others, 2005, Prasad and Costello, 1995, Scheirer, 2005, Wakerman and others, 2005). In both settings (high-income and low-/middle-income), authors concluded that the sustainability of health programs requires long-term funding (Bradley and others, 2005). Studies suggest that chances for sustainability are higher in those organisations that use available funds efficiently (Higgins, Naylor, and Day, 2008), regularly assess and plan present and future financial needs (Casey and others, 2009, Israel and others, 2006), and are capable of attaining diverse funding streams (not depending on one

source) (Bratt, Foreit, and de Vargas, 1998, Evashwick and Ory, 2003, Stevens and Peikes, 2006). Diversified and sufficient funding in contrast to funding earmarked for a specific intervention was found to improve the chances of sustainability (Rog and others, 2004, Stroul and Manteuffel, 2007).

Flexibility. Studies exploring the sustainability of interventions consistently found that the ability of stakeholders to adapt an intervention's design or implementation processes was a determinant of sustainability. This was related to the adaptability of an intervention to the changing needs of beneficiaries (Bracht and others, 1994, Bradley and others, 2005), or the modification of an intervention to fit the organisational culture and variations in patients population (Akogun and others, 2001, Goetz and others, 2009, Gurtler and others, 2007). Similarly, studies that explored the long-term viability of organisations concluded that continuous adaptation to societal changes, community needs, and population demands is a driving factor of sustainability (Nordqvist, Timpka, and Lindqvist, 2009, Wakerman and others, 2005). Important for sustainability of organisations was the flexibility to change the organisation's strategy or operations in response to changes in the overarching health system's regulatory or fiscal environment (Bratt, Foreit, and de Vargas, 1998, Israel and others, 2006, Jana and others, 2004, Plochg and others, 2006, Singh and others, 2010, Wright, 2009). These included, for example in the case of funding cuts, redefining services and staffing patterns or changing strategies for creating demand for services (LaPelle, Zapka, and Ockene, 2006). Organisations with cultures open to new knowledge and with emphasis on a high level of proficiency were more likely to sustain innovations (Glisson and others, 2008).

Interactions. Relationships within and with other organisations were found also to be a determinant of sustainability in all studies that included this component in the assessment (Appendix 2, A2.4). Interventions that were designed to run as vertical hierarchies were less likely to be sustained (Bossert, 1990, Stevens and Peikes, 2006). Pilots or innovations that were not integrated into domestic policy and legal frameworks, formal domestic health services, and on-going roles and responsibilities were at substantial risk of being discontinued at the end of external support (Amazigo and others, 2007, Fuller and others, 2005, Gruen, Weeramanthri, and Bailie, 2002, Harpham and Few, 2002, Milne and others, 2007). Though stand-alone projects enjoy independence, such interventions have limited options for funding and resources to draw upon when the project cycle ends (Stevens and Peikes, 2006). Collaboration, building alliances, gaining support and involvement of various stakeholders (both political and in the communities) were critical for sustainability in a number of studies (Bratt, Foreit, and de Vargas, 1998, Edwards and Roelofs, 2006, Eliason, 1999, Higgins, Naylor, and Day, 2008, Jacobs, Price, and Sam, 2007, Jana and others, 2004, Knippenberg and others, 1997, Minkler and others, 2006,

Nelson and others, 2007, Nilsen and others, 2005, Nordqvist, Timpka, and Lindqvist, 2009, Singh and others, 2010, Sivaram and Celentano, 2003, Wakerman and others, 2005, Wong, Chan, and Koh, 1998). Coordination in implementation between actors (e.g. government, NGOs, international actors) was found to be an important determinant for the sustainability of complex programmes such as HIV/AIDS (Greco and Simao, 2007, Le Loup and others, 2010, Rosenberg, Hartwig, and Merson, 2008, Torpey and others, 2010), family health (Mancini, 2004), partnerships (Alexander and others, 2003, Israel and others, 2006), and community-based programmes (Gurtler and others, 2007, Nelson and others, 2007, Toledo Romani and others, 2007).

Performance. Interventions that are culturally acceptable and demonstrate benefit, either observable or perceived, to communities or stakeholders had better prospects for sustainability (Amazigo and others, 2007, Bossert, 1990, Greenhalgh and others, 2005, Jacobs, Price, and Sam, 2007, Kachur and others, 1999, Rashed and others, 1997, Scheirer, 2005, Streefland, 1995, Toledo Romani and others, 2007, Wang, Gu, and Dupre, 2008). In low- and middle-income countries, projects that were viewed as an imposition from donors and not beneficial in the local context were not likely to be sustained (Amazigo and others, 2007, Israr and Islam, 2006, Jacobs, Price, and Sam, 2007, Rashed and others, 1997, Streefland, 1995, Toledo Romani and others, 2007). Achieving results or bringing benefits was referred to as an overarching attribute that determines the sustainability of an organisation. Authors noted a particular importance of the strategic use of monitoring and evaluations systems in planning, refining operations, and disseminating results (Alexander and others, 2003, Evashwick and Ory, 2003, Fuller and others, 2005, Knippenberg and others, 1997, Milne and others, 2007, Minkler and others, 2006, Nelson and others, 2007, Stevens and Peikes, 2006, Stroul and Manteuffel, 2007, Torpey and others, 2010). These studies concluded that achievement of organisational goals and results, and effective use of monitoring and evaluation systems are the foremost factors in building organisational credibility and reputation, gaining political and financial support, and creating demand for services provided.

(iii) *External contextual environment*

A number of empirical studies concluded that the overarching health system characteristics, economic conditions, political climate, policies of funding agencies and country's history may influence the sustainability of health interventions or organisations (Amazigo and others, 2002, Ashwell and Barclay, 2010, Atun and others, 2005e, Bossert, 1990, Dasgupta and Priya, 2002, Greenhalgh and others, 2005, Gruen and others, 2008, Higgins, Naylor, and Day, 2008, Humphreys and others, 2008, Israr and Islam, 2006, Jacobs, Price, and Sam, 2007, LaFond,

1995b, LaFond, 1995c, Le Loup and others, 2009, Le Loup and others, 2010, Nelson and others, 2007, Nordqvist, Timpka, and Lindqvist, 2009, Rosenberg, Hartwig, and Merson, 2008, Sibthorpe, Glasgow, and Wells, 2005, Stroul and Manteuffel, 2007, Williams and others, 2007). Several authors highlighted the non-linear, interrelated and interdependent nature of influences on sustainability (Amazigo and others, 2007, Goodson and others, 2001, Gruen and others, 2008, Humphreys, Wakerman, and Wells, 2006, Mancini, 2004). Authors concluded that there was a very human aspect to sustainability; role of leaders, social relations, and relationships among key decision-makers (LaFond, 1995c, Savaya, Spiro, and Elran-Barak, 2008, Sibthorpe, Glasgow, and Wells, 2005). For example, national political commitment for a certain programme does not guarantee on-going financing, and increased or solely national financing does not ensure sustainability (Bossert, 1990, Lafond, 1995a, Sibthorpe, Glasgow, and Wells, 2005).

Among external factors, several studies pointed out a key role of donors' investment policies. This was shown to be important in both high-income and low-/middle-income settings. In a low- and middle-income context, investment strategies that support vertical programmes and 'value for money' draw attention away from a unified strategy for health sector development, thus compromising sustainability in health sector (Lafond, 1995a). In the USA, instability of short-term funding and high expectations from funders created an impediment for developing comprehensive health promotion in the communities (Higgins, Naylor, and Day, 2008). Furthermore, uncertainty in funding negatively affects relations in complex organisations, creating tensions for sharing/competing for resources (Stroul and Manteuffel, 2007). In both settings, inflexibility in donors' funding and projects' implementation policies was found to be an impediment to sustainability (Ashwell and Barclay, 2010, Humphries, Gomez, and Hartwig, 2010, Israel and others, 2006, Wakerman and others, 2005).

CHAPTER SUMMARY

Contemporary understanding of sustainability in health systems is as a complex, multidimensional phenomenon. Common themes found in definitions of sustainability include meeting current needs and a vision for the future as relates to the well-being and health of a population, benefits for people in the health system, continuing public health impact of health interventions, maintaining structural or functional components of a health system or the health system overall. It has been acknowledged and understood that sustainability is difficult to conceptualise and study. The reasons include the complexities surrounding the sustainability phenomenon outlined earlier in this Chapter and the nature of sustainability (e.g. looking ahead,

long term). An approach proposed by Alexandre et al is to analyse sustainability by proxy fashion on the basis of observable characteristics, which are presumed to be precursors of sustainability (Alexandre and others, 2007). The systematic review of conceptual frameworks and empirical studies presented here suggests that such observable characteristics might be leadership, capacity, adaptability/flexibility, interactions and performance. Research indicates that notions of integration are components of a sustainability characteristic which I termed here as 'interactions'. A key finding, which was evident in this review, is that this notion has been defined differently. Next Chapter 4 provides an overview of the definitions and conceptual and analytical approaches to integration and health systems.

CHAPTER 4 INTEGRATION

INTRODUCTION

This chapter provides an overview of the definitions and conceptual approaches to the analysis of integration and health systems. I conducted an analysis of peer-reviewed literature on concepts, definitions, and analytical approaches to integration and health systems. The structured review included conceptual and/or analytical frameworks of integration (these included conceptual papers and empirical studies drawing on explicit conceptual frameworks), systematic reviews and meta-analysis of integration initiatives; and reviews (overviews) of conceptual or methodological approaches to integration. The detailed methodology of the literature review is presented in the Appendix 3 (A3.1, A3.2). Briefly, the literature search included searches of Medline [from 1980], Embase [from 1950] and the Cochrane library. The initial search was performed in December 2008 and updated in April 2010. The search was limited to the English language and papers accessible through the University of London library services. Bibliographies of selected papers were searched to identify further publications. The search strategy included key terms related to the concept of integration including 'integrat*', 'collaborat*', 'coordinat*', 'co-ordinat*', 'link*'. The search was restricted to MeSH and Emtree headings under 'delivery of health care, integrated', 'health services', and key terms 'health program*', 'health intervention*', 'health system*'. The search was then limited further to include terms 'measure*', 'framework*' and 'model*'.

The findings of this literature review have been published in a paper: Shigayeva A, Atun RA, McKee M, Coker R²⁴ 'Health systems, communicable diseases and integration', Health Policy and Planning, 2010, 25, Supplement 1: i4–20. This chapter presents the findings of the literature review as they appeared in the mentioned publication with minor modifications.

I begin this chapter with the theoretical background underlying the integration concept. I follow with an overview of definitions of integration in health systems and an analysis of conceptual frameworks identified in the literature search. I conclude the Chapter with a brief summary of the results of the identified systematic reviews on integration and health systems.

²⁴ Co-authors are Professor Richard Coker, PhD supervisor, and Professor Martin McKee, an advisory committee member. Professor Rifat Atun has been informal advisor who provided advice over the course of developing the conceptualization of integration applied in this thesis.

4.1. THEORETICAL BACKGROUND

The word *integrate* is used to express the bringing together or merging of elements or components that were formerly separate (Kodner and Spreeuwenberg, 2002), or to '*combine into a whole*', '*bring or come together into equal membership of society*' and '*complete by addition of parts*' (Wilson, 2003 citing the Australian Oxford dictionary).

4.1.1. Contingency theory

The notion of integration has its roots in organisational theory, particularly in contingency theory (Galbraith, 1973, Lawrence and Lorsch, 1967a, Lawrence and Lorsch, 1967b), a subset of open systems theory (Scott, 2002). Complex organisational systems are composed of separate but interconnected elements, which, in a functioning system, play complementary roles in the conduct of tasks in the pursuit of common aims and goals (Pfeffer, 1982). However, as systems become more complex and their surrounding environment more uncertain and unpredictable, systems typically segment into subsystems. Organisations, in response to demands and uncertainties in the environment, adapt by allowing more flexible structures, division of labour and responsibilities, factors that consequently can lead to segmentation of professional norms, attitudes, behaviours and interests of the organisation's members (Lawrence and Lorsch, 1967b). This might result in loss of effectiveness in implementing common tasks or inefficiencies. Increased differentiation thus, it is argued, requires implementation of integration, which was defined by Lawrence and Lorsch as '*the quality of the state of collaboration that exists among departments that are required to achieve unity of efforts by the demands of the environment.*' However, since differentiation also allows organisations to achieve their goals, according to these authors, most successful organisations are those that can effectively balance differentiation and integration. This challenge in finding a balance between differentiations in roles, occupations, and responsibilities, and a need for integration and coordination that encourages people to work together effectively and efficiently towards a larger organisational mission, highlights one of the fundamental tensions identified in organisational theory and practice (Jaffee, 2001).

4.1.2. Inter-organisational relationships

Similar tensions between integration and differentiation (or specialisation) have been described in the theoretical and empirical literature on inter-organisational relations (Jaffee, 2001). Inter-organisational relations have long been a topic of interest in a variety of disciplines including

organisational theory, organisational behaviour, strategic management, economics, sociology, and political sciences (Aldrich, 1979, Benson, 1975, Galaskiewicz, 1985, Oliver, 1990, Smith, Carroll, and Ashford, 1995, Whetten, 1981). Research of inter-organisational relations is concerned with interactions, including factors determining these interactions, which occur among or between organisations, and the environment (Jaffee, 2001, Oliver, 1990). The theoretical developments are vast and have different facets. I did not aim for a detailed analysis of the literature on inter-organisational relations, limiting this to overviews in order to highlight how integration is understood in this literature.

As a result of changes in the social division of labour, economic specialisation and differentiation (or with increased system's complexity), there is increasing interdependence among increasingly specialised organisations and the respective resources they control (Jaffee, 2001). People in organisations typically pursue their own or their organisation's interests, which may or may not coincide. New demands, limitations in resources, competition, needs to control environmental uncertainty or increases in an organisation's influence or legitimacy create conditions for forming relations with other organisations (Galaskiewicz, 1985, Oliver, 1990).

Often formation and maintenance of inter-organisational relations are explained from theoretical perspectives of resources dependency (Aldrich, 1979, Pfeffer, 1982) and power-based theories (Benson, 1975, Pfeffer and Salancik, 1978, Provan, Beyer, and Kruytbosch, 1980) that explain inter-organisational dependencies created by the need of all organisations to control and/or acquire scarce resources. Agency theory and institutional theory were applied to explain relational trust based on motives of mutual benefits rather than organisational individualism (Alter and Hage, 1993), or problems of joint working associated with resource sharing, political turf battles, or regulatory differences (Provan, Beyer, and Kruytbosch, 1980).

Broadly, formation of inter-organisational relations can be mandated (through legal or regulatory mechanisms, or by means of organisational hierarchy), be driven by market forces, or based on mutual trust and reciprocity (Oliver, 1990). These forces are not mutually exclusive. Inter-organisational relationships have a potential to result in domination, overtly or covertly, of one organisation over another, or control by one organisation over another's resources. An alternative relationship, based on reciprocity and trust, may result in inter-organisational relations that are characterised by cooperation, collaboration, and coordination (rather than domination, power, and control), working together towards common interests or mutually beneficial goals (Huxham and Vangen, 2000, Oliver, 1990).

Organisations are, however, abstract constructs; interactions between organisations '*only emerge, grow and dissolve as a consequence of individual activities*' (Ring and Ven, 1994). Even when inter-organisational relationships are formed based on trust, the longevity and success of collaborative efforts is largely determined by interactions between individuals, their individual roles, interests, and intentions (Hudson and others, 1999, Huxham and Vangen, 2000, Smith, Carroll, and Ashford, 1995).

4.1.3. Health systems and inter-organisational relationships

In contrast to the corporate sector, whose ultimate goal is to make a profit, the goals of the health system are more complex (Hsiao, 2003, Murray and Frenk, 2000). The strategic goals of health systems are often defined as balancing gains in population health, social and financial risk protection, and consumer or patient satisfaction (Atun and Menabde, 2008 -b, de Savigny and Adam, 2009, WHO, 2000) through intermediate goals of equitable access and coverage, choice, efficiency and effectiveness (Hsiao, 2000, McPake and Kutzin, 1997).

Health systems are organisationally complex. Functions include, amongst others, planning, governance, administration, finance, and service delivery. Clinical care, public health and social services are provided by multiple actors, including state agencies, non-governmental organisations (including international), donor organisations, community groups and lay health workers, family members, and private enterprises (Atun and others, 2005b, Frenk, 1994). Moreover, health organisations, programmes, groups, and individuals within health systems are increasingly interdependent in their use of funds, human resources, knowledge, skills and technologies (Axelsson and Axelsson, 2006, Lasker, Weiss, and Miller, 2001).

Although market forces are important in many health systems, connections between stakeholders (organisations or individuals) working on health issues are often characterised by consensus building, shared values and a shared philosophy concerning common problems rather than market imperatives. This consensual manner of working does not exclude competitive relations or power struggles, however (Alter and Hage, 1993, Axelsson and Axelsson, 2006, Contandriopoulos and others, 2003, Rodríguez and others, 2007).

Thus, the concept of integration in public health systems is intrinsically related to notions of cooperation, collaboration, partnerships and coordination (Axelsson and Axelsson, 2006, Bolland and Wilson, 1994, Horwath and Morrison, 2007, Lasker, Weiss, and Miller, 2001, Lehman and others, 2009). In fact, the terms 'coordination', 'collaboration', 'alignment', or

'networks' are often used interchangeably with the term 'integration' in the health systems and health services research literature (Table 4.1).

Given the complexity of contemporary health systems, they are increasingly being viewed as complex adaptive systems (Atun and Menabde, 2008 -b, de Savigny and Adam, 2009, Frenk, 1994, Plsek and Greenhalgh, 2001) or complex socio-cultural-political systems (Atun and others, 2006a, Blaauw, 2003, McDaid and others, 2006). This view of systems acknowledges the social nature of organisations, that the goals, roles, interests, intentions, power-relations, and behaviours of actors within these systems are of critical importance, and so too are their interactions as individuals and the groups (whether formal or informal) they inhabit, be they individual health care workers, patients, policy-makers, donors, patients' groups, bureaucrats and administrators, or politicians (Blaauw, 2003, Frenk, 1994). Individual goals of patients and health care workers do not necessarily match aims of health policies. Underpaid and overworked staff often see health systems as means of their own survival, and are less likely to behave in the interest of overall organisational aims (Franco, Bennett, and Kanfer, 2002, McPake and others, 1999, Schneider and others, 2006). With the introduction of innovations or establishment of collaborative approaches, professionals are often reluctant to lose professional autonomy and independence, status, potentially income and respect from patients (Atun and others, 2005a, D'Amour and others, 2008). There is now recognition that for building successful collaborative and integrative approaches in health system; the local social and political culture, informal relations between providers and patients, providers, employers, and policy makers should be understood and addressed (Atkinson, 2002, Gilson, 2003, Horwath and Morrison, 2007, Hudson, 2002, Johnson and others, 2003, Schneider and others, 2006, van Raak, Mur-Veeman, and Paulus, 1999).

4.2. DEFINITIONS AND PERSPECTIVES

The published literature reveals a wide range of concepts of integration in health systems (Atun, Bennet, and Duran, 2008, Axelsson and Axelsson, 2006, Kodner, 2009, Nolte and Mckee, 2008, Suter and others, 2007). Health systems differ in governance arrangements, regulatory norms, managerial rules and funding flows, professional skill-mix, political, institutional and professional structures, and cultural values. The notion of integration has been pursued in many ways in different health systems (Nolte and McKee, 2003). There is a wealth of terminology such as 'integrated care', 'integrated services', 'horizontal programmes', 'disease management', 'case management', 'continuity of care', 'coordinated care', 'managed care', 'comprehensive care', and 'seamless care' to name a few (Atun, Bennet, and Duran, 2008, Kodner, 2009, Nolte

and Mckee, 2008). Table 4.1 highlights some of the definitional issues surrounding a few of these terms.

This lack of a commonly adopted definition and the variety of approaches taken to analyse integration has been referred to as an ‘academic quagmire of definitions and concepts analysis’ (Howarth and Haigh, 2007). However, recent empirical studies reveal integration to be polymorphous by nature (Atun and others, 2010b, Nolte and Mckee, 2008). Those from different disciplines and professions understand the term differently. I present below three commonly used concepts identified in the integration literature, namely ‘integrated care’, ‘disease management’, and ‘continuity of care’.

Integrated care

Exploring the application of the ‘integrated care’ concept to health and social care in industrialised countries, Leichsenring (2004) distinguished discourses that evolved either from health care perspectives (‘managed care’ and ‘public health’ discourses) or from social services perspectives that focused on broader whole system approaches (‘person-centred’ discourses). Complementing these perspectives, Leichsenring also explores ‘institutional discourse’, which focuses on organisational strategies to realise integration and/or coordination of services (Leichsenring, 2004). For example (as noted by Leichsenring), the WHO European Regional Office defines integration from a health care perspective as: *‘a concept of bringing together inputs, delivery, management and organisation of services related to diagnosis, treatment, care, rehabilitation and health promotion. Integration is a means to improve services in relations to access, quality, user satisfaction and efficiency’* (Grone and Garcia-Barbero, 2001). Definitions within a public health discourse (or ‘person-centred’ view) put an emphasis on integration between primary and secondary care including social service delivery: *‘the goal of [integration] is to enhance quality of care and quality of life, consumer satisfaction and system efficiency for patients with complex, long term problems, cutting across multiple services, providers and settings’* (Kodner and Spreeuwenberg, 2002). As noted by Nolte and McKee (2008), boundaries across these discourses are ambiguous, because of differences across industrialised countries in health systems arrangements and responsibilities for financing and health and social services delivery.

Table 4.1 Selected definitions of integration, and related concepts and terms

Concept	Definition (Authors)
Integration	<p>‘...a process where disease control activities are functionally merged or tightly coordinated with multifunctional health care delivery.’ (Unger, De Paepe, and Green, 2003)</p> <p>‘...a search to connect the health care system (acute, primary medical, and skilled) with other human service systems (long-term care, education, vocational and housing services) in order to improve outcomes (clinical, satisfaction, efficiency). (Leutz, 1999)</p> <p>‘...a process that involved creating and maintaining, over time, a common structure between independent stakeholders (and organizations) for the purpose of coordinating their interdependence in order to enable them to work together on a collective project.’ (Contandriopoulos and others, 2003)</p>
Integrated care	<p>‘...is a concept bringing together inputs, delivery, management and organization of services related to diagnosis, treatment, care, rehabilitation and health promotion....is a means to improve the services in relation to access, quality, user satisfaction and efficiency.’ (Grone and Garcia-Barbero, 2001)</p>
Integrated delivery networks	<p>‘A network of organizations that provides and arranges to provide a coordinated continuum of services to a defined population and is willing to be held clinically and fiscally accountable for the outcomes and the health status of the population served.’ (Shortell, Gillies, and Anderson, 1994)</p>
Integrated health services	<p>‘process of bringing together common functions within and between organizations to solve common problems, developing a commitment to shared vision and goals and using common technologies and resources to achieve these goals.’ (WHO, 1996)</p>
Disease management	<p>‘...is a systematic, population-based approach involving identification of people at risk of a particular disease, intervention throughout the condition’s life cycle, and the packaging and management of treatments and services across the entire care and disease spectrum in order to achieve better and more cost-effective health outcomes.’ (Kodner, 2009)</p> <p>‘An approach to patient care that emphasises coordinated, comprehensive care along the continuum of disease and across health care delivery systems’ (Ellrod and others, 1997)</p>
Partnership	<p>‘...encompass all types of collaboration (consortia, coalitions, alliances) that bring people and organizations together to improve health.’ (Lasker, Weiss, and Miller, 2001)</p>
Continuity of care (<i>continuum of care</i>)	<p>‘is achieved by bridging discrete elements in the care pathway—whether different episodes, interventions by different providers, or changes in illness status—as well as by supporting aspects that endure intrinsically over time, such as patients’ values, sustained relationships, and care plans.’ (Haggerty and others, 2003)</p>
Coordinated care (<i>case management</i>)	<p>‘...system-wide efforts and/or specific policies to ensure that patients—particularly those with chronic conditions—receive services that are appropriate to their needs and coherent across care settings and over time.’ (Hofmarcher, Oxley, and Rusticelli, 2008)</p>

Disease management

Another key concept related to integration is *disease management*, which concerns management of chronic conditions. Nolte and McKee (2008), in their analysis of relevant concepts, found that views on disease management evolved from focusing on a single chronic condition (focus on a disease) to a population-based approach with a focus on addressing multiple needs of patients with co-morbidities. The later views on disease management include notions of coordination, continuity and comprehensiveness, which in large extent overlap with the concept of integrated care (Nolte and McKee, 2008). For example, Ellrodt et al define disease management as: '*an approach to patient care that emphasises coordinated, comprehensive care along the continuum of disease and across health care delivery systems*' (Ellrodt and others, 1997).

Continuity of care

Continuity of care (or continuum of care) is often used interchangeably with notions of integration. Defined differently, continuity of care in general relates processes by which patients experience cohesiveness and connectedness of the health system (Haggerty and others, 2003). Continuity of care '*is achieved by bridging discrete elements in the care pathway—whether different episodes, interventions by different providers, or changes in illness status—as well as by supporting aspects that endure intrinsically over time, such as patients' values, sustained relationships, and care plans*' (Haggerty and others, 2003). Views on continuity of care encompass several aspects such as patient's experience in receiving care, provision of care over time, relationships with providers, relationships between different care levels, information and communications exchanges between providers and patients, and across providers (Haggerty and others, 2003, Kodner, 2009).

4.3. CONCEPTUAL FRAMEWORKS FOR THE ANALYSIS OF INTEGRATION

Reflecting the diversity of approaches to integration, there are a number of conceptual and analytical frameworks that have been developed specifically for a particular health care or contextual setting. The search identified 41 conceptual frameworks relating to integration and 13 implementation frameworks offering roadmaps for the establishment of integrated programmes, services or system (Appendix 3, A3.3.). I have not identified a unifying framework for *analysis* of integration initiatives, though frameworks exist to address specific research questions.

A variety of different typologies of integration in health systems exist (Armitage and others, 2009, Atun and others, 2010a, Axelsson and Axelsson, 2006, Colombini, Mayhew, and Watts, 2008, Delnoij, Klazinga, and Glasgow, 2002, Kodner, 2009, MacAdam, 2008, Nolte and Mckee, 2008, Simoens and Scott, 2005, Sobczak, 2002, WHO, 1996), including the concept of integration and communicable disease programmes (Grepin and Reich, 2008, Mills, 1983, Sylla and others, 2007, Unger, De Paepe, and Green, 2003, Wang and others, 2007). Existing typologies can be summarised in terms of how they address three questions: *why* integration is desirable, *what* structures and/or functions at different levels of the health system are affected by integration (or lack thereof), and *how* integration influences interactions between health system components or stakeholders.

The '*why*' of integration asks about the driving forces or the purposes of integration. Ultimately, integration is a response to real or perceived fragmentation of functions and services for users, to gaps, duplication, inefficiencies, or to concerns about growing costs or changing population' demands and expectations (Grone and Garcia-Barbero, 2001, Kodner, 2009).

The '*what*' of integration includes questions that relate to the *structures and/or functions* at different levels ranging from the overall health system, specific programmes and interventions, and individual and institutional stakeholders (Atun and others, 2010a, Contandriopoulos and others, 2003, Delnoij, Klazinga, and Glasgow, 2002, Grepin and Reich, 2008, Kodner, 2009, Kodner and Spreeuwenberg, 2002, Mills, 1983, Nolte and Mckee, 2008, Simoens and Scott, 2005, WHO, 1996). The subjects of integration include structures and processes of governance, financing, policy, management and administration, service delivery, clinical care, demand generation, and information systems (Atun and others, 2010a, Kodner and Spreeuwenberg, 2002). The *what* of integration also includes notions of convergence of institutional or professional cultures, norms, working methods, approaches and symbols adopted by various stakeholders, taking account of their power, interests and objectives (Fabbricotti, 2007).

The '*how*' of integration refers to the dynamic interactions between organisations, programmes, individual providers, and/or stakeholders (Atun and others, 2010a, Boon and others, 2004, Fletcher and others, 2009, Grepin and Reich, 2008, Horwath and Morrison, 2007, Kodner and Kyriacou, 2000, Leutz, 1999, Simoens and Scott, 2005, Sylla and others, 2007, Wang and others, 2007). These interactions include efforts to enhance joint working such as building strategic or contractual alliances, regulations, merging service delivery, establishing multidisciplinary teams, creating service networks, and developing coordination mechanisms.

Connections between organisations can occur within a geographical space, at international, national, regional/district, or local levels (Atun and others, 2010a, Grepin and Reich, 2008, Mills, 1983). Authors also discuss the breadth of integration. Horizontal integration involves integration of organisations or providers working at the same level of the hierarchy (for example, among hospitals), and vertical integration refers to integration across different levels of the service delivery hierarchy (for example, between hospitals and primary care facilities) (Axelsson and Axelsson, 2006, Kodner, 2009, MacAdam, 2008, Nolte and Mckee, 2008).

There is an emerging acknowledgement that integration in health systems and the benefits that may accrue are, to a considerable extent, dependent upon the characteristics of different health systems and the wider context within which they are situated (Atun and others, 2010b, Atun and others, 2010c, Friedland, Harries, and Coetzee, 2007, Gyapong and others, 2010, Nolte and Mckee, 2008, Okot-Chono and others, 2009, Van Damme and Kegels, 2006). Particularly important are the role of key political stakeholders and decision-makers, and their commitment, support and willingness to work together to resolve conflicts and provide leadership in advocating, designing, implementing and maintaining integration initiatives (Atun and others, 2005b, Mur-Veeman and others, 2003, van Raak and others, 2005, van Raak, Mur-Veeman, and Paulus, 1999).

I reviewed these various frameworks, asking whether they reflect the questions of the why, what, and how of integration, as well as the extent to which they acknowledged health system characteristics, the wider contextual environment and the roles of key stakeholders. I did not find any one framework that explicitly addressed all of these parameters. Appendix 3 (A3.3.) summarises selected frameworks.

All the frameworks reviewed address questions associated with the *what* of integration. Publications exploring integration in high-income countries contributed disproportionately to conceptualising the dynamics of interactions (the *how* of integration) between previously separate components of the health system. Several authors conceptualised integration along a continuum of inter-organisational relationships, with increasing intensity in interactions, formalisation of governance arrangements, sharing of responsibilities, or pooling of resources. Integration is viewed by most as a transformative change that may lead to a complete merger of organisations or a formalised collaboration of systems of governance, accountability, or service delivery, often involving resource pooling (Axelsson and Axelsson, 2006, Boon and others, 2004, Fleury, 2006, Konrad, 1996, Leutz, 1999, Messeri, Kim, and Whetten, 2003, Sylla and others, 2007). Formal and structured interactions on such continuums are labelled as, for example, linkage, coordination, cooperation, or collaboration (though they may be defined

and/or ranked differently). Some authors argue that more complex, long-term or unstable and fluctuating problems requiring multiple complex interventions may benefit from greater integration (Fleury, 2006, Leutz, 1999, Messeri, Kim, and Whetten, 2003). Coordination is often viewed as involving some degree of managerial oversight (Axelsson and Axelsson, 2006), whilst collaboration, partnerships, and cooperation are more commonly understood to be built upon mutual agreements, with formalised arrangements following if common goals are agreed (Axelsson and Axelsson, 2006, de Rijk, van Raak, and van der Made, 2007, Konrad, 1996, Lasker, Weiss, and Miller, 2001, Weiss, Anderson, and Lasker, 2002).

Several frameworks identified focus either on collaboration, partnerships, or cooperation as types of interactions within an overall rubric of health system or programme integration initiatives (Brazil and others, 2004, D'Amour and others, 2008, de Rijk, van Raak, and van der Made, 2007, Horwath and Morrison, 2007, Lasker, Weiss, and Miller, 2001, van Raak and others, 2005, van Raak, Mur-Veeman, and Paulus, 1999). These considered explicitly the role of key actors and stakeholders, their influences and interests, as well as factors in promoting and sustaining cooperation or collaboration.

The review identified only one analytical framework (Atun and others, 2010) that builds on a clearly outlined conceptual framework of health systems and explicitly takes into account the role of key stakeholders, health system functions, and the broader context. In analysing the level, nature and extent of integration, the framework appropriately categorises integration of targeted programmes into health systems along a continuum from fully integrated to partially integrated and not integrated, but the question of 'how' partial integration occurs is not explored in detail. The majority of the conceptual papers reviewed outline the purpose of integration overall [the *why* of integration], but only a few analytical frameworks consider the intermediate and/or final outcomes or consequences of integration (Provan and Milward, 2001, Vazquez and others, 2009, Wan and Wang, 2003).

4.4. SYSTEMATIC REVIEWS ON INTEGRATION IN HEALTH SYSTEMS

I identified 16 systematic or structural reviews on integration in health systems, and examined the benefits of integration. These reviews examine integration in health systems in high-income countries (Bodenheimer, Wagner, and Grumbach, 2002, Butler and others, 2008, Hesse and others, 2007, Ouwens and others, 2009, Ouwens and others, 2005, Soto, Bell, and Pillen, 2004, Suter and others, 2007, Weingarten and others, 2002, Willenbring, 2005) or low- and middle-income countries (Atun and others, 2010b, Bhutta and others, 2008, Briggs and Garner, 2006, Church and Mayhew, 2009, Dehne, Snow, and O'Reilly, 2000, Lewin and others, 2008,

Wallace, Dietz, and Cairns, 2009), and identify a paucity of evidence that convincingly demonstrates that integration improves access to care, service quality, programme efficiency or effectiveness. There is no evidence to suggest a positive impact on equity of outcomes. This lack of evidence may be due to the complex nature of integration, which is clearly multifaceted and complex (Howarth and Haigh, 2007, Nolte and Mckeek, 2008).

CHAPTER SUMMARY

In summary, despite the diversity of views and definitions, the review of the literature in my study suggests that, broadly, integration is viewed positively in relation to health systems. Common themes found in definitions are suggestions that integration reduces fragmentation or duplication of services, improves patient care outcomes and results in greater satisfaction with services, offers benefits to overall population health, and improves the performance of health systems, their programmes and services (Table 4.1). There is a diversity of analytical approaches to integration in different health systems. It appears that integration in a health system is a multidimensional notion, which can encompass at least three key questions: *why* integration is desirable, *what* structures and/or functions at different levels of the health system are affected by integration (or lack thereof), and *how* integration influence interactions between health system components or stakeholders.

The review presented in this chapter served as a background for defining a concept of integration and health systems for this study. The next chapter presents the conceptual framework for analysis that was applied in this study.

CHAPTER 5 SUSTAINABILITY OF A COMMUNICABLE DISEASE PROGRAMME: A CONCEPTUAL FRAMEWORK FOR ANALYSIS

INTRODUCTION

This chapter presents a conceptual framework for the analysis of the sustainability of a communicable disease programme. In the development of this framework I draw on:

- (i) A conceptual framework for analysis of a communicable disease programme and a health system (Atun and others, 2004, Coker, Atun, and McKee, 2004a). Building upon Pawson and Tiley (1997), the authors proposed a conceptual and analytical approach to the analysis of a communicable disease programme and health system. Pawson and Tiley (1997) proposed that social regularities (e.g. outcomes, patterns, associations) are brought about by the actions of underlying mechanisms (e.g. choices that social actors make, resource capacity available to them) acting in a social context. According to Atun and others (2004), underlying mechanisms that can explain why a disease control programme works, for whom and in what circumstances lie within inter-dependent programmatic and health system arrangements²⁵.
- (ii) Theoretical perspectives on sustainability of complex adaptive systems (Fiksel, 2003, Fiksel, 2006, Folke, 2006, Kemp, Parto, and Gibson, 2005) and a systematic review of conceptual approaches to and empirical studies on sustainability in health systems (Chapter 3). Based on these, I propose a conceptualisation of the sustainability of a disease control programme. The concept is presented in section 5.1. 'Sustainability of a communicable disease programme' of this chapter.
- (iii) Conceptualisation of integration in a health system²⁶, which is a part of this PhD. I draw on the review of integration in health systems presented in Chapter 4. I extended the conceptualisation of integration in health system that has been proposed previously by Atun, Ohir, and Adeyi (2008) in their conceptual framework for analysis of the integration of targeted interventions into health systems.

²⁵ The explanatory mechanisms, according to Atun and others (2004) and Coker, Atun and McKee (2004a), might include, for example, adoption of innovative policy by stakeholders, budget sharing between programmes, providers' payment mechanisms and incentives structure or organization of service delivery.

²⁶ Shigayeva A., Atun R., McKee M., Coker R., Health systems, communicable diseases and integration, Health policy and Planning, 2010, supplement November.

I begin the chapter by providing a brief background²⁷, a normative definition of sustainability of a communicable disease programme and a proposed conceptualisation of sustainability. I then present a conceptual framework for analysis that has been developed and applied for exploring the sustainability of TB and HIV/AIDS programmes in the case in Kyrgyzstan.

5.1. SUSTAINABILITY OF A DISEASE CONTROL PROGRAMME

Disease control programmes, which are established with the purpose of controlling a communicable disease, are components of health systems. In this research, health systems are viewed as complex adaptive systems (Checkland, 1981, Plsek and Greenhalgh, 2001). This view of health systems emphasises the social nature of organisations, that the goals, roles, interests, intentions and behaviours of actors (individuals or groups), and their interactions, within systems are of critical importance (Frenk, 1994, Blaauw, 2003). Health systems are embedded within a broader context comprising a set of critical interacting functions that include governance, financing, planning, service delivery and evaluation, and which are designed to achieve specified objectives (Atun and Menabde, 2008 -b) Fundamental goals of the health system are increased health, protection from financial risk, and responsiveness to users (Frenk, 1994, Hsiao, 2003, WHO, 2000), while intermediate goals include equity, efficiency, choice and effectiveness (Atun and Menabde, 2008 -b).

Control of communicable diseases of public health importance requires long-term efforts, unless transmission in humans has been interrupted or a pathogen has been eliminated globally (Dowdle, 1998, Fine, Oblapenko, and Sutter, 2004, Heymann, 2006, Moss, 2009, Noordeen and others, 1996). Disease epidemics evolve as a result of complex relations among pathogens, social, ecological and broader economical and political systems. Complex adaptive systems constantly change and adapt in response to internal and external factors (Atun and Menabde, 2008 -b, Plsek and Greenhalgh, 2001). These factors might include, for example, changes in a population's health, introduction of innovations, changes in a domestic political, or in global or national economic, environment. Systems operate in environments where uncertainty, risks and surprises are unavoidable. Propositions from complex systems theories suggest that a system's resilience is a system property, which is essential for the system's sustainability (Holling, 2001, Mayer, 2008). Resilience of complex adaptive systems is interpreted as an ability of a system to withstand disruptions or pressures whilst maintaining essential functions and performance; and to continuously renew, innovate and improve (Fiksel, 2003, Fiksel, 2006, Folke, 2006).

²⁷ Detailed background is presented in Chapters 3 and 4.

Drawing on the abovementioned theoretical propositions (Fiksel, 2003, Fiksel, 2006, Folke, 2006), I define a sustainable communicable disease programme as continuously effective in reducing a disease problem, and responsive and adaptive to changes in the nature of disease epidemics (actual or perceived), population needs, or contextual environment. In this definition, the *what* of sustainability (i.e. what should be sustained) is a continued reduction of a communicable disease problem, which includes interruption of infection transmission and reduction of morbidity and mortality associated with an infection or a disease.

Sustainability is inherently a multidimensional phenomenon (Greenhalgh, Kyriakidou, and Peacock, 2004, Gruen and others, 2008, Shediac-Rizkallah and Bone, 1998). This notion is difficult to conceptualise and explore empirically, particularly because it concerns a future state. In conceptualizing the sustainability of a programme, I follow an approach by Alexandre and others (2007). The authors suggested an analysis of sustainability by proxy on the basis of observable capabilities or characteristics, which are presumed to be precursors of sustainability. Drawing on the review of existing conceptualisations of sustainability of a health programme (or a health organisation) and empirical studies (Chapter 3), I propose five interrelated characteristics of a programme: (i) leadership, (ii) capacity, (iii) adaptability (or flexibility), (iv) interactions, and (v) performance, that are viewed in this research as precursors of programme sustainability. I extend the framework by Atun and others (2004), proposing that these five precursors of sustainability are underlying mechanisms that can explain why a disease control programme is likely to be sustainable or not.

In the following sub-sections, I provide definitions of each characteristic as has been viewed in this research. These are also summarised in Box 5.1.

5.1.1. Leadership

Leadership refers to the capability of a programme's actors to lead, govern, and manage. In a sense, these capabilities are a unifying force that energizes all other aspects of the programme's sustainability. Leadership is viewed as social processes occurring among individuals, groups and organisations, which are concerned with motivating and influencing people towards goal settings and achieving these goals (Hartley and Benington, 2010, Hartley and Hinksman, 2003). Leadership concerns the willingness and ability of actors to commit to disease control efforts; have a clear and long-term vision for disease control efforts, gain political and financial support, build a programme's credibility, build trust and engage with various stakeholders, mobilise resources and implementation efforts, taking ownership of reforms and innovations.

5.1.2. Capacity

Capacity is defined as managerial, technical, financial, physical (organisational structures), communication and human resources capabilities, which enable a programme to function over time (LaFond, Brown, and Macintyre, 2002). These include both structures (resources) and processes involved in generating, allocating, maintaining and evaluating the use of resources. Important for sustainability is maintenance of resources over time and ability to operate effectively with modest consumption of resources (i.e. efficiency). As with other authors, I view financial resources as critical for a programme's sustainability (Lafond, 1995a, Mancini, 2004). Stable and long-term funding is important for addressing complex or chronic health conditions (Nilsen and others, 2005, Stevens and Peikes, 2006), but of critical importance for sustainability is efficient use of funds and regular assessment of present and future financial needs (Higgins, Naylor, and Day, 2008, Knippenberg and others, 1997, LaFond, 1995b, Mancini, 2004, Torpey and others, 2010).

5.1.3. Flexibility (adaptability)

This characteristic of sustainability is defined as the willingness and ability of actors to adapt or change disease control strategy (strategic objectives and priorities), policy (strategy, legislation, regulations), or a programme's structures or functions (e.g., approaches to funds mobilisation, resource allocation mechanisms, service provision, re-training of personnel, reporting and evaluation approaches) in response to external pressures, changes in nature of a disease or introduction of innovations. This aspect of sustainability also refers to openness to innovations, and capabilities to incorporate innovations into routine programme practices, moving innovations beyond a pilot stage and expanding their implementation in order to improve the programme's performance.

5.1.4. Interactions

Interactions refer to ability and willingness of actors to establish and maintain key connections and relationships, both inside and outside the programme. This characteristic relates to the notion of integration as conceptualised in this PhD research. Drawing on theoretical perspectives on the sustainability of complex adaptive systems (Fiksel, 2003, Fiksel, 2006, Folke, 2006, Kemp, Parto, and Gibson, 2005), and assessment of conceptual and empirical literature on sustainability (Chapter 3) and integration (Chapter 4), I propose that integration, as a concept, is one of the characteristics (i.e. dimensions) of sustainability. In conceptualizing

integration in health systems, I extend a framework by Atun and others (2008) by drawing on literature on inter-organisational relations in social and health services (Kodner and Kyriacou, 2000, Konrad, 1996, Leutz, 1999).

In this research, integration (as a concept) is defined as the structures and functions (i.e. the *what* of integration) associated with establishing and sustaining a health system and its components in order to ensure effective, efficient and equitable use of resources (i.e. the *why* of integration). There is a range of functional (and structural) relationships across a continuum. In this study, these interactions (i.e. the *how* of integration) between programmes (or a programme and other health system component) range from no formal interactions, linkage, coordination and full integration. This characteristic relates to the presence of interactions with other actors and programmes in a system to avoid areas of vulnerability in resources, managerial or technical expertise, service delivery or information (Baum and others, 2006, Greco and Simao, 2007, Greenhalgh and others, 2005, Nelson and others, 2007, Scheirer, 2005). This notion relates to the evolution of a programme as a coherent component of a health system, in which programmes contribute to achievement of the overall system's goals of effectiveness, efficiency, equity.

5.1.5. Performance

Performance refers to the capability of a programme to operate effectively, equitably and efficiently in order to increase the likelihood of reducing a *disease problem*. This aspect of sustainability relates to the *what* of sustainability (i.e. outcomes), which is understood in this research as interruption of disease transmission and reduction of mortality and morbidity associated with infection/disease. Thus important for sustainability is the presence of monitoring and evaluation systems that can provide sound measurements of the programme's (or its intervention's) effectiveness, efficiency and equity.

5.2 A FRAMEWORK FOR ANALYSIS

Empirical evidence suggests that the five characteristics of a programme outlined above are context-specific and emerge as a result of dynamic relations among several factors. Broadly, these factors are the nature of a communicable disease both actual and perceived, structural and functional arrangements of a communicable disease programme and a health system, individual and institutional roles of various stakeholders, and the political, economic and social contexts (Atun, Ohiri, and Adeyi, 2008, Atun and others, 2004, Atun and others, 2005b, Atun and others, 2005e, Gruen and others, 2008, LaPelle, Zapka, and Ockene, 2006, Sibthorpe, Glasgow, and Wells, 2005).

In this thesis I propose that several factors and inter-relationships among them enable or impede the existence and/or actions of the five programme characteristics (precursors for sustainability) on delivery of disease control interventions. The framework for the analysis of has the following key elements:

- *a communicable disease problem*
- *a disease control programme*
- *actors*
- *a health system*
- *a context.*

The framework comprises the following key relations and influences:

- *interactions between health system components,*
- *political economy* (relations among actors and their influences on a programme),
- *input/output* (influences of a programme on a disease problem).

A schematic presentation of the framework as applied for the analysis of TB and HIV/AIDS programmes is presented in Figure 5.1. In the following narrative, I outline how sustainability characteristics relate analytically to the framework components (summarised in Box 5.1).

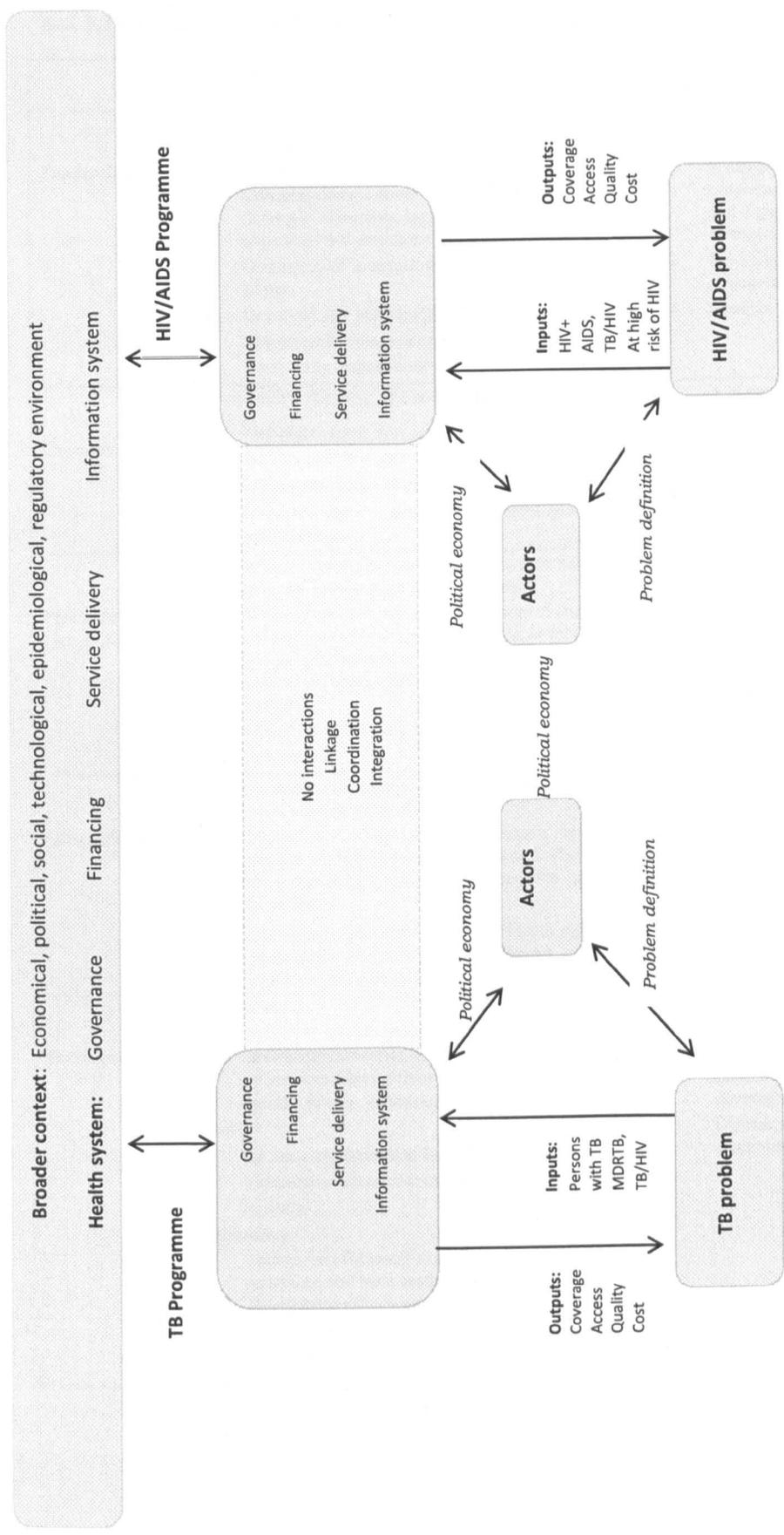


Figure 5.1 Framework for analysis

Modified from Atun and others, 2004, Atun and others, 2008, Gruen and others, 2008

Box 5.1 Programme's characteristics for assessing sustainability

	Explanation/Indicators	Elements of the analytical framework
Leadership	<ul style="list-style-type: none"> • A broad, clear, long term strategic vision for disease control efforts; • Coherent disease control policy framework (strategic objectives, legislation), lack of competing objectives and priorities; • Ownership of innovations/reforms by domestic actors; • Devolved and participatory decision making, consensus building among various stakeholders involved in disease control efforts. 	<ul style="list-style-type: none"> • Actors, political economy • A disease control programme (governance and organisational arrangements) • Health system's arrangements • Context
Capacity	<p>Availability, planning, use and evaluation of:</p> <ul style="list-style-type: none"> • Funding • Service infrastructure • Human resources, drugs and medical technologies • Informational system technologies and infrastructure. 	<ul style="list-style-type: none"> • A disease control programme • Health system's arrangements • Context
Flexibility <i>[adaptability]</i>	<p>In response to changing demands/needs, external pressures or introduction of innovations:</p> <ul style="list-style-type: none"> • Willingness and capabilities of actors to change disease control strategy or priorities, or modify overall processes of resources planning and allocation, organisation of service delivery, M&E system • Openness to learning and orientation towards innovations 	<ul style="list-style-type: none"> • Actors, political economy • A disease control programme • Health system's arrangements • Context
Interactions	<p>Establishment and maintenance of relationships, both inside and outside the programme:</p> <ul style="list-style-type: none"> • Interactions within the programme's institutions/organisations in order to maintain and efficiently use the programme's resources and improve capabilities to perform • Interactions with actors and other health system components to ensure effective efficient, and equitable use of resources 	<ul style="list-style-type: none"> • Interactions between health system's components • Health system arrangements • Context
Performance	<p>Effectiveness:</p> <ul style="list-style-type: none"> - sufficient service (interventions) coverage; - accessible, available, timely and convenient to users of services interventions; - quality of care, efficacious and safe interventions; <p>Equity:</p> <ul style="list-style-type: none"> - the same opportunities for access and quality of care irrespective of social status, gender, or geographic location <p>Efficiency:</p> <ul style="list-style-type: none"> - Allocative efficiency – maximisation of health outcomes and least costly mix of interventions; - Operational efficiency – maximum possible quantity of a specific output for a given level of expenditure (that is producing at lowest unit cost, or maximisation of health outcome at a given cost) 	<ul style="list-style-type: none"> • Inputs – scope of TB epidemic, patients needs • Output - cost, quality, coverage, access • Disease surveillance, M&E evaluation system

5.2.1. A communicable disease problem

A communicable disease problem refers to the nature of an infection or a disease caused by a pathogen, character of transmission, and scope and magnitude of an epidemic. A disease problem also relates to its changes such as the emergence of drug resistance or co-epidemics with other health conditions. In the framework, persons at risk of infection, infected or with disease²⁸ are considered *as inputs* into a programme (Figure 5.1). The character of a disease problem informs necessary interventions, service coverage and resources, the need for introducing innovations (if/when available) or rapidity of response (in case of rapidly spreading new strain/disease). Whether and how a programme and the health system within which it is situated influences *a disease problem*, specifically whether they impact beneficially on improving coverage, access, quality, and reducing cost (*outputs* in Figure 5.1), and consequently reducing the disease problem (that is whether the programme is capable of *performing* effectively, equitably and efficiently), depend on many factors outlined below.

5.2.2. A disease control programme

Following Murray and Frenk in their definition of a health system (Murray and Frenk, 2000), I define a *disease control programme* as comprised of all organisations and individuals, whose purpose and activities are principally directed towards the prevention and control of a *disease problem*. For the purposes of this research, I conceive of a programme having four formal components outlined below. Each component has structural and functional elements (Table 5.1). This view of a health programme echoes the conceptualisation provided by Atun and others (2004). Programme's components assessed in this research are:

- (i) *Governance*, that is overall oversight of a programme including disease control policy development, strategic and operational planning (decision making regarding the programme's resources, and implementation processes; needs assessment and priority settings), accountability, regulation, and performance management. In this research, I view this programme component as important for shaping the *leadership* of a communicable disease programme.
- (ii) *Financing*, that is the sources, collection, pooling, and allocation of funds (i.e. provider payment mechanisms) for the programme's activities and services.

²⁸ Depending on clinical manifestations of infection progression and their public health importance.

(iii) *Service delivery* relates to the structures and functions of a programme, which directly influence persons at risk/with disease. This function includes organisation and provision of disease control interventions (e.g. preventative, curative, rehabilitation and support interventions); development of human resources necessary for service provision (training, skills development), and procurement and distribution of drugs and medical technologies (including preventative commodities such as condoms).

(iv) *Monitoring and evaluation*. Collection, analysis and dissemination of information related to disease epidemiology and programme activities (i.e. disease surveillance system), including monitoring and evaluation of the programme's activities and use of resources.

Assessment of a programme's structural and functional components allow understanding of the programme's *capacity*, including capabilities for maintaining capacity over time.

5.2.3. Actors

In this research, programmes are viewed as socially established and sustained. Key roles are played by stakeholders, referred to here as the programme's *actors* (Figure 5.1), who may be funders, policy makers, managers, community leaders, groups voicing the needs of patients and users' of services, providers of services, professional associations, religious authorities, civil society organisations and other groups who are directly or indirectly affected by a health problem (Atun and others, 2010a, Gruen and others, 2008).

How actors define *a problem* is of considerable importance – its urgency, scope, socio-economic impact, and the social narrative surrounding a problem, the needs and demands of those at risk from and with disease (Atun and others, 2010a, Atun and others, 2008, Atun and others, 2005d, Oliver, 2006, Tkatchenko-Schmidt and others, 2008). *Problem definition* also often influences choice, and balance, of preventative and curative interventions; decisions about the adoption and continuation of policies and interventions. How programme actors view a specific disease problem or view changes in the problem (e.g., emergence of drug resistance, or HIV/ADS co-epidemics with IDUs) may influence decisions regarding the establishment of interactions with other health system components (i.e. *interactions*). For example, previous research from the FSU showed that the social narrative surrounding TB disease and perceptions of risk contributed to inhibiting the integration of TB clinical care into broader health system components (Atun and others, 2005a, Atun and others, 2005c, Atun and others, 2005d, Mathew and others, 2009a, Vassall and others, 2009b).

A programme's *actors* may positively or negatively inform and influence a programme's very existence, its resources, functioning, and relationships with other health system actors (Gruen and others, 2008). Relations among actors are referred to here as *political economy*, which is defined as actors' individual or institutional interests, influences (power), and positions in regards to a particular policy or organisational issue (Brugha and Varvasovszky, 2000, Varvasovszky and Brugha, 2000). These policy or organisational issues include, but are not limited to, decisions about resource mobilisation, allocation and evaluation (i.e. *capacity*). These also include decisions about the introduction and maintenance of innovative interventions, changes in disease control policies, strategic priorities or programme functions in response to changes in disease epidemics, introduction of innovations or other external pressures (i.e. *flexibility* – willingness of actors to change processes). Actors' roles, positions or authority to lead others shape the programme's *leadership*. *Leadership* is often determined by the health system's governance and organisational arrangements, ownership of resources, organisational culture or history (Hartley and Benington, 2010, Porter and McLaughlin, 2006).

Actors are at the centre of the question of whether integration of communicable diseases with other health system components will be initiated, effectively implemented and maintained. Potential impediments include, but are not limited to, differences in philosophies and approaches to care and treatment (Heller, McCoy, and Cunningham, 2004), a lack of national and local leadership to dedicate resources, time and attention to those providing integrated services (Chaulet, 1998, Feenstra and Visschedijk, 2002, Mayhew and others, 2000), reluctance from specialists to lose professional autonomy (Dimitrova and others, 2006), and tensions over control of resources (Hill and Tan Eang, 2007).

A programme's *actors* also interact with other health problems and health programmes, thus they are constrained (or supported) by health system, social, cultural, political, and economic environments (Gruen and others, 2008).

5.2.4. Health system

A programme's arrangements and resource capacity (i.e. *capacity*) are dependent upon the organisational characteristics of the *health system* and the *context* that is the broader political, legislative, economic, social and technological environments (Atun and others, 2004). Whether a programme is capable of responding to a disease problem, and to changes in the problem, effectively, equitably, and efficiently to a considerable extent depends on the health system's arrangements. The health system to a large extent determines the programme's *flexibility*

characteristics – whether, for example, with the introduction of an innovation a programme is capable of changing its structural or functional arrangements to support implementation of the innovation on a wider scale, both effectively and efficiently. For example, the prevailing health system financing mechanism in Russia created incentives for prolonged and repeated hospitalisations of TB patients, impeding the establishment of efficient approaches to TB control (Floyd and others, 2006). The prevailing health system's and programme's arrangements may determine the available options and feasibility for integration of communicable disease programmes with the broader health system (i.e. *interactions*) (Atun and Olynik, 2008, Atun and others, 2005e, Dimitrova and others, 2006, Floyd and others, 2006, Hasker and others, 2009, Marx and others, 2007, Tkatchenko-Schmidt and others, 2010, Tkatchenko-Schmidt and others, 2008, Wang and others, 2007).

5.2.5. Integration as interactions between health system's components

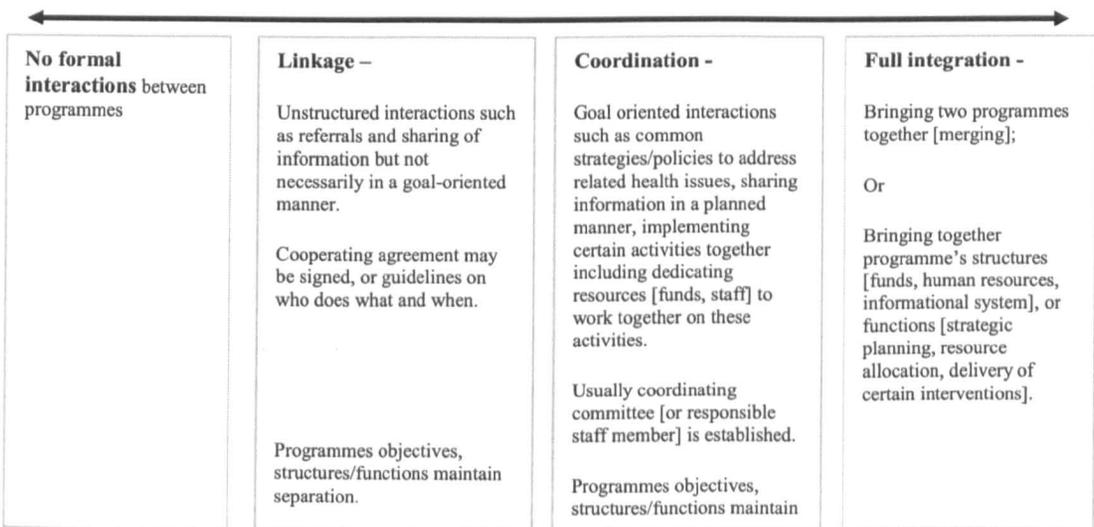
This framework element is focused on assessment of programme *interactions*. Integration, as a concept, is defined as the structures and functions (i.e. the *what* of integration) associated with establishing and sustaining a health system and its components in order to ensure effective, efficient, and equitable use of resources (i.e. the *why* of integration). Health systems and programmes have four key components with each including *structural and functional* elements: governance, financing, service delivery and information systems. These are outlined in Table 5.1. Thus, integration may involve structural or functional elements of any of these components. In line with (Kodner and Kyriacou, 2000, Konrad, 1996, Leutz, 1999), there is a range of functional (and structural) relationships acting along a continuum. For this study, I define this continuum or levels of interactions (i.e. *the how* of integration) between programmes (or indeed a programme and other components of a health system) as: no formal interactions, linkage, coordination, and full integration (Table 5.2). Across this continuum of *interactions* there is increased formality in governance, sharing of responsibilities for joint activities, and pooling of resources.

When *no formal interactions* exist, a communicable disease programme is structurally organised and functions in parallel with other health system components. An example of such programmes would be communicable disease control programmes as described in Chapter 2, in the Soviet Union (Atun and others, 2008, Coker and others, 2003). Governance structures are separate; policy development, strategic and operational planning, and performance management are implemented exclusively by TB-dedicated institutions. Funds are planned and channelled separately, either through ear-marked budgets or parallel donors financing. TB detection, care and support is delivered only by specialised TB service providers.

Table 5.1 Programme’s structural and functional elements

Programme’s components	
Governance	<p><i>Structures</i></p> <p>Organisational structures Disease control policy, regulations and laws</p> <p><i>Functions</i></p> <p>Strategic and operational planning Accountability Regulation Performance management</p>
Financing	<p><i>Structures</i></p> <p>Funds (sources)</p> <p><i>Functions</i></p> <p>Pooling of funds Provider payment mechanisms</p>
Service delivery	<p><i>Structures</i></p> <p>Facilities (infrastructure) Laboratories Drugs, medical technologies, medical supplies Human resources (including managerial)</p> <p><i>Functions</i></p> <p>Training and development of human resources, Procurement and distribution of drugs and medical supplies Care pathways/provision of interventions</p>
Information system	<p><i>Structures</i></p> <p>Informational technologies and infrastructure</p> <p><i>Functions</i></p> <p>Data management - collection, analysis, dissemination Monitoring and evaluation of programme’s activities and impact</p>

Table 5.2 Levels of integration – examined through a lens of ‘interaction’



Linkage is defined as unstructured interactions between two programmes, such as when interactions occur in an *ad hoc* manner, information is exchanged upon request, or patients' referrals occur.

Coordination represents goal-oriented activities enhanced by working together on joint activities, whilst a programme's distinctive structures and functions are retained. Coordinating structures or regulatory mechanisms should exist and be supportive of organised interactions (Contandriopoulos and others, 2003). Shared responsibilities would be defined in the arrangements for governance, planning of resources, implementation of joint activities or coordinated collection and analysis of information.

Full integration involves changes in both programme structures and/or functions, leading either to establishing common formalised governance structures or uniting governance responsibilities, pooling of funding, merging service delivery, or unifying information systems. Integration also refers to a merging of two programmes across all functional areas.

Detailed definitions for mapping interactions between TB and HIV/AIDS programmes and programmes with general health services are presented in Table 5.3.

5.2.6. Context

The context denotes economic, political, regulatory, social-cultural (including historical legacy), epidemiological, regulatory and technological environments (i.e. systems), within which a health system operates and interacts with (Atun and Menabde, 2008 -b, Atun and others, 2004). Empirical research on sustainability in health systems consistently shows that these contextual factors are important determinants of the sustainability of health programmes, potentially creating both impediments and opportunities (Chapter 3). Communicable diseases in particular have been a subject of political attention or neglect that affects resources dedicated for disease programmes. For example, GHIs have created an environment of global political attention to three major communicable diseases – TB, HIV/AIDS and malaria, including increased and substantial funding. Such international attention and funding, in some contexts, might create opportunities for improving the chances of disease control programmes' sustainability, through the introduction of evidence-based innovations (e.g. DOTS, ART, opioid substitution therapy) or improving domestic resource capacity.

Table 5.3 Mapping interactions between TB and HIV/AIDS programmes or with general health system

Programme's component	Linkage	Coordination	Full integration
<p>Governance</p>	<p>Responsibility for policy development, strategic and operational planning, performance management, are separate for each programme.</p> <p>Joint staff meetings or working groups for informational purposes.</p> <p>Guidelines might exist for reciprocal referrals at service delivery level.</p>	<p>Coordinating committee [or similar structure] for planning, implementing and evaluating joint activities is set up, including resources mobilisation (e.g. applications and management of donors' assistance) (Gurneberg and others, 2008, Terris-Prestholt and others, 2008). [Malawi case in (Friedland, Harries, and Coetzee, 2007)]</p>	<p>Governance functions for both programmes are structurally and functionally, or only functionally, integrated.</p>
<p>Finances</p>	<p>Responsibility for planning of funds and decision making is separate, including separate channels of funds allocation; or funds earmarked from international sources specifically for each programme.</p> <p>Informal agreements between programme's stakeholders to conduct mobilisation of funds or legislation change.</p>	<p>For collaborative activities budgetary oversight and decision making are shared; guidelines/procedures in place - who pays for what - for joint activities (Chimzizi and others, 2004). Resources (facilities, laboratories, staff) for implementing joint activities might be shared.</p>	<p>Funds from all sources, including donor's funding, for both programmes are pooled, common channels of funds allocation. Joint responsibility for financial planning and management.</p>
<p>Service delivery</p>	<p>Dedicated staffs for each programme, care processes are separate. TB and HIV/AIDS specialists have responsibility only within own speciality, but cross-trained on implementation of referral procedures (Okot-Chono and others, 2009).</p> <p>Services might be co-located (e.g. VCT at TB clinics, or TB and HIV/AIDS rooms in one facility), but each programme's staff are under separate management and accountability lines. Information exchange between staff members exists, but not on a regular basis and activities are not evaluated jointly.</p>	<p>Care managers or focal point coordinators to manage patients' transition between programmes and coordinating necessary tests and care (e.g. VCT for TB patients, TB DOT for HIV positive) including follow-up and regular informational exchange relevant to clinical care and/or social support (Gasana and others, 2008, Terris-Prestholt and others, 2008).</p> <p>Some staff perform joint activities, e.g. laboratory sends reports to two programmes; screening for TB at HIV clinics; screening for HIV at TB clinics. HIV/AIDS and TB specialists are trained on diagnosing and managing both diseases, but provide care for their own speciality with referral for treatment of other condition.</p>	<p>Multifunctional staff or both TB and HIV/AIDS specialists are available at clinics who work within multi-disciplinary team and under the same managerial line and common accountability. [example - South Africa's case study in (Friedland, Harries, and Coetzee, 2007)]. Multidisciplinary team is jointly responsible for management of patients' care.</p> <p>Staff are trained and perform tasks for managing care for both diseases; common system of accreditation and training for managing both diseases.</p>
<p>Information system</p>	<p>Indicators for each programme reported, channelled through programme-specific monitoring and evaluation (M&E) system. Data for both systems may be collected by the same individuals (e.g. at lower levels of health system). M&E indicators are not harmonised between the systems. No formal or systematic data exchange between the two systems (Rudge and others, 2010).</p>	<p>Harmonisation of some M&E indicators, but there are also some parallel indicators and/or reporting systems for some partners (e.g. external donors) involved in the national HIV or TB response. Formal exchange of data between HIV and TB M&E units (Rudge and others, 2010).</p> <p>For joint TB/HIV activities responsibility for monitoring and evaluation is shared [example - South Africa case in (Friedland, Harries, and Coetzee, 2007)].</p>	<p>Unified (comprehensive) informational system; joint responsibility for M&E. M&E indicators for HIV/AIDS and TB are part of general health information system (Rudge and others, 2010).</p>

CHAPTER SUMMARY

This PhD research proposed analysis of a potential for sustainability based on a programme's capabilities or characteristics, which are presumed as precursors of a programme's sustainability. These precursors of sustainability are leadership, capacity, flexibility, interactions and performance. Throughout the thesis, I also refer to precursors of sustainability as a programme's characteristics. In my conception of sustainability, the notion of integration (referred to as 'interactions') is one of the precursors of a programme's sustainability.

The framework for analysis consists of several components that provide a guide to understand the existence and actions of these five precursors of a programme's sustainability and influences upon them. The overarching schematic presentation of the framework is outlined in Figure 5.1 (Chapter 5). In particular, Figure 5.1 defines factors, and interrelationships among them, that potentially influence the five precursors of sustainability. These are a disease problem, health system and programme arrangements, actors, and the broader context. The five precursors of sustainability are not presented schematically in Figure 5.1 (with the exception of the assessment of formal interactions between programmes). Instead, the general understanding on the way in which the factors outlined in Figure 5.1 may relate to these five programme characteristics is presented in Box 5.1. Definitions used to assess formal interactions between programmes are presented in Table 5.3.

CHAPTER 6 METHODS

INTRODUCTION

The previous chapter presented the conceptual framework for analysis of the sustainability of a communicable disease programme. This chapter begins by stating the research questions for the case study followed by an overview of the methodological approach applied in this study. I then elaborate on methods applied in the case study in Kyrgyzstan, outlining data sources, and data collection and analysis. The procedural results are also presented (i.e. number of respondents interviewed, and data collected and used in the analysis). I discuss the limitations of the methodological approach in the concluding Chapter 10, 'Discussion and conclusions', where I also reflect on challenges in studying sustainability in general.

6.1. RESEARCH QUESTIONS FOR A CASE STUDY

At the inception of this PhD thesis, the research questions for the case study in Kyrgyzstan were whether the TB and HIV/AIDS control programmes are sustainable, and how integration of the programmes with the broader health system influences sustainability (Chapter 1). Following the conceptualization of the sustainability of a programme (Chapter 5), these research questions were further detailed to understand five programme characteristics (i.e. leadership, capacity, flexibility, interactions and performance), and influences upon them. As I outlined in Chapter 2, several policy innovations that are financed and supported by GHIs have been introduced in the FSU region. In this research, I focus on how Kyrgyzstan's health system arrangements support these innovations. Innovations that were considered in this research are DOTS and MDRTB management for TB control, and harm reduction interventions and ART for HIV/AIDS control. In the case study particular attention has been paid to issues pertaining to interactions of programmes with other health system components. Exploration of questions was focused on programmes *at the national level*. The research questions are as follows:

Research question 1: Is the TB control programme sustainable?

- i. What is the nature of the TB epidemic in Kyrgyzstan? How is the TB problem defined by the programme's actors?

- ii. Who are the key actors of the TB programme and what is their role? What is the character of the TB programme leadership? How and whether is leadership affected by the programme's governance and organizational arrangements?

This question focuses on understanding the TB programme's leadership. This question establishes what actors are involved in developing the TB control strategy, policy and legal framework, planning and mobilizing resources. The inquiry also identifies how formal arrangements for the TB programme's governance affect leadership.

- iii. How are resources for the TB programme planned, allocated and evaluated?

This question assesses the programme's capacity. Particular attention is paid to the availability of financial resources, their sources and allocation, and to evaluation of spending on TB control.

- iv. How and why have the TB programme's governance, financing, and service delivery changed, or have they not, with the introduction of policy innovations - DOTS and MDRTB management?

This question explores the flexibility characteristic. DOTS was an important policy innovation in the FSU context, aimed at not only bringing evidence-based practices for TB treatment but also establishing efficient approaches to TB control (Atun and others, 2005e, Floyd and others, 2006). The question aims to understand how health system's arrangements for TB services financing and service delivery have changed, or have not, in response to the introduction of TB policy innovations.

- v. What are the interactions between TB services in the penitentiary and civilian sectors? What are the interactions between TB services and general health services?
- vi. How is the TB programme performance monitored and evaluated? How does the TB programme perform in terms of TB case detection, access to TB and MDRTB treatment, and treatment outcomes?

Research question 2: Is the HIV/AIDS programme sustainable?

- i. What is the nature of the HIV/AIDS epidemics in Kyrgyzstan? How is the HIV/AIDS problem defined by the programme's actors?
- ii. Who are the key actors of the HIV/AIDS programme and what is their role? What is the character of the HIV/AIDS programme leadership? How and whether is leadership affected by the programme's governance and organizational arrangements?

- iii. How are resources for HIV/AIDS programme planned, allocated and evaluated?
- iv. How has the delivery of treatment of narcotic drug dependency changed with the introduction of interventions for harm reduction among IDUs? How and whether has specialized HIV/AIDS services delivery changed, or has it not, with introduction of ART?

This question explores the flexibility characteristic. Harm reduction among IDUs, particularly treatment of opioid replacement therapy is an important policy innovation. During the Soviet period, drug dependency was traditionally delivered by vertical narcology services; opioid drugs use was criminalized. This the question aims to understand the why and how of the health system's arrangements for delivery of opioid substitution therapy.

- v. What are the interactions between specialized HIV/AIDS and narcology services with general health system?
- vii. How is HIV/AIDS programme performance monitored and evaluated? How does the HIV/AIDS programme perform in terms delivery of harm reduction interventions and ART?

Research question 3: What is nature of interactions between TB and HIV/AIDS control programmes at present?

Research question 4: What are the likely implications of TB and HIV/AIDS programmes' integration with the broader health system for the sustainability of these programmes?

The four research questions also explored health system and broader context.

6.2 METHODOLOGY OVERVIEW

In exploring the potential for sustainability of the TB and HIV/AIDS programmes in this study, the extension of realistic evaluation by Pawson and Tilley (1997) as proposed by Atun and others (2004), is adopted²⁹. The seminal work by Pawson and Tilley (1997) is derived from the critical *realism*³⁰ tradition in the philosophy of science, particularly works by Bhaskar, Hesse,

²⁹ As has been presented earlier, Atun and others (2004) and Coker and others (2004a) build on Pawson and Tilley's (1997) realistic evaluation in their conceptual, analytical and methodological approaches to a study of health programmes and health systems.

³⁰ This school of thought '*has sought to position itself as a model of scientific explanation which avoids traditional epistemological poles of positivism and relativism*' (Pawson and Tilley, 1997).

and Harre (Bhaskar, 1975, Harré, 1986, Hesse, 1974). In critical realism's ontology there is one reality to discover, which exists and acts independently of scientists and their activities (Bhaskar, 1975). According to Bhaskar, social reality is stratified into three overlapping domains: the empirical (experiences or events that can be observed), the actual (events irrespective of whether observable or not), and the real (the causal structures and/or mechanisms that generate events). The core claim of realist ontology is that causal mechanisms do not work deterministically unless an experimental and closed system has been set up (Bhaskar, 1975, Olsen, 2010). In the realist's view, the real world is open and dynamic, where multiple explanations and causations are possible. The real is imperfectly and probabilistically comprehensible (Guba and Lincoln, 1994). The intent of a research is in improvement of interpretations and fostering a more complete understanding of the external reality rather than seeking a definitive truth (Blaikie, 2007, Downward, Finch, and Ramsay, 2002, McEvoy and Richards, 2003, Sobh and Perry, 2006).

A realist's scientific inquiry starts with building a model (or a framework) of structures and/or mechanisms that are to provide better representations for phenomenon being studied (Bhaskar, 1975, Blaikie, 2007, Healy and Perry, 2000, Olsen, 2010). Realistic evaluation is based on explanatory strategies, in which understanding of the context and causative mechanisms is the key in explaining why a health programme works, for whom and in what circumstances (Coker, Atun, and McKee, 2004a, Pawson and Tilley, 1997). The framework for analysis for this study has been presented in Chapter 5. As has been outlined in Chapter 5, I extended the work of Atun and others (2004) by proposing underlying mechanisms (i.e. the five programme characteristics, or precursors of sustainability) that can explain why a programme is likely to be sustainable or not.

Qualitative and quantitative methods were used to understand the existence and actions of these five programme characteristics, and influences upon them. For my study, I adapted a toolkit developed by Atun and others (2004) (Appendix 1, A1.3)³¹, which incorporates methods allowing a systemic approach to understanding a programme and a health system, and allows assessment of historical and contemporary events. The toolkit consists of modules, each exploring a particular health system component (e.g. governance, financing, organization of service delivery). The toolkit is designed in a way to encompass a variety of perspectives, using both documentary sources and interviews with key informants representing different specialities (e.g. governance and administration, financing, M&E) and/or different levels of health system

³¹ This is a validated tool, which has been applied for studying communicable disease control programmes and health systems in the FSU settings (Atun and Olynik, 2008, Atun and others, 2005, Coker and others, 2003) and other regions (Conseil and others 2010, Desai and others 2010, Mounier Jack and others 2010).

(e.g. national, regional, local). I adapted this toolkit by modifying a section to explore formal interactions between the programmes and by developing topic guides for interviews (Appendix 1, A1.4) to explore questions relevant to the five characteristics of a respective programme (TB or HIV/AIDS programme).

Table 6.1 presents methods used in the research questions of the case study, and the respective chapter or section in a chapter where findings are presented.

Table 6.1 Research questions of the case study, methods, and corresponding chapters

Research question	Methods used	Chapter
Questions 1-4 (context and health system)	Review of published literature and documents, review of routinely collected data on socio-economic indicators, demographic and public health	Chapter 7
Questions 1 & 2. Sustainability of TB and HIV/AIDS programmes		Chapter 8 (TB programme), Chapter 9 (HIV programme)
(i) Problem definition (TB or HIV/AIDS)	Analysis of routinely collected epidemiological data; documents and key informant interviews, thematic analysis	Chapter 8, section 8.1 Chapter 9, section 9.1.
(ii) Leadership	Analysis of domestic and international policy and regulatory documents and evaluation reports; key informant interviews, thematic analysis	Chapter 8, section 8.2 Chapter 9, section 9.2.
(iii) Capacity	Analysis of health system's and programme's financing, infrastructure and human resources (based on documentary sources), key informant interviews, thematic analysis	Chapter 8, section 8.3 Chapter 9, section 9.3.
(iv) Flexibility	Analysis of domestic and international policy documents and evaluation reports; key informant interviews, thematic analysis	Chapter 8, section 8.4 Chapter 9, section 9.4.
(v) Interactions	Analysis of domestic and international policy documents, regulatory documents and evaluation reports; key informant interviews, thematic analysis	Chapter 8, section 8.5 Chapter 9, section 9.5.
(vi) Performance	Analysis of health services provision and utilization data, analysis of domestic and international evaluation reports, key informant interviews, thematic analysis	Chapter 8, section 8.6 Chapter 9, section 9.6.
Question 3	Analysis of domestic and international policy documents, regulatory documents and evaluation reports; key informant interviews, thematic analysis	Chapter 8, section 8.5.
Question 4	Literature review, key informant interviews, thematic analysis	Chapter 10, section 10.2

In my research, quantitative methods included an analysis of secondary data – routinely collected data by national or international agencies. These included TB and HIV/AIDS epidemiological data, health system's financing, health services provision and utilization data, and socio-economic indicators.

Qualitative methods comprised:

- In-depth interviews with key informants, both using an interview's topic guide and unstructured discussions. All respondents were interviewed using interview topic guides (Appendix 1, A1.4)³². Additionally, questions from the toolkit modules (Appendix, A1.3) that were relevant to a respondent speciality (e.g. financing, M&E) were included into an interview.
- Documentary analysis, with documents from the following three sources:
 - national (domestic) policy documents, which are defined in this research as strategic plans, legislation and regulatory documents, official country's reports to international agencies (e.g. UNAIDS country reports),
 - policy documents, and monitoring and evaluation reports of international agencies,
 - previously published and non-published studies and evaluations conducted in Kyrgyzstan in the areas of health system reform, TB and HIV/AIDS control;
- Field observations, to support the above, during the 6 months presence in Kyrgyzstan, which included field notes and mass media outputs.

A 'framework approach', as outlined by Ritchie and Spencer (1994), was applied in the analyses. The analytical process was iterative. Data analysis was on-going and concurrent with the data collection process. A deductive inference approach guided the analysis within areas of interest identified in the toolkit (Appendix 1, A1.3) and interview guide with key informants (Appendix 1, A1.4). Collected data also were explored inductively using thematic content analysis (Green and Thorogood, 2009, Pope, Ziebland, and Mays, 2000, Ritchie and Spencer, 1994) that generated emergent explanations. Additionally, I assessed emerging findings asking the question of 'why things appear as they seem to be' (Olsen 2010) that is searching for a meaning within the context and within available empirical evidence (Atun and others, 2006).

All steps of setting up a field work site, establishing cooperation with the study's counterparts, setting up appointments and conducting interviews, transcription of interviews, analysis and interpretation were performed by me.

³² Two topic guides have been developed. The one was aimed for interviews with key informants representing the TB programme, and the other – with key informants of the HIV/AIDS programme.

6.3. DATA COLLECTION AND SOURCES

6.3.1. Ethical considerations

This study was approved by the Ethics Committee of the London School of Hygiene and Tropical Medicine (LSHTM), and the Committee of Bio-ethics at the Medical Academy of the Ministry of Health. In Kyrgyzstan, this is the only ethics committee for conducting research involving humans. Both committees approved an information sheet and a study participant consent form (Appendix 1, A1.2). During the consent for the study, the rationale of the study, and how information would be used were explained to potential respondents. All study participants were given options for an interview being 'on record' or 'off the record'. All participants signed the consent form. The consent form had an option of 'off-record' interview (Appendix 1, A1.2). In 'off the record' cases, a respondent agreed to be interviewed but refused to be quoted or audio-recorded. Additionally, 'off record' respondents requested that the information provided was not included in the thematic analysis. Interviewees agreed that their information would be used only to inform my understanding of research questions explored, and used to clarify data obtained from other sources. Those agreeing for the 'on-record' interview were asked whether they would allow the interview to be audio-taped or only for notes to be taken (hand-recorded by me). Respondents also were asked whether they would allow their expressions to be quoted in the thesis or in any consequent publications. All respondents were given an option to remain anonymous. In accordance with requirements of both Ethics Committees, all personal identifiers of respondents have been kept strictly confidential. Names, contact information, and a job position are known only to me. Each respondent has been assigned a unique identifier. When quoting throughout the thesis, only the personal code assigned by me is given. When deemed necessary, general affiliations were given, and details of job affiliations and traceable job positions have been masked. Consent forms, all interview records, notes and audio tapes are accessible only to me.

6.3.2. Field work

Data generation included a desk study in London for 1 month and 6 months field work in Bishkek, Kyrgyzstan. Data collection also included a trip to Geneva, Switzerland, for interviews with key informants at the GFATM. At the initial stage, a desk study was undertaken with an aim to get a broad understanding of the historical, political, socio-economic, cultural and epidemiological contexts in Kyrgyzstan. The desk study included a review of published literature and grey literature on health system reforms, TB and HIV/AIDS control.

This stage allowed me to identify what data are available and what gaps exist, and to adapt an interview guide for key informants (Appendix 1, A1.3).

The field work lasted from June 10, 2009 to December 9, 2009. During this period I lived and worked in Kyrgyzstan. Administratively, the field work was set up as collaboration between the research group of my supervisor, Professor Richard Coker, and the Health Policy Analysis Project (HPAP)³³ at the Centre for Health Systems Development (CHSD), Bishkek city. This allowed filing an application to the Kyrgyzstan's ethics committee as the country does not have procedures for applications from a foreign research student.

The host agency agreed to provide support for a Kyrgyzstan visa, filing an ethics application to the Committee of Bioethics of the Ministry of Health prior to my arrival to the country, and administrative support. Administrative support included providing advice on identifying key informants, contact information of Kyrgyzstani agencies and gaining access to national documents. A senior policy analyst at HPAP served as my counterpart, introducing me to some key stakeholders working in national and international agencies.

Upon arrival in Kyrgyzstan, I took the formal steps that were necessary to conduct the study activities. These included introducing the study and seeking support from the Ministry of Health. A meeting with the deputy of the Minister of Health at the time resulted in overall support with advice to proceed further through respective head agencies responsible for TB and HIV/AIDS. These are the National Centre of Phthisiatry and the Republican AIDS centre. I conducted introductory meetings with head officials (or a deputy) of these agencies. At the introductory meeting, the Director of the National Centre of Phthisiatry gave his support and permitted the study activities. Upon initial contact, the director of the AIDS centre informed me that he did not approve the study activities. I managed to sort this issue in the next two months, which included several meetings with the deputy director and a research team at the AIDS centre. The two agencies appointed key points of contact for me; both were deputy directors at the respective institutions.

It was explained to all potential respondents upon introduction that the study is a part of my PhD research, which is funded fully by the LSHTM. All information about my background and my research interests were explained to respondents. A reflection on how my background

³³ HPAP has been funded by the WHO/Euro and DFID. Whilst on field work, HPAP has disintegrated from the Centre for Health System Development formally becoming an NGO.

and values may have affected data collection, analysis and interpretation is presented in the section 6.5.2.

6.3.3. Interviews

Key informants were selected purposefully to encompass *actors* involved in each disease control programme *on a national level*. Key informants were selected based on their experience, knowledge and expertise in areas of TB or HIV/AIDS control. All attempts were made to have a sample of key informants representing different specialities. Though the focus of the research inquiry has been on the national level, respondents working at various levels of health system (e.g. national, oblast, rayon) have been included (Atun and others, 2004). A stakeholder analysis (Bryson, 2004, Varvasovszky and Brugha, 2000) was employed in order to identify actors involved in each programme, their role and influences. A preliminary list of actors was developed during a desk study and review of documents, consultations with my counterpart at the host agency and key contacts at the National Centre of Phthisiatry and the National AIDS centre. At this stage, I started to build a contact list of potential respondents. As the interview process proceeded, respondents suggested additional potential respondents. Actors' role and influences were further explored during the interviews.

An initial contact with prospective respondents was sought through telephone, fax or an email. Potential respondents agreed to be interviewed after an initial contact, refused right away or required several attempts to secure an interview appointment. I had an introductory meeting with a number of respondents in order to recruit them into the study. Several potential respondents were unavailable despite numerous attempts. In two instances, representatives of the state's agencies working at the rayon level requested a formal approval from their respective state's administration (not ethical approval nor the MOH), which I could not obtain. In every instance, an alternative respondent was sought. One group not represented in this research is members of Parliament overseeing social and health sector.

All interviews were face-to-face using a topic guide (Appendix 1, A1.4). All respondents were asked questions outlined in the respective topic guide, and were encouraged to discuss questions in length. Interviews were guided by probes (Appendix 1, A1.4). Additionally questions relevant to their speciality (e.g. financing, or drugs management system) were asked using respective sections of the toolkit (Appendix 1, A1.3). Most interviews lasted on average for 1 hour (ranged from 30 min to 2 hours). Interviews were conducted by me either in English or in Russian. All interviews, except for two, were conducted at the respondent's work place. These two interviews were conducted at the HPAP office.

6.3.4. Documents

The documentary analysis served several purposes. First, documents facilitated understanding of how the health system's responses to TB and HIV/AIDS epidemics had been evolving since Kyrgyzstan's independence. Documents facilitated understanding of formal positions, the role and aim of actors of the TB and HIV/AIDS programmes. Published quantitative data such as financial reports, epidemiological data, health services structural capacity (e.g. number of facilities, beds, medical personnel), and health care utilization data were considered documentary sources in this research. Documents analysis was one of the sources of information for verifying data provided during the interviews. Vice versa, information obtained from documents was verified during interviews with key informants.

6.3.5. Field notes and observations

I kept a diary of my field work, recording events such as making interview appointments, overall impressions during the interviews, observations of organizational settings (e.g. health care facilities), and information provided during informal discussions pre- or post-interview. These notes facilitated keeping a record of outstanding gaps in data, agreed follow-up meetings, obstacles encountered during the data collection.

6.3.6. Procedural results

41 key informants were interviewed individually by me. Seven of them were interviewed 'off the record'. Table 6.2 summarizes the completed interviews with 41 informants. A list of organizations involved in the study and a time-line of interviews with individual respondents is included in Appendix 1, A1.5. Off-record interviews were not used in the thematic analysis. These off-record interviews informed the analysis by means of helping me to understand the issues explored in this PhD study, and to clarify information provided in some documentary sources.

Only 34 on-record interviews were used in the thematic analysis. I conducted a follow up interview with 6 key informants³⁴ to clarify gaps and ask additional questions. Follow up meetings were unstructured discussions. Because 'off-records' interviews were not systematically analysed, this thesis reports the results based on information provided during

³⁴ All 6 of them were 'on-record' interviews

interviewees with the 34 on-record interviewees. Out of 34 on-record interviews, 26 were audio-taped, and consents for quoting were given by 22 respondents. In cases where the interview was not audio-taped, I carefully transcribed notes taken during the interview immediately after the interview and recorded them in a Word document. All audio-taped interviews were transcribed verbatim by me.

Table 6.2 Key informants interviewed in this study according to their programme affiliations

	TB programme	HIV/AIDS programme	All
Domestic actors	15	16	25
State	13	11	19
NGOs	2	5	6
National	9	7	12
Oblast	3	7	10
Rayon	3	2	3
International actors	9	11	16
All	24	27	41
<i>On record</i>	<i>21</i>	<i>24</i>	<i>34</i>
<i>Off the record</i>	<i>3</i>	<i>4</i>	<i>7</i>

*10 respondents were interviewed for both programmes

I obtained regulatory documents such as strategic plans, laws and regulations governing health system functioning, including relevant documents related to the TB and HIV/AIDS programmes from my field work counterpart and key contacts at the National Centre of Phthisiatry and the National AIDS centre. From the same sources, I obtained official domestic reports on implementation of national plans or programmes. National health accounts of Kyrgyzstan's health system were obtained from my counterparts (HPAC, 2008, HPAC, 2009, HPAC, 2011).

Epidemiological data and programme performance data were obtained from the Republican Medico-Informational Centre (this data are open access) and the National Centre of Phthisiatry and the National AIDS centre.

I used open-access datasets routinely collected by international agencies. These included WHO/EURO health for all database (WHO/Euro, 2011), WHO Global TB reports (WHO, 2010a), UNAIDS epidemiological updates, UNDP Human Development Indicators database (UNDP, 2010), World Bank World Development Indicators database (WB, 2010), and the OECD Official International Assistance database (OECD, 2010).

6.4. DATA ANALYSIS

6.4.1. Data analysis using the realistic evaluation approach

Data were analysed from a realist perspective, iteratively exploring whether postulated mechanisms (i.e. characteristics or precursors for sustainability) exist, how they act upon delivery of disease control interventions, and what factors influence these five characteristics. The aim of the analysis was not in finding direct causative relations, but in revealing multiple explanations and perceptions about the same reality (Olsen, 2010). In realism research, triangulation of different data sources, perspectives, or methods is applied to reveal a ‘family of answers’ that cover several contingent contexts and different reflective participant, albeit imperfectly (Pawson and Tilley, 1997).

During the analytical processes, I used findings from interviews and documents analysis looking for common and divergent opinions, comparing contrasting positions and contradictory information. I was interpreting opinions of respondents within the actor’s organizational role and overall historical and health system context, aiming to determine how data are related, compiling ideas and key concepts and their relations, looking for relations between different accounts and events (Atun and others, 2006). I put emerging key findings within available research evidence on the role of health system’s arrangements in shaping programme’s characteristics (i.e. leadership, capacity, flexibility, connectivity and performance). I considered evidence such the historical role of institutions, influences of international actors on national policy-making and financial mechanisms for disease control, opportunities and challenges with integrating historically vertical programmes, and challenges with developing robust disease surveillance and M&E systems.

6.4.2. Managing data

As a guide to organising, managing and interpreting data, I used a framework approach (Ritchie and Spencer, 1994), which was defined by authors as ‘*a content analysis method which involves summarizing and classifying data within a thematic framework*’. Five interrelated steps of analysis were followed: familiarization, identifying a thematic framework, indexing, charting and interpretation. I also used guiding principles of thematic content analysis as outlined by (Green and Thorogood, 2009).

Familiarisation with qualitative data included review of collected documents and listening to interview recordings several times, making notes on emerging themes, remaining gaps or contradictions arising from different sources. I did not manage to transcribe all interviews concurrently during the data collection, however some were transcribed. All remaining transcriptions were made by me later upon return to London in January -February 2010. I returned to the original audio tapes during interpretation and further analysis to grasp any missed points on how respondents expressed their opinion.

During the familiarisation step, a thematic framework for indexing the data was developed. I used NVivo 8 to organize the large amount of textual data (documents and interview transcripts, separate folders for each data source). Three separate folders were created in NVivo – ‘health system’, ‘TB programme’ and ‘HIV/AIDS programme’ (the ‘health system’ folder included components relevant to the general health system, and other health programmes as emerged during the data analysis process). On a broad level, all textual data were organised in NVivo into two overlapping categories (I refer to them here as ‘*themes categories*’). These *themes categories* were: (1) health system or programme components — governance, financing, service delivery, and monitoring and evaluation; and (2) sustainability characteristics – leadership, capacity, flexibility, connectivity and performance. Each ‘programme’ folder also included a subfolder related to a ‘health problem’. Programme sustainability characteristics and programme components overlap, however given the large volume of textual data, organising the data in these two *themes categories* facilitated familiarisation with data. In a sense, such organisation of data allowed me to capture an overall picture of the collected data.

The thematic framework was further developed within ‘sustainability characteristics’ *theme categories*: (i) based on *priori themes*, which correspond to the questions within an analytical framework, and (ii) *emergent themes* arising from interviewees’ responses and related to respondents perceptions, explanations or accounts. Table 6.3 presents a summary of the indexes and themes applied to the qualitative data. Interviewees were indexed systematically applying the codes. Documents were indexed using *priori themes* codes.

Table 6.3 Key themes explored in the data

TB programme		
Themes Category	Priori Themes	Emergent themes
1. TB Problem	1.1. Perception of TB epidemic 1.2. Perception of HIV/AIDS problem	1.3. Stigma 1.4. MDRTB problem 1.5. TB in marginalized groups
2. Leadership	2.1. Formal governance arrangements 2.2. TB control policy, legal framework 2.3. Decision making 2.4. Strategic vision and priorities 2.5. Role and responsibilities of actors	2.6. Perception of donors' role in TB control 2.7. Accounts of donors and national actors interactions 2.10. Perception of programme's leadership
3. Capacity	3.1. Funds, financial mechanisms 3.2. Physical infrastructure, organizational arrangements 3.2. Human resources 3.3. Drugs	3.5. Perception long term availability of funds 3.7. Role of donors in funding TB control 3.6. Perception long term human resources needs
4. Flexibility	4.1. DOTS introduction - policy change 4.2. DOTS implementation, case detection 4.3. DOTS implementation, TB treatment 4.4. MDRTB management implementation	4.5. Willingness to change approach to TB treatment delivery 4.6. Capability to treat patients at primary care level 4.7. Perception of inpatient TB treatment
5. Interactions	5.1. Coordination prisons and civilian 5.2. Interactions with HIV/AIDS services 5.3. Interactions with primary care	5.4. Willingness to interact with HIV/AIDS services 5.5. Perception of interactions with HIV/AIDS programme 5.6. Perception of civilian and penitentiary sectors interactions 5.7. Accounts interactions between TB services and primary care
6. Performance	6.1. Monitoring and evaluation mechanisms	6.2. Perception of effectiveness of M&E system 6.3. Perception of TB programme's achievements 6.4. Perception of TB programme's barriers

Table 6.3 (continued).

HIV/AIDS Programme		
Themes Category	Priori Themes	Emergent themes
7. HIV/AIDS Problem	7.1. Perception of HIV/AIDS epidemic	7.2. Perception of IDU problem 7.3. Stigma
8. Leadership	8.1. Formal governance arrangements 8.2. HIV/AIDS control policy 8.3. Drug use reduction and drug control policy 8.4. Decision making 8.5. Strategic vision and priorities 8.6. Role and responsibilities of actors	8.7. Perceptions of country multisectorial coordinating committee 8.8. Perceptions of leadership role of NGOs 8.9. Role of donors in HIV/AIDS policy formulation
9. Capacity	9.1. Funds, financial mechanisms 9.2. Physical infrastructure, organizational arrangements 9.3. Human resources 9.4. Drugs	9.5. Role of donors's financing of HIV/AIDS response 9.6. Perception long term availability of funds 9.7. Resources mobilization 9.8. Role of NGOs in delivery HIV/AIDS interventions 9.9. Perceptions of long term sustainability of NGOs
10. Interactions	10.1. Coordination prisons and civilian 10.2. Interactions with TB services 10.3. Interactions with primary care	10.4. Willingness and capabilities to interact – NGO and state's organizations 10.5. Accounts of interactions between HIV services and primary care.
11. Flexibility	11.1. ART introduction - policy change 11.2. ART- organization of service delivery 11.3. Harm reduction – policy change 11.4. Harm reduction – organization of delivery	11.5. Willingness and capability to implement opioid substitution therapy 11.6. Perception of service provision to IDUs 11.7. Opinion, ART delivery at primary care
12. Performance	12.1. Monitoring and evaluation mechanisms	12.2. Perception of M&E system 12.3. Achievements and barriers

I used NVivo for coding data using priori themes only (for both interviews and documents). Chunks of coded data within priori themes were extracted from NVivo and transferred to Microsoft Word to be re-arranged according to themes. For each programme (TB and HIV/AIDS) separately, interview data were further coded applying priori themes. To allow within-case and between-case (i.e. a respondent) comparison and analysis, interview data were organised in charts in a table format, in which columns represented themes and rows corresponded to each respondent. Similarly, for each programme, data from documents (e.g. evaluation reports, studies) were organised in charts with rows representing sources.

6.4.3. Presentation of findings

I organize the presentation of the findings in four chapters. Chapter 7 presents an analysis of the broader political, socio-economic, regulatory context and health system based on the review of the literature and documentary sources. In Chapters 8 and 9, I present results of an analysis of TB and HIV/AIDS programmes respectively, focusing on the five programme characteristics, which as I proposed (Chapter 5) are precursors of the sustainability of these programmes. In presenting the findings, I aim to explain *why* and *how* health system changes have occurred, or have not, in Kyrgyzstan's context in response to evolving TB and HIV/AIDS epidemics and new challenges such as MDRTB. Throughout Chapters 8 and 9, I elaborate on likely implications for sustainability of TB and HIV/AIDS control programmes. In the concluding Chapter 10, I bring together the results of the analysis presented in Chapters 8 and 9. I analyse and discuss the differences and similarities between the two programmes in their potential for sustainability. Chapter 10 discusses the key findings of the study in the context of empirical studies in the FSU and broader knowledge on sustainability of health programmes. I also reiterate my conceptual developments and propose an empirically tested framework for analysis of sustainability. This concluding chapter also reflects on the conceptual and methodological limitations of the study.

6.5. QUALITY

There is an overall understanding that the quality of research can only be judged in terms specific to the paradigm under which a researcher is working (Bryman and Teevan, 2005, Healy and Perry, 2000, Mays and Pope, 2000, Porter, 2007). Nevertheless, commonly used criteria to judge the quality of qualitative research are broadly related to fundamental principles of ethics, relevance and importance of research, appropriateness and rigour of methods that include attention to validity (or credibility) and reliability (or verification)³⁵ as well as role of a researcher (Cohen and Crabtree, 2008, Mays and Pope, 2000). Earlier in this chapter I outlined the ethical principles applied in this PhD research. Additionally, the importance and relevance of this PhD research have been presented in the introductory Chapter 2. In this section, I focus on three aspects of judging research quality, namely criteria of validity, reliability and my role as a researcher.

³⁵ Criteria used to judge about validity and reliability in particular are defined and termed differently, with different meanings as compared to quantitative studies (Bryman and Teevan, 2005, Guba and Lincoln, 1994). For example, Guba and Lincoln, 1994 proposed criteria of *truthfulness* and *authenticity*. Truthfulness is made up of four elements – *credibility* and *transferability* (corresponding to validity), and *dependability* (corresponding to reliability), and *confirmability* (i.e. objectivity) (Bryman and Teevan, 2007).

6.5.1. Validity and reliability

In the realism paradigm, a researcher aims to explain the one reality, which is in turn independent of a researcher and only imperfectly apprehensible (Guba and Lincoln, 1994, Healy and Perry, 2000, Pawson and Tilley, 1997). The commonly suggested criteria for assessing validity and reliability in the realism paradigm include the following:

- One of the criteria of the internal validity of a realist's inquiry include what Healy and Perry (2000) refer to as 'contingent validity', which is the development of a priori theory about broad generative mechanisms and the contexts.
- Internal validity is also judged based on how the research encompasses its reality's several contingent contexts and multiple perspectives about the single, complex and dynamic reality (Riege, 2003, Sobh and Perry, 2006). Triangulation in realist's research provides a more comprehensive analysis of different data sources, methods and participants' perspectives.
- External validity, or analytic generalization (Healy and Perry, 2000), refers to theory building during the course of an empirical study and explores how findings relate to existing theories and empirical evidence.
- Criteria of reliability in realist research are similar to Guba and Lincoln's (1994) criteria of dependability or consistency (Healy and Perry, 2000), which refer to the extent to which the research can be audited.

Table 6.4 details the steps undertaken to ensure validity and reliability in this research. In summary, to improve internal validity, this study applied a validated tool that relies on multiple data sources and methods of data collection (documents, interviews, and routine datasets) (Atun and others, 2006). Respondents recruited for this study were of various backgrounds to ensure the capture of multiple perspectives (Atun and others, 2004). Data collected from these various sources was compared and corroborated. Over the course of data collection and initial analysis, I was comparing and cross-checking the data that was obtained from different sources (e.g. official national reports and previous evaluation reports implemented by international actor), information provided by different respondents, and results emerging from quantitative and qualitative analysis. Attention was also paid to contrasting and contradictory information, and opposing opinions in interviews (i.e. negative cases).

Table 6.4 Criteria of validity and reliability applied in this research

	Phase of the research	Steps undertaken
Validity criteria (reference)		
A priori theory about generative mechanisms and the context (Healy and Perry, 2000)	Design, data collection and analysis	Entered the field with a priori conceptualization of sustainability Use of theoretical perspectives from complex systems Literature review on sustainability and integration in health systems Keeping the journal dealing with the events, emerging facts and evidence Use multiple sources of evidence, including from other empirical studies Peer review
Internal validity (Healy and Perry, 2000, Riege, 2003)	Data collection and analysis	Explanation building through triangulation of data sources, methods (i.e. quantitative and qualitative), sources of data and perceptions of interviewees Application of topic guide (Appendix I.A1.4) with open-ended questions to allow broad questions before probing Awareness of own values and their impact on data collection, keeping a detailed field notes to document how my own perspectives were evolving Peer and respondents review
External validity or analytic generalization (Healy and Perry, 2000, Riege, 2003)	Data analysis and interpretation	Evidence obtained in a case study is compared with extended literature (i.e. empirical studies in the FSU, studies on sustainability and integration in health systems) Attention to, and interpretation of findings in the context
Reliability criteria (reference)		
The extend by which research can be audited (Healy and Perry, 2000; Riege, 2003, Lincoln and Guba, 1985)	Data collection, analysis and interpretation	Follow a study protocol Atun and others (2006) Use a systematic approach to data management, coding, and analysis (the framework approach by Ritchie and Spencer, 1994)

When there was divergent or contradictory information, I was seeking for explanations in order to understand the reasons why. I have discussed conceptual development and findings of the case study continuously with my supervisor and the advisory committee panel. I asked for feedbacks on the emerging facts and findings from several key informants during the follow up meetings. At the end of the field trip the preliminary findings were reviewed with two of the study's participants, my counterparts at the National Centre of Phthisiatry (NCPH) and the Republican AIDS centre. Such feedbacks were usefull to enrich or to adjust my interpretation of findings. To meet criteria of reliability, I followed systematically a methodological approach by Atun and others (2004). In addition, analysis of qualitative data using the framework approach by Ritchie and Spencer (1994) allows a researcher to demonstrate a systematic

approach and replication. I interpreted emerging findings in the context of available empirical evidence that allowed me to explain the relevance of the research findings to similar contextual settings and discuss how the findings add to existing body of knowledge (Chapter 10).

6.5.2. Reflexivity: role of the researcher

A realist is said to be value-aware, that is the realist accepts that there is one real world to discover through multiple perceptions of participants (Healy and Perry, 2000). For these reasons, researcher's values and background, which affect a picture of external reality during the processes of collection, analysis and interpretation of data, are concerns in the realist's research (Cohen and Crabtree, 2008, Sobh and Perry, 2006).

On reflection, there are two aspects of my background of which I was aware as potentially affecting the research processes. The first aspect relates to my prior educational and professional background. I came to study this PhD from a positivist background in infectious diseases epidemiology having received a MPH degree in the USA. Prior to the LSHTM, my experience in qualitative research was limited. The second aspect concerns my personal background. A native of Kazakhstan, I emigrated to Canada in 2001 (at the age of 30), where I worked for four years prior to starting PhD study at the LSHTM. It should be noted though, that I moved to Canada solely for professional reasons. I still consider myself belonging to Kazakhstan. In fact, this combination of professional background and personal values has driven me to further studies and shaped my interests in conducting research on communicable diseases control in central Asia.

Thus, I came to the field work in Kyrgyzstan having a combination of both western and Soviet education and professional experiences. On one hand, as a researcher in Kyrgyzstan, I benefited from being a Russian-speaking native of Kazakhstan and understanding the Kyrgyz language³⁶. I have a cumulative 7 years prior experience of working in the public health field on a national level in Kazakhstan, and in other the FSU countries as a consultant. This experience helped me to conduct the necessary formal steps and to establish working relations whilst in Kyrgyzstan. On the other hand, my origin is not of Kyrgyzstan. Kyrgyzstan, though one of historical Kazakh's neighbours, was a novel country and culture for me. These facts may have affected how respondents viewed me and consequently shared their information with me. Some respondents perhaps were hesitant to express their full accounts, as saw me as a representative

³⁶ Kazakh and Kyrgyz culture and languages are historically close. I am a native of Kazakhstan, ethnically Kazakh.

of a western society. The others, who viewed me as one who understand the FSU context, shared more insights.

On reflection, the fact that I was not of Kyrgyz origin and a foreign PhD student may also have influenced the access to potential respondents. Indeed, this might be the reason why several interviewees have chosen to have an 'off-record' interview. In my view, the process of establishing initial contacts, building working relations, and collecting the data has been challenging. Key informants in this study are senior level officials, either in international organizations, domestic state or non-governmental organizations. All have busy schedules, and getting an appointment often took several weeks, or even months in certain cases. There were instances when potential respondents were sceptical about my intentions and the purpose of my research. Nevertheless, my prior experience working with senior level officials in the region provided me with some of the advantages of an insider's status. During introductory meetings and discussions I attempted to find points of common experience or expertise, with an aim to gain trust and understanding of my research. With several respondents, including my counterparts at the NCPH and the National AIDS centre, I have met or conversed over the phone a number of times. On balance, I believe, working relations were established with key counterparts that were helpful in overall research process.

CHAPTER 7 KYRGYZSTAN: OVERVIEW OF HEALTH SYSTEM AND BROADER CONTEXT

INTRODUCTION

This chapter provides an overview of the health system, and the contextual environment within which the health system functions.

Kyrgyzstan was one of the poorest Soviet republics, relying on subsidies from Moscow. At the time of writing, the country remains classified as a low income country by the World Bank (WB). As of 2009, Gross National Income (GNI) per capita (Atlas methods, current US\$) was US\$ 870 (WB, 2010). The United Nations Development Programme (UNDP) Human Development Index (a composite measure of life expectancy, educational attainment and per capita GDP) ranks Kyrgyzstan 109th among 169 countries worldwide (UNDP, 2010). This ranking is below all current FSU states, with the exception only of Tajikistan. As of 2007-2008, an estimated 40% of country's population lived in poverty (defined as consumption per capita) and approximately 9% were in extreme poverty (TheGovernmentKyrgyzstan, 2007b, TheGovernmentKyrgyzstan, 2009, WB, 2010).

In the years following independence in 1991, Kyrgyzstan experienced substantial economic downfall and reversal in social indicators. By 1995, total public revenues as a share of gross domestic product (GDP) fell to 15% from an estimated 41% in the Soviet period of 1989 (Cheasty, 1996, Kutzin and others, 2009, Promfret, 2002). As a result, the ability of the state to spend on health was reduced dramatically. By the beginning of the 2000s, public spending on health was reduced from an estimated 4.1% of GDP in 1991 to 1.9% in 2001 (Kutzin and Cashin, 2002). As per all countries in the FSU region, Kyrgyzstan embarked on a reform of the inherited, publicly funded Soviet health system (Rechel and McKee, 2009). The inherited health system had extensive physical infrastructure, and a high number of health care personnel. The system was financed in accordance with input-based norms (e.g., number of beds, personnel), with most of the health budget financing the large hospital infrastructure.

The analysis presented in this chapter draws primarily from secondary sources. The chapter is structured to present key aspects of the following areas:

- A brief historical background of the country;
- Key political, socio-economic developments since the disintegration of the USSR;

- Major developments in the political environment;
- The general demographic pattern and health status of the population;
- Main features of the health system's components as known at the time of data collection. I provide an overview of the health system's governance, financing, service delivery, and informational systems, reflecting on changes that have been brought about by the health reform programme.

7.1. HISTORICAL, POLITICAL AND SOCIO-ECONOMIC CONTEXT

Kyrgyzstan is a relatively small³⁷ mountainous country that borders Kazakhstan, Uzbekistan, Tajikistan and China (Figure 7.1). Its geopolitical location has determined not only its economic and social development throughout its history, but also the security and political interest of world's most powerful states such as Russia, the USA, and China. It is the only country in the world that hosts military bases of both the USA and Russia. Being at the crossroads of illicit drug trafficking from Afghanistan to Europe and Russia, Kyrgyzstan also hosts internationally connected criminal networks. The country has been referred to as a most liberal state in socio-economic and health system reforms in comparison with other central Asian FSU countries³⁸ (Kutzin, Jakob, and Cashin, 2010, Kutzin, Jakob, and Shishkin, 2009, Pomfret, 2007). On the other hand, the Transparency International ranks Kyrgyzstan 164th out of 178 countries in the corruption perception index (TransparencyInternational, 2010). In the following sub-sections, I review key aspects of socio-economic and political developments, highlighting key known factors that have been influencing these processes following the disintegration of the USSR.

7.1.1. Historical background

Kyrgyz nomads have more than 2000 years' history. Kyrgyz Qahanat, a type of nomads' statehood, existed at the time of Genghis Khan's rule in the 12th century (Tchoroev, 2002). Kyrgyzstan was previously the Kyrgyz Soviet Socialistic Republic. The republic was formed in 1925 initially as an autonomous oblast, and was given 'republic' status in 1936.

The Soviet government defined the borders of the Soviet republics in central Asia based on a pragmatic approach, which tended to include ethnic and linguistic principles. Along with native Kyrgyz' lands in the Tian-Shan Mountains, the republic acquired historically native settlements of the Uzbeks around Fergana Valley (one of the most fertile valleys in central Asia) and Tadjiks, Kazakhs, Uyghur across the respective borders. At its foundation therefore Kyrgyzstan

³⁷ Size of overall territory – 198,500 km².

³⁸ Central Asian FSU countries are Kazakhstan, Kyrgyzstan, Uzbekistan, Tajikistan and Turkmenistan.

was a multinational republic. The ethnic structure has been changing during and after the Soviet period due to substantial immigration and emigration (Abazov, 1999a, Huskey, 1995, Schmidt and Sagynbekova, 2008). At all times, along with the titular nation, Uzbeks and Slavs (predominantly Russian) were the largest ethnic groups. As of 2008, 65% were Kyrgyz, 14% were Uzbeks, 12.5% were Russian, and 8% were other ethnic minorities (TheGovernmentKyrgyzstan, 2009).

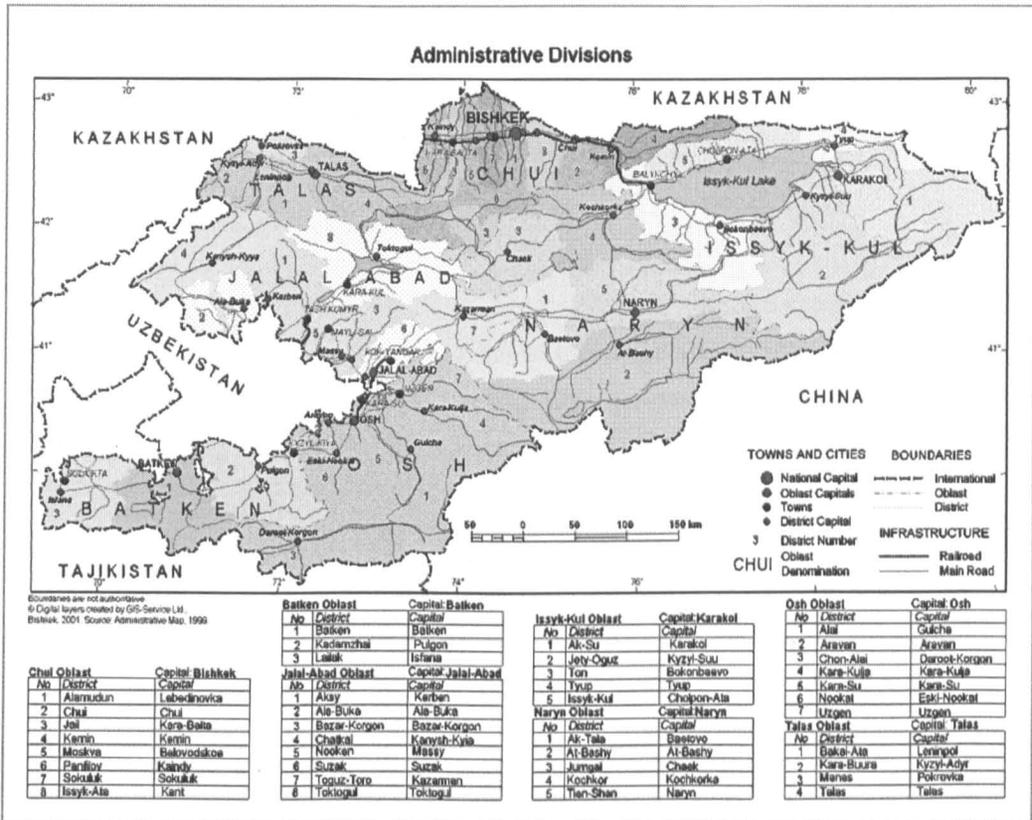


Figure 7.1 Administrative map of Kyrgyzstan

Throughout Kyrgyzstan's history, its geography has been a determining factor in its economic and political developments. A mountainous country, only about 10% of its land is suitable for industrial, agricultural and urban development (Huskey, 2008). Most of the population live in rural areas. As of 2008, 65.3% of its 5.250 million populations were rural. At present, the country is divided administratively into 7 oblasts, the capital Bishkek city and Osh city (Figure 7.1). High mountains, which are impossible to cross most of the year, divide the country from north to south. The south comprises Osh, Jalalabad and Batken oblasts. The north includes the capital (Bishkek city), and Chui, Naryn, Talas, and Issyk-Kul oblasts. Industry developments have been concentrated largely in the north, primarily Chui oblast and Bishkek city. In the south agriculture is a major economic activity.

During the Soviet period ethnic groups tended to divide along occupational lines, which was determined by their primary settlements and political factors (Huskey, 1995). Nomadic Kyrgyz lived mostly in the vast mountainous regions where sheep raising served a traditional livelihood. Uzbeks concentrated in agricultural lands in the fertile Fergana Valley in the south, and Slavs tended to dominate in the urban-based industrial sector in Bishkek and Osh, including in education and research (Huskey, 1995, Huskey, 2008). Post-Soviet transition deepened the socio-economic disparities among geographic regions, urban and rural populations, and these affected ethnic groups differently. Whilst agricultural settlements appeared more resilient, many Kyrgyz living in mountainous rural areas were forced to move to urban settlements in the search for jobs, largely to Bishkek and Osh cities.

7.1.2. Macroeconomic context

Kyrgyzstan does not possess substantial natural resources, with the exception of its hydro-electricity resources, small amount of gold and rare minerals. Upon disintegration of the USSR, left without any support from Moscow, Kyrgyzstan's government turned to the assistance of international agencies for economic and social systems reforms (Abazov, 1999b, Pétric, 2005, Pomfret and Anderson, 2001, Promfret, 2002). The first President, Askar Akaev³⁹, pronounced liberal and radical measures to move to a market-oriented economy. Kyrgyzstan was the first country in the FSU to sign an agreement with the International Monetary Fund (IMF) and cooperation with the World Bank (WB), in 1993, and to join the World Trade Organization (WTO), in 1998 (Pomfret and Anderson, 2001, TheGovernmentKyrgyzstan, 2007b).

By the end of the 1990s, substantial external financial support from the IMF, WB and other individual states allowed Kyrgyzstan to achieve macroeconomic stabilisation, in terms of cutting inflation and slightly reducing the budget deficit (Abazov, 1999b, Pomfret, 2007). However, international aid was provided about one-fifth in grants and four-fifths in loans, and eventually international assistance came at a high price in terms of external debt (Promfret, 2007). In 2000 the external debt/GDP ratio exceeded 100% and Kyrgyzstan was forced to turn to the Paris Club for rescheduling in 2001. It was later rescheduled again on March 11, 2005, following the IMF's approval of Kyrgyzstan's arrangement under the Poverty Reduction and Growth Facility (ParisClub, 2005).

³⁹ Askar Akaev, the 1st President of Kyrgyzstan, was in power in the period 1991-2005, and was removed by an infamous coup in March 2005. He lives in political exile in Moscow, Russia.

Since independence, the country has been continuously supported through the highest financial and technical assistance per capita in the central Asian region, averaging at 50-60 US\$⁴⁰ per person per year (OECD, 2010, Promfret, 2007). In the period from 2000 to 2008, Kyrgyzstan received a cumulative US\$ 1.85 billion (OECD, 2010). Among multilateral external actors are the WB, European Union, and the Asian Development Bank. Among individual countries, key donors are the USA, followed by Germany, Japan, Switzerland, UK, Sweden, Norway (OECD, 2010). Aside from international aid, direct international investments into the country's economy have been minimal.

According to some authors, the overall performance of the economy is difficult to evaluate because of embedded corruption, growing shadow and criminal economy (Cummings and Nørgaard, 2004, Pomfret, 2007). The country's economy is vulnerable to any external economic changes, particularly in Russia and Kazakhstan which are close trading partners and source of remittances. More than one-sixth of Kyrgyzstan's population, from 600 000 to 1 million citizens, are seasonal or long-term labour migrants to Russian and Kazakhstan (Marat, 2009, Schmidt and Sagynbekova, 2008). Labour migrants' remittances constitute a substantial part of Kyrgyzstan's economy. These were estimated, for example, as 27% of GDP in 2007 (Marat, 2009).

The country has a substantial and growing shadow economy, which in 2006 was estimated as equivalent to 53% of GDP (UNDP, 2006). Since the early 1990s, central Asian countries have become some of the key routes of illegal drugs trafficking from Afghanistan to Europe, Russia and China. Kyrgyzstan hosts influential central Asian criminal networks, whose key business involves illicit drug trafficking from Afghanistan to Europe and Russia (Kupatadze, 2008, Madi, 2004, Marat, 2006, Townsend, 2006). The underworld's criminal economy is substantial in regions where influence of central Government is weak (Kupatadze, 2008, Madi, 2004, Marat, 2006). Kyrgyzstan has both a corrupt political environment (presented in the next section) and widespread poverty.

7.1.3. Political context

Kyrgyzstan is governed as a republic under the executive branch of the President and the Prime Minister. The elected parliament is the legislative branch of the government, and the Supreme Court is the judicial branch. The people of Kyrgyzstan have lived through two political crises;

⁴⁰ Source: Official Development Assistance, Organization for Economic Development and Cooperation (OECD). OECD databases, available at: <http://stats.oecd.org>.

one in March 2005 and the other in April-June 2010. The country's only two ex-Presidents live in political exile.

In the 1990s the country was referred to as an 'island of democracy' in central Asia, largely because of the initial policy of the first President Akaev to open doors to international organisations, and to allow the proliferation of civil society organisations and NGOs, independent media and a vocal parliament (Anderson, 2000, Cummings, 2008). Despite relative (as compared to other central Asian republics) liberalism and declarations of democracy, Akaev's rule grew into an increasingly authoritative regime. Akaev's leadership manipulated the constitution, and promoted his family's economic and political interests (Cummings, 2008, Lewis, 2008). As elsewhere in central Asia, clans, tribal and regional affiliations based on ancestry historically play an important role in forming political, economic and social networks (Collins, 2004, Huskey, 1995). In the case of Kyrgyzstan, the north-south divide has always been profound, being a determining factor in political life throughout its history, even during the Soviet period (Cummings, 2008, Huskey, 1995, Madi, 2004, Marat, 2008). During Akaev's regime, the country's political elite was engulfed in rivalries and tensions, in which the north-south divide played a key role. Corruption was wide-spread. In early March 2005, in response to manipulation of Parliamentary elections, violent clashes erupted initially in the southern oblasts, and eventually led to a popular uprising in Bishkek. These events, referred to as the 'Tulip revolution', brought into power Kurmanbek Bakiev⁴¹, a southern politician, and once a Prime Minister of Akaev's government.

Many hoped that the 'Tulip revolution' would bring about democratic changes. However, under President Bakiev the country moved towards more centralisation of power and authoritarianism (Lewis, 2008). Corruption worsened, freedoms were limited, and political opposition was suppressed (Huskey, 2010). Bakiev applied the same approach as his predecessor, consolidating political and economic power in the hands of few, including his family (Kupatadze, 2008, Lewis, 2008, Marat, 2008). These few had control over parliament, law enforcement and national security, and key sectors of the country's economy, such as the hydro-energy sector, borders' and custom's control, and the banking system (Marat, 2008).

On April 8, 2010, the Bakiev regime was thrown out by a people's uprising, during which dozens of demonstrators were killed and hundreds injured. An interim government was formed and Parliament was dissolved. On June 11th, 2010, violent and ethnically motivated clashes between Kyrgyz and Uzbeks erupted in southern Osh and Jalal-abad oblasts. Hundreds were

⁴¹ Kurmanbek Bakiev, the 2nd President of Kyrgyzstan, was in power in the period 2005-2010. He was removed by an uprising in April 2010. He lives in exile in Belorussia at the time of writing.

murdered and thousands injured. Infrastructure of Osh city and Uzbeks villages was destroyed. The country once again underwent rapid political changes with election of a new parliament in October 2010.

7.1.4. Civil society

A main feature of the democratisation model that is promoted by international actors in the FSU region has been state transparency and accountability through involvement of civil society organisations. The establishment and support of the non-governmental sector in the FSU region was high on the donors' agenda. There was sizeable financial aid to realise this aim (Buxton, 2009). Proliferation of NGOs in central Asia, including in Kyrgyzstan, and their financial dependence on donors have been at the centre of debate since the late 1990s (Anderson, 2000, Buxton, 2009, Paasiaro, 2009, Pétric, 2005, Shishkaraeva and others, 2006, Ubysheva and Pogojev, 2006). Some researchers argue that donor-supported NGOs are advocates of western interests and a neo-liberal agenda with limited space for independent decisions even though they are not accountable to the state (Pétric, 2005). The majority of well-established NGOs in Kyrgyzstan tend to concentrate in the capital Bishkek, and to a lesser degree in Osh city. NGOs are often led by former academic, scientific or state elite. It has been suggested that these organisations have very weak links to and common interests with the majority of rural poor. Others view Kyrgyzstan's NGO sector as vibrant and competitive with its own power balances and interests, which evolves on its own independent rules. The civil society sector is recognised as important, particularly in the context of political instability and rivalries. The majority of Kyrgyzstan's NGOs cover social, legal issues, gender issues, civic education, health services, ecology and other areas (Ubysheva and Pogojev, 2006). Several leading NGOs have become important actors in the political arena, bravely challenging and openly questioning agendas of the state or of international actors such as the IMF and WB (Marat, 2008, Paasiaro, 2009).

7.2. PATTERNS OF HEALTH

Patterns of health in central Asian countries and their determinants remain an understudied subject (McKee and Chenet, 2002). Available data are based on national vital statistics, which are routinely reportable to the WHO. Studies that have analysed these vital statistics suggested underreporting, problems with surveillance coverage and completeness (Aleshina and Redmond, 2005, McKee and Chenet, 2002, McKee, Figueras, and Chenet, 1998). Recording and reporting is particularly poor in rural areas (Guillot, 2007), where most of the population resides. A key issue for interpreting official vital statistics data is internal migration and

international labour migration, combined with weak capacity to properly register movement of the population.

The trend in life expectancy at birth in Kyrgyzstan appears broadly similar to those observed in other central Asian countries (McKee and Chenet, 2002, McKee, Figueras, and Chenet, 1998). Life expectancy at birth improved throughout the Soviet period, and then fell during the 1990s, before levelling in the 2000s. According to the WHO/Euro Health for All database (WHO/Euro, 2011), the average life expectancy at birth (both sexes) has been 68.5 years in recent years. This is similar to the FSU average of 68 years and considerably lower than the EU figure of 79.6 years. Males have a lower life expectancy, with a gap of 8-9 years.

According to empirical evaluations (Aleshina and Redmond, 2005, Guillot, 2007), infant and maternal mortality are likely considerably underreported. For example, the official infant mortality rate for 2002 was reported as 21 infant deaths per 1000 live births, whilst a multiple demographic cluster survey conducted by UNICEF and Demographic Health Surveys has given an infant mortality rate of 61 infant deaths per 1000 live birth (95% CI 47-76) (Aleshina and Redmond, 2005). Recent estimates suggest that under-five child mortality in central Asia, including Kyrgyzstan, might have been decreasing (Rajaratnam and others, 2010). In 2010, under-five mortality was estimated at 42.5 deaths per 1000 (95% CI 36.0-52.4). This health indicator appears higher in comparison, for example, with Russia which suggests a point estimate of 14.5 deaths per 1000 in the same study (Rajaratnam and others, 2010). Kyrgyzstan also has higher maternal mortality rates than several other FSU countries (Hogan and others, 2010). In 2008 the maternal mortality rate was 69 deaths per 100 000 live births (95% CI 58-82) as compared to a rate of 44 (95% CI 38-51) for Kazakhstan or 20 (95% CI 16-26) for low-income Moldova (Hogan and others, 2010).

Similar to other central Asian countries, Kyrgyzstan is likely facing a double burden of communicable and chronic non-communicable diseases (McKee and Chenet, 2002). According to existing health data (RMIC, 2008, WHO/Euro, 2011), major causes of deaths are cardiovascular diseases (>40%), cancers, external causes such as injuries and poison, chronic diseases of the respiratory system, chronic liver diseases and cirrhosis. Kyrgyzstan shows high rates of preventable and manageable chronic diseases such as hypertension, endemic anaemia and endemic endocrine disorders including diabetes and thyroid dysfunctions (RMIC, 2008). The TB burden was historically substantial (presented in details in Chapter 8). Viral hepatitis including B and C is also a substantial problem. For example, the incidence of hepatitis B is 10.4 cases per 100 000 population as compared to the European Union average of 2.7 or the FSU's average of 4.4 cases per 100 000 population (WHO/Euro, 2011).

Alcoholism and intravenous drug use are important determinants of premature mortality in the FSU region, including in Kyrgyzstan, and are shown to be associated with violent behaviour, poisoning, accidental injuries and cardiovascular diseases (McKee, Shkolnikov, and Leon, 2001, Pomerleau and others, 2005, Pomerleau and others, 2008, Redmond and Spooner, 2009, Shkolnikov, McKee, and Leon, 2001).

7.3. HEALTH SYSTEM

The Kyrgyzstan's health system reform was initiated in 1996, upon the approval of the Manas health care reform programme (Meimanaliev and others, 2005). Among priority objectives of the health system reform were changes in financing, restructuring and downsizing hospital infrastructure and health personnel, and reforming primary care through introduction of family medicine (Atun, 2005, Purvis and others, 2005). Financing reform included diversification of domestic sources of finances, centralizing pooling of funds, and moving away from input-based line-item providers' payment (Jakab and others, 2005, Kutzin, Jakab, and Cashin, 2010).

Kyrgyzstan reportedly managed to move forward with this reform programme, achieving the abovementioned objectives, in spite of constrained financial capabilities and political instability during the last decade (Atun, 2005, Falkingham, Akkazieva, and Baschieri, 2010, Jakab and others, 2005, Meimanaliev and others, 2005, Purvis and others, 2005). I highlight the health system's changes that have occurred as a result of the reform in the following sub-sections.

The current health system reform programme, Manas Taalimi 2006-2010, aims to build on these achievements, moving forward to establish an integrated health care system (The Government Kyrgyzstan, 2006b). The reform programme envisions an ambitious reform of sanitary epidemiological services to establish public health services that would integrate health promotion and prevention, surveillance and control of communicable and non-communicable diseases, and regulatory function.

Donors' involvement in Kyrgyzstan's health reform in terms of financial assistance and technical advice has been considerable (McKee, Figueras, and Chenet, 1998, Meimanaliev and others, 2005, MOH, 2008a). Among key actors in Kyrgyzstan's reform were the World Bank (WB), United State Agency for International Development (USAID), World Health Organization (WHO), UK Department for International Development (DFID), Kreditanstalt für Wiederaufbau (KfW), German Technical Cooperation (GTZ) and Swiss Agency for Development and Cooperation (SDA) (Borowitz and Atun, 2006, WB, 2008). Kyrgyzstan

reportedly represents an exemplary case of donors' continuity of efforts, cooperation and coordination with national health system stakeholders (Borowitz and Atun, 2006, Falkingham, Akkazieva, and Baschieri, 2010, Kutzin and others, 2009).

I present in the following sections the main features of the health system's components as were known at the time of data collection

7.3.1. Governance

Health care and public health services remain predominantly publicly owned. The private health sector remains limited. The notable exception is the pharmaceutical sector, which is nearly fully privatised (Meimanaliev and others, 2005). The state, through the MOH, develops and approves health policies, including the state health care benefit programme (TheGovernmentResoultion, 2006, TheLaw, 2004, TheLaw, 2005b). The MOH also carries regulatory functions in regards to health prevention, treatment and rehabilitation, licensing and attestation of health providers, and quality and safety assurance. The MOH's guidelines and regulations are compulsory for all health organisations irrespective of ownership. Parallel health services under other Ministries have been retained.

Oversight of the health system is top-down. Some functions of the MOH have been delegated to its sub-ordinate organisations such as the Department of Sanitary and Epidemiological Services, and the Department of Pharmaceutics and medical technologies. Quasi-governmental entities have been established such as the Medical Accreditation Commission, the Association of Family Group Practices and the Hospital Association (Meimanaliev and others, 2005).

Oversight at regional levels is provided through regional coordinating commissions on health⁴². The regional commission is chaired by the head of the regional state office (Meimanaliev and others, 2005, TheLaw, 2005b). The regional health commissions include the heads of main health organisations in the region, and representatives from other sectors such as education, social protection, and reportedly representatives of NGOs.

⁴² Regional level extensions of the MOH were abolished in 2000 due to governance restructuring.

7.3.2. Financing

Sources and financial flows

There have been two principal changes in Kyrgyzstan's health system in generating revenue from domestic sources, namely the introduction of health insurance and formalisation of private out-of-pocket payments (OOP). The Mandatory Health Insurance Fund (MHIF) was established in 1996. The MHIF is based on earmarked 2% payroll tax contributions and a 5% health insurance contribution from the 5% land tax collected from farmers, the pensions fund, unemployment insurance fund, and social welfare recipients (Meimanaliev and others, 2005, TheGovernmentKyrgyzstan, 2006b). OOP include official co-payments, and in-cash payment made by households at the point of delivery for purchasing of pharmaceutical products, fees for non-medical services and for medical services not included in the state benefit package (latter referred to as 'special means').

Exemptions from formal co-payments and entitlements are regulated by the State Guaranteed Benefit Package (SGBP) (TheGovernmentKyrgyzstan, 2007a). Under the SGBP, emergency services and basic primary care services for enrolled patients are free of charge. Co-payments are flat-fees payable to hospitals on admission, for certain additional outpatient services (e.g. diagnostic tests), for specialist's outpatient services, and for additional drug benefit to contracted pharmacies. Level of copayments and exemptions⁴³ are defined annually by the MOH. Providers keep revenues collected from co-payments, and were mandated to use 80% of co-payments for supplies, food, and the purchase of medicines.

Thus, health system revenue is collected from four sources: general taxes, earmarked taxes from payroll and social benefits, private (users' of services) and international funds (Figure 7.2). Revenues from all public sources are pooled at the national level (Kutzin and others, 2009). As of 2007, formation of the health budget is based on a programme approach (MOH, 2007).

⁴³ Based on (i) socio-economic status - veterans of World War II, disabled in army services, persons with disabilities, orphans, nursing home residents, military force personal; (ii) age - children under 5 years, pensioner 75 years and older, or (iii) health condition - those with socially-important diseases such as tuberculosis, diabetes, cancer, or highly-pathogenic diseases.

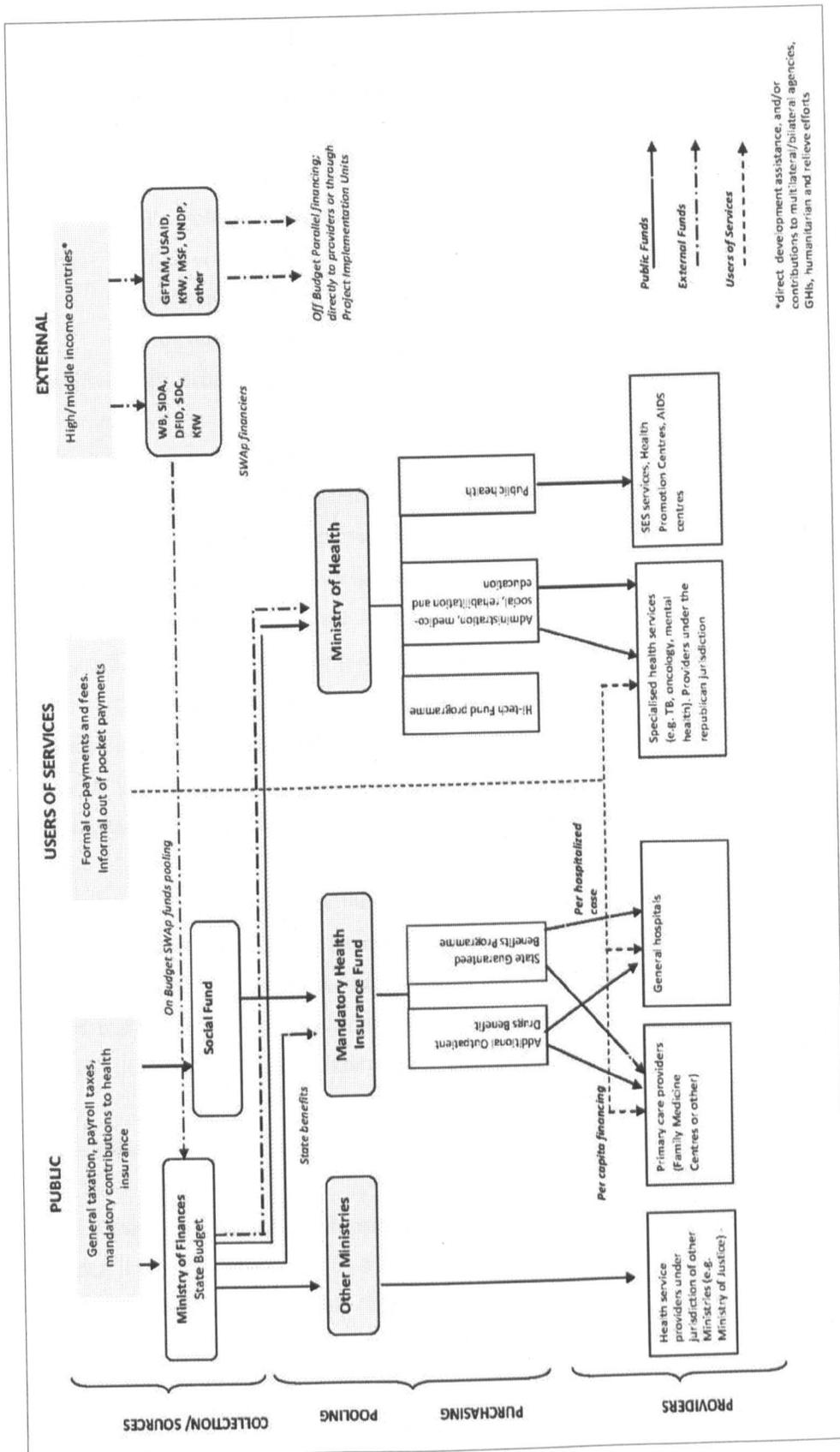


Figure 7.2. Financial flows, Kyrgyzstan's health system

Source: WB, 2008; MOH 2008

There are five programmes for budget purposes:

- (i) The State Guaranteed Benefit Package;
- (ii) Additional drugs benefit;
- (iii) Public health and health promotion, which includes services provided by sanitary-epidemiological stations, HIV/AIDS services, blood services, health promotion centres;
- (iv) Medico-social services – these include services provided by all organisations under republican jurisdiction, and specialised services such as tuberculosis, oncology, mental health, rehabilitation, and administration and medical education;
- (v) High-technology services.

The MHIF manages SGBP and additional drugs benefits allocated from the state on behalf of the entire population. The MHIF purchases services from contracted providers. At present these include primary care providers and general hospitals. Services are reimbursed by the MHIF based on capitation for primary care providers, and on patient-based payment (i.e. hospitalised case) for inpatient facilities. The MHIF has allowed the introduction of new institutional arrangements for pooling of funds and purchasing of services within the SGBP, thus reportedly consolidating the purchaser-provider split (Falkingham, Akkazieva, and Baschieri, 2010, Kutzin and others, 2009, Kutzin, Jakab, and Shishkin, 2009). A so-called single payer system has been established. Such arrangements also have allowed a common informational system and new provider' payment mechanisms (Borowitz and Atun, 2006).

The MOH pools the funds for the other three programmes. Each specialised health service has its own budget line. Funding for health services under other Ministries is channelled separately. External funding is either executed through the sector-wide approach (SWAp) or channelled 'off budget' directly to service providers. SWAp actors in Kyrgyzstan include the WB, DFID), KfW, SDA and the Swedish International Development Cooperation agency (SIDA).

Health expenditure trends

As I mentioned earlier, public spending on health had reached its lowest level by 2000-2001 when it was estimated at 2.1% of GDP. During the last decade, state spending on health has increased, but not considerably (Figure 7.3). In nominal terms, total spending from all sources increased from 2900 million Kyrgyz Som (KS) in 2000 to 12,500 million KS in 2009 (HPAC, 2008, HPAC, 2009, HPAC, 2011). This constitutes an increase in health spending from all sources from 4.8% of GDP in 2000 to 6.8% of GDP in 2009 (Figure 7.3).

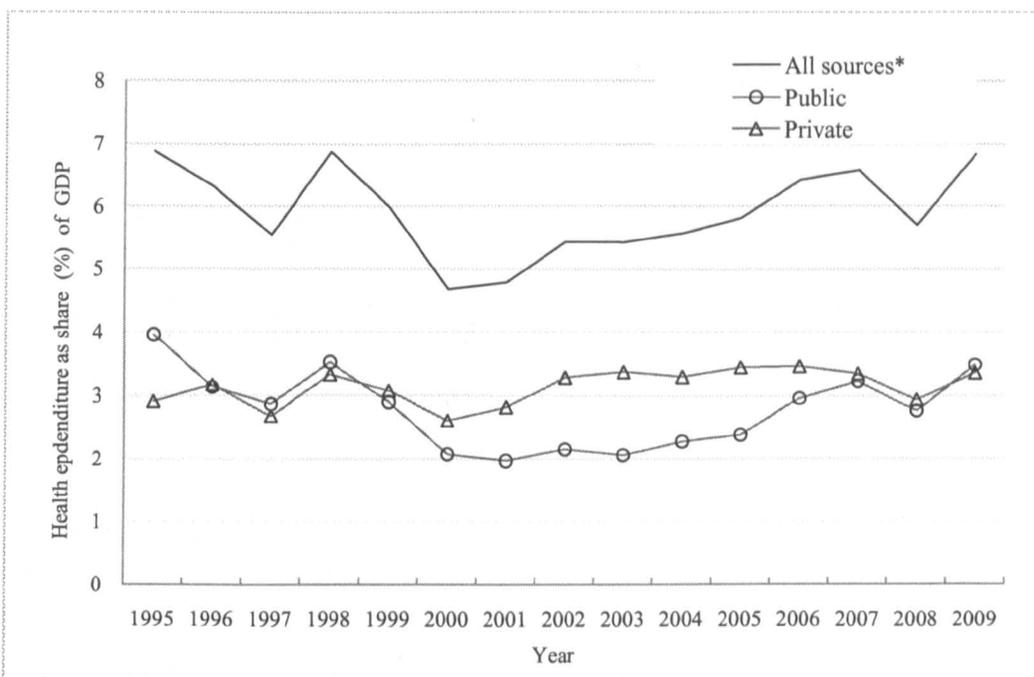


Figure 7.3. Health expenditure as % of GDP, Kyrgyz Republic, 1995-2009.

Source: WB Development Indicators database, HPAC 2008, HPAC 2009, HPAC 2010.

*spending from the external sources is not shown on the Figure 7.3. Spending from external sources ranged from 0.5% to <1.0% GDP in different years (HPAC 2008, HPAC 2009, HPAC 2010)

Health spending per capita (PPP) increased steadily from US\$ 66 in 2001 to US\$ 152 in 2009 (based on 2005 constant US\$ prices) (WB, 2010). This is below the average per capita health spending among low- and middleincome states in Eastern Europe and central Asia, which was US\$ 303, in current US\$ (WB, 2010).

Tax revenues remain a main source of public funds for the state, with the MHIF playing a complementary and relatively minor role in financial terms (HPAC, 2008, HPAC, 2009, HPAC, 2011). Most health expenditure comes from the state budget and users' of services (Table 7.1). Nearly half of total health expenditure comes from the users' of services (Table 7.1, Figure 7.3). Data on donors spending on health were not collected systematically until 2006 (HPAC, 2008). This has generally fluctuated year-to-year and has been estimated to be as high as 9.5-12% of total health expenditure (HPAC, 2008, HPAC, 2009, HPAC, 2011, Meimanaliev and others, 2005).

Most public funds are spent on curative services. In this category, the amount spent on outpatient care has been growing over the last years. As of 2009, hospitals accounted for 45.7% and outpatient services for 29% of total public expenditure on curative services (HPAC, 2011). Public spending on public health and preventative services is not considerable, remaining at a

level of 5-7% (HPAC, 2008, HPAC, 2009, HPAC, 2011). Most of OOP are payments for medications at outpatient level (HPAC, 2008, HPAC, 2009, HPAC, 2011). The National Health Accounts (NHA) estimate that more than 70% of OOP are spend in this category.

Table 7.1 Health expenditure by source of funds as share (%) of total health spending, Kyrgyz Republic, 2000-2009

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Budget	43.4	40	38.2	35.1	34.5	36.4	34.3	32.5	37.6	38.6
MHIF	3.7	3.6	3.7	4.5	6.5	4.3	6.6	7.7	4.6	5.5
Private	52.9	56.5	58.2	60.4	59	59.2	55.5	48.2	46.9	42.9
External, SWAp							3.6	5.8	4.0	7.6
External parallel financing								5.7	6.9	5.5

Source: HPAC 2008, HPAC 2009, HPAC 2010,HPAC 2011.

Systematic monitoring of external funding within NHA began in 2007. It is therefore difficult to infer trends over time in parallel and joint external financing for health. Thus far, detailed information on sub-accounts (e.g. TB) has been published only for 2008. In this year, the larger proportion of donors' financing was 'parallel' financing (63%), and the rest was on budget support through a SWAp. Distribution of donors funding by health programmes indicated disproportionally high spending on TB and HIV/AIDS programmes. In 2008, 42% of total donors funding went to the HIV/AIDS programme, 24% to the TB control programme, and the remaining 34% on other health programmes (HPAC, 2009)

7.3.3. Organisation of service delivery

In Kyrgyzstan most of the restructuring and downsizing of inpatients facilities was implemented in 1999-2003. Overall number of all hospital beds reduced from 83 beds per 10 000 population in 1997 to 50 beds per 10 000 in 2008 (RMIC, 2008). Hospitals' closures affected primarily rural hospitals. 78% of all closed hospitals were rural (Purvis and others, 2005). Regional large general hospitals with speciality departments were formed by merging, administratively and financially, pre-existing general and specialised hospitals (Meimanaliev and others, 2005, Purvis and others, 2005). The network of tertiary-level facilities and national hospitals has been retained. This network is clustered primarily in Bishkek city. Several specialised services such as dermatology-venerology and narcology have undergone considerable changes in the closure of all regional extensions, with the exception of national-level centres and Osh oblast. Other specialised services such as TB services underwent only closures of rayon extensions.

A primary care model based on family medicine has been introduced (Atun, 2005 , Hardison and others, 2007). This has included re-training of medical doctors as family practitioners, initially through short-term training courses (Hardison and others, 2007). Family medicine has been included into formal medical education programmes. An extensive network of outpatient service providers that existed in the Soviet times has been retained. Family medicine groups (FMG) have been formed based on pre-existing primary care providers (i.e. policlinics). Large urban specialised policlinics (e.g. adult and children, with a number of specialists) have been formed into Family Medicine Centres (FMC). In some instances, small hospitals were merged with FMCs as well. FMCs are the largest outpatient health facilities, located in cities and rayon centres. Outpatient services in rural areas are provided by feldsher ambulatory points (FAP). Administratively FAPs are supervised either by FMG or FMC.

FMGs are the main providers of primary care, and population enrol only in family groups. They are staffed with at least one family doctor, paediatrician and gynaecologist (and therapist), 2-5 nurses, and a manager. Most of the FMGs were established as affiliates of FMCs. FMCs provides administrative and financial management, and at the same time are providers of specialised outpatient care. Over time, the scope of services provided by family medicine doctors has increased (MOH, 2008a). Family doctors are responsible for managing STDs, family planning, prenatal and antenatal care, detection of TB cases and treatment follow up in the continuation phase, management of acute and chronic diseases, and management of mild mental disorders such as depression, health prevention and promotion.

In addition to family doctors, FMC provide specialised services. Reform implementation has not fully addressed referral mechanisms from family doctors and specialists within FMCs and from primary care to hospitals (Atun, 2005 , Jakab and others, 2005).

Human resources

Following downsizing and restricting of health care services in the early 2000s, the numbers of medical doctors and mid-level personnel were reduced by approximately 30% (Purvis and others, 2005). The number of medical doctors decreased from a national average of 34.1 per 10 000 population in 1991 to 23.8 per 10 000 in 2008, and mid-level personnel from 94.7 to 53.0 per 10 000 respectively (Meimanaliev and others, 2005, RMIC, 2008). There is a noticeable divide in the availability of health personnel between urban and rural areas. On average, the availability of medical personnel (both medical doctors and mid-level) is 3-4 times higher in urban areas than in rural. For example, in 2008 the number of medical doctors in urban areas ranged from 27.1-46.6 per 10 000, and in rural areas from 7.9 to 16 per 10 000 (RMIC, 2008).

The health reform programme has not addressed problems with remuneration of health personnel. Low wages and lack of incentives for medical personnel has been a chronic problem since the Soviet period. There has been an increasing trend of outflow of health personnel from the health system (Kojokeev, Murzalieva, and Manjjeva, 2008). Medical personnel either leave for jobs in other sectors, or migrate to regions with better job prospects, both internally to urban centres and externally to neighbouring countries such as Russia and Kazakhstan. In one study (Kojokeev, Murzalieva, and Manjjeva, 2008), respondents identified low salaries, which do not match increasing responsibilities, and low prestige as the main reasons driving health workers in the search for other job opportunities outside the health sector.

7.3.4. Information system

Collection of health statistics (e.g., mortality, morbidity, health care utilisation, financing) follows a hierarchical principle in line with the hierarchical organisation of health system. The central unit for health information in Kyrgyzstan is the Republican Medico-Informational centre (RMIC), under the MOH. The MOH approves the health indicators to be collected. Depending on speciality, all health organisations from the lower level submit reports to their superior organisation. For example, TB hospitals submit the reports to their regional TB centre. Normally, reports are submitted monthly or quarterly (i.e. every three months) and annually. Respondents have noted that reporting requirements for FMC are considerable. As a result, family doctors spend a lot of time on administrative work.

CHAPTER SUMMARY

In summary, a major focus of Kyrgyzstan's health reform has been changes in financing. In particular, these changes included the diversification of revenue collection, reduction of fragmentation of pooling and changes in payment mechanisms to general health providers (Kutzin and others, 2009). These new mechanisms are credited with reducing geographic disparities in resources allocation (Kutzin, Jakab, and Cashin, 2010). The introduction of official OOP has also been attributed to an improved transparency of financial transactions between patients and providers, given the high level of under-the-table payments to health providers that existed prior (Baschieri and Falkingham, 2006, Falkingham, Akkazieva, and Baschieri, 2010). Despite improvements, the burden of health care payments for the country's poor population remains considerable (Falkingham, Akkazieva, and Baschieri, 2010). However, the impact of financing reform on the performance of providers still has a limited evidence base (Moreno-Serra and Wagstaff, 2010, Rechel and McKee, 2009, Wagstaff, 2010, Wagstaff and Moreno-Serra, 2009), and has not been evaluated in Kyrgyzstan. Another major component of health system reform has been the introduction of family medicine as a model of primary care. Despite intentions (MOH, 2008a, TheGovernmentKyrgyzstan, 2006b), fragmentation of service delivery among providers of specialised services has not yet been addressed.

CHAPTER 8 SUSTAINABILITY OF TB CONTROL PROGRAMME

INTRODUCTION

Chapter 7 provided an overview of the health system and political, socio-economic, and epidemiological contexts within which the TB and HIV/AIDS control programmes function. This chapter aims to analyse the sustainability of the TB control programme in Kyrgyzstan.

By the beginning of the 1990s, the status of TB services was critical. It was reported that there was a shortage of anti-TB drugs in the period from 1992-1996 (ICRC 2004). In response, WHO, WB, USAID, and KfW included the introduction of DOTS in their initial development assistance efforts. Kyrgyzstan piloted DOTS in 1996, being one of the first countries in the FSU region to adopt the strategy as national policy in 1998 (MOH, 2006). The country was also among the first countries globally to have piloted WHO's Practical Approach to Lung Health (PAL) strategy in 2003 (MOH, 2006). Additionally, pilot projects to address TB/HIV and management of MDR-TB were initiated in 2005. Considerable financial and technical assistance exclusively to the TB programme were provided most notably by WHO/Euro, WB, USAID, KfW, GFATM, International Committee of the Red Cross (ICRC), and Médecins Sans Frontières (MSF).

The chapter examines five characteristics of the TB programme: leadership, capacity, flexibility (adaptability), interactions, and performance (Chapter 5). In this research, disease control programme sustainability is assessed through analysis of observable programme characteristics. While these characteristics are intimately interconnected, for the sake of clarity, the chapter is structured to present an analysis of each.

I begin the chapter by critically assessing TB data from surveillance sources with the purpose of showing whether TB surveillance likely reflects the reality of the TB epidemic in the country. This is followed by an examination of how the TB problem is perceived by study respondents.

The *'Leadership'* section aims to identify and characterise leadership. The section assesses the strategic aims of the TB control programme, how these are supported by the legislative framework, and what factors determine implementation of the defined strategic goals. The section presents results of the analysis regarding who the key actors of the programme are, their roles and influences, with a purpose to identify who leads the programme. I present an

assessment of the health system's arrangements for TB programme governance, organisational arrangements for the programme, and identify whether these arrangements influence the leadership of the programme. The section on '*Capacity*' outlines the results of the analysis of resources for the TB control programme. I assess the programme's financing, financial mechanisms, TB services infrastructure, focusing on changes in inpatient capacity. I also assess the availability and development of human resources for TB control; and availability, procurement and distribution of anti-TB drugs.

In the '*Flexibility/adaptability*' section, I present an analysis related to how the health system's arrangements for TB programme functioning changed in response to the introduction of policy innovations. Two innovations are considered – DOTS and MDRTB management. In particular I focus on changes in clinical management of TB patients and organisation of service delivery, and providers' payment mechanism. As was discussed in Chapter two, these functions in particular were determinants of the ineffectiveness and inefficiencies of TB control during the Soviet period, including in the post-Soviet period as was shown in the research in Russia (Atun and others, 2005e, Floyd and others, 2006). The '*Interactions*' section summarises an analysis of interactions between TB services in civilian and penitentiary sectors, and interactions between TB services and HIV/AIDS services, and primary care services. I conclude the chapter with a section on '*Performance*'. Drawing on secondary data (national statistics and WHO TB data) and interviews, I explore whether the TB control programme is effective, efficient and equitable.

8.1. TUBERCULOSIS EPIDEMIC

Tuberculosis has historically been a public health problem in central Asia, including in Kyrgyzstan. The scope of the TB problem prior to the Soviet period is unknown due to lack of surveillance activities. Epidemiological studies to directly or indirectly measure TB incidence, prevalence or mortality have never been conducted in the country. As was presented in Chapter 2, there are, thus, substantial uncertainties in regards to the TB situation during the Soviet period. Reliance on fluorography for confirming TB diagnosis has likely resulted in misdiagnosis. In this section, I discuss available TB surveillance data⁴⁴, and analyse how TB is viewed by programme actors. This analysis is based on both interview data and definitions of the TB problem as outlined in official country documents. As I show further in this chapter, the perceptions presented here influence policy formulation by domestic policy makers.

8.1.1. TB surveillance data

During the Soviet period the central Asian countries showed higher TB notifications and deaths rates as compared to Russia and other USSR regions (Raviglione and others, 1994). According to the USSR surveillance data, the TB burden had been reduced by the middle 1970s. During the 1970s-1980s, Kyrgyzstan's TB notifications fluctuated at the level of 52-60 per 100 000 population. TB death rates had been reported below 10 deaths per 100 000 (Raviglione and others, 1994). As elsewhere in the FSU region, notified TB cases and deaths grew rapidly during the 1990s, peaking in 2001-2002 (Figure 8.1.A, Figure 8.1.C). In the following years, the increase in TB cases and deaths was reportedly halted (Figure 8.1.A, Figure 8.1.C). As of 2008, national surveillance registered 106.3 TB cases per 100 000 population and 9.9 TB deaths per 100 000.

Despite the abovementioned reduction in notified cases and deaths, assessment of TB surveillance data suggests weaknesses. For example, there are notable annual variations of registered new TB cases and deaths across oblasts (Figure 8.1.C, Figure 8.1.D). Though TB case notifications have seemingly improved (e.g. less annual variations) in the last five years, there are substantial intra-oblast (25-49%) and year-to-year variations in proportion of BK+ cases (BK+ is either smear and/or culture confirmed TB case)⁴⁵. Annual variations in registered deaths in some oblasts are substantial. This suggests that TB case detection and diagnosis, including registration of TB-associated deaths, are likely subject to error.

⁴⁴ Despite attempts, the National Centre of Phthisiatry did not provide me with epidemiological surveillance datasets allowing an assessment of the accuracy and consistency of surveillance data.

⁴⁵ Data is not shown. Source – the the National Centre of Phthisiatry

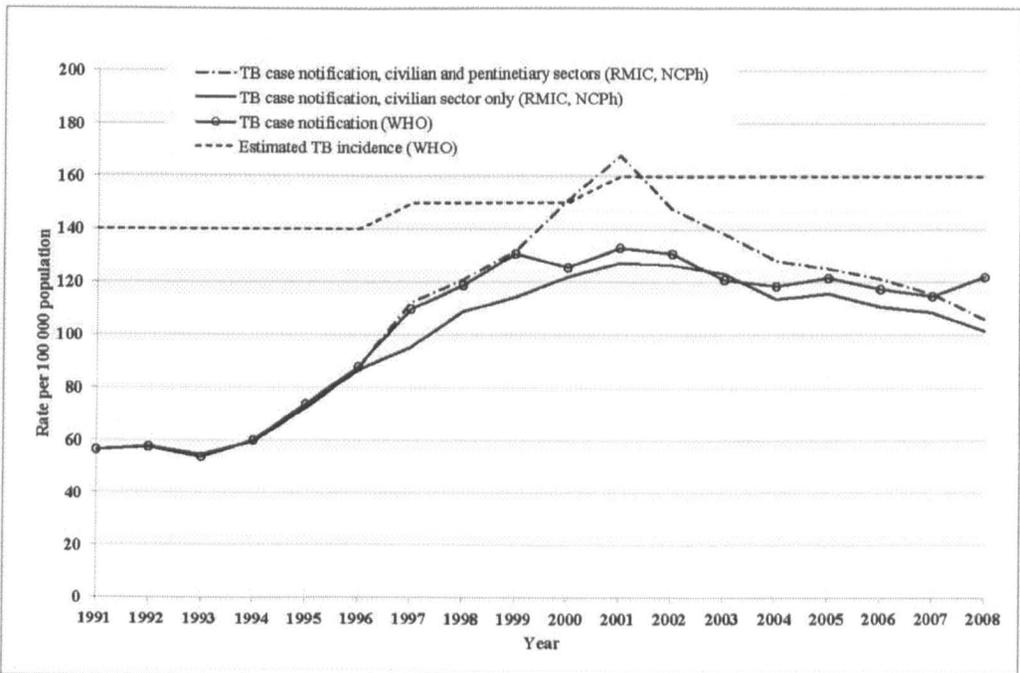


Figure 8.1.A. Tuberculosis cases, notification rates per 100 000 population, Kyrgyz Republic

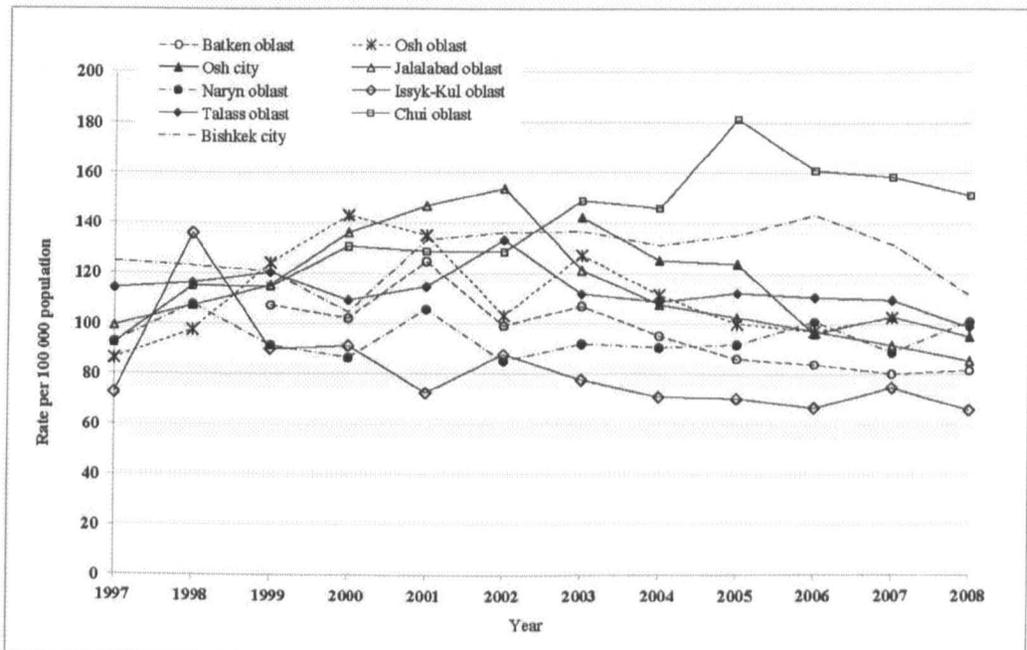


Figure 8.1.B. Tuberculosis cases, notification rates per 100 000 population, administrative regions

Figure 8.1. TB case notification and death rates per 100 000 population, Kyrgyz Republic, 1991-2008

Source: The National Phthsiatry Centre of Kyrgyz Republic, Republican Medico-Information Centre of Kyrgyz Republic, WHO (2010a).

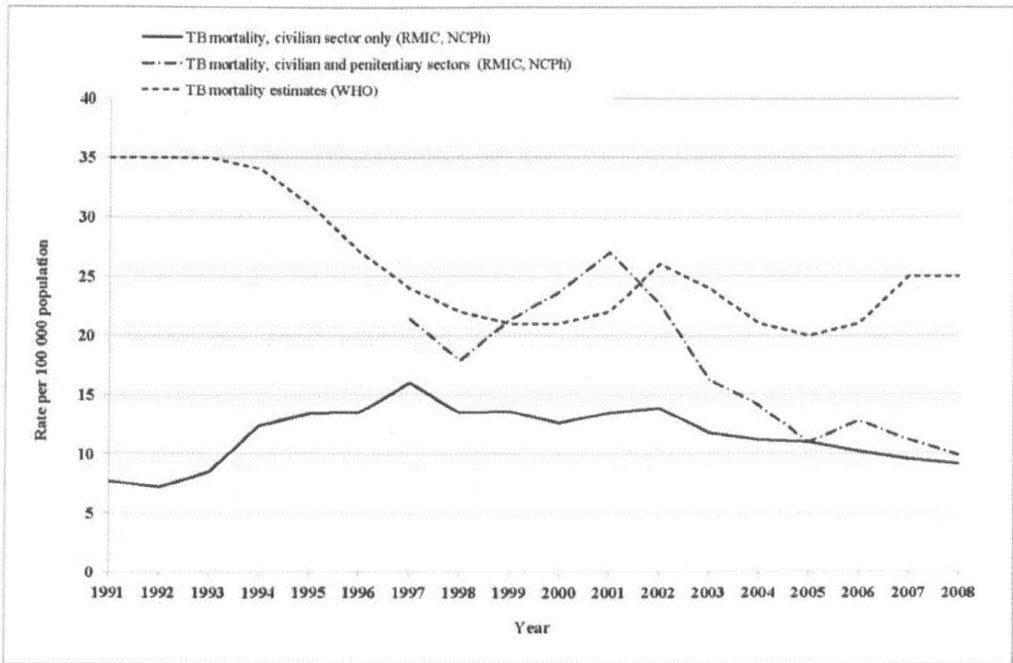


Figure 8.1.C. TB death rates per 100 000 population, Kyrgyz Republic

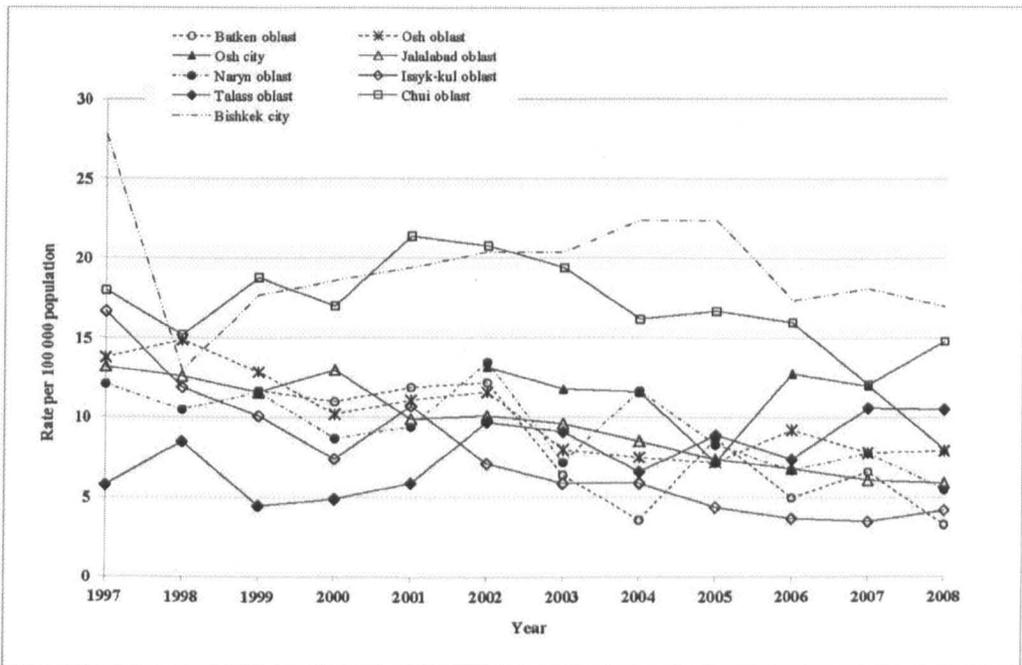


Figure 8.1.D. TB death rates per 100 000 population, administrative regions

Figure 8.1 (continued). TB case notification and death rates per 100 000 population, Kyrgyz Republic 1997-2008

Recent WHO estimates of TB incidence, prevalence and mortality (WHO, 2010a) also suggest potential underreporting of TB cases over the last decade. TB incidence was likely 143 TB cases (95% CI, 114-171) per 100 000 population in 1995 and remained at a similar level of 159 (95% CI, 129-191) in 2008. TB prevalence has been reduced from a likely level of 180 (95% CI, 89-290) TB cases per 100 000 in 1995 to 140 TB cases (95% CI, 53-270) in 2008. TB mortality has not changed; it was an estimated 26 (95% CI, 19-35) per 100 000 population in 1995 and remained at 22 (95% CI, 15-32) in 2008. However, given the wide confidence intervals given by the WHO models, there are substantial uncertainties in the estimates provided.

Table 8.1 Notified TB cases and registered TB deaths, 2008, Kyrgyz Republic

	Population, thousands	Notified TB cases (all forms)		TB death	
		N (% total)	Rate per 100 000	N (%)	Rate per 100 000
Batken oblast	428.5	350 (6.3 %)	81.7	14 (2.7%)	3.3
Osh oblast	1081.3	1100 (19.7%)	97.9	84 (16.1 %)	7.9
Osh city	250.2	238 (4.3%)	95.1	20 (3.8 %)	8.0
Jalalabad oblast	987.1	845 (15.1%)	85.6	58 (11.1 %)	5.9
Naryn oblast	270.6	274 (4.9%)	101.3	15 (2.9 %)	5.5
Issyk-Kul oblast	433.7	323 (5.8%)	65.7	18 (3.4 %)	4.2
Talass oblast	218.5	216 (3.8%)	98.9	23 (4.4%)	10.5
Chui oblast	761.2	1152 (20.6%)	151.3	113 (21.6%)	14.8
Bishkek city	819.0	914 (16.4%)	111.6	139 (26.6%)	17.0
Penitentiary sector	10500*	250 (4.0%)	2439.0	38 (7.3%)	370
Kyrgyz Republic	5250.1	5583	106.3	522	9.9

Source: Republican Medico-Information Centre, Kyrgyz Republic

There are differences in notified TB cases and deaths across oblasts⁴⁶ (Figure 8.1.B, Figure 8.1.D, Table 8.1)). In the last five years, TB notifications were considerably higher in Chui oblast and Bishkek. Without sound epidemiological studies or a systematic assessment of surveillance, explaining the inter-regional differences in TB rates in Kyrgyzstan is difficult. Among possible causes, studies elsewhere indicate a strong socio-economic gradient in TB burden within countries and communities (Lonnroth and others, 2009, Lopez De Fede and others, 2008). According to these studies, urbanisation and rapid socio-economic changes create conditions in some urban clusters for higher TB transmission or higher risk of developing TB disease. However, empirical data on these phenomena in Kyrgyzstan are absent.

⁴⁶ Administrative regions.

TB notification and death rates in the penitentiary sector are 10-20 times higher than in the civilian sector (Bashmakova and others, 2009, ICRC, 2004). As of the end of 2008, new TB cases in the penitentiary sector comprised 4.5% of the country’s notified cases, and 7% of TB deaths (Table 8.1). Because the factors contributing to higher rates of TB in Kyrgyzstani prisons have not been studied empirically, causes of these higher rates remain unclear. Higher rates of TB among prisoners than in the general population were found in other studies conducted in the FSU region (Drobniewski and others, 2005, Lobacheva, Asikainen, and Giesecke, 2007) and internationally (MacNeil, Lobato, and Moore, 2005). It has been suggested that prisons are a setting with increased risk of TB transmission due to higher contact rates (Jones and others, 1999, Stuckler and others, 2008) as well as an overall propensity of prison populations to have higher risks of developing TB disease (Drobniewski and others, 2005, Lobacheva, Asikainen, and Giesecke, 2007).

The number of detected TB cases, and TB notification rates (data is not shown) are higher in young adults aged 15-34 years (Figure 8.2). This pattern is suggestive of persistently high transmission (Rider, 1999). TB rates are higher in males (a common observation for TB). TB mortality is disproportionately higher among young males, which is 3 to 5 fold higher than in females (WHO/Euro, 2011).

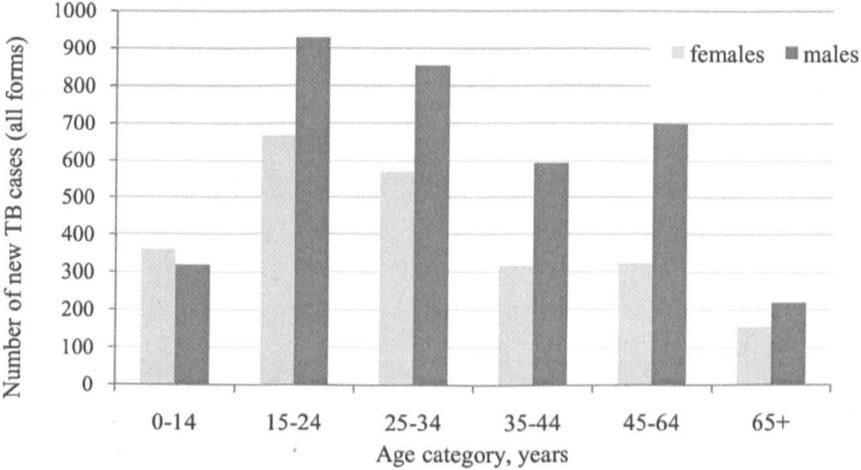


Figure 8.2. Number of notified TB cases, by age and gender, 2007, Kyrgyz Republic

Source: The National Phthsiatry Centre of Kyrgyz Republic

MDRTB data

As elsewhere in the FSU region, the scope and trends of MDRTB in Kyrgyzstan are not fully known. There is no national MDRTB surveillance system in the country. Nationwide surveys have never been conducted. MDRTB surveys have been conducted in Kyrgyzstan twice⁴⁷, in 2002 and 2007. Both covered Bishkek city. The survey conducted in 2007 by Supra-national laboratory (Bristol, Germany) identified 24.8% MDRTB prevalence among new cases, and 53.7% among previously treated cases (CMCC, 2009). MSF conducts MDRTB surveillance in one penitentiary facility, which showed 27.7% prevalence among new TB patients and 59% among previously treated (data for 2007). Modelling performed by the WHO suggests that in 2008, MDRTB rates were 13% (95% CI 0-25%) among new cases and 42% (95% CI 12%–72%) among previously treated cases (WHO, 2010b). This has been interpreted to mean that in 2008, the number of MDRTB cases in the country was somewhere between 350 and 2400 cases (WHO, 2010b). Substantial uncertainty thus surrounds the epidemiology of MDRTB in Kyrgyzstan.

TB/HIV data

TB and HIV/AIDS surveillance systems are not linked and the scope of TB/HIV problem is not clearly defined. Though all TB patients are required to undergo testing for HIV upon confirmation of TB diagnosis, TB services do not register HIV test results (HIV status is confidential and depends on voluntary disclosure by patients). Data on HIV/TB is currently collected by HIV/AIDS services. According to the AIDS services, as of July 1, 2009 there were a cumulative 309 persons detected with TB/HIV co-infections, with a notable increase in recent years. WHO estimates also suggest that prevalence of HIV among incident TB cases has likely grown from 1.4% (95% CI, 0.52-2.1) in 1996 to 6.8% (95% CI, 5.1-9.0) in 2008 (WHO, 2010a).

8.1.2. Perceptions of programme actors' on the TB epidemic

As I have shown in the preceding analysis, there are uncertainties with regards to the epidemiology of TB in Kyrgyzstan. It is likely that substantial reductions in TB incidence and mortality have not occurred in the last decade. TB surveillance lacks accuracy and completeness. The scope and any changes in MDRTB occurrence are not fully known. And the contribution of HIV to the TB public health challenge remains unclear but is probably

⁴⁷ WHO/IUALTD in 2002 (Kyrgyz Republic, the sixth GFATM grant application, TB component), and supra-National Laboratory, Bristol, Germany in 2007 (Kyrgyz Republic, the ninth GFATM grant application, TB component).

underestimated. Nevertheless, detection of MDRTB in newly diagnosed cases clearly suggests ongoing transmission (Frieden and others, 1993, Rullan and others, 1996). A high proportion of MDRTB in previously treated cases is indicative of persistent weaknesses of clinical and organisational management patients (e.g. treatment interruptions) with TB (Post and others, 2004) (Cox and others, 2007, Victor and others, 2007)

This study finds that aggregate national TB notification and death rates are used by officials as indicators to report on TB progress. Changes in TB case notifications are often reported as changes in TB incidence. Reductions in both indicators are reported by official sources as one of the programme's achievements (MOH, 2008a). The majority of respondents view TB epidemics as having stabilised. However, the overarching perception is that TB remains a serious public health problem. Primarily, there is recognition that TB is, to a large extent, determined by socio-economic conditions:

'According to indicators the TB programme works well, TB mortality has been reduced as well, it is already below 10. However, the TB problem is a social problem – it will be acute till socio-economic conditions get improved.' (Respondent TB10)

TB in marginalised and vulnerable groups

It has been noted by all respondents that TB in Kyrgyzstan disproportionately⁴⁸ affects people of low socio-economic status such as the unemployed, homeless, poverty-stricken, old aged, labour migrants, and those with a history of detention. Empirical research elsewhere consistently demonstrates that those with low socio-economic status and marginalised groups are often at higher risk of acquiring TB infection or developing TB disease. Increased risk of TB infection has been found to be associated with poor and crowded living conditions (Lonnroth and others, 2009). Poor nutrition, unhealthy life styles, or a higher propensity for having underlying chronic conditions often contribute to an increased risk of progression to TB disease (Dye and Floyd, 2006, Frieden and others, 2003, Rieder, 1999). These population groups, for several reasons, are often subjected to stigmatisation, lack of information, delay or inability to access health services (Farmer, 1997, Grange and others, 2009, Jaramillo, 1999).

Based on the analysis of interviews, there appear to be differences between domestic and international actors in how the TB problem is perceived. Domestic respondents appear to view the TB problem as one largely related to TB transmission associated with a lack of control over

⁴⁸ Official data on socio-demographic characteristics of TB patients has not been provided during the data collection.

groups that are difficult to trace, monitor or treat. On the other hand, international stakeholders perceive the problem in terms of TB stigma and weaknesses of TB service delivery processes.

Domestic respondents in this study have consistently singled out internal migrants and ex-prisoners as groups driving the TB epidemic. These groups were cited as the ones contributing to higher TB notification and deaths rates in Bishkek city and Chui oblast (Table 8.1).

Internal labour migrants often experience challenges with meeting the administrative requirement to register with local police following a move to an urban centre. This, in turn, prevents them from being registered with primary care providers. Registration with primary care providers determines their eligibility for free primary care services. This lack of access to health services is, in the opinion of some key domestic respondents, viewed as a lack of control over a person and/or lack of responsibility on the part of an individual. This is shown in the following interview excerpt:

'Because megalopolis has certain structures implementing law enforcement – these people of course settle down in suburbs, where strict control over a person is absent. Therefore, he is not getting registered, not getting propiska⁴⁹ in the passport office... they do not want go through prophylactic screening... even if sick, they visit their friends, market, funerals – certainly they represent a threat in terms of epidemiology...'

(Respondent TB06)

This points to the perception that migrants and migration present risks for TB transmission in the community. According to respondents and national reports, internal migrants still undergoing TB treatment often default. This is perceived by some domestic respondents as mainly a fault of the patient (i.e. lack of responsibility), but not as a failure of TB services to reach these population groups:

'At the new site, they do not get on the dispensary registration (transfer of registration), not getting registered with police, for a long time...it is impossible thus to trace them. For example arrived from Naryn, got the intensive phase over there, and came to Bishkek to work in the bazaar. And how would we find him?' (Respondent TB02)

Ex-prisoners are also viewed by national respondents as a critical source of TB in the community. Chui oblast hosts two detention colonies, where penitentiary TB hospitals are

⁴⁹ In Russian – official residency registration with police.

located. Upon release, according to respondents, most former prisoners stay in the area. Ex-prisoners experience serious obstacles in obtaining passports, cannot (for various reasons) meet requirements of registration with police, and consequently cannot formally enrol into treatment entitlements with civilian health services. Those who are on TB treatment often do not continue treatment. The release of prisoners, who have undiagnosed TB or are still undergoing treatment, is sometimes viewed by providers as a fault of the prisons system:

'They release people irrespective of whether treatment is completed or not. They say – human rights. What about the human rights of my residents? Here one has infected a teacher, and then she infected the whole school. Children...' (Respondent TB07)

A common theme that emerged in interviews with domestic respondents is the notion of 'asocial' segments of society. The concept of 'asocial members of society' has its roots in Soviet ideology, which considered certain segments of society as undesirable. These people are viewed as irresponsible (or 'non-compliant'). For example, below is the opinion of a respondent who believes that ex-prisoners practice 'asocial' and sometimes illegal lifestyles, which lead them to hide from treatment:

'They conduct an asocial lifestyle, or those who are involved in illegal activities. They not only hide from TB treatment, they live in their hidden world.' (Respondent TB06).

The existence of TB stigma has been noted by respondents representing international organisations. This issue did not emerge in interviews with domestic respondents. Ex-prisoners suffering from TB and/or with MDRTB are particularly stigmatised:

'The civilian sector is very much stigmatised, TB patients and prisoners. If you are both, and undergoing MDRTB treatment – you are really at the end of the chain.... TB is not recognised as a real threat to public health... And, of course, not speaking for people who know, but in a broad society – they think it is a disease of the underprivileged of society like drinkers, homeless, prisoners...and that it can never be a threat to public health.' (Respondent TB05)

This negative perception is exemplified in the following interview excerpt from a representative of general health services:

'and of course, a source of resistance are those from prisons – they spit out everywhere.' (Respondent PHC01).

Perceptions of TB programme actors about MDRTB

MDRTB is recognised as a concern by all respondents. The lack of MDRTB surveillance and the limitations of available data are recognised, and it is acknowledged that the scope and extent of MDRTB is not defined:

'It is unknown what the pace is... how many new drug resistant patients are identified, or now exist, because there is no universal access to this test that defines the resistance pattern.... So it is unknown what is rate of creation of MDRTB.' (Respondent TB11)

I found that national stakeholders often present the MDRTB problem as separate from TB. There is no explicit acknowledgement in national documents that MDRTB is caused by failures of TB providers to find and properly treat drug-susceptible TB. National stakeholders, particularly representatives of the National Centre for Phthisiatry (NCPh), frame the MDRTB problem as one related to a lack of control over people who are difficult to trace or treat. There is a tendency to link the problem to specific socio-economic groups:

'The uncontrolled migration of population, and associated social problems... create challenges in detecting and registering TB patients. Their late presentation to TB services, and late initiation of therapy... impossibility of conducting direct observation of treatment are the main reasons for unsuccessful treatment outcomes and development of resistance.' (MOH, 2008d)

Along with an opinion that MDRTB *'is the fault of DOTS, we never had MDRTB before'* (TB01), MDRTB is perceived as a problem solely related to transmission control. Here for example, is how one key informant, who represents a decision-making institution in TB control, presented the issue:

'Development of resistance is a natural process. Microorganisms are alive and are adapting – if one survives, it produces generations of resistant organisms. And we have resistant TB already circulating; we cannot interrupt its development... it is late to fight development of resistance, what we have to fight is transmission of resistant TB. This is why some of these patients have to be isolated.' (Respondent TB02)

A similar perception of the MDRTB problem is expressed in an interview with another key informant. In this informant's view, the risk of MDRTB transmission is rather high thus necessitating isolation:

'MDRTB patients should, in principle, be in a certain closed environment – that is the patient is infectious and should be isolated from the society.... For example, we are located right on the highway; a patient can go to market, get on the bus, hang out all day then come back at night, and announce that by law he needs treatment and food....'

(Respondent TB06)

Perceptions of TB programme actors about TB/HIV

The HIV/AIDS epidemic is viewed by all the TB programme's respondents as a potential threat to TB control. Nevertheless, the problem of TB/HIV co-infection is not yet considered as critically important by national TB stakeholders:

'Of course it is a concern [HIV], because tuberculosis is a main opportunistic infection among the HIV infected, and not only an opportunistic infection, but also a cause of death. Really it is a potential problem, big problem for TB services. But yet the level of HIV infection in the republic is not so high.' (Respondent TB02)

'It [TB/HIV] is still...number is notyou know...we are not talking about Africa here. But it is coming, and it will grow. But most are not aware of it, not from the TB side [TB programme].' (Respondent TB05)

In summary, the analysis presented in this section suggests that among some key TB programme actors, perceptions about the course of the TB epidemic are formed in the absence of robust surveillance and epidemiological studies. I found that views that existed during the Soviet period, which framed TB control measures as control over persons or patients, persist. Failures of the health system to properly treat patients and prevent the emergence of MDRTB often are not explicitly acknowledged, nor is the challenge posed by aligning HIV and TB control. Stigma is an important feature of the TB control system and informs its functioning.

8.2. LEADERSHIP

8.2.1. Policy responses to the TB epidemic

I analysed leadership in TB control policy-making from the standpoint of whether a clear strategic vision for reforming TB control services is present, and what the vision is, and what

the processes of implementation are for the development of patient-centred TB care. I also examined what strategic steps are being planned for responding to emerged (or emerging) MDRTB. I present a more detailed analysis of the health system response to MDRTB in the section '*Flexibility*'. In analysing TB control policy I relied on two policy instruments. These are *governmental programmes* on TB control⁵⁰, and the regulatory basis governing TB control.

Strategic aims of the TB control programme

Since the adoption of DOTS as a national strategy in 1998, national policy makers declared a commitment to implementing the TB control strategy based on international recommendations. The current TB control strategy is outlined in the *governmental programme* 'Tuberculosis-III', 2006-2010 and the health system reform programme 'Manas Taalimi', 2006-2010⁵¹ (TheGovernmentKyrgyzstan, 2006b, TheGovernmentKyrgyzstan, 2006). The strategy largely mirrors the objectives of the Global Plan to Stop TB, 2006-2015 (WHO, 2006b, WHO/Euro, 2007). Kyrgyzstan declares commitment to the establishment of quality DOTS. Policy makers also aim to implement policy innovations such as MDRTB management, implementation of DOTS in prisons, collaboration between HIV and TB services, and contributing to health system strengthening through Practical Approach to Lung Health (PAL).

The integration of vertical TB services with the general health system and public health services is one of the long-term objectives of health system reform (MOH, 2008a, MOH, 2008d, TheGovernmentKyrgyzstan, 2006b). As a priority, there are plans to integrate specialised TB and pulmonology services at primary care level, thus allowing expansion of DOTS and PAL (MOH, 2007b, TheGovernmentKyrgyzstan, 2006b). Despite aiming at broader integration of the TB programme into the general health system, there is little detail and attention in strategic documents with regards to the mechanisms for strengthening community-based treatment and the social support system for TB patients.

Furthermore, I have found that the policy framework in Kyrgyzstan has competing objectives. A case in point is an approved plan for TB services reform for the period 2008-2016, which has been developed by the MOH and the NCPH. The reform plan sets out an approach that emphasises hospitalisation as a key mode for TB treatment. This plan is formulated to retain

⁵⁰ TB control measures in the country are implemented in accordance with a *governmental programme*, which is a state approved strategic policy document. This document outlines objectives, actions and implementation strategy, including expected outcomes. Since 1996, three *governmental programmes* on TB control were approved by the state and implemented ('Tuberculosis-I', 1996-2000; 'Tuberculosis II', 2001-2005, and 'Tuberculosis-III', 2006-2010).

⁵¹ TB control and prevention of respiratory diseases is a priority sub-programme within on-going health reform programme 'Manas Taalimi', 2005-2010.

TB service inpatient infrastructure⁵² with further differentiation of TB inpatient facilities. According to the approved document (MOH, 2008d), existing TB facilities/departments would be specialised into 4 types of inpatient facilities: (i) facilities for treating newly diagnosed and relapse TB cases, (ii) specialised facilities for treatment of MDRTB (or departments in tertiary-level TB facilities), (iii) specialised facilities for treating chronic cases (infectious cases and those with unfavourable course of treatment), and (iv) rehabilitation centres for patients on recovery and contacts (suspects of TB).

Implementation of TB policy innovations

This study finds that implementation of all policy innovations in TB control during the last decade have been dependent on technical, and to a large extent, financial, support from donor agencies. Examination of international assistance provided since the early 1990s identified that the assistance has been focused primarily on DOTS implementation (Table 8.2). The national expansion of DOTS has been implemented with assistance from the WHO, USAID/CDC and KfW (Table 8.2). Passive case detection using sputum microscopy and treatment observation during the continuation phase has been included in the functional responsibilities of primary care providers. Particular attention has been paid to the establishment of a network of microscopy laboratories at primary care level. Nearly all primary care providers and staff of TB services have been trained, laboratory equipment supplied, and DOTS has been included into formal medical education curricula. Centralised M&E and anti-TB drugs procurement and distribution systems have been set up.

Fundamentally, donors have focused on changes in the clinical management of TB patients, with a move from individualised treatment of TB patients to strict adherence to the WHO recommended regimens. As I exemplify further in the analysis, in principle, structural reforms of TB services have been limited to closing down TB dispensaries at rayon level. Though the follow up of TB patients was included in the responsibilities of primary care providers early in the health reform process, interactions between TB services and primary care providers are limited to coordination of service delivery (the analysis of which is detailed in the section under '*Adaptability*'). International financial assistance for TB control has not been linked into SWAp mechanisms or linked with the aims of health reform processes. Structural reforms of TB services have not been encouraged by the targeted assistance for TB control. An exception has

⁵² Downsizing of TB services infrastructure would involve 6 small TB departments at the territorial general hospitals. These together would account for closing 205 TB beds out of an existing 3520 beds over an 8 year period. At the same time, the MOH has requested, as a part of KfW assistance, to build a new TB hospital in Bishkek city, which is set to take place in 2010-2011, with an expected capacity of 175 beds.

been the World Bank that required, at the inception of piloting DOTS in 1996, inclusion of passive case detection and treatment follow-up into primary care (WB, 2008).

Donors' initiatives have also determined the time of the inception, scope and speed of implementation efforts. With the exception of DOTS, innovations are being operated as pilots.

Until 2005/2006 the strategic focus was primarily focused on drug-susceptible TB. Treatment of MDRTB patients became possible after GLC approval in 2005. The GFATM grant (round 2, 2004-2009, and round 7, 2007-2012) fully covers treatment of MDRTB patients. The DOTS-plus pilot initially included 50 MDRTB patients. Within the GFATM grant, MDRTB treatment is planned to be expanded to enrol 1180 MDRTB patients in the period 2007-2012 (CMCC, 2009). With the exception of MSF (which operates in one TB facility in the penitentiary sector), there is no on-site and ongoing international assistance to domestic TB actors in relation to MDRTB management.

The penitentiary sector started actual⁵³ implementation of DOTS in 2004-2005, when ICRC and MSF (Table 8.2) began their assistance efforts to address the TB crisis in prisons. This was seven years after DOTS had been declared a national policy. Until then, there was reportedly limited attention to TB in prisons from the side of national stakeholders involved in piloting and expanding DOTS in the civilian sector (ICRC, 2004). The only exception has been the Soros Foundation and KfW, which were purchasing anti-TB drugs.

⁵³ Official country documents declare that DOTS was introduced in the penitentiary sector in 2000.

Table 8.2 International assistance to TB control, disbursed and approved funding, Kyrgyzstan, 1998-2010

Agency	Time period (sub-contractor/round)	Focus	Monetary value
WHO	1994-present	WHO TB control policy – technical support	appx 50 000 per year
KfW	1998-2005 (TB-1/2)	1 st line drugs, lab equipment and supplies	5.12 million EURO
	2006-2010 (TB-3/4)	Construction of National Laboratory, TB hospital	5.0 million EURO
World Bank	1996-2000, TB component, Health System Reform Project -1	1 st line drugs, equipment, training , piloting of DOTS	1.6 million US\$
USAID	1997-2000 (CDC Central Asia)	DOTS pilot, Laboratory diagnostics, electronic surveillance (M&E) system	
	2001-2009 (Project Hope)	DOTS implementation (labs, training, M&E, integration with PHC)	1.45 million US\$ ¹ (approximately)
	2005-2009 (Capacity project)	TB/HIV pilot, Chui Oblast	
GFATM	2004-2009 (round 2)	DOTS, DOTS-plus pilot, TB drugs, etc	2.8 million US\$,
	2007-2012 (round 7)	DOTS, DOTS-plus, TB drugs, etc	8.3 million US\$
	Round 9 (not signed)	DOTS-plus, TB drugs, etc	7.8 million US\$ (committed)
ICRC	2004-2010	TB control in penitentiary sector, colony 27	500 000 US\$ per year (approximately)
MSF	2005-2010	TB control in penitentiary, colony 31 [MDRTB management]	600 000 US\$ per year, (approximately)
Government of Finland	2003-2007	Pilot WHO PAL strategy	2.2 million Euro
	2007-2010 (implemented by Finland's NGO)	WHO PAL strategy	200 000 – 500 000 Euro per year (varied)
AFEW	2005-2010	TB/HIV component	

¹ Amount is approximated for Kyrgyzstan, regional project for 5 countries total 5.8 million US\$.

USAID-funded project Capacity has implemented a pilot on a model of TB/HIV collaboration in Chui oblast in 2005-2009. The activities, though they were recognised by the domestic respondents as successful, were not expanded further reportedly because of lack of resources. At the time of data collection, interactions between two specialised services were limited to establishing collaboration at national level. National coordinators at the National Centre for Phthisiatry and the republican AIDS Centre have been assigned as point contacts in regards to TB/HIV patients. A national clinical protocol on the management of TB/HIV based on WHO recommendations have been developed. At present, *AIDS Foundation East-West (AFEW)*, international NGO, continues pilot TB/HIV collaboration in penitentiary sector.

Legislative and regulatory basis for TB control

The legal and regulatory framework⁵⁴ for the policy on TB prevention, diagnosis and treatment emphasises the state's responsibility for TB control. The regulatory framework prescribes centralised and hierarchical governance and organisational arrangements for TB services. The state pledges provision of TB control measures based on principles of *'free of charge, universal access and equal rights for all citizens and residents of Republic of Kyrgyzstan'* (TheLaw, 1998b). Guarantees include the organisation and delivery of *'specific prophylactic, diagnostic, curative and rehabilitation measures'*, including the financing of these measures and social support for patients⁵⁵ and health care workers⁵⁶ (TheLaw, 1998b).

The legislative framework makes it clear that tuberculosis is a communicable disease, which poses a threat to public health. The law gives the state an authority to impose coercive measures. Persons are administratively liable (TheLaw, 1998b) in case of non-compliance with prophylactic and sanitary-epidemiological measures, failure to follow recommendations of a healthcare provider in regards to TB treatment or transfer of dispensary registration. Further, TB patients *'who systematically avoid treatment upon the court's decision are objects of detention in special facilities for inpatient TB treatment'* (TheLaw, 1998b). Those patients *'with infectious forms of TB, who systematically avoid inpatient treatment, and who therefore pose a threat to the public are administratively and legally liable'* (TheLaw, 1998b). The law, however, does not specify how to proceed if treatment is not available, for example in case of XDRTB or even MDRTB. As I present further in the analysis, MDRTB treatment is available only for those enrolled into pilot sites funded by the GFATM.

The TB law outlines patients' rights for respectful and humane treatment, proper diagnosis and care, and social benefits⁹. There is very little said in the law or supporting regulations, however, regarding what constitutes proper treatment and how it should be delivered.

8.2.2. Governance and organisational arrangements

Over the last decade, increasing numbers of international actors have been associated with the TB programme, including involvement of primary care providers. Analysis indicates that, in

⁵⁴ TB legislation is outlined the Law of Kyrgyz Republic "On protection of population against tuberculosis". TB prevention measures are also governed by the Law 'On sanitary-epidemiological well being of the population', and the Law 'On health protection of the citizens of the Kyrgyz Republic'.

⁵⁵ The state guarantees full coverage of sick leave, maintenance of employment, travel to the place of treatment, disability benefits, and treatment in specialized sanatoria.

⁵⁶ Medical workers in specialized TB services are eligible to additional annual leave of 14 working days and 30% salary increase.

principle, governance and organisational arrangements of TB services remain centralised and organised hierarchically. The state, through the MOH, has a central authority in decision making and responsibility for all aspects of TB control. A core of the programme remains a large hierarchically organised network of specialised TB services, headed by the NCPH (Figure 8.3), which is a subordinate agency of the MOH. Decisions made by the MOH and NCPH *'are obligatory for all health organisations irrespective of ownership or subordination'* (TheLaw, 1998b). There is a parallel specialised TB service in the penitentiary sector under the jurisdiction of the Ministry of Justice (MOJ).

With the entry of donors, two parallel governance bodies related to TB control were established. The first is a High Level Working Group on TB (HLWG) also referred to as the Coordinating Committee for Tuberculosis. The HLWG is hosted at NCPH. It was set up as a part of the Project Hope/USAID efforts to establish better governance practices and political support at national level (Teitelbaum, Ibragimov, and Akchurin, 2006). This coordinating committee was meant to become an executed advisory body with participatory decision making from all interested parties involved in TB control. The committee formed 6 working groups focusing on the following priorities – MDRTB, TB/HIV, DOTS, drug management, laboratories, and prisons. The second body is the Country Multisectoral Coordinating Committee⁵⁷ (CMCC), which has been established as a response to a GFATM requirement. However, involvement of national TB actors in the CMCC is limited to reporting GFATM grants implementation.

The TB service network consists of TB centres (formerly regional-level TB dispensaries), TB hospitals, dispensaries and rehabilitation centres (Figure 8.3). At each administrative level, there is a lead TB organisation, which oversees activities in a region. At rayon level, TB control activities are headed by a TB office at the rayon FMC or rayon territorial hospital (a main health facility at rayon level). Each FMC has a TB (phthisiatry) specialist, who oversees activities of family doctors. A TB specialist (TB cabinet) is a part of the FMC but works under organisational/methodological supervision of the TB service organisation. Sanitary Epidemiological Services (SES) have a regulatory role in overseeing implementation of preventative measures such as BCG vaccinations, selective screening for TB infection or disease.

⁵⁷ Analysis relevant to CMCC is presented in Chapter 9.

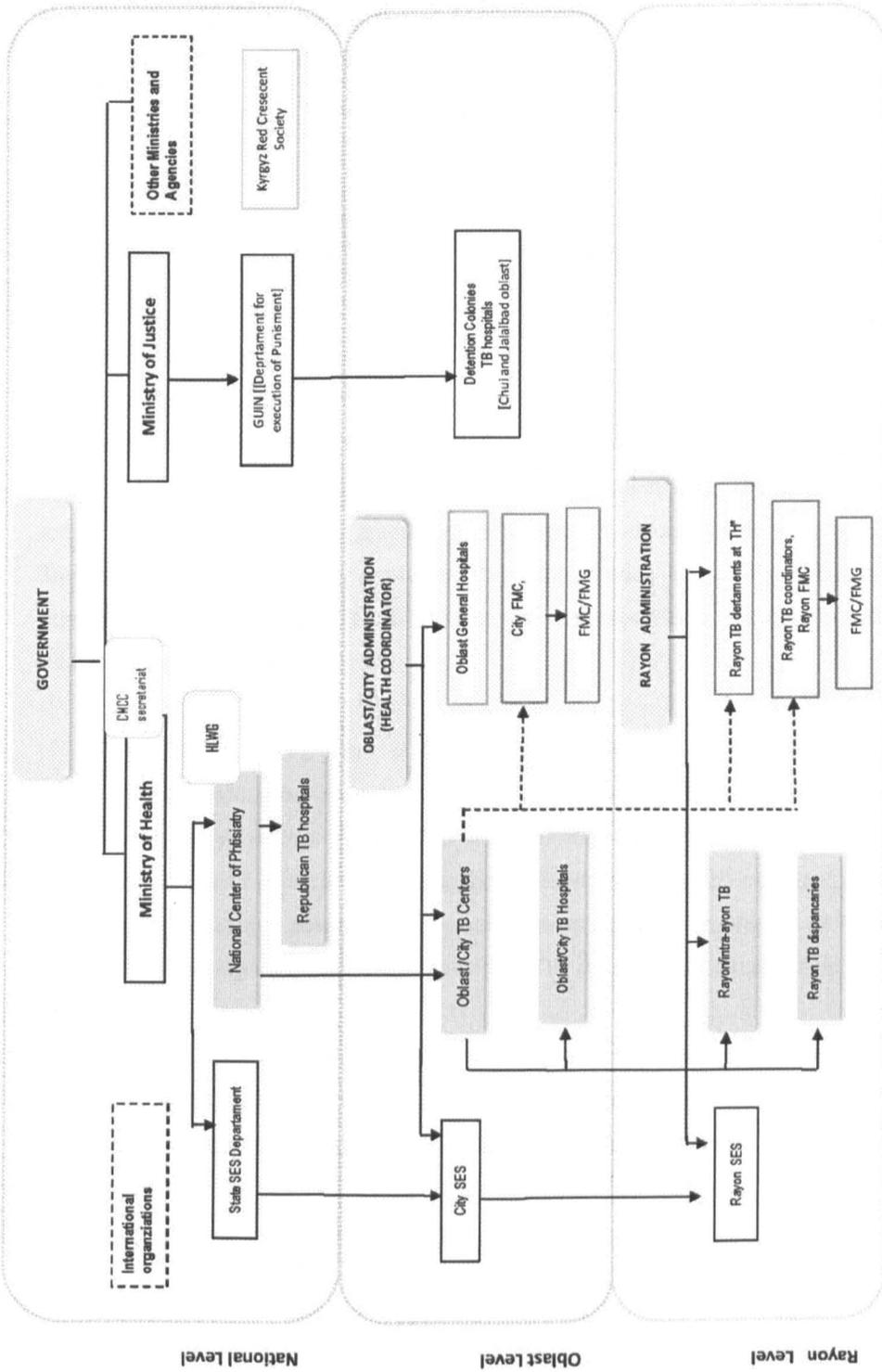


Figure 8.3 Organisational chart of TB programme, Kyrgyz Republic
 Source: National Centre of Phthisiatriy, Manual on TB programme in Kyrgyzstan, 2006, 2009

Involvement of community groups or non-governmental organisations in TB control is minimal. A majority of respondents mentioned that there are no strong groups that could represent the interests of TB patients. An exception is the Kyrgyz Red Crescent society⁵⁸, which has a historical partnership with the national TB programme and the MOH. The Red Crescent is involved in providing social and psychological support to TB patients during their outpatient treatment. Assistance is focused on those from vulnerable groups – elderly retired, disabled, or poor.

8.2.3. The National Centre for Phthisiatry as a formal leader of the TB control programme

The analysis of the roles, responsibilities and positions of actors suggests that the TB programme's leadership has been formally assigned to the NCPH. I found that historically embedded formal governance and centralised authority, which is concentrated within the NCPH, create impediments for effective coordination of TB control efforts. Though HLWG was active sometime after its inception, it gradually has become a body associated with the NCPH and its decisions. Most respondents, outside of the institute, view the NCPH as not meeting their expectations on leadership. This is how one of the respondents elaborated on the issues of leadership and coordination:

'[NCPH] a priori plays a leading role, however, as it relates to questions of coordination... they play more of a formal role than coordinate issues...they need to be more active in their interactions with international partners.... This [area] is rather isolated, and civil society is practically absent here. We do not have any NGOs with open and strong position, which could present and protect interests of TB patients.... I think this highlights the weakness of the [TB] programme.' (Respondent TB10)

Formally the NCPH is open to and collaborative with international initiatives in TB control. The analysis revealed that the NCPH is perceived as isolated from the broader health system community including from donors and NGOs. The NCPH, by its mandate, is responsible for TB services and over the years has defended the interests of TB services. This is how a leader of primary care defines the NCPH leadership:

⁵⁸ Kyrgyzstan's NGO – a network of Red Crescent Society existed since early 1990s throughout FSU

[national coordinator] is a leader. He defends the interests of his hospitals. When there are discussions going on about the budget – he defends hospitals. If money is left – only then to primary care.’ (Respondent PHC01)

Neither the NCPH nor any other actors emerged as a leader that would have engaged and mobilised efforts of all interested parties:

[national coordinator] might be a leader in some segments, but unfortunately he does not pay the same interest to all segments. And penitentiary is not his piece of cake, definitely not..... there is no integrating leader figure, which would pay the same attention to all aspects, or to be there where attention is most needed, without taking into consideration his own interests – this kind of leader figure, we do not have.’

(Respondent TB05)

Vertical governance of the TB programme in Kyrgyzstan has been indeed supported by the WHO and other TB partners. DOTS in principal encourages vertical managerial functions, drug procurement, and monitoring and evaluation (Raviglione and Pio, 2002). The WHO supports a strong central unit of the national TB programmes. In Kyrgyzstan, this role has been given to the NCPH. Technical and financial assistance has been largely channelled through the NCPH or specialised TB services. In the period from 2003-2010, the NCPH has been a principal recipient of GFATM grants. During data collection, concerns were expressed by some respondents that the NCPH has insufficient capacity in terms of grant management, particularly financial management. These concerns were expressed ‘off the record’, thus I cannot present quotes in this thesis. However, an audit by the Office of the Investigator General of the GFATM conducted in December 2009 has revealed problems with financial and programmatic management (GFTAM, 2010a). At the time of writing, there was a transition that would include arrangements in which UNDP⁵⁹ hosts the GFTAM grants implementation unit.

⁵⁹ UNDP is to become one unit for GFTAM grant management.

8.3. CAPACITY

8.3.1. Financial resources

Sources of funds and financial flow

Funds for the programme come from the public (both the state budget and the social fund), private (users of services) and international sources. Financing of the TB programme is fragmented (Figure 7.2, Chapter 7). A network of TB facilities in the civilian sector is funded from the MOH budget as a separate budget line ('sub-programme') (MOH, 2007, MOH, 2008b). Primary care providers are funded by the MHIF. The MOJ finances health services in the penitentiary sector from its own budget. International funding dedicated to TB control (Table 8.2) has been channelled as parallel 'off budget' funding. Donors disburse funds to grants' recipients or serve as providers (e.g. training, etc).

By law, treatment of all diagnosed TB patients is free at point of delivery on all levels of care (The Government of Kyrgyzstan, 2007a, The Law, 1998b). Official users' payments are charged only for x-rays and diagnostic services for non-TB patients. These official OOP are less than 0.5% of total expenditure on TB control (Akkazieva and others, 2009). There have been no studies conducted to date to assess unofficial OOP incurred by TB patients.

Expenditure on TB control

This study finds that the monitoring and evaluation of spending on TB control is weak. The MOH budget on TB services is summarised within general spending categories. These include human resources (salaries and social insurance contributions), administration and planning, and 'other services' (food for patients, maintenance and renovation of infrastructure, medicines and consumables). Expenditure on TB activities, which are provided by primary care providers, has never been monitored systematically. Similarly, donors' investments in TB control have not been monitored systematically. Information received from different sources on donor's annual disbursements is sometimes contradictory (Bashmakova and others, 2009).

Based on previous evaluations (Akkazieva and others, 2009, Bashmakova and others, 2009, Godinho and others, 2005b, WHO/Euro, 2004) and collected data, I reconstructed spending on the TB control programme. Total expenditure on TB control has been increasing steadily over

the last decade, from approximately 130.9 million Kyrgyz som⁶⁰ (KS) in 2000 to 473.7 million KS in 2008 (Figure 8.4.) This approximates to an increase from 2.8 million US\$ in 2000 to 10.4 million US\$ in 2008. The state budget and donors' funding are the main sources of funds (Akkazieva and others, 2009 , Bashmakova and others, 2009, Godinho and others, 2005b, WHO/Euro, 2004). In nominal terms, spending from the state budget on specialised TB services (Figure 8.4) has increased from 80 million Kyrgyz som (KS) in 2000 to 290 million KS in 2008. Spending on TB services as a proportion of the MOH budget remained at the level of 6.5-7% over the years (Figure 8.4). In different years, the proportion of donors' funding has been estimated to range from 30% to 50% of total spending on TB control (Akkazieva and others, 2009 , Bashmakova and others, 2009, Godinho and others, 2005b, WHO/Euro, 2004). Major donors, in terms of volume of financial support, have been USAID, KfW, and GFATM (Table 8.2).

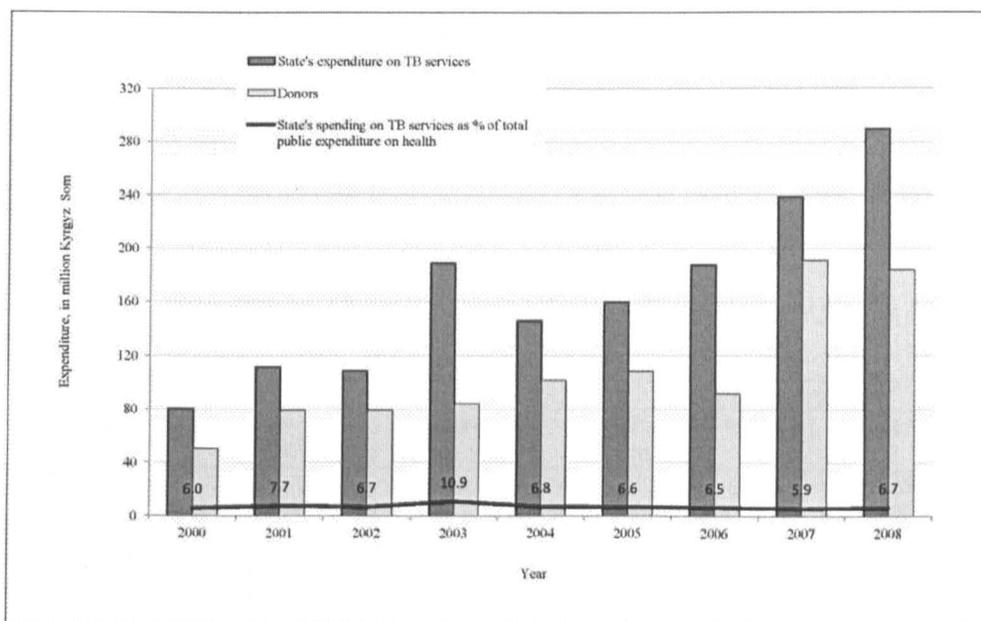


Figure 8.4 Expenditure on TB programme, 2000-2008.

Source: National Centre for Phthisiatry, Akkazieva and others, 2009 , Bashmakova and others, 2009, Godinho and others, 2005, WHO/Euro, 2004

National Health Accounts 2007, TB sub-account

According to NHA for 2007⁶¹ (Akkazieva and others, 2009), 79.4% of programme funds was spent on specialised TB service providers in the civilian sector, 1.6% in the penitentiary sector and 4.1% on primary care providers (Table 8.3). Functionally, spending on inpatient treatment

⁶⁰ 1 US dollars = 46.7 KS current exchange rate as of 2010

⁶¹ Only one available study that systematically assessed funds allocation for the TB programme.

was 39.4%, outpatient treatment 3.2%, diagnostics 10%, and public health and prevention activities 8.3% (Table 8.4).

Table 8.3 Spending on TB control, by provider, National Health Accounts, Kyrgyz Republic, 2007

By provider	All sources (in Kyrgyz Som)	Source	
		Public (MOH and MHIF)	External
Specialised TB services	342863.3 (79.4%)	270784.5	72078.8
TB hospitals	58895.3 (13.6%)	58895.3	0
TB centres	245026.8 (56.8%)	177437.9	67588.9
NCPH	38941.2 (9.0%)	34451.3	4489.9
TB hospitals, penitentiary	6895.8 (1.6%)	6895.8	0
TB departments, rayon territorial hospitals	6168.1 (1.4%)	6168.1	0
FMG/FMC	17869.1 (4.1%)	17869.1	0
International providers	57792.4 (13.4%)		57792.4
Total	431588.7	301717.5	129871.2*

Source: Akkazieva and others, 2009

*61 466 KS of donors' funds were channelled through the MOH, and were accounted as public expenditure (Akkazieva and others, 2009)

Table 8.4 Spending on TB control, by functional activity, National Health Accounts, Kyrgyz Republic, 2007

by Function	All sources (in Kyrgyz Som)	Source	
		Public [MOH and MHIF]	External
Inpatient treatment	169 888,7 (39.4%)	120619,6 (40%)	49269,1 (37.9%)
Outpatient treatment	13 971,6 (3.2%)	507,6 (0.2%)	13464,0 (10.4%)
Ancillary services ^{1,2}	42 984,2 (10%)	33683,6 (11.2%)	9300,6 (7.2%)
Prevention and public health activities	35923,4 (8.3%)	25162,1 (8.3%)	10761,3 (5.6%)
Administration and health insurance for TB activities ³	52586,2 (12.2%)	52586,2 (17.4%)	0
HC expenditure not specified	116234,5 (26.9%)	69158,3 (22.9%)	47076,2 (36.2%)
TOTAL, KS (Kyrgyz Som), % of Grant Total		301717.4	129871.2*
GRANT TOTAL, all sources	431, 588.7		

Source: Akkazieva and others, 2009

¹ Includes diagnostics - culture, sputum microscopy, fluorography, PPD, and 'other'-unspecified;

² Includes 1649,5 KS of estimated official OOP

³ Other than DOTS management and administration.

* 61 466 KS of donors' funds were channelled through the MOH, and were accounted as public expenditure (Akkazieva and others, 2009).

International financing

Since 1996, international funding covers implementation of all TB control innovations and key consumables. These include all quality anti-TB drugs (1st and 2nd line), equipment and recurrent supplies for functioning of laboratories, monitoring and evaluation activities (as per WHO), on-going training of health personnel, community health education activities, and social support packages for TB patients. According to the majority of respondents, the state will not be able to afford to fully finance TB control activities in the short-medium term. All domestic respondents perceive the state's funding for TB control activities as insufficient:

'whenever there is a discussion about financing - we raise this issue constantly with the Ministry of Health, and on the level of the state that the plan for implementing TB control programme – this plan is already with 30-40% deficit. This means that we do not have funds to fully implement planned activities.' (Respondent TB02)

In this analysis, targeted donors' assistance, whilst improving capacity, is identified as impeding effective interactions. An example of this is the targeted assistance of ICRC and MSF to prisons. These efforts have resulted in substantial improvements in penitentiary TB hospitals' infrastructure, laboratory capacity and in delivery of TB interventions inside the penitentiary sector. However, such targeted assistance, coupled with fragmented domestic financial flows to TB provides and shortage of funding in the public sector, creates distrust. Representatives of the civilian TB service perceive patients who are released from prisons as an additional burden, which stretches already scarce resources in the civilian sector:

'we understand that the GUIN⁶² is different 'state' with its own donors, but they act in a quite dishonourable manner in relation to civilian health services – they put problems on the shoulders of the civilian health system...They built those hospitals, show these hospitals to everyone – why did they build them? If they have given these resources to the civilian health sector.... just look and compare – in what dire conditions are our hospitals...' (Respondent TB06)

Representatives of primary care consider that they do not receive sufficient financial support, including from international agencies, to deliver either TB interventions or other disease interventions. Representatives of primary care express concerns that there are no mechanisms for on-going support to implement TB activities:

⁶² GUIN is a Russian abbreviation of the Department of Execution and Punishment.

'This is a question, this is a big question – whether our health system will be able to afford what we were receiving from Project Hope. Question of financial sustainability... At present we have absolutely no financial support. I appreciate what Project Hope did - purchased microscopes, supplies, trained staff... Yes we integrated – integrated everything, but what about ongoing financial support...?'

(Respondent PHC01)

There has been a growing acknowledgement that parallel GFATM financing does not contribute to involvement of community TB care. Funds do not reach patients effectively:

'The money, which comes from the Global Fund has not yet smoothly found its way to the end users. So this is a channelling of the money and flow of funds – [they] do not reach yet the level of end users to an extent, which would be satisfying.'

(Respondent TB09)

8.3.2. TB services infrastructure and laboratory network

As has been discussed earlier, this study finds that structural reform of TB services has been limited to closing down TB dispensaries at rayon levels. In the period from 1997 to 2008, TB-bed capacity has been reduced⁶³ from 9.4 to 6.7 TB beds per 10 000 population, respectively (RMIC, 2008). As a result of these changes, the network of inpatient TB facilities is being concentrated on national and oblast levels. The network includes secondary and tertiary level TB inpatient facilities with specialisation for adults and children. TB bed capacity differs across regions (Table 8.5). Out of the existing 3520 TB beds (in 2008), 1020 (28.9%) are dedicated for inpatient care for children; and 1140 (32.4%) beds are dedicated for tertiary care (and rehabilitation). The penitentiary sector hosts two TB hospitals with a total capacity of 240 TB beds (both hospitals are in Chui oblast's prisons). Kyrgyzstan has a well-established network of primary care (Table 8.6).

The diagnostic network has a hierarchical structure headed by the National Reference laboratory (NRL) of the NCPH. At the time of data collection, it was reported that drug susceptibility testing is done only at the NRL. A network of microscopy laboratories has been expanded to primary care providers (Tables 8.5 and 8.6). Bacteriological culture is performed in 13

⁶³ Most of reduction of bed capacity has been implemented in 2001-2003.

laboratories (including NRL), which are located in oblast TB centres or TB facilities under republican jurisdiction.

Table 8.5 TB services capacity, Kyrgyz Republic, 2008

Region	Population, '000s	No. inpatient TB facilities ¹	Bed capacity (all facilities in the region)	TB beds per 10 000 population	Laboratories performing bacteriology ²	Laboratories performing only microscopy
Batken oblast	428.5	4	190	4.4	1	3
Osh oblast	1081.3	6	570	5.5	1	4
Osh city	250.2	1	100			2
Jalalabad oblast	987.1	7	584	6.5	1	3
Naryn oblast	270.6	1	65	2.4	1	1
Issyk-Kul oblast	433.7	1	60	1.4	1	
Talass oblast	218.5	2	120	5.5	1	1
Chui oblast*	761.2	4	321	3.8	2	1
Bishkek city, capital	819.0	3	370	4.5	1	1
Republican jurisdiction (n=6)**			1140		3 ³	3 ⁴
Kyrgyz Republic	5250.1	31	3520		13	17

Source: Republican Medico-Information Centre, Kyrgyz Republic

¹ Four tertiary-level facilities (including NCPH), 25 secondary level facilities⁶⁴ (9 Oblast/city TB Centres, 11 TB hospitals at city/raion levels and 5 TB dispensaries on rayon level), and 2 rehabilitation centres (republican jurisdiction) for TB patients. Five out of 11 TB hospitals and one of rehabilitation centres are dedicated for children care.

² These laboratories also have microscopy

³ National Reference Laboratory is included into the count

⁴ Included in the preceding count

** Republican level facilities and NCPH, tertiary level facilities

Table 8.6 PHC providers involved in delivery of TB control interventions, Kyrgyz Republic, 2008

	Family Medicine Centres	FMG (affiliates of FMC)	FMG (independent organisations)	Centres of General Practice	Laboratories performing only microscopy
Batken oblast	7	83	-	2	9
Osh oblast	9	112	-	-	13
Osh city	7	40			3
Jalalabad oblast	11	138	1	5	14
Naryn oblast	6	45		1	6
Issyk-Kul oblast	7	41	13	2	8
Talass oblast	4	34	2	1	6
Chui oblast	9	86	5	1	10
Bishkek city, capital ¹	19	99	-	-	18
Kyrgyz Republic	79	678	21	12	90¹

Source: Republican Medico-Information Centre, Kyrgyz Republic

¹ There are 3 microscopy labs in Bishkek in 3 specialised polyclinics.

⁶⁴ At the time of data collection, there also were 6 TB departments at the rayon territorial hospitals (general health services). These would be closed down as per TB services reform concept MOH (2008c).

Respondents noted that TB inpatient facilities are old (many were built in the 1960s-1970s) and in poor condition. The relative exceptions are a few facilities renovated with financial support from donors⁶⁵. In economically underdeveloped regions, some facilities have interruptions of electricity and water supplies. In several hospitals, patients are being treated in wards up to 6 persons with poor ventilation. Lack of infection control in TB hospitals, as well as in health care facilities in general, has been mentioned as a key challenge for TB control. There are no funds for infection control equipment for staff such as proper respiratory protection.

8.3.3. Anti-TB drugs

The TB programme has a centralised system of anti-TB drugs procurement and distribution. The first-line anti-TB drugs are distributed in line with the hierarchical organisation of the programme (Figure 8.3). High quality first-line anti-TB drugs are being purchased through the Global Drug Facility (financed at present by GFTAM, previously by KfW). The county reportedly keeps 6 months stock at the national level. The drugs are then distributed to the Oblast TB centres, which have a quarterly stock for all patients on treatment in the oblast (3 months supply). A rayon TB coordinator takes a supply of drugs for each patient discharged from a hospital, a supply necessary to complete treatment in an outpatient setting.

A key problem noted by some respondents is that anti-TB drugs such as isoniazid, rifampicin, and some antibiotics used in treatment of MDRTB are available in some private pharmacies. Representatives of the NCPH noted that despite their efforts to ban the selling of anti-TB drugs, especially isoniazid and rifampicin, these were not successful. The NCPH pointed that without effective regulatory mechanisms it is challenging to prevent all private pharmacies from selling anti-TB drugs without prescriptions.

8.3.4. Human resources

According to official sources, in 2008 Kyrgyzstan's health system employed 241 TB doctors and 1857 family doctors (with 5333 new TB cases in 2008 that is 4.5 TB doctors per 100 new TB patients; or 0.5 TB doctors per 10 000 population). Only TB specialists have the right to confirm TB diagnosis, prescribe treatment and make decisions about treatment outcomes.

⁶⁵ Penitentiary TB facilities funded by ICRC, and facilities for MDRTB treatment funded by GFATM in Bishkek city and under NCPH jurisdiction.

Most respondents perceive this human resources situation as a crisis. As has been discussed in Chapter 7, human resources challenges in Kyrgyzstan's health system include concentration in urban settlements and shortage in rural areas, low salaries, high work load, lack of incentives and overall often low motivation. According to respondents in this study, the medical profession, and particularly phthisiatry, is not considered prestigious:

'Phthsiatrist, especially on level of FMC, is not a prestigious job, nobody pays attention to our problems. Everything is on us. The TB problem is right at the end, and the general assumption is that we work only with ex-prisoners and risk groups.'

(Respondent TB07)

There has been a notable outflow of personnel from the health system either because of change of occupation or labour migration to Russia and Kazakhstan. As relates to the TB programme, respondents reported that many qualified, experienced or trained personnel leave their jobs. Donors invest considerably through training of health personnel in new skills (e.g. sputum microscopy, M&E). Ironically, training that is provided by international donors (with issued certificate) is often used to get employment elsewhere:

'We conduct annually 3-4 trainings for laboratory personnel. Substantial money is spent, substantial, all donors' funding. Give certificates – CDC's, GFATM's trainings – and with these certificates they leave. Therefore, training is very good, we prepare them well. We are given money for this – we teach them, train them – but...they do not have the motivation to stay.' (Respondent TB01)

8.4. FLEXIBILITY (ADAPTABILITY)

This section presents my analysis of how and why health system arrangements for the TB programme have changed, or not, in support of the introduction of the policy innovations, DOTS and MDRTB management. I focus on changes in the providers' payment mechanism, clinical management of TB patients and organisation of service delivery.

As highlighted previously, in general the country is committed to implementing WHO-recommended policy for TB control. Indeed, some domestic respondents hold the WHO's expertise in high regard:

'WHO developed standards of treatment based on evidence...and if the whole world follows this approach – why should not we?DOTS is a very good programme; it is just not everyone understands it right. Many think it is only about the last letter 'S', but the first three letters – this is a cornerstone of everything – directly observed treatment.'

(Respondent TB06)

The NCPH, the main TB control policy institution, however, emphasises that the country is adopting internationally-recommended approaches whilst at the same time taking into account historical approaches, scientific experience and feasibility (MOH, 2006, MOH, 2009). These may, at times, be contradictory.

8.4.1. Resource allocation and payment mechanisms for TB providers

Previous empirical research conducted in Russia showed that providers' payment mechanisms have important implications for the efficiency of the TB programme in the FSU context. Input-based payment, either based on number of registered TB patients or number of beds, creates perverse incentives to retain inpatient TB facilities and continue unnecessary hospitalisations (Atun and others, 2005e, Floyd and others, 2006).

Kyrgyzstan initiated changes in financing of inpatient TB facilities in 2008 (MOH, 2008a, TheGovernmentKyrgyzstan, 2006b). This was 10 years after adoption of DOTS. Until then the budget formulation and payment to TB services was based on historical fixed line-items per facility. At the time of data collection, the TB services were on their second year of financing reform. Thus, it was early to identify any impact on efficiency. Nevertheless, an analysis of financial changes identified several barriers impeding a shift towards community-based, efficient, patient-oriented TB care.

Changes in financing are input oriented. Each TB hospital is paid (i.e., receives an annual budget) based on number of expected hospitalised cases and average reimbursement rate per case. Expected number of cases is estimated based on historical data from the number of admissions for the previous year. Average reimbursement rate is adjusted for case group, geography (mountainous area, remote cities, rural, urban), hospital type (national, oblast, rayon, and adult/children's), and expenses for the ambulatory-diagnostic department (MOH, 2008b). In 2009, there were 5 reimbursement case groups based on treatment category (cost of drug regimen) and deemed maximum length of stay. These categories were (from lower reimbursement rate to a higher): (i) a person with a differential diagnosis (i.e. a suspect of TB),

(ii) a newly diagnosed TB case, (iii) a previously treated case, (iv) a chronic case requiring surgery, and (v) a MDRTB or a poly-resistant TB.

Consequently, hospitals that treat more patients, diagnose and manage more clinically complicated patients, or have more admissions receive larger funding. Such payment mechanisms also create perverse incentives to keep large republican-level tertiary facilities and oblast level hospitals. According to the regulation (MOH, 2008b), TB hospitals are given financial autonomy within the allocated budget and may reinvest any savings (e.g. retention of personnel through salary's incentives, etc). However, respondents noted that possibilities to save the funds are limited as the allocated state budget is in deficit:

'These are the same money, there is no increase in funds...the same budget with deficit already....just redistributed.....those hospitals that treat more, receive more funds. Perhaps there is some flexibility, but how would one save money....and increase salaries so to retain staff if electricity, food and other expenses are going up...'

(Respondent TB02)

An oversight over allocation of resources, according to regulations, remains within interested parties – the MOH and the NCPH. These agencies are given the main responsibility for monitoring hospitalisation and performing cost analysis (MOH, 2008b).

The health system's financial mechanism does not address a lack of linkage or coordination in resources planning and allocation among inpatient TB facilities, primary care providers or TB services in penitentiary sector. Primary care providers are paid per capita, based on number of enrolled population (presented in the Chapter 7). There is no performance-based element in payment to primary care providers as relates to TB care despite that fact that they oversee TB treatment after patients are discharged from hospital.

8.4.2. DOTS implementation: changes in TB service delivery

The study finds that partial changes in clinical management of drug-susceptible TB have taken place. According to representatives of TB services, WHO-recommended standardised treatment regimens for drug-susceptible TB are strictly followed. However, application of pathogenic therapy and surgical interventions as treatment modality continues. Capacity to conduct passive case detection at primary care level has been improved. Kyrgyzstan continues to conduct

selective fluorography screening among risk groups⁶⁶. Screening of children for TB infection using the Mantoux test and preventative treatment using isoniazid continue. Kyrgyzstan has adapted the TB registration system⁶⁷ to incorporate WHO recommendations for classifying TB cases based on epidemiological criteria (sputum positive or negative) and history of previous treatment.

A network of specialised TB facilities has been retained, with increased centralisation of inpatient care at secondary/tertiary care. My analysis finds that there is persistent overreliance on specialised TB services for TB diagnosis, treatment, rehabilitation and social support. Nearly all newly diagnosed and relapse adult TB cases, irrespective of sputum-positivity, are admitted to hospitals during an intensive phase of treatment (2-3 months). Treatment of children and adolescents with confirmed TB disease or infection (prophylactic treatment) is being delivered, as a preference, in hospital settings. Though regulations require hospitalisation for TB treatment only during the intensive phase (except of MDRTB), there are no clear guidelines with regards to repeated hospitalisations. Decisions about hospitalisation are made on an individual basis:

'We decide depending on the situation. If it is better to complete treatment in the hospital – then we keep a patient in the hospital. For example, if the patient has a big family, no normal living conditions in the place of residence. But, there are also cases when the patient cannot or does not want to be treated in the hospital even if it is prescribed.' (Respondent TB07)

Hospitals serve as social-support institutions: *'considering the socio-economic situation of some contingents of patients (poor, homeless, those with many children, etc), the national coordinator recommends conducting treatment in the intensive phase as well as in the continuation phase in an inpatient setting'* (MOH, 2006, MOH, 2009).

Inclusion of passive case detection and treatment observation by primary care providers (i.e. family doctors) are viewed as an important achievement of the health system reform and TB programme. Recognised benefits of integration include improved access to TB services for patients, and acceptance in the communities:

⁶⁶ The risk groups include: all health care workers, HIV-positive persons, all persons with underlying chronic diseases (i.e. diabetes, lung diseases), migrants, those who have completed TB treatment and have residual changes in the lungs, or contacts with persons who diagnosed with active TB.

⁶⁷ TB dispensary registration system.

'services became closer to people, to communities – instead of [travelling] to other rayon to TB hospital or dispensary, patients are close to their family, to communities.... Integration with primary care is necessary, and should be strengthened further.'

(Respondent TB07)

Detailed analysis in this study reveals that interactions between TB services and primary care providers are limited to coordination of service delivery. Confirmation of TB diagnosis or any other decisions about TB treatment are made exclusively by a TB specialist. Even if a person is found sputum-positive by a primary care provider, sputum microscopy and other clinical investigations are repeated upon referral to TB services. Functions of family doctors are limited to observation of treatment and timely referral to a TB specialist. Family doctors make no decisions about TB treatment (e.g. prescription of anti-TB drugs).

Several respondents reported that primary care performs well in implementing passive case detection. However, they also state that overall, primary care has a weak capacity to implement treatment observation accordingly. Representatives of TB services stated that DOT is not necessarily followed and drugs are being given for several days ahead. Along with delivering TB interventions, family doctors carry out responsibilities for other vertical programmes (e.g., STDs, mental health). Every programme has different reporting and M&E requirements. Family doctors, and all staff at primary care, are overworked; often having to spend considerable time on administrative paperwork. One respondent explains the situation:

'On the stage of case detection, it works well. Regarding treatment follow-up, primary care certainly does not have resources for observing each patient directly. This is understandable, as primary care implements many programmes not only anti-tuberculosis... This is a question of workload, or as we can say, rational allocation of tasks which primary care can implement effectively.' (Respondent TB10)

8.4.3. Health system response to MDRTB

The study finds that the health system's response to MDRTB has been slow and fragmented. There is no universal access to MDRTB diagnosis and treatment. Access to treatment is limited to those patients enrolled into GFTAM-funded pilot sites. There is a plan to treat 1180 MDRTB patients over the course of 5 years (GFATM round 6 grant, 2007-2012) (CMCC, 2009). By the end of 2009, 550 patients have been enrolled into the treatment (GFTAM, 2010a). At the same

time, the country reported 785 confirmed MDRTB cases (WHO, 2010a, WHO, 2010b). The destiny of detected MDRTB patients, who are not enrolled in DOTS-plus, is not clearly communicated, and thus is unknown. Treatment of MDRTB is centralised and decisions on patient's enrolment into the treatment programme are made by the NCPH. The criteria on what basis patients are being selected for MDRTB treatment are not clearly defined nor communicated.

Several factors played a role in this response. Implementation of MDRTB management solely depends on approval from international donors (e.g. GLC regulations), followed by the disbursements from GFATM. The country does not have independent capabilities to expand capacity for MDRTB diagnosis and treatment (e.g. purchase 2nd line drugs). Treatment of MDRTB is centralised (through a national coordinator at the NCPH). Pilot sites are organised at NCPH, Jalal-Abad and Osh oblast TB centres. MDRTB patients are treated in hospitals over the whole course of treatment (18-24 months).

The strategic focus for responding to MDRTB has been on highly specialised care. As I presented earlier, the NCPH and the MOH envision further specialisation of existing TB inpatient facilities. According to some respondents, particularly domestic, specialist hospitals are necessitated by the extent of the TB epidemic⁶⁸, lack of infection control capacity in all inpatient facilities in the country, and a lack of financial and other resources to rapidly strengthen capacity for MDRTB treatment. The perceived threat from MDRTB patients is cited as one of the reasons for further specialising TB hospitals. Here is how an official country policy document articulates the issue:

'In the current structure, in hospitals patients with different types of TB receive treatment (in one hospital) – newly diagnosed, MDRTB, chronic cases. Hospitals are located in places with high population density (e.g. Bishkek city, Osh city, Naryn, and other oblast and rayon centres); very often patients move freely, and as a result can infect environment and population.' (MOH, 2008d)

⁶⁸ Respondents and documents often referred to only when level of TB incidence will be below the level of 50 cases per 100 000 population integration of anti-tuberculosis services with general system on all levels be possible.. Some respondents explained that this level is a WHO definition of TB epidemic.

Further, key national policy makers consider isolation as one approach for MDRTB control:

'.....isolation of chronic cases and MDRTB is a solution. We lobby this question on a higher level, there is support. Otherwise, where should we put these patients? Primarily socially vulnerable. Now some departments are already being changed to caring for chronic cases.... if we want to conquer TB, it is perhaps the time to undertake radical measures. They will be isolated whilst infectious, whilst they are a source of infection... yes the issue of human rights exists, but I am not saying to lock them – I am saying to create acceptable living conditions in such institutions, as they did in Estonia.' (Respondent TB02)

Options of ambulatory treatment of MDRTB were not being considered at the time of data collection. Concerns about the slow response to MDRTB, and the focus on centralised and highly specialised care, were expressed by a respondent who represents an international agency working in Kyrgyzstan on MDRTB management:

'Disaster might come later, especially TB/HIV, MDRTB/HIV. The speed by which the response is given is very crucial. It is not a solution to have a plan – this patient will be treated in 5 years. All depend on skills, capacity of the National Centre of Phthisiatry... they keep them in the hospital for 2 years... once a patient has become non-infectious they could be treated in an ambulatory setting... But it is not done although it is recommended by international standards... There is a need to accelerate the decentralisation of MDRTB treatment.' (Respondent TB11)

8.5. INTERACTIONS

'What the WHO was saying in 1998 about multisectorial approach, in this area things did not quite work out yet.... a multisectorial approach to TB treatment should actually be multisectorial. But what we have – we doctors struggle on our own. To some extent social services also express interest. The Ministry of Justice also does something on its level... But a unifying, clear and effective strategy, which all would follow, for some reason, we do not have it.' (Respondent TB06)

In this section I present my results and analysis of the TB programme's interactions with other health system components (Table 8.7). In summary, the TB control programme in Kyrgyzstan remains predominantly comprised of specialised TB services. TB services are centralised and separately financed, planned, delivered and evaluated with limited interactions with specialised HIV services, and the general health system. Formal coordination with the primary care programme, and between civilian and penitentiary sectors (including pre-detention or remand prisons) have been established and reportedly improved as compared to the Soviet period. These improvements have been, to some extent, attributable to donors' projects. I earlier reported that a major impediment for further improvement of interactions between services analysed in this study is the lack of coordination in planning, and allocation and evaluation of financial resources. Several aspects of interactions, particularly as relates to interactions between TB services and primary care, have been presented earlier. I provide additional findings below.

TB services in penitentiary and civilian sectors

There is formal coordination between civilian and penitentiary TB services in governance, service delivery and monitoring and evaluation of DOTS. The policy and regulatory framework explicitly outlines (TheGovernmentKyrgyzstan, 2006) roles and responsibilities of the MoH and the MOJ, and coordination of efforts. There is a formal national coordinator appointed in each Ministry and guidelines on release of prisoners who are still on treatment to civilian TB services. It was mentioned by all respondents that coordination in governance on a national level between two Ministries has improved in recent years. Efforts have been put forward by international actors such as, for example, establishing HLWG on TB control by the Project Hope.

Table 8.7 TB programme: interactions between civilian TB services and HIV services, primary care, and TB services in penitentiary sectors

Component	Element of interactions	CIVILIAN AND PENITENTIARY TB SERVICES			TB SERVICES AND PRIMARY CARE			TB SERVICES AND HIV SERVICES		
		Linkage	Coordination	Integration	Linkage	Coordination	Integration	Linkage	Coordination	Integration
Governance	Organisational structures									
	Disease control policy									
	Regulatory mechanisms									
	Strategic and operational planning									
	Accountability framework									
Financing	Funding source									
	Pooling of funds									
	Mobilisation and planning of funds, external									
	Budgeting and planning, domestic									
	Providers payment mechanism	GFATM			GFATM			GFATM		
Service delivery	Facilities (infrastructure)									
	Laboratories									
	Drugs, medical technologies, medical supplies									
	Human resources (including managerial)									
	Training and development of human resources,									
	Procurement and distribution of drugs and medical supplies									
	Care pathways or provision of interventions									
M&E	Informational technologies and infrastructure									
	Data collection and analysis									
	Performance management									

GFATM-Activities within GFATM grant

* only application processes for GFATM, separate working groups for each programme

A representative of an international agency explains changes in interactions:

'Retrospectively, certainly coordination of efforts between the penitentiary and civilian sectors has improved, because there were times when it was difficult to sit at one negotiation table representatives of the penitentiary system and the Ministry of Health, in particular of phthisiatry services. At present this issue is being solved.'

(Respondent TB10)

However, improvements in coordination of transition of ex-prisoners to the civilian sector are largely supported by donor agencies. ICRC and MSF provide on-site facilitation with the implementation of DOTS, and management of MDRTB, including management of co-morbidities such as malnutrition and HIV/AIDS. Success stories related to the transition of ex-prisoners and their adaptation back to communities are implemented within donors' pilot projects by HIV-service NGOs (presented in details in 'HIV/AIDS' chapter). ICRC and MSF also facilitate transition of released prisoners, who are still on TB treatment, to the civilian sector.

Aside from donors' supported projects, in practice, critical problems with transition of ex-prisoners back to civilian communities have not been solved. These problems relate to registration of prisoners with civilian organisations (e.g. police), access to health and social care, and default in TB treatment among ex-prisoners persists. Sometimes, representatives of TB service providers blame donors, the penitentiary sector overall and the behaviour of ex-prisoners:

'This is all the fault of international donors – renovated their hospitals according to 'Euro standards', these prisoners are getting released and they then do not want to get treated in our conditions.' (Respondent TB07)

Stigmatisation of ex-prisoners has been mentioned as an impediment for their transition back to civilian life. According to representatives of international organisations (e.g. ICRC, MSF), there is overall negative attitude towards ex-prisoners even from providers of TB services in the civilian sector:

'Ex-detainees tell us they are not treated well and this is why they go away. And this is not only their fault; it is lack of education in a system which does not really support

them. And whenever we have an ex-prisoner whom we want to send to Vorontsovka⁶⁹, the TB coordinator would tell us 'if I take him – I would not be able to take a child in his place...' - they [TB specialists] feel that they actually do not deserve it [treatment] or do not appreciate it.' (Respondent TB05)

TB and HIV/AIDS services

As has been noted earlier, there have been considerable efforts within GHI, led by USAID, to establish a foundation for linkages between these services in governance, service delivery and information system. My analysis in this study indicates that these interactions (as existed at the time of data collection) are limited to the national level. Where local coordination of service delivery exists it is limited to activities within donors' projects. A thematic group on TB/HIV (High Level Working Group at the NCPH) was set up in 2006. National coordinators at the NCPH and Republican AIDS Centre have been assigned as point contacts with regard to TB/HIV patients. There is exchange of information through meetings and conferences. National clinical protocols on management of TB/HIV based on WHO recommendations have been developed.

These services in principle remain separate as relates to financing, service provision and M&E. Interactions in service delivery are limited to HIV testing at TB facilities upon diagnosis. Isoniazid prophylaxis among HIV-positive persons, if prescribed, is administrated by HIV services. Similarly, if a patient requires both TB and ART treatment, he/she attends each service separately to receive treatment. In terms of GFATM funding, separate principle grants recipients (e.g., the NCPH for TB programme and Republican AIDS centre for HIV/AIDS programme) do not contribute to closer interactions. Information between services is shared only on request. Analyses in this study indicate that lack of robust M&E systems, and linkages between, in both programmes potentially might impede further evolvement of interactions:

'Programmes in principal are still vertical. For TB – it is TB/HIV; for HIV – it is HIV/TB. Thus, there is tension – 'yours' – 'ours'. Of course they clearly need to see evidence – but what do they see? There are not too many cases.' (Respondent HS03)

Several respondents reported that the HIV/AIDS programme is more concerned about interaction, particularly its HIV service NGOs (though also supported through donors' projects):

⁶⁹ Vorontskovka – department of NCPH, where MDRTB patients receive treatment.

'HIV community is much more concerned. They are very much aware, but not the other way around. Not the TB community. Now HIV services, HIV institutions – they try to attract attention from TB services, from TB facilities – because they have some percentage of HIV/TB patients, and of course they have some problems with screening for TB, diagnosing TB, and treating TB....' (Respondent TB05)

8.6. PERFORMANCE

8.6.1. Effectiveness

Based on available secondary data and weaknesses of TB surveillance, it was difficult to judge the TB programme's performance. Kyrgyzstan reports a universal access to DOTS. There has been 100% DOTS coverage in the civilian sector since 1999, and in the penitentiary sector since 2005. TB case detection of sputum-positive pulmonary cases has varied over the years, indicating a trend towards improvement. The most recent WHO report estimates 65% case detection rates in the last five years (WHO, 2010a). The proportion of BK+ TB cases⁷⁰ grew from 26% in 1998 to 45.7% in 2008. However, there is substantial year-to-year variability across regions (Figure 8.2.C). Treatment success among sputum-positive pulmonary cases has been reported consistently above 82-84% since 1998 (MOH, 2006, MOH, 2009, WHO, 2010a). Among the successful outcomes, 80-81% are reported as cured and 4-5% as completed treatment (WHO, 2010a).

Coverage and access to MDRTB diagnosis and treatment is limited. According to official sources, around 20% of notified new cases as well as previously treated are being tested for drug susceptibility (WHO, 2010). National stakeholders reported during the interviews that they do not monitor development of MDRTB during the course of TB treatment. Development of MDRTB during TB treatment is arguably one of the key indicators of quality of treatment. As of the end of 2009, 550 MDRTB patients out of 785 identified patients were undergoing treatment. Treatment outcomes for MDRTB have not been officially reported.

⁷⁰ BK+ are either sputum positive or bacteriologically confirmed TB cases, or both.

8.6.2. Efficiency

Average length of hospital (ALOS) stay in 2008 for adults with TB was 60.1 days (ranging 45.8 to 75.2 days across regions), and for children 87.2 days (range 63.3 – 118.4 days) (Table 8.8). The earliest data on ALOS that were accessible during the data collection were for 2002, and these indicators have not changed (RMIC, 2002, RMIC, 2008). Data on ALOS for years prior to DOTS adoption were not accessible. Judging from research conducted in Russia where ALOS was 86 days for adults prior to DOTS (Marx and others, 2007), length of adult's hospital stay for TB treatment in Kyrgyzstan has likely been shortened as compared to practices existing during the Soviet period.

Nevertheless, inpatient TB treatment for 2-3 months for all patients including sputum-negative patients is an extended hospital stay. There is empirical evidence that once treatment of drug-susceptible TB patients with effective anti-TB drugs is started, the infectiousness of a patient might be minimal within around 2 weeks (Harries, Maher, and Nunn, 1997, Riley and others, 1962). Even though there is variability in response to treatment, when there is clinical evidence that a patient clearly responds to treatment he/she can be treated on an outpatient basis.

In 2008, TB beds were occupied on average 335 days (ranging across regions 282-377 days), which equates to 92.6% bed occupancy for the year (across regions - from 77.2% to 103% of the year) (Table 8.8). Number of hospital admissions per bed per year was 4.2 nationally, ranging from 1.7 to 6.3 across the regions. Nationally, there were nearly 3 times more hospital admissions than number of newly notified TB cases (admission/new case ratio varied from 0.95 to 2.8 across the regions) (Table 8.8). This is suggestive of inefficiencies of TB services. These findings echo findings of studies conducted in Russia (Floyd and others, 2006) that have shown inefficiencies associated with overcapacity of TB beds and unnecessary hospital admissions.

There is a perceived shortage of human resources in the TB programme (presented in the section 'Human resources'). Though I have not assessed workload of medical personnel, there might be potential inefficiencies related to the number and functional responsibilities of TB doctors. As has been presented earlier, there are 241 TB doctors currently working in the system. On average, there are 5500-6000 new TB cases notified each year, whose treatment is 6-8 months. Each doctor therefore should be caring, on average, for approximately 10-15 TB patients at any one time, which is not a high number of patients.

Table 8.8 Inpatient TB beds capacity and service provision. Kyrgyz Republic, 2008

Region	New TB cases	Beds (n)	TB beds/ New TB case	Hospital admissions (N)	Admissions /bed ²	Admission/ new TB case	Bed occupancy ¹ (adults)	ALOS (adults)	Bed occupancy ¹ (children)	ALOS (children)
Batken oblast	350	190	0.54	842	4.4	2.4	352	75.2	236	95.1
Osh oblast	1059	570	0.54	2422	4.2	2.3	377	59.1	337	92.0
Osh city	238	100	0.42	226	2.3	0.95	n/a	n/a	339	80.8
Jalalabad oblast	845	584	0.69	2378	4.1	2.8	348	48.3	341	66.3
Naryn oblast	274	65	0.24	279	4.3	1.01	351	63.9	298	81.8
Issyk-Kul oblast	285	60	0.21	378	6.3	1.32	282	45.8	n/a	n/a
Talass oblast	216	120	0.55	452	3.7	2.09	358	68.2	296	63.2
Chui oblast	1152	321	0.28	1671	5.8	1.45	311	60.8	378	98
Bishkek city	914	370	0.40	1508	1.7	1.65	331	67	342	118.4
Republican jurisdiction*	n/a	1140		4171	3.6		317	63.3	239	107.1
All regions	5333	3520	0.66	14727	4.2	2.76	335	60.1	311	87.2

Source: Republican Medico-Information Centre, Kyrgyz Republic and author's calculations

* Republican level facilities and NCPH, tertiary level facilities

¹ days per year; ² admissions per bed per year

8.6.3. Equity

As was discussed earlier in this Chapter, TB stigma exists particularly as relates to patients who represent marginalised groups (i.e. ex-prisoners). I was not able to assess in this study whether the quality of TB care for these groups of patients differs from other patients. Other authors found that TB stigma contributes to less attention to their needs from health care providers in general health services or communities (Dodor and Kelly, 2009, Dodor, Kelly, and Neal, 2009). Overall, efforts to systematically conduct health education in communities and reduce stigma in Kyrgyzstan have been limited:

'Overall, there is a serious stigmatisation of the problem, up till now, in my opinion, there is overall belief that TB is an untreatable contagious disease. Even if the patient is coughing more than two weeks...he does not go to health services....afraid.... There is a need to strengthen the work with communities, more actively conduct explanation activities.' (Respondent TB10)

SUMMARY FINDINGS

In conclusion, this chapter revealed several impediments to the sustainability of the TB programme in Kyrgyzstan.

The Government of Kyrgyzstan declares political commitment to implementing internationally recommended approaches to TB control. Despite these political declarations, the establishment of community-based care of TB patients is hampered by prevailing reliance on, and retention of, hospital-based TB services. This contradicts the public health objective to establish efficient approaches to TB control. Furthermore, the response to the potentially serious MDRTB problem is being framed as having only one option; to continue practices of specialised hospitalised TB care. Given the country's limited resources, such a strategic approach may contribute to an inability to meet the financial cost of MDRTB management, in addition to perpetuating inefficiencies. The programme's leadership is characterised by centralised and formal authority, dominated by one institution – the NCPH. This has been determined by the health system's arrangements for the TB programme's governance and organisational arrangements. Verticality was supported by donors, most notably in the way funds were channelled. Participatory decision making and involvement of other actors is limited to donor-supported projects, otherwise decision making is dominated by the NCPH.

Political commitment to TB control is supported partially by governmental funding. The state's guarantees for all TB interventions are firmly embedded in the country's legislation and state funding streams (i.e. into the state's budget). Implementation of DOTS and MDRTB management to a considerable degree depends on international funding. Domestic resources (managerial capabilities, funds, human resources) are concentrated in inpatient facilities located at national and oblast levels.

Financial mechanisms for the TB programme pose critical impediments to sustainability. Domestic financial mechanisms (planning, allocation) are fragmented; needs of patients facing multiple comorbidities are not being taken into account. Fragmentation in financing and vertical financing (both domestic and international) emerged as a key factor impeding further involvement of interactions between TB services and other health system components. Effective mechanisms for evaluating investments in TB control have not been established.

Declaratively, domestic TB actors are willing to implement innovative approaches in TB control. However, implementation of innovations depends on external financial assistance. Overall the programme's domestic actors demonstrate limited flexibility in changing the delivery of TB care. Despite implementing DOTS for over a decade, a shift to community-based TB care and support has not occurred. Hospitalisations remain a dominant approach to TB care. Social support and the response to MDRTB are framed as relying on specialised inpatient care.

Overall, the TB programme, which is comprised primarily of specialised TB services, has limited interactions with the broader health system.

Performance of the programme appears to be sub-optimal, however full assessment of performance was not possible in this study because of weaknesses in TB surveillance and lack of robust monitoring of MDRTB and TB/HIV problems. This study finds that inefficiencies in TB service delivery likely persist.

CHAPTER 9 SUSTAINABILITY OF HIV/AIDS CONTROL PROGRAMME

INTRODUCTION

'Certainly, investments of such substantial amount of funds resulted in very dynamic developments, and introduction and even scaling up delivery of interventions in general. How effective are these interventions or projects? This question has emerged only because here are substantial money channelled to HIV/AIDS. We started to think about that. If financing would be only from the state's budget, we would be worrying and thinking more about mobilizing resources instead of effectiveness of investments.....' (Respondent HIV04)

This chapter aims to explore sustainability of HIV/AIDS programme. Similar to other FSU countries, HIV has emerged as a novel public health problem to a newly formed state (Chapter 2). Prior to 2000, most HIV cases in Kyrgyzstan were assumed to be imported from abroad as cases were detected primarily among foreign citizens. In the period from 1987-2000, the Kyrgyzstan health system detected 14 HIV cases among its citizens (Table 9.1). A notable outbreak of HIV among IDUs in Osh city was reportedly detected in 2001 (Osmonaliev, 2005). Since 2001, the number of detected HIV cases has been increasing rapidly (Table 9.1).

UNAIDS defines the epidemic in Kyrgyzstan as a low prevalence (<0.1% in adult population) or concentrated epidemic among IDUs (UNAIDS, 2010). Over the last 15 years, the HIV/AIDS control programme has been evolving with substantial technical and financial assistance from international organisations. As has been discussed in the Chapter 7, in the middle of 1990s Kyrgyzstan's political climate was marked by openness to western international organisations and ideas, a proliferation of NGOs and relatively free mass media. A UNDP thematic group on HIV/AIDS was set up in 1996, with the aim to mobilise response and advocacy in preventing HIV/AIDS epidemics⁷¹. Even though there were only a few detected HIV/AIDS cases, national policy makers declared their political commitment⁷² to a multisectorial response in preventing HIV/AIDS epidemics. Needle and syringe exchange projects were piloted⁷³ in 1999 in the civilian sector, and in 2000 in penitentiary sector.

⁷¹ UNDP and the Government signed an agreement to conduct a joint project on 'Prevention of STDs/HIV, 1997-2001'. Within framework of this collaboration, a first governmental programme 'On prevention of STD/HIV/AIDS, 1997-2001' (ref) has been approved by the State.

⁷² Including commitment to signed international declarations, treaties and conventions on HIV/AIDS control and prevention and human rights.

⁷³ Two pilots in Bishkek and Osh city. UNDP and Soros Foundation/the Open Society Institute .

Kyrgyzstan has been a pioneer in the FSU region to pilot methadone replacement therapy, first in the civilian sector in 2002, and in prisons in 2008⁷⁴. ART is delivered since 2005 and fully funded by the GFATM grant.

In my research, I assess a programme's sustainability by analysing five programme characteristics: leadership, capacity, flexibility (adaptability), interactions, and performance (Chapter 5). This chapter is structured similarly to the previous chapter (Chapter 8), by presenting these characteristics in separate sections. I begin the chapter by presenting an analysis of HIV/AIDS surveillance data and how the HIV/AIDS epidemic is perceived by programme actors. The '*Leadership*' section assesses leadership of the HIV/AIDS programme. This section analyses the strategic aims of the HIV/AIDS control programme and how the strategy is supported by a legislative framework for HIV/AIDS control and illicit drug use reduction. I then identify key programme actors, explore their role in HIV/AIDS control efforts, and analyse formal governance and organisational arrangements for HIV/AIDS control programme to identify whether these influence the programme leadership.

The '*Capacity*' section assesses financial resources for the programme, their sources and overall expenditure on HIV/AIDS control over time. This section also analyses available infrastructure (services) available for delivering HIV/AIDS interventions. I also assess in this section the availability and development of human resources, availability, procurement and distribution of ART drugs and other medicines, commodities for preventative interventions, available information and communication technologies.

The '*Flexibility/adaptability*' section presents an analysis related to how health system's arrangements for specialised narcology (that traditionally deliver treatment of substance dependency) and AIDS services changed to support implementation of innovations. I explore in this study two innovations - (i) opioid substitution therapy, and (ii) ART. In the '*Interactions*' section I analyse the interactions between specialised HIV services and primary care services, narcology and primary care services, and overall between is of integration between state services and HIV-services NGOs. Details of these interactions were also presented throughout the other sections. In section the '*Performance*', drawing on secondary data (national statistics and UNAIDS reports), I assess performance of the HIV/AIDS programme (e.g. effectiveness, efficiency, and equity).

⁷⁴ There are only few countries in industrialized countries, or otherwise, that implement harm reduction in prisons

9.1. HIV/AIDS EPIDEMICS IN KYRGYZSTAN

9.1.1. HIV/AIDS surveillance data

As of the end of 2009, the national HIV surveillance had reported a cumulative number of 2561 detected HIV cases (Table 9.1). This year, the majority of cases (67.4%) were among IDUs. During the last several years, Kyrgyzstan also detected HIV cases infected through heterosexual contact. As was reported by the study respondents most are identified as sexual contacts of IDUs (Figure 9.1). A large outbreak of paediatric HIV cases in a rural town Nookat, Osh oblast was detected in 2007, among children below 5 years old who were infected either through blood transfusions, other hospital-based invasive procedure, or unknown causes (in later years this number grew to 147 children). By the end of 2009, Kyrgyzstan had also identified 52 babies who were infected through vertical transmission. Among registered HIV cases, majority were young males aged 24-39 years old. Male to female ratio is 3 to 1 (75%/25%).

Table 9.1 Registered HIV and AIDS cases, 2000-2009. Kyrgyz Republic

Year	2000 ¹	2001	2002	2003	2004	2005	2006	2007	2008	2009
New HIV cases	53	149	160	132	161	171	244	409	552	687
New HIV cases (Kyrgyzstan' citizens)	14	134	146	125	153	165	233	388	532	671
HIV cases, cumulative	14	148	294	419	572	737	970	1358	1890	2561
HIV cases per 100 000 population	0.3	3.0	3.2	2.6	3.1	3.3	4.6	7.7	10.1	12.8
AIDS diagnosis, cumulative		1	10	20	34	54	82	108	145	214
Died (all causes) from AIDS	1	4	8	17	16	31	37	57	55	
					10	48	72			124
TB/HIV, cumulative						49	112		270	345

Source: Republican AIDS Centre, Kyrgyz Republic

¹ cases registered up to 2000.

According to the recent UNAIDS data, as of the end of 2009 a point estimate of the number of HIV infected people living in Kyrgyzstan was 9800, with confidence interval (95%) ranging between 6500 and 16000 cases (UNAIDS, 2010). The difference between officially registered HIV cases and UNAIDS estimates (which, in turn, have wide confidence intervals) is considerable. Clearly, there are considerable uncertainties in available data. Problems with data are also exemplified with HIV or AIDS associated deaths that are also estimated to be high – a cumulative 2600 (1400 – 6500) by the end of 2009 (UNAIDS, 2010). Official registration system has detected 332 deaths among HIV positive persons.

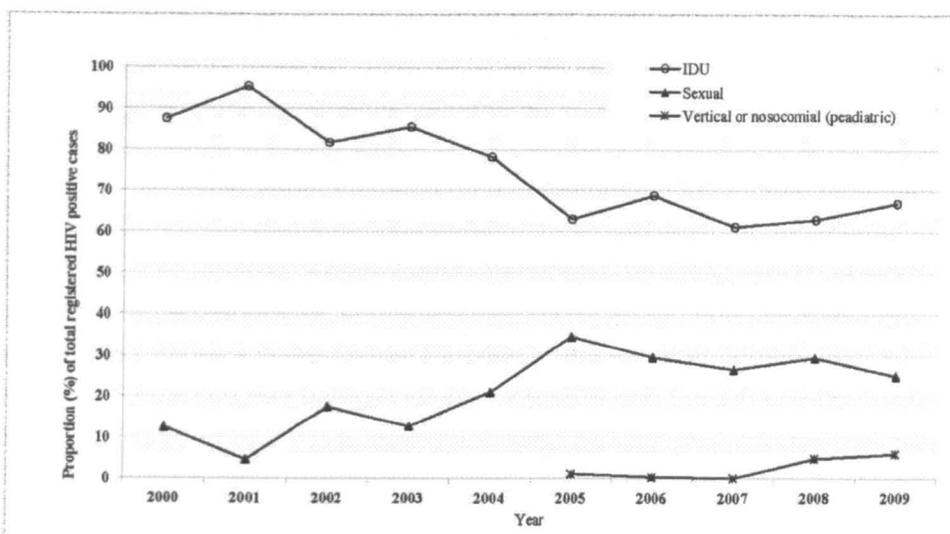


Figure 9.1 Cumulative registered HIV cases, by route of transmission, 2000-2009. Kyrgyz Republic.

Source: Republican AIDS Centre, Kyrgyz Republic .

Cases by the transmission route(if known) as of 2009: IDUs-1726 (67.4%); heterosexual contact -633 (24.7%), paediatric HIV (nosocomial transmission 147 (5.76%), paediatric HIV (mother to child) – 52 (2%).

As I discussed in Chapter 2, the magnitude and the trends of HIV/AIDS epidemic in the FSU, including Kyrgyzstan, are not fully known. The region lacks accurate and reliable data on HIV/AIDS and persons at risk (Bernitz and Rechel, 2006). Uncertainties in estimates are particularly profound in countries with weak surveillance systems such as most FSU countries (Bernitz and Rechel, 2006, Lyerla, Gouws, and Garcia-Calleja, 2008, Walker and others, 2004). UNAIDS produces its estimates based on available data from national sources (UNAIDS, 2010). At present, HIV/AIDS data in Kyrgyzstan come from the HIV case registry and sentinel surveillance among risk groups. The current HIV testing policy includes mandatory testing among blood donors, selected occupational groups and migrants from selected countries (TheLaw, 2005a). The MOH also recommends routine testing all pregnant women, and patients with TB (MOH, 2007a, MOH, 2008c).

Weaknesses of routine HIV surveillance are well-recognised by some respondents in this study:

'We have around 2500 cases detected. But according to WHO - this number should be multiplied by 4. Our epidemiological department forecasts around 6500 cases.... How do we detect them? Those who need a certificate to work abroad, migrants. Women – when pregnant, TB patients....But majority – we cannot reach or find.'

(Respondent HIV08)

In 2004, sentinel surveillance among risk groups⁷⁵ for HIV infection and their behaviours was introduced into functional responsibilities of the Republican AIDS centre.⁷⁶ The most recent results (Table 9.2) indicate the highest proportion of HIV positive individuals among tested IDUs (14%), and prisoners (7%). MSM (4% in 2007), and sex workers (1.6% in 2009) had lower rates. Compared to previous years rates of HIV among IDUs and prisoners nearly doubled in 2009. However, these results require cautious interpretations, as these are non-representative of populations at risk and likely bear considerable uncertainties. A major problem, as I illustrate in the following section, is that a size of populations at risk and their changes in Kyrgyzstan are unclear. A second issue is that sentinel surveillance among risk groups even if implemented with methodological rigour have considerable likelihood of biases and errors. These errors might include, but are not limited to, selection biases, incompleteness of sampling frame, poor definition of populations at risk, misunderstanding of context and behaviour of risk groups that affects ability to reach sufficient representation, and non-response biases (Magnani and others, 2005, Malekinejad and others, 2008, Simic and others, 2006).

Table 9.2 Results of HIV sentinel surveillance among risk groups, 2004-2009, Kyrgyz Republic

Risk group	2004	2005	2006	2007	2009
IDUs	6.4%	8%	7.4%	7.7%	14.3%
Prisoners	2.7%	0.4%	3.5%	4%	7%
SW	1.7%	1.1%	1.4%	1.3%	1.6%
MSM	0	0	3.5%	4%	
Pregnant Women	0	0.1	0	0.1%	
Patients with STD	0.5%	0.1%	0	0.1%	

Source: Republican AIDS Centre, Kyrgyz Republic

During my fieldwork and data collection, representatives of RO SPID were not able to provide me with detailed information on applied methodology and changes to it. Sampling was snowballing or clusters sampling techniques in earlier years, and in 2009 a respondent driven sampling (Heckathorn, 1997) has been applied. Sentinel surveillance activities had initially included Bishkek city and Osh city only, then, starting 2007, were expanded to include cities in Jalal-Abad, Batken and Chui oblasts.

⁷⁵ IDUs, prisoners, sex workers, MSM, pregnant women and persons with STD.

⁷⁶ In Kyrgyzstan, designed and implemented with donors' technical and financial assistance CDC/USAIDS, 2004-2006, then CAAP project in 2007 -2009.

9.1.2. Population groups at risk of HIV – limitations of available data

In Kyrgyzstan, reliable data on size of population groups at risk of HIV such as IDUs, sex workers and MSM is lacking. Changes in a number or behavioural patterns among these groups over time are largely unknown. Kyrgyzstan is not unique in this matter. Globally data on prevalence of IDUs in populations is limited or fragmented due to methodological challenges with estimating or measuring the size of these marginalised groups (Aceijas and others, 2006a, Mathers, Cook, and Degenhardt, 2010, Mathers and others, 2008, RefGroupUn, 2010).

UNODC have produced estimates of IDUs twice. In 2001, the estimated number ranged 80 000 -100 000 (Bashmakova and others, 2009), in 2006 a point estimate was 25 000 IDUs (Bashmakova and others, 2009, UNODC, 2008). CDC conducted a study in 2007 and provided a point estimate at 35 000 (respondent HIV06). WB assessment in 2003 estimated that there were around 70 000 IDUs (Godinho and others, 2005a). At present, UNDOC 2006 figures suggesting that there are around 25 000 IDUs are used by national stakeholders as a best available estimate of IDUs population in the country. UNDOC produces its estimates based on assumptions extrapolated from official registration data that captures populations in urban settings (or known IDUs 'hubs') with rest being imputed (Mathers and others, 2008).

Estimates of MSM and sex workers also suggest substantial uncertainty. According to national sources, number of sex workers might range from 7000 to 10500 (mid- point 4000), and number of MSM was estimated from around 5000 to as high as 18000-36000 (CMCC, 2011).

Illicit drug trafficking and detected HIV cases

Despite substantial limitations of available HIV/AIDS data in Kyrgyzstan, IDU likely was, and remains, an important driver of HIV/AIDS epidemics. Relationships between illicit drug trafficking, heroin availability, needle sharing behaviours spread of HIV has been well-documented in the FSU (Beyrer and others, 2009, Nabatov and others, 2002, Nabatov and others, 2007) other regions (Beyrer and others, 2000, Crofts, Reid, and Deany, 1998). Since the early 1990s, central Asian countries are host to key opiates trafficking routes from Afghanistan en-route to Russia, Europe and increasingly to China (Madi, 2004, Townsend, 2006). Kyrgyzstan has experienced continuous increase of new registered opioid (primarily heroin). According to national sources the number of registered opioid users (mostly heroin) increased from 3261 IDUs in 2000 to 6573 in 2008 (RMIC, 2008).

Known major drug trafficking routes through Kyrgyzstan cross Fergana Valley, which hosts Osh and Jalal-Abad oblasts, Bishkek city, and several sites in Chui oblast (Townsend, 2006, UNODC, 2008). The trajectory (temporal and geographical) of HIV/AIDS epidemic appears to mirror the pattern of the IDU epidemic in Kyrgyzstan. Geographically, HIV-cases are predominantly being detected in four regions, which are located along known drug trafficking route (Figure 9.2). It should be noted however that known drug trafficking routes are those which are defined by the UNODC based on reports from national law enforcement agencies. There are potentially drug trafficking routes which are not known to the law enforcement.

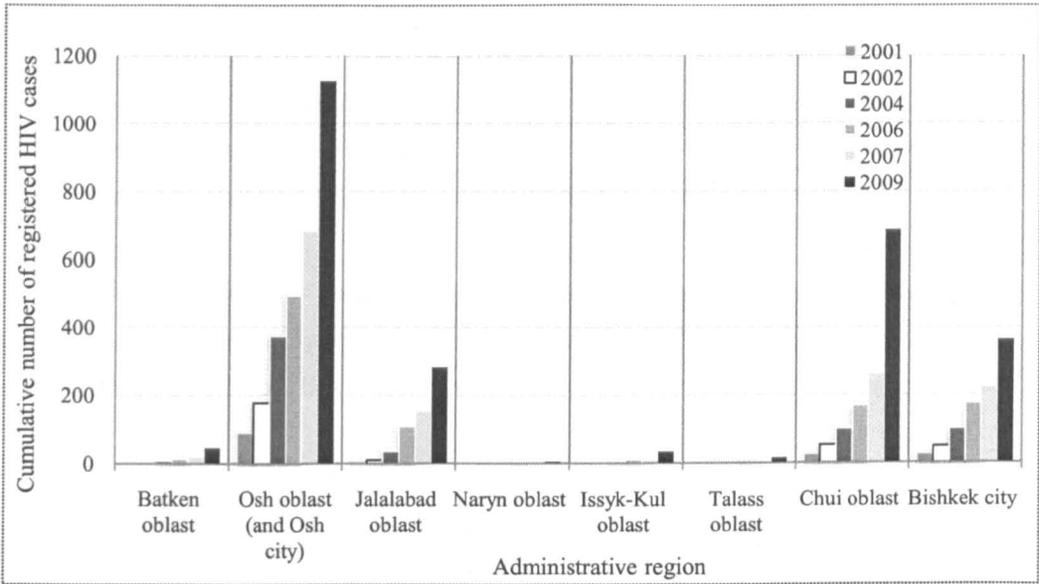


Figure 9.2 Cumulative number of registered HIV cases, by administrative regions, Kyrgyz Republic, 2001-2009.

Out of a cumulative number registered HIV cases (total =2561) in 2009, 44% (n=1128) were in Osh oblast (including Osh city), 27% (n=687) in Chui oblast, 14% (n=364) in Bishkek city, and 11% (n=282) in Jalal Abad oblast. Source: Republican AIDS Centre, Kyrgyz Republic

Based on molecular epidemiology studies on HIV-1 subtypes prevalence and distribution in the central Asian region (including Afghanistan) the HIV epidemic likely started through linked outbreaks among IDUs and trafficking of drugs to Kazakhstan and Russia. The country likely has experienced a nascent pattern (sporadic transmissions with no relations to each other) up until middle 1990s. Similar to other central Asian countries, this was followed by linked outbreaks among IDUs that led to a larger but concentrated epidemic (on-going transmission but limited to this risk group and their sexual contacts) (Beyrer and others, 2009, Carr and others, 2005, Nabatov and others, 2007, Sanders-Buell and others, 2007).

9.1.3. HIV/AIDS problem definition – perceptions of programme’s actors

In summary of the previous section, there are substantial uncertainties in terms of magnitude and geographic areas affected by HIV/AIDS epidemic in Kyrgyzstan. Available data indicates nevertheless that IDU is the likely a main driver of the epidemic. I found in this research that available data leads sometimes to divergent interpretations about the course of epidemics or HIV/AIDS control efforts. Most respondents expressed a view that HIV/AIDS problem is a serious socio and health problem. There is overall understanding that HIV/AIDS epidemic is in principle driven by IDUs:

‘The driving force of the epidemic remains and continues to be IDUs. Though there is transmission to general population, but through close contacts of IDUs...There are cases through blood transfusion. Not through donors’ blood actually– there are only few cases, there is primarily hospital transmission.... (Respondent HIV06)

Transmission of HIV in hospital settings is viewed by some respondents as rather uncontrollable. Additionally, transmission cases among MSM are viewed as a serious and an unacknowledged problem. Below is how these issues had been summarised by one respondent:

‘Among critical moment, we see uncontrolled HIV transmission in clinics. Not only here, but also in Uzbekistan, Kazakhstan and Tajikistan, in all countries – nosocomial transmission. This is perhaps is most important aspect. We also see that despite an overall general trend of feminisation of the epidemic, the epidemic remains concentrated among intravenous drug users. We also see hidden infections, infections about which nobody likes to talk is among MSM.’ (Respondent HIV02)

Lack of transmission in the general population is viewed by other respondents as effective and successful efforts with preventing HIV/AIDS. This is how a respondent, with years of experience working on HIV/AIDS prevention present the situation:

‘We never had problems with surveillance. Never this question was not an issue in Kyrgyzstan....we practically managed to contain transmission in within risk groups. Only recently, we observe growth of heterosexual transmission. In my opinion, we have very good prevention programmes. Of course, we had an outbreak in Nookat....but programmes are indeed excellent, and this is recognised and it is obvious. This is because of these prevention interventions, we managed for a long time to prevent heterosexual transmission in general population’ (Respondent HIV01)

Respondents who work closely on issue of drug use reduction also noted changes, albeit slow, in overall view on drug use problem among policy makers:

'In the last 3-4 years, there is emerging understanding, more-less, that drug use is not necessarily legally liable . And people started to understand, especially among policy makers – those who make decisions, that drug use is a disease for which people should not be always incarcerated. This is a health condition, which should be considered from medical as well as social standpoints.' (Respondent HIV04)

However, other study participants noted fragility of attention to IDUs. During the Soviet period, drug use has been historically considered as one of society's 'ills' (ref). Drug use was criminalised. A respondent who worked on substance dependence treatment for decades noted that it is only because of an increased political attention to HIV/AIDS that there is now some attention to IDUs problem:

'We have 70-80% of HIV cases among IDUs. This is why there is an increased attention to IDUs. Prior to HIV – there was only criminalisation of drug users.'

(Respondent HIV03)

All respondents identified stigma and discrimination against persons with HIV/AIDS, IDUs, prisoners, sex workers, and MSM as a fundamental problem for HIV/AIDS prevention and control efforts. Study participants noted that stigma exists in the general population. Notably, stigma from the side of health care providers was identified as considerable. A quote below perhaps profoundly exemplifies this perception (quote of a representative of a primary care):

'We agreed to have methadone centre here. But prior to really having experience of interacting with them [IDUs], we did not know what problems we might encounter. Some of them are really are not manageable, really doomed people. I think some of them – it is just complete degradation. No rehabilitation would help them. I think, their cognition is permanently damaged from long-term use [of drugs].'

(Respondent PHC02)

9.2. LEADERSHIP

9.2.1. Policy responses to HIV/AIDS and IDUs epidemics

Leadership and political commitment to HIV/AIDS prevention and control in the FSU context are represented when seen in the context what strategic goals are being formulated, and how legislative base has been made aligned with these strategic goals. Studies in Russia (Chapter 2) demonstrated that legacy of the Soviet legislation with punitive measures against marginalised populations including PLHIV impeded effective response to epidemic. In the analysis presented in this section, I considered two policy instruments: i) the state's approved programmes, referred here as *governmental programmes*, which are strategic policy documents; and ii) legislation – law and regulations governing HIV/AIDS control and narcotic drugs use. Among other indicator of leadership is what has been implemented. These are explored further in this chapter.

Strategic aims of HIV/AIDS prevention and control response

Analysis of strategic documents endorsed in the last decade indicates that Kyrgyzstan has been following international recommendations in setting strategic aims for HIV/AIDS efforts. At the beginning of the 2000s, strategic goals on HIV/AIDS control were framed within an overall international discourse on HIV/AIDS, embedded in UNGASS 2001 session on HIV/AIDS and the 2004 Dublin declaration. As one the MDG, addressing HIV/AIDS is included as priority area in Poverty reduction strategy, Country development strategy, and health system reform(TheGovernmentKyrgyzstan, 2006b).

In the early 2000s, HIV/AIDS epidemics in the FSU was defined as a potential threat to countries' development: *'the HIV/AIDS epidemic threatens to become a crisis of unprecedented proportions in our region, undermining public health, development, social cohesion, national security and political stability in many of our countries'*, as was formulated, for example, in the Dublin declaration in 2004 (DublinDeclaration, 2004).

The current national HIV/AIDS control efforts in Kyrgyzstan were formulated as preventing a generalised epidemics and averting potentially an associated socio-economic crisis (TheGovernmentKyrgyzstan, 2006a). Kyrgyzstan's policy makers declare a commitment to a comprehensive and multisectorial response to HIV/AIDS epidemics. Kyrgyzstan aims to achieve universal access to prevention and treatment, scaling up targeted interventions such as risk reduction among youth, IDUs, migrants, and sexual workers. Strategic documents (TheGovernmentKyrgyzstan, 2006a, TheGovernmentKyrgyzstan, 2009) state the authorities'

intentions to change the legislative framework to protect vulnerable groups from stigma and discrimination, to ensure medical, legal and social support for persons living with HIV/AIDS, and their families. Among goals are also capacity development of community groups, which represent interests and needs of PLHIV.

As elsewhere in central Asian region (Latypov, 2009), Kyrgyzstan's national strategy on illicit drugs control and drugs misuse declares a balanced approach (TheGovernmentKyrgyzstan, 2004). Among key policy objectives, are law enforcement measures against drugs trafficking and counter criminal activities as well as objectives of prevention and reduction illicit drugs use. The country states intentions to establish modern approaches to treatment and rehabilitation of persons with illicit drug dependency. This policy document also explicitly states links drug control efforts with measures against HIV/AIDS epidemics, development of regulatory mechanisms for supporting HIV/AIDS prevention including implementation of harm reduction programmes.

Legal framework for HIV/AIDS control and illicit drugs use

Despite endorsing a comprehensive response to HIV/AIDS epidemic, achievements of these are not supported by existing legislation. Since independence Kyrgyzstan has passed laws on HIV/AIDS twice, in 1996 and then in 2005 (TheLaw, 2005a). As compared to USSR's law on HIV/AIDS, Kyrgyzstan includes several important provisions. The law guarantees persons living with HIV/AIDS(PLHIV) provision of high quality medical care, humane and fair treatment, social and psychological support, legal assistance and representation, free expression of sexual and reproductive rights, and free choice of health care provider (TheLaw, 2005a). HIV status is confidential, and unauthorised disclosure without consent is a criminal offense (TheLaw, 2005a, TheLaw, 2005b). Discrimination and stigma against people living with and affected by HIV/AIDS are prohibited (TheLaw, 2005a). However, the regulatory mechanisms have not been developed or implemented fully to ensure confidentiality of PLHIV or to reduce stigma and discrimination against them. This is how one respondent explained:

'The confidentiality principle is being broken all the time. There are many cases, the legal clinic Adilet has a full portfolio of cases on that. But system does not change. The Ministry of Health is a system, and this system must develop normative acts and executive mechanism to ensure implementation of the HIV law. This does not exist yet.'

(Respondent HIV02)

Criminal and administrative liabilities against sexual minorities and sex workers were removed from the criminal code in 1997. At the same time, Kyrgyzstan retained the Soviet Union's provision in the criminal code which specifically focuses on HIV and STD transmission (TheLaw, 1997). Infecting other persons, when knowing about own HIV/STDs status is administrative or criminal offenses. There is also a liability for HIV transmission which results from 'improper implementation of job responsibilities' by a health worker. In 2008, Kyrgyzstan's court sentenced nine health care workers of causing the HIV outbreak among children infected in hospitals in Osh oblast to 3 to 5 years imprisonment (Utyasheva, 2008).

The existing legal framework (TheLaw, 1997, TheLaw, 1998a) does not address the needs of individuals suffering from drug dependence, protection of their rights or protecting them from discrimination. The existing legislation is focused on control of drug use (UNODC, 2010). There has been partial decriminalisation of drug possession⁷⁷. The legislative framework nevertheless remains very restrictive. Acquiring, possession, mailing or transporting a small quantity of illicit drugs for personal use even without intentions to sell are administrative or criminal liabilities. Notably, implementation of harm reduction interventions is not written into the existing legislative framework. These interventions, in both civilian and penitentiary sectors, are run based on Ministry of Health and Ministry of Justice prikazes (MOH, 2001, MOH, 2002, MOH and MOJ, 2007) allowing implementation of pilots. (These will be further explored in the section under 'Adaptability'.)

Implementation of HIV/AIDS policy innovations

Since 1997, implementation of all HIV/AIDS innovative interventions, including opioid substitution therapy and ART, and innovative models of integrated prevention and care delivery for marginalised groups has been under way with technical and financial assistance from international actors. UN-agencies, KfW and the Open Society Institute (OSI) in partnership with the Soros foundation continuously provide support since that time (Table 9.3). It is with the assistance of the OSI and UNDP, that needle and syringe exchanges (NSP) were piloted in 1999 and methadone replacement therapy piloted in 2002. KfW provides ongoing assistance for strengthening diagnostic laboratories. In the middle of 2000s, a number of international actors have grown. WB, DFID, and USAID started large multimillion dollars regional HIV/AIDS projects. Kyrgyzstan's has been successful in obtaining GFTAM funding through round 2 (17 million US\$), and round 7 (27 million US\$). Within GFATM grant ART has been

⁷⁷ A minimal residual quantity of narcotic substance was defined as 1 ml.

initiated in 2005, and reportedly continuously being scaled up. OST and NSP are also being expanded within GFATM grant.

Broadly, the provided international assistance has been focused on three areas. The first is strengthening the country's capability to develop 'The Three Ones' - one unified HIV/AIDS policy, one coordination body, and one M&E system (UNAIDS, 2004). The second is development of capacity of local organisations in implementing HIV/AIDS interventions. Most interventions have been those of HIV prevention – risk reduction. A major focus has been on developing capabilities of non-governmental organisations. Attention to strengthening capacities of the state's health care providers has been limited. Capacity building is usually understood as being developed through training programmes. These in turn were often fragmented, each international actor having their own priorities. Trainings on skills such as financial management, economic evaluation or principles of epidemiology and public health were limited. The third is provision of medicines, consumables and supplies necessary for implementing HIV/AIDS prevention and treatment.

The situation has evolved in the way that priorities of what is being implemented are driven by what is being funded by donors. Domestic respondents noted a lack of coordination in the priorities setting with those who implement HIV/AIDS interventions on the ground.

'From one hand, donors are trying to coordinate....we have the following process here – we know that each organisation [NGO] has two-three donors supporting, and we of course are trying to find out – what activities current grant is covering. This is from one hand. From another hand, duplication is taking the place nevertheless because each donor has own interest. And these interests may not intersect and sometimes it is difficult to reach agreement.' (Respondent HIV01).

Table 9.3 International assistance to HIV/AIDS control, Kyrgyz Republic, 1996-2010

Agency	Time period	Project or grant round	Focus	Monetary value
UNDP UNAIDS ⁷⁸	1996-present	UN Joint programme for HIV/AIDS	Strengthening 'Three ones' - technical assistance to CMCC, national strategy, M&E.	39.000 – 50.000 US\$ per year
UNODC	2006-2009	Central Asia Regional Project	Prevention of HIV in prisons, treatment of drug dependency, rehabilitation of drug users	866.000 US\$ ⁷⁹
UNFPA	1995-present		Sexual reproductive health, youth	
UNICEF			PMCTC, VCT in health care, youth	
WHO	1992-present		Technical assistance to CMCC, national strategy, M&E.	
World Bank ⁸⁰	2005-2010	Central Asian Aids Control Programme (CAAP)	Supportive policy environment, strategic planning, sentinel surveillance, HIV prevention risk groups; quality of HIV services	5.5 million US\$ ⁸¹
EU	2000-2008 (extended)	BOMCA ⁸² CADAP ⁸³	Boarder control strengthening, counter-drug crime and drug control measures, drug control	
GFATM	2004-2009	Round 2 grant	HIV prevention among risk groups, PLHIV treatment and care. All consumables and medicines . M&E	17.1 million US\$
	2009-2011-	Round 7 grant	HIV prevention among risk groups, PLHIV treatment and care All consumables and medicine. M&E	11.8 million US\$ approved 25 million US\$ committed
USAID	2001-2004	CDC/Central Asia	Sentinel HIV surveillance, blood safety, diagnostic laboratories	
	2004-2009	Capacity project	Civil society mobilisation, education and empowerment of vulnerable groups, technical assistance to the CMCC, TB/HIV integration model (Chui oblast), VCT	1.2 million US\$
	2009-2014	Health outreach	HIV and TB prevention among risk groups, capacity building of NGOs and state agencies to reach and improve access to services	3.75 million US\$ ⁸⁴
DFID	2004-2012	CARHAP ⁸⁵	Harm reduction among IDUs, development of quality services and M&E system, strengthening enabling environment	1.5 million GBP
KfW	2005-2010		Diagnostic laboratories, procurement of equipment and consumables, VCT	3.6 million Euro
GTZ	2009-2018	HIV/AIDS and preventing addiction in central Asia	Health promotion and education with a focus on preventing drug use among youth	
Soros/OSI	1997-2009		Harm reduction. Implementation partner of CARHAP in Kyrgyzstan	
AFEW	2005-2010		Social support, prisons, IDUs, TB/HIV	

⁷⁸ Kyrgyzstan's UNAIDS country coordinator was appointed in 2010, prior - under UNAIDS/central Asia region coordinator.

⁷⁹ Amount is approximated for Kyrgyzstan, total regional 5, 212 million US\$.

⁸⁰ Co-financed with DFID.

⁸¹ Amount is approximated for Kyrgyzstan, total regional 25 million US\$ from WB, and 1 million GBP from DFID.

⁸² Boarder Management Central Asia

⁸³ Central Asia Drug Control Action Programme

⁸⁴ Amount is approximated for Kyrgyzstan. Regional project for 4 countries, 15 million US\$.

⁸⁵ Central Asia Regional HIV/AIDS Programme

9.2.2. Governance and organisational arrangements

In line with the commitment to multisectorial response to HIV/AIDS, Kyrgyzstan's government has formed its first high level HIV/AIDS coordinating committee in 1997. Over the last decade, a high level national coordinating body has undergone a number of changes (Figure 9.3), caused by political changes in Kyrgyzstan's government and international initiatives such as the UN's 'Three Ones' principles and the introduction of the GFTAM country's coordinating mechanism (Murzalieva and others, 2009, Murzalieva and others, 2008, Spicer and others, 2010). At all times, the CMCC or its equivalent has been chaired by the high level governmental official.

At the time of the data collection, a national coordinating body was referred as the Country's Multisectorial Coordinating Committee (CMCC) on communicable diseases of social importance and high pathogenicity (Figure 9.3). This structure was formed in 2007 by merging the state Republican Epidemiological Commission (REAC) and the Country Multisectorial Coordinating Committee on HIV, TB and malaria. One of the changes has also involved a physical relocation of the coordinating unit (referred to as the executive secretariat) from the Vice Prime Minister's office to the MOH.

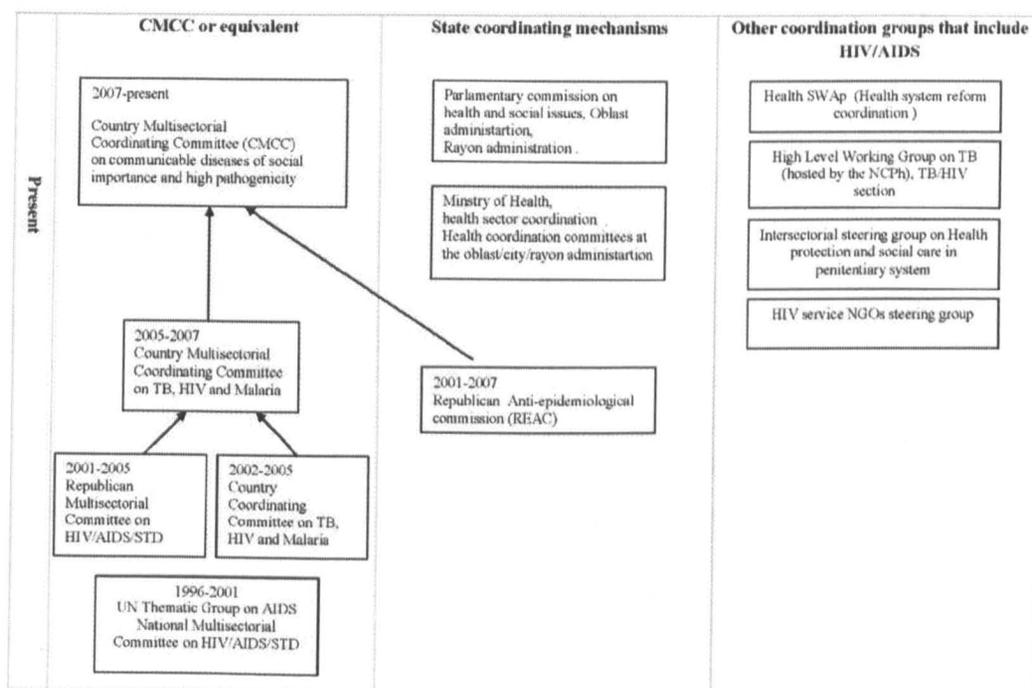


Figure 9.3 HIV/AIDS coordination structures, Kyrgyz Republic, 1996-2009

Adapted from Murzalieva et al, 2008, and the MOH, 2008.

Previous studies conducted in Kyrgyzstan have shown that CMCC as was formed in 2007 had weak coordination capabilities, unbalanced membership composition (i.e. majority members are state's representatives), and had lost its authority in decision making as compared with the previous structure (Murzalieva and others, 2009, Spicer and others, 2010). All respondents in my study noted similar challenges including weak leadership capabilities of the CMCC:

'There are many players in HIV/AIDS, but leadership, which would unite all sectors, does not exist. The situation evolved in the way that CMCC, in its form today, is very a weak structure.....' (Respondent HIV10).

In this analysis, several factors emerged as creating important barriers for effective coordination of HIV/AIDS efforts, irrespective of location of coordinating unit or membership composition of the CMCC. These factors consequently affect the forming of an unifying domestic leadership. These factors are:

- Prevailing governance and organisational arrangements of the health system and other sectors. Separate planning, decision making and accountability lines within health system's programmes (e.g. AIDS services, narcology), between sectors (e.g. health, social services, financing, penitentiary), and between the state and non-governmental organisations.
- Limited interactions between the CMCC and country's existing coordination mechanisms (e.g. state's governance coordinating mechanisms, health system coordination, SWAP), and lack of clear regulatory framework for the CCMC functioning.
- A parallel channelling of substantial amount of funds (e.g. GFATM) in the environment of weak country's economic conditions. Weak domestic capacity for financial management, planning and resources allocation for HIV/AIDS in accordance with epidemiological evidence. The latter issue is compounded by lack of a robust HIV/AIDS surveillance system. These all combined contributes to creating tensions and competitions for funds from limited sources and prevents strengthening collaboration among programme actors.

These findings are detailed hereafter in the following subsections.

Organisational arrangements

The state has an overall responsibility for social and public health challenges related to HIV/AIDS epidemics. There is a parliamentary commission on social and health care and public health issues that oversees implementation and formally coordinates any governmental programme⁸⁶. Similar formal state offices and commissions are established at all regional levels. These formal government commissions at all levels have a coordinating role in planning and implementing any governmental programme endorsed by the state (e.g. TB, mental health).

The HIV/AIDS programme is complex comprising of public health service organisations, NGOs and international organisations (Figure 9.4). Among the state's institutions, the Ministry of Health and the Ministry of Justice (including its Agency for Drug Control) oversee the state's organisations involved in delivery for HIV/AIDS interventions.

The Ministry of Health is, in principle the main policy making body and main decision making institution as relates to planning, delivery and evaluation of HIV/AIDS preventative, curative and rehabilitation interventions as well prevention and treatment of narcotic drug dependency. The Ministry of Health oversees specialised health services, which are responsible for delivery of HIV/AIDS interventions (Table 9.4, Figure 9.4). Functional responsibilities of these services are presented in Table 9.4. The MOH delegates formal responsibilities for HIV/AIDS to the AIDS services and for drug dependency to the Narcology services. Specialised services are headed by Republican level institution (referred as a Centre or Institute) with regional extensions to the oblast level. Delivery of services such as STD and narcology is integrated with general services. There are specialised outpatient rooms at Family Medicine Centres (FMC) or departments at general hospitals.

The Ministry of Justice and its Agency for drugs control are policy making entities as relates to drug control, including drug use control. All decisions regarding health services in the penitentiary sector also have to be approved by this Ministry.

NGOs are providers of HIV-services (Table 9.4). Most services provided by the NGOs are nearly fully those supported financially by international organisations. Donors operate in Kyrgyzstan based on bilateral country's agreements or treaties with multilateral agencies (e.g.

⁸⁶ Governmental programmes are state's approved strategic policy documents, outlining efforts for a certain period of time, usually 5 years period

UN). For implementing any project, donors have to agree with and get approval from respective Ministry or regional administration.

Accountability lines and effective communication between NGOs implementing donor-supported projects and the MOH (or other Ministries) have not established. A key factor impeding effective coordination is a lack of formal interactions in financing. These lead to overall to misunderstandings and confusions because donors tend to implement their projects through NGOs and these in turn are reportable to donors. These tensions were articulated by one respondent, a representative of international organisation and previously a member of CMCC:

'Many representatives of the state argue - The Ministry of Health is responsible at the end. NGO receives funds, and they are not accountable for anything; the state is being left on the side... Donors argue - sorry, the money are given to the country; thus, the country should establish effective mechanisms of monitoring, evaluation and coordination to be able to control what is happening in the country.' (Respondent HIV05)

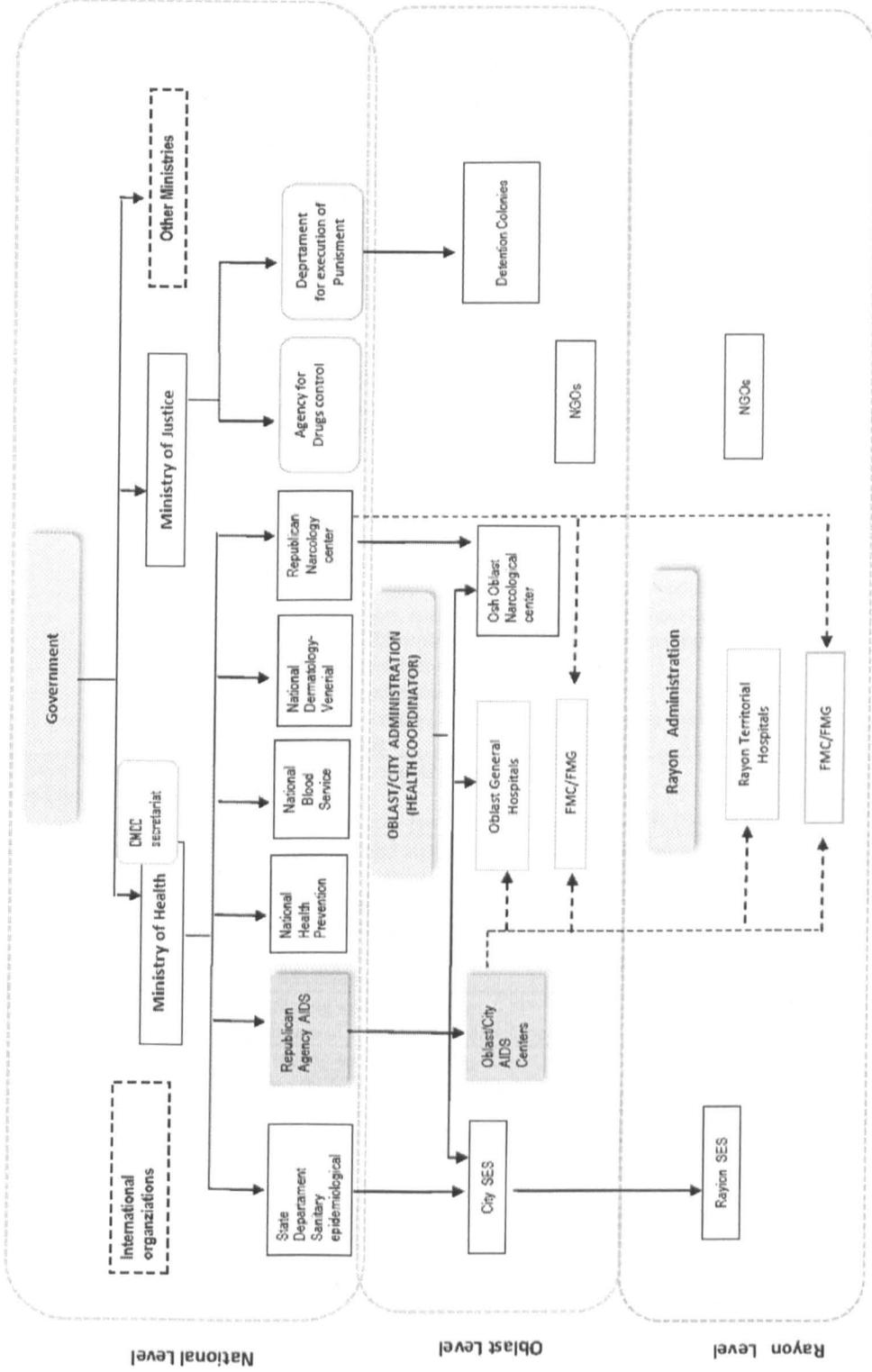


Figure 9.4 Organisational chart of HIV/AIDS programme
Source: Murzalieva et al. 2008

Table 9.4 Services and organisations involved in delivery of HIV/AIDS prevention interventions

	Main functions related to HIV/AIDS prevention, treatment, care or support
AIDS services	<p>Policy on diagnosis, treatment and care for PLHIV; Development of clinical protocols and guidelines HIV testing and counselling Confirmation of HIV/AIDS diagnosis; Clinical monitoring and management of PLHIV; Provision of ART; Supervision and coordination of treatment and care for PLHIV when treated with any provider; Surveillance, including sentinel HIV surveillance (planning, organisation, implementation); Health education</p>
Narcology services	<p>Policy on diagnosis, treatment and care for people with drug dependency Development of clinical protocols and guidelines HIV testing and counselling Treatment of drug dependence Opioid substitution therapy Needles exchange, condoms distribution; Health education Drug dependency surveillance</p>
NGOs	<p>HIV counselling; Friendly clinics (STDs treatment); Legal services; Support (social, legal, food vouchers, various counselling on health care,) for PLHIV, drug users, sex workers, ex-prisoners; Peer-to-peer counselling Referrals to AIDS centres, TB services, other treatment (IDUs are often accompanied by social worker) Syringe and Needles exchange, Rehabilitation centres (IDUs, ex-prisoners), drop in centres Health promotion</p>
General health services	<p>HIV testing and counselling PMCT Primary health care providers: (Observation of PLHIV)</p>
STD services	<p>Organisational and methodological work (development of clinical protocols, guidelines) ; HIV testing and consulting; STDs testing, consulting, treatment; STDs/HIV prevention (health education and promotion); STD surveillance</p>
TB services	<p>HIV testing and counselling Treatment of PLHIV, who developed active TB (do not deliver ART)</p>
Penitentiary health services	<p>HIV testing and counselling Testing for STDs, TB, Hepatitis B and C ART provision; Drug-dependency treatment; TB treatment; Opioid substitution therapy; Needles exchange, condoms distribution, health education;</p>
SES	<p>Regulatory function on implementation of prevention activities Surveillance of communicable diseases</p>
Blood services	<p>Screening of blood for HIV, Hepatitis C other blood-borne pathogens</p>

9.2.3. The Country multisectorial coordinating committee: interactions with other coordination mechanisms

The CMCC emerged in this analysis as having weak formal interactions with existing national and regional governance structures and mechanisms, which in turn are charged with coordination of efforts in their constituencies as relate to health and social development. The CMCC functioning has not been institutionalised into existing domestic organisational structure. In fact, functioning of the CMCC secretariat is funded from GFTAM grant (Bashmakova and others, 2009). In 2004-2009, UNDP and USAID/Capacity project provided technical assistance. The existing regulatory framework does not provide the CMCC with an authority in making decisions regarding planning and implementing HIV/AIDS interventions, particularly on regional levels. This often resulted in duplication of lines of command, and sometimes confusion over roles and responsibilities within country's pre-existing governance functioning. Membership in existing committees and national and oblast extensions often overlapped. Given frequent turn around in the government on all levels, several respondents expressed a need to integrate the CMCC into existing permanent structure such as the AIDS centre or the MOH.

This is how one respondent, who used to work at high level position at the MOH and now holds post in an international agency, pointed issues with CMCC:

'One of the rationale to unite existing Committee (RCHPK) and CMCC against HIV/AIDS, TB, malaria was to reduce duplication in membership (time as well) particularly where it is needed – on oblast and rayon levels. And within existing governance structures and existing regulatory framework to allow implementation. In a sense, the government was thinking about sustainability of coordinating functions, to limit duplications and confusions.' (Respondent HS02)

There are also parallel working groups and coordinating bodies, in which HIV/AIDS is one of the sections (Fig 9.3). There are overall weak linkages between the CMCC and SWAP mechanisms. This is despite that HIV/AIDS is one of the sub-programme in the health system reform programme, which aims at integration of HIV/AIDS interventions with primary care (TheGovernmentKyrgyzstan, 2006b).

Capabilities to mobilise, evaluate use of resources for HIV/AIDS programme

Most domestic respondents perceive the main role of the CMCC as mobilisation of resources, more specifically in ensuring proper processes for applying for GFTAM grants. One of the

indicators of a country's leadership in HIV/AIDS control is having domestic oversight over investments in HIV/AIDS, and not only as relates to the GFATM. Several respondents pointed out that at present neither CMCC nor other domestic entity can negotiate with the higher level decisions makers on priorities and allocation of resources, for example with donors' agencies. Donors in fact are viewed by some domestic respondents as actors who dominate HIV/AIDS policy implementation processes.

'It is difficult to say about any uniting or coordinating entity. Such entity would help. One which would keep everyone together; would have a lobbying function – even as relates to donors. When they come with their projects proposals, such entity would lobby interests of national stakeholders. Each donor has own policy here in Kyrgyzstan.... Kyrgyzstani stakeholders should have a say – today we need money for harm reduction but tomorrow we would need funds for HIV prevention among sex workers. Unfortunately, donors dictate.' (Respondent HIV01)

Another indicator of HIV/AIDS programme governance and leadership is capabilities to monitor investments and evaluate the programme's performance. Analysis indicates that there is still (i.e. evidence based public health and policy development were limited during the Soviet period) weak capabilities for economic evaluation, and planning and resources allocation in accordance with epidemiological evidence. Given weaknesses of HIV surveillance outlined earlier, decisions are sometimes made without rigorous evaluations:

'My major concern is that some of our politicians, those who make decisions, do not fully understand why we are trying to direct money to this group (IDUs). There are opinions already – since transmission is occurring in general population, there is no need to prioritise IDUs...But we have to think about effectiveness of measures whilst epidemic is still concentrated.' (Respondent HIV06)

Key impediment for CMCC functioning, as perceived by respondents, has been tensions and conflicts associated with competition for scarce resources:

'...political games have resulted in Kyrgyzstan's losing 9th round [GF]. A close friend of a Vice Minister at the time, leader of NGO 'Women's Congress', which never worked in the area of HIV/AIDS has been put as co-recipient from civil society....If such things would continue, we are at risk to lose substantial investments.' (Respondent HIV10)

9.2.4. Role of NGOs in HIV/AIDS response

Domestic NGOs emerged in the analysis as important actors of HIV/AIDS programme. According to all respondents, particular important role of NGOs is provision of services (Table 9.4). A common perception among respondents was that NGOs are more effective in reaching marginalised group than the public services, and provide services that the state organisations are not providing effectively such as social and legal support. Several civil society leaders took an active part in facilitating the state in formulation of HIV/AIDS strategic documents (The Government Kyrgyzstan, 2006a). Some leaders played a role in advocacy for legislation change⁸⁷. Otherwise, role of NGOs in HIV/AIDS programme governance and decision making is limited. NGO's reported challenges with getting their interests activities approved through the CMCC' mechanisms:

'Because there is a majority of the state's representatives, but we are minority. Therefore, we beforehand are destined to lose because any decision is being approved by the majority of votes.' (Respondent HIV06)

Most respondents have noted improved interactions between NGOs leaders and the state actors, particularly with the entrance of the GFATM. However, overall the perception is that there is much do to in building trust between the state and NGOs:

'We always were trying to work and were saying, that non-governmental sector is not here to replace, its purpose is to add to and to expand capabilities to the state. ...but, the state does not always understand. Attitude to us is nevertheless as to a 'younger' brother – 'what you can possibly do?' and so on. ...Effective partnership should be based on trust – that we are professionals in our areas and they are in their field. But we do not have it yet.' (Respondent HIV06)

Despite the growing role of NGOs in HIV service delivery, formal interactions with the state in financing have not been established. For most, the only source of funds is international donors. Several respondents pointed that NGOs in Kyrgyzstan have evolved as proactive actors, who take an active role in resources mobilisation for the country, though often for their own interests:

⁸⁷ Example – the lobby in changing administrative and criminal code for possession of drugs.

'We have very strong civil sector. Civil sector has own interest, because financing is primarily from donor sources. This is why civil sector organisations always put question about funds mobilisation....civil organisations are aware of all mechanisms to ensure implementation of Global Fund requirements during an application preparation....Civil sector has grown during the last several years, know its rights, and use all mechanisms to defend such.' (Respondent HIV05)

NGOs have become important partners for implementing a number of international projects. They often do not have decision making capacity or involvement in determining design of these projects and how the allocated funds could be spend. :

'NGOs depend on policy from where money comes from. From donors. In any circumstances, [NGOs] have to align with donors' programmes... the only distinctive characteristic of our Kyrgyzstan is that we have 'green light' to all [donors'] projects... The distinctive limitation however – any project that is started has own priorities – what money are given for, and what are not.' (Respondent HIV03)

9.3. CAPACITY

9.3.1. Financial resources

Sources of funds and financial flows

HIV/AIDS programme is funded from public (i.e. the state budget and the social fund), private (i.e. users of services) and external sources. Financing is fragmented (Figure 9.5). The MOH purchase services from providers of specialised services – AIDS, narcology, health promotion, STD dispensaries, TB, blood services and SES. Each specialised service has a separate budget line within the MOH programme (i.e. ‘programme’ for financial purposes), which is planned and allocated separately. MHIF purchases services from general services, as well as social assistance channelled for PLHIV. The MOJ has its own pool of funds, which is planned for and allocated to health services in the penitentiary sector. Financial planning and payment mechanisms to providers of HIV/AIDS interventions are linked.

Assessment of out-of-pocket payments (OOP) of PLHIV or persons at risk of HIV have not been assessed. At present treatment and care after PLHIV are being funded from the GFTAM grant. Only HIV infected children below 5 years old are fully covered by the state’s benefits. Treatment of people suffering from narcotic drug dependency is not covered by the state. In general, as was presented in the Chapter 7, OOP constitutes around 50% of health expenditure (HPAC, 2008, HPAC, 2009).

Funds from external sources for HIV/AIDS programme are channelled as ‘parallel’, off-budget funding. Each donor channels funds separately either directly to providers of services (as to grant recipients), or act as service providers (e.g. provision of trainings). The republican AIDS agency has been a principal recipient of GFTAM grants until principal’s recipient from 2004 until 2010. At the time of writing, there was a transition, in which UNDP would be a principal recipient of all Kyrgyzstan’s GFATM grants (GFTAM, 2010b). Funding for NGOs for delivery of HIV/AIDS interventions come from international sources.

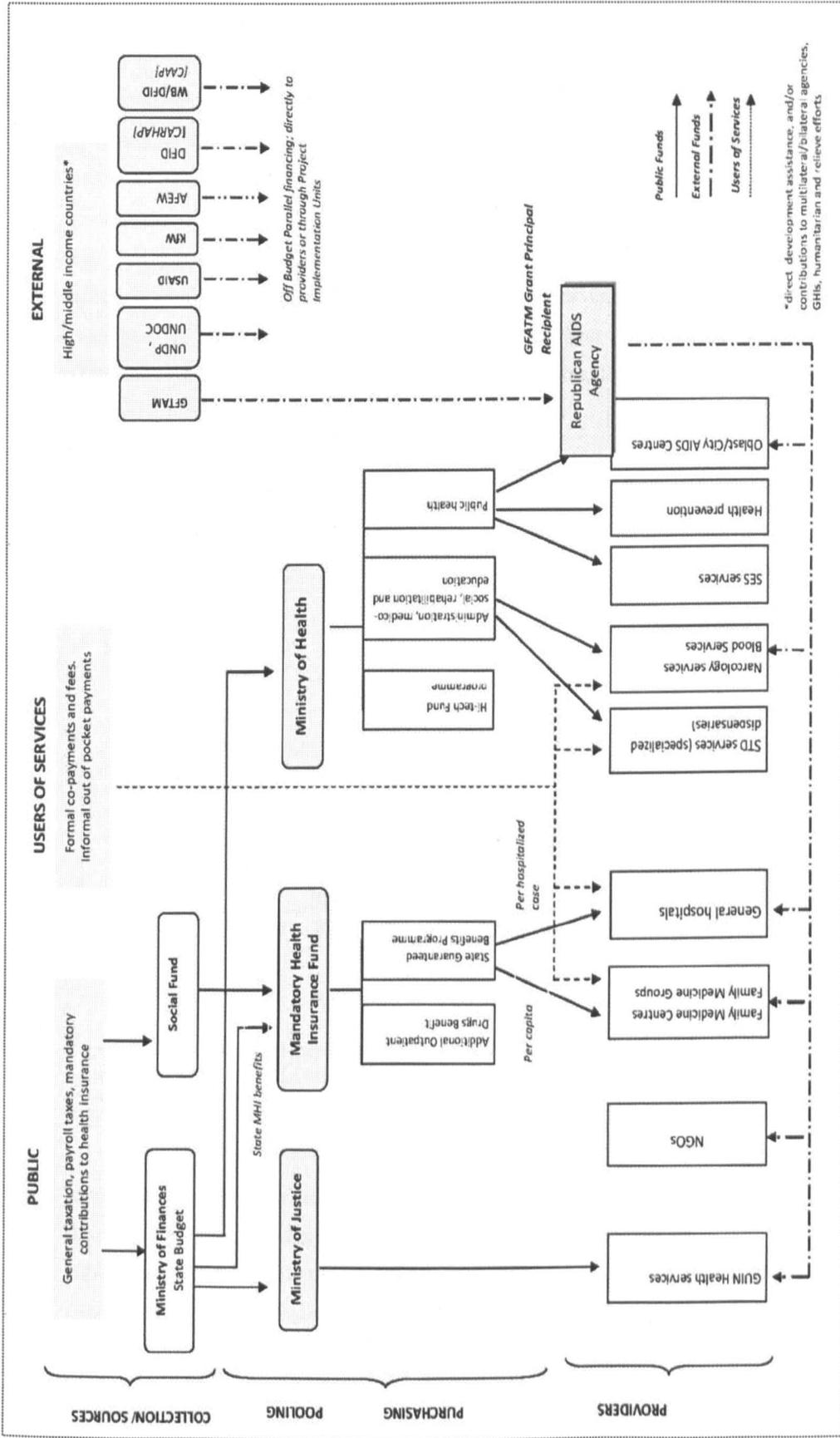


Figure 9.5 Financing of HIV/AIDS Programme

Source: WB, 2008; MOH 2008

Expenditure on HIV/AIDS prevention and control

This study finds that up until recently 2006-2007, there has not been on-going monitoring of spending on HIV/AIDS. With the exception of the GFATM and KfW, historical information on external funding, which was obtained from different sources, is sometimes contradictory (Bashmakova and others, 2009). National reports prior to 2008 on domestic spending on HIV/AIDS tend to include only expenditure on specialised AIDS services, without taking into account state's spending on HIV/AIDS prevention interventions delivered by other services. I managed to reconstruct spending on HIV/AIDS over time based on previous studies (Bashmakova and others, 2009, CARHAP, 2008, Murzalieva and others, 2008) and recent national reports (UNAIDS, 2010).

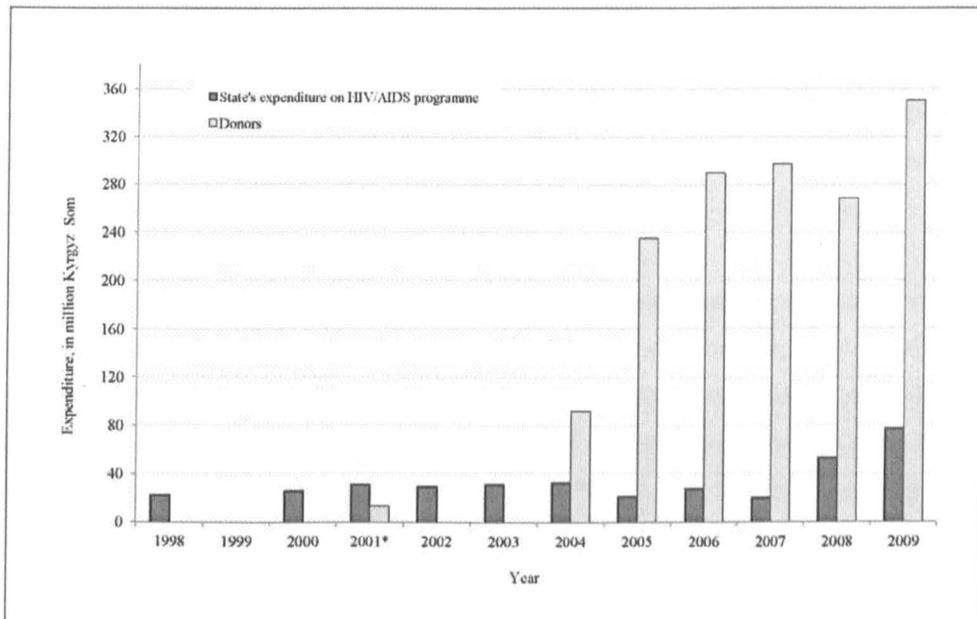


Figure 9.6 Expenditure on HIV/AIDS programme, 1998-2009

Sources: Bashmakova and others, 2009; CARHAP, 2008; Murzalieva et al, 2008, UNAIDS 2010

*Notes: for 1998, 2000, 2002, 2003 – data on donors' spending were not available. Data for all years from national sources includes different inclusion criteria: all years with exception of 2008-2009, spending only on HIV/AIDS services.).

In financial terms, international financing and the state's budget constitute major sources of funding. Documentary sources and interviews indicated that starting 2004-2005 there has been substantial inflow of international financial assistance channelled specifically for HIV/AIDS (Figure 9.6). Total spending on HIV/AIDS has increased 10 folds in the period from 2001 to 2009, from approximately 44.5 million Kyrgyz Som (KS) in 2001 to 428 million KS in 2009.

In US dollars, the increase is approximately from 0.95 million US\$ in 2001 to 10 million US\$⁸⁸ in 2009. During this period, spending on HIV/AIDS from domestic sources has fluctuated at the level of 8-18% of total spending, whilst the rest came from donors. Domestic spending on specialised AIDS services, as a proportion of the state's spending, has been 0.6-0.7% over the years. International investments in HIV/AIDS have been disproportionately high. In 2007, international spending on HIV/AIDS constituted 28% of total international investment on health in Kyrgyzstan (Murzalieva and others, 2009). Since 2005, GFTAM funding accounted for 50% -70% of international funding for HIV/AIDS (Bashmakova and others, 2009, Murzalieva and others, 2009). GFTAM is not linked to SWAP mechanisms. A respondent, who represents one of the development partners working on health system reform, expressed a frequently mentioned concern:

'There is an urgent need to align GFATM funding with health system development. Funds for HIV/AIDS are enormous comparing to overall donors' assistance for health system. Roughly, for example. SWAp – total donors contribution is 60 million [US\$] for 5 years, GFATM has spend and committed some 45 million for a comparable period.' (Respondent HS02)

Data on funds allocations by type of HIV/AIDS prevention, treatment and care has not been collected systematically over the years. The relatively detailed data on HIV/AIDS spending was compiled by the country in its UNGASS 2008 report (UNAIDS, 2008). This data indicates, for example, that in 2006, 81.7% of funds were spent on prevention activities (with nearly half in this category not specified what activities), 10.7% on care and treatment and 5.9% on management.

International funding for HIV/AIDS response

The programme depends on external funding for medicines (antiretroviral drugs and other medications), condoms, syringes, functioning of laboratories (e.g. laboratory supplies and reagents), implementation of HIV sentinel surveillance and so on. An overarching problem identified by all respondents is that the state cannot fund HIV/AIDS interventions because of country's economic situation. All respondents singled out dependence on donors' financing and lack of secure long term funding as a risk for functioning of HIV/AIDS programme:

⁸⁸ 1 US dollar = 46.7 KS current exchange rate as of 2010.

'Unfortunately... if international funding would stop – for example, tomorrow they would leave Kyrgyzstan - all programmes on harm reduction, prevention of HIV infection and so on – these simply stop. Nothing would be implemented. We all know this very clearly.'

(Respondent HIV01)

All domestic respondents identified dependence on donors for almost all aspects of clinical monitoring of HIV positive persons, ART and treatment of opportunistic infections. For example, even though the state guarantees all medical care for PLHIV free of charge by law (TheLaw, 2005a), at present, all treatment of PLHIV is covered fully from GFTAM grant. If donors pull out, neither the state nor most PLHIV would not afford ART:

'We wish they [donors] continue to support us. With our groups – they would not afford...ART is not yet included into the state's guarantees. Only children below 5 years old...' (Respondent HIV08)

It appears that by the end of 2010, the GFATM might be a main source of funding for HIV/AIDS programme. Some donors (e.g. DFID) have undertaken strategy to assist in GFATM application processes and to ensure inclusion of their activities into GFATM grant application. Other donors cannot guarantee continuity of funding. There is a perception, that each donor's has been concerned only with own investments:

'Every [donor] is interested about own funding and how their projects work... first of all. Global Fund is somehow.... it just provides funds. It is just interesting for everyone – how necessary is to continue their presence if Global Fund provides grants. Only in this respect.' (Respondent HIV05)

The dependence on few donors also creates competition for funding, sometimes opposition and prevents coordination within NGOs community. Below is how a recognised NGO leader defined interactions within NGO community:

'There is practically no coordination among civil sector organisations, there is a competition for funds. But, in this regard, it is necessary to note role of the Global Fund's Principal recipient - they are trying to keep things in order... In my opinion, it is currently only force that coordinates anything. Accordingly, they coordinate only in own interests, and it is interest of the Ministry of Health because it is Ministry's structure. What relates to internal processes within civil sector – I do not see any coordination.'

(Respondent HIV02)

9.3.2. Capacity of HIV-service NGOs

There has been reportedly a proliferation of HIV-service NGOs since the beginning of 2000s (Shishkaraeva and others, 2006 , Ubysheva and Pogojev, 2006). There are reportedly nearly 100 NGOs, whose portfolio involve HIV-related activities operating in Kyrgyzstan (Ubysheva and Pogojev, 2006). The long term viability of NGOs as organisations is perceived as a major problem by all respondents. Many NGOs do not have their own infrastructure (e.g. offices), they rent their facilities and pay salaries to staff solely from grant funds.

'They are not sustainable – civil sector organisations. If donors leave, they would not be able to support the staff, they would not be able to... As soon as there be no financing – they simply would be forced to close down, and then – simply, all this network of services would stop functioning.' (Respondent HIV05)

Several respondents noted that civil society sector is still evolving. Established NGOs tend to be located in Bishkek city, Osh city and urban settings in Jalal Abad and Chui oblasts. For most NGOs, future survival is fragile. There are NGOs which have been established only for implementing a certain project; others are created based on a public organisation (e.g. an AIDS centre also have own NGOs, in which employees of AIDS centre also members of NGOs). Below is how one respondent has explained the status of the NGO community:

'If you look closer... there are not too many strong NGOs indeed. UN, Soros brought them up (developed). In reality – yes, we also were thinking 'too many NGOs'... But in reality, only few, the ones which would work when there be less funds. Here I think quantity will grow into quality, eventually.' (Respondent HIV07)

NGOs do not have predictable, secure and long term sources of funding either from the state or from donors. Previous studies in Kyrgyzstan demonstrated that interruptions in GFATM disbursements resulted in interruptions of HIV services provided (Murzalieva and others, 2008). Several respondents in this study pointed out a similar issue. This concerns not only NGOs but also the public organisations. Though NGOs, according to domestic legislation, are eligible to conduct commercial activities, this is not possible for most HIV-service NGOs that provide services to vulnerable population groups:

'There are a lot of questions about sustainability of NGOs, about financing. I honestly cannot imagine how service NGOs would do any commercial activity. Our clients are vulnerable people, without any funds or other means for living. This is why I do not see how we may offer any fees for our services.' (Respondent HIV03)

Donors' granting mechanisms to NGOs do not allow their growth as organisations. Existing mechanisms of giving 'seed' funds also do not allow implementation of comprehensive programmes. According to respondents, donors prefer a small and short term granting mechanism (normally one year funding) disbursed across a number of NGOs rather than longer term agreement with established organisations. An NGO leader explains the challenges:

'They have such system – 'you are already established [NGO], and getting funds for a long time, we also have to give grants to other'... and at the end – they give a little here and a little there... For example, UNDOC given us a grant to establish rehabilitation programme [for IDUs] for one year. But who can establish a comprehensive rehabilitation in one year? We needs to learn lessons, have time to improve in order to have any impact. It is not possible in one year.' (Respondent HIV06).

9.3.3. Available public services for delivery of ART and narcotic drug dependency treatment

Main functional responsibilities for delivery of diagnostic services for HIV, treatment and care after PLHIV remain within specialised health services (Table 9.5). Formally, interventions such as HIV test counselling, collection of blood for testing is delivered at any health care facility in the country. Specialised AIDS services have an exclusive right for confirming HIV diagnosis, prescription of ART or treatment of other opportunistic infections. These specialised services are located in the capital and oblast's urban centres (Table X). Each AIDS centre has a diagnostic laboratory; however, capabilities to perform Western Blot (for confirming HIV virus) are limited to the National Reference laboratory and a laboratory in Osh AIDS centre. Monitoring of CD4 count, and monitoring of viral load in HIV-positive persons (PCR technique), is possible only at the National laboratory. Narcology facilities for delivery of treatment of narcotic drug dependency including OST are also concentrated in urban settlements (Table 9.5).

Table 9.5 State services structures providing specialised HIV/AIDS testing and treatment, and drug dependency treatment and care

	Region	Population, thousands	AIDS centres	Narcology ¹	OST
Oblast or city level	Batken oblast	428.5	1		
	Osh oblast	1081.3	1	1	5
	Osh city	250.2		1	
	Jalalabad oblast	987.1	1	1	
	Naryn oblast	270.6	1		
	Issyk-Kul oblast	433.7	1		
	Talass oblast	218.5	1		
	Chui oblast	761.2	1		7
	Bishkek city, capital	819.0	1		4
	Republican jurisdiction		1	2	
	Penitentiary sector			1	2
	Kyrgyz Republic	5250.1	9	6	18

Source: Republican AIDS Centre, Kyrgyz Republic

¹Narcology dispensaries or departments at mental hospitals. Specialised narcology dispensaries are only in Bishkek city and Osh city. There are narcology offices in 39 Family Medicine Centres in the country

9.3.4. Antiretroviral drugs and other medicines and commodities

As has been mentioned earlier, donors' fully finance procurement of antiretroviral drugs, methadone other drugs for treating opportunistic infections, syringes, and condoms. I did not manage to conduct detailed assessment of procurement and distribution system. An officer who oversees procurement and distribution of commodities through GFTAM grant refused an interview. Other respondents noted that procurement of these products is organised in compliance with donors' requirements. Kyrgyzstan either receives medical products directly from a supplier contracted by an international agency or purchases pharmaceutical products in compliance with donors' recommendations to ensure quality of pharmaceutical products. Distribution of medical products is centralised through GFATM principal recipient, at the time of data collection it was the Republican AIDS Centre.

9.3.5. Human resources

Respondents representing HIV/AIDS programme have mentioned the same problems with human resources such was presented in Chapters 7 and 8. Common themes were low pay rates, and shortage of personnel on rayon levels. According to respondents there is a shortage of personnel on management of substance drug dependency or infectious diseases in general. The Republican AIDS centre reported that there are 83 medical doctors and 51 middle-level medical

personnel working in the specialised AIDS centres. However, all are working on national or oblast levels.

9.4. FLEXIBILITY (ADAPTABILITY)

This section presents an analysis of the flexibility characteristic of HIV/AIDS programme. I analysed changes in service delivery arrangements that had occurred, or are occurring, with the introduction of two evidence-based interventions – opioid substitution therapy (OST) and ART. Historically, treatment of substance dependence has been delivered through vertically organised narcology services (discussed in Chapter2). Any interventions related to HIV/AIDS were the exclusive function of specialised AIDS services (Chapter 2). Previous research has demonstrated that such health system arrangements impede effective implementation of both interventions (Bobrova and others, 2007b, Tkatchenko-Schmidt and others, 2008). As has been discussed, delivery and scale up OST and ART have been included into the country's strategic plans

Overall, this study finds an openness and willingness to implement to innovations. Despite such willingness, respondents identified two overarching barriers. One is the lack of domestic resources to continue or to expand geographic coverage of interventions. The other is slow changes or even resistance to change in supporting regulatory mechanisms. Donors' pilots are often allowed, but when a question of expanding arises, the regulatory system is constraining:

'...what is obvious that in Kyrgyzstan a new practice is being introduced first, then proper regulatory mechanisms Meaning that many innovations are being conducted as pilots, but when question of expanding of a pilot arise then it is becoming obvious that activities are not in line with existing legislation and regulations. In other countries, it is vice versa– first a legislative base is being prepared'. (Respondent HIV05)

9.4.1. Legal environment as a barrier for implementing and scaling up harm reduction interventions

This study finds that implementation of OST in Kyrgyzstan is vulnerable to changes in the domestic political climate. Kyrgyzstan's legislation remains restrictive and is focused on drug control. Harm reduction interventions operate as pilots without clear and explicit regulatory framework. Implementation of these interventions is based on Ministerial decrees that approve implementation of pilots. Activities of outreach workers and NGOs that implement harm

reduction activities (e.g. needles and syringes exchanges) are not regulated by the law or any other domestic regulatory mechanisms; there are no standards or rules governing their activities (UNODC, 2010). Existing provisions in the administrative and criminal codes potentially put them at risk of legal liability for distributing syringes or other equipment (e.g. for 'inducing consumption or 'organisation and maintenance' of sites) (UNODC, 2010).

The introduction of a legislative base for drug dependence treatment and harm reduction has been in strategic plans since 2004. The law 'On narcological services and prevention of narcotic drug dependence' has been drafted and public hearings conducted. The law was drafted to clarify rights of drug users, and regulate service provision and standards of drug dependence treatments and harm reduction interventions. However, according to study participants, there has been a strong resistance from some legislators, parliamentarians and representatives of some public services:

'What we have met is resistance to methadone therapy. On the level of parliamentarians. One parliamentarian has initiated the process to legalise harm reduction programmes. We have only prikaz to implement pilot projects. But no legislation. Thus, [we] wanted to legalise methadone therapy, and syringe exchange, and our projects. And a barrier became methadone therapy. Some parliament members raised an issue that Russia has prohibited methadone therapy...thus, the question of legislation got stuck, and still is not solved.' (Respondent HIV03)

Inclusion into the law obliges the state to ensure provision of interventions. Thus far, the state has been reluctant to take responsibility:

'For example, the Law on Narcology services – during hearings certainly a question was put – 'so we approve this law but in 5 years the Global Fund would end its activities – from where will we get money to cover interventions which are proposed in the legislation?' The proposed law obliges the state to ensure provision of these interventions to drug-dependent persons.' (Respondent HIV04)

9.4.2. Delivery of illicit drugs dependence treatment

Opioid substitution therapy has been piloted in civilian sector in 2002, and then in penitentiary sector in 2008. Methadone is included into national essential list of medicines. Naloxone, a drug for opioid overdose management is also allowed in Kyrgyzstan (UNODC, 2010).

Currently treatment of drug dependency is carried out by the state's narcology services (dispensaries or departments at mental hospitals, rooms at primary care) and private providers. Those who receive treatment at the state narcology services are being registered. Respondents, who work with IDUs, noted that despite the law on confidentiality of patients' information (TheLaw, 2005b), information is being shared with law enforcement if such requests are made.

Along with traditional approach of inpatient detoxification practiced during the Soviet period, public narcology services reportedly apply psychotherapy and rehabilitation, and opioid substitution therapy. IDUs are not covered by the state's benefits. Even traditional detoxification treatment is not affordable for majority of IDUs. According to respondents, IDUs prefer to avoid state's narcology services, or disclose this problem to any state's health provider. IDUs prefer to get treatment either at NGOs (e.g. rehabilitation or physiological counselling), or be treated at private clinics. Treatment in the latter is expensive and unaffordable for most.

Opioid substitution therapy is provided exclusively by public narcology services under supervision of the republican narcology centre (there were 18 OST sites at the time of data collection). Several sites have been co-located with FMC and AIDS centres. Co-location is viewed as an achievement by many national and international actors. However, co-location without formal interactions in financing or management of delivery creates lack of interest. This is exemplified by a quote from an interview with a head of the family medicine centre:

'Methadone centre brings us many problems....I do not like this centre. This is a Global Fund project.....They just physically located here. In my opinion, there should be a separate facility. Perhaps – let them be, but separately from us....in reality - they should not be in general health system. They are not our employees, and are under complete supervision of the Narcology Centre.....I would better have opened there an outpatient clinic for the elderly...we have no financial flow from [this methadone centre].. They use our infrastructure'. (Respondent PHC02)

One of the major impediments for delivery and expansion of OST are weak formal linkages in financing and service delivery among narcology, mental health, general health system, social

services, and other specialised services such as TB and HIV/AIDS. As one the leader of a harm reduction NGO explained, only methadone replacement without addressing co-occurring health, social and legal problems would not likely be effective:

'....An issue that they want substantially scale up the coverage. But, there should be joint efforts of physiologists as well, and social problems have to be addressed. ...All should be considered and addressed in a comprehensive way. But not – just distribute methadone. Meaning addressing one problem, other also should be taken into account – and medical problems, and legal, and social – only then it be possible to achieve anything.when we are solving only one problem - it does not work.'

(Respondent HIV03)

Analysis shows that gaps in services provision for IDUs caused by fragmentation and specialisation of health services are often covered by NGOs. There are several integrated models provided by NGOs, which include social workers, narcology specialist, and psychotherapists. These models also provide referral support for IDUs and other clients.

'Services for risk groups, particularly for IDUs is developing quite dynamical...around 60-70% of services are provided primarily by NGOs. Non-governmental organisations are more flexible. Responses to changes in demand, which are determined with contextual changes or clients' needs, are more timely then response of the public organisations. Public organisations usually require more time.' (Respondent HIV04).

However, as was discussed earlier these models of integrated service delivery are limited to donors' supported projects. The scope and scale of implementing harm reduction innovations depends on donors' policies and within limits of external funds.

9.4.3. Delivery of ART

Delivery of ART started in 2005 with financial support of GFTAM. At present, diagnosis and clinical monitoring of HIV-positive person is centralised and performed only by AIDS centres. Clinical management decisions are made only by national consultants in Bishkek city and Osh city. According to MOH regulations, health care for PLHIV is to be provided in any health care organisation. There are now 2 hospices (10 beds each) for end-stage AIDS patients. Formally, there is coordination of delivery of some HIV/AIDS interventions. As was presented, primary care providers perform VCT (including collect blood and sending to AIDS centres' labs) and

observe registered PLHIV. The role of FMC is limited to conducting clinical tests and providing AIDS centres with updates on clinical status (e.g. send lab results). PLHWH have to attend AIDS services to collect antiretroviral drugs usually 2 weeks to 1 months supply. At the time of data collection, ART reportedly has been delivered via FMC only in Osh oblast, again under close supervision of AIDS centres.

Antiretroviral drugs and all other medications for treating opportunistic infections, are purchased from GFATM grant. According to regulations (ref), HIV-positive persons are registered (under dispensary observation) for life at the AIDS centres and at the primary care provider. Representatives of AIDS services recognise that the services do not have sufficient capacity to deliver ART. These respondents highlighted a major problem with ensuring adherence to ART therapy among IDUs, but not with other PLHIV:

'With therapy – it is primarily a problem with IDUs. Very difficult to work with them. They often agree with everything, but in practice many disappear and do not keep appointments, check-ins or to pick up drugs.' (Respondent HIV13)

This gap in service provision is often covered by NGOs through their social work and referrals. They bring their clients to the AIDS services, TB services or other health care organisations. NGOs also were mentioned as the ones closing the gaps between AIDS services and primary care providers:

'As opposed to collaboration with AIDS services, the work with NGOs is set very well, with 'TaisPlus', 'Positive Initiative'. They bring us their clients – we provide them services, performing tests. Very good interactions, we conduct round tables, and are involved in their activities'. (Respondent PHC03)

9.4.4. Plans for integrating HIV interventions into primary care

Integration of delivery of biomedical HIV interventions (e.g. diagnosis, treatment) with general health system is one of the aims of health system reform (The Government of Kyrgyzstan, 2006b). Respondents expressed an opinion that integration is a promising prospect, given that specialised services cannot handle growing number of detected HIV/AIDS cases. However, there are no clear plans or mechanisms on how integration will take place:

'...important aspect of integration – this requires investments. For example, Manas Talimi puts integration as a priority ... however, there is no defined financial resources for integrating preventative interventions into primary care....There is no clear mechanisms how integration will take place....there is a need to think about financial mechanisms so to ensure effectiveness would not hampered. (Respondent HIV04)

Furthermore, primary care providers perceive their involvement in HIV/AIDS as not clearly defined. Though trainings on HIV/AIDS of FMC personnel have been conducted, some providers appear not to know what is required from their side:

'Regarding HIV/AIDS –.....Not clear what is required from us, and what is done overall throughout the country to address HIV/AIDS. We have regulatory base, staff is trained, we have infectionist office here. We have HIV patients under observation. But collaboration with AIDS services is only in its inception stage ... we have more questions than answers. AIDS services act as regulatory agency. Here is no coordination, no collaboration.' (Respondent PHC03)

Key informant representing primary care noted that their services are not ready to deal with HIV problem properly. Over the last decade attention of AIDS services and donors has been on high risk groups and support for NGOs. On balance, efforts to strengthen general health system were minimal:

'AIDS centre started with risk groups. To a less extent things were done to train medical personnel on all levels – primary care, hospitals....And as result we have what we got in Osh – doctors do not use precautions. If they would start with training as National TB centre. And attitude to HIV problem would be different, and there would be some caution. And perhaps we would have avoided the outbreak in Osh. They've put everything on risk groups – prostitutes, prisons...But health care workers were left behind... yes of course they issued clinical protocols and guidelines. But to distribute guidelines is one thing. Health care workers need to be trained to implement new protocols and monitored how they implement it...' (Respondent PHC01)

Another barrier for effective integration of HIV interventions (biomedical) into general health system is a broader problem of stigma and discrimination against PLHIV, which persists including among health care providers:

'In regards to [HIV] service delivery at primary care, stigma creates serious barriers. People living with HIV are not attending general health services and will not - unless problem of stigmatisation and discrimination from health providers would be solved'

(Respondent HIV02)

9.5. INTERACTIONS

This section summarises interactions of HIV/AIDS programme (Table 9.6). HIV/AIDS programme is complex and fragmented. In this study, I assessed interactions between specialised HIV services and primary care services, narcology services and primary care services, and HIV-service NGOs and state services (i.e. narcology, HIV services or primary care). Several aspects of programme's interactions have been presented earlier throughout this chapter.

Specialised services involved in delivery of HIV interventions (i.e. AIDS, narcology) have separate governance, financing, and service delivery. These specialised services in turn have limited interactions with primary care services in governance. These interactions are limited to health system's regulatory framework and disease control policy (i.e. state regulations are the same for all state agencies). There are no formal interactions between specialised services and primary care in financing, including in mobilizing international funds. There is a formal coordination in service delivery, however as was outlined these are not effective. Gaps in service provision caused by lack of interactions among specialised TB, HIV/AIDS and narcoogy services are being covered by HIV-service NGOs.

These NGOs functions are however limited to donor-supported initiatives. Formal interactions between the state's organisations and NGOs in terms of financing, service delivery and information exchange have not been established. Coordination between the state and NGOs exists only as relates to mobilisation of funds and implementation of projects, more specifically as relates to GFATM grants.

Table 9.6 HIV/AIDS programme: interactions between HIV services and primary care, and narcology services and primary care, and state organisations and domestic NGOs

Component	Element of interactions	HIV SERVICES AND PRIMARY CARE			NARCOLOGY AND PRIMARY CARE			STATE SERVICES AND DOMESTIC NGOs		
		Linkage	Coordination	Integration	Linkage	Coordination	Integration	Linkage	Coordination	Integration
Governance	Organisational structures									
	Disease control policy									
	Regulatory mechanisms									
	Strategic and operational planning									
	Accountability framework									
Financing	Funding source								GFATM	
	Pooling of funds									
	Mobilisation and planning of funds, external								GFATM	
	Budgeting and planning, domestic									
	Providers payment mechanism									
Service delivery	Facilities (infrastructure)							GFATM (OST co- location)		
	Laboratories									
	Drugs, medical technologies, medical supplies									
	Human resources (including managerial)									
	Training and development of human resources,									
	Procurement and distribution of drugs and medical supplies		GFATM							
	Care pathways or provision of interventions								GFATM	
M&E	Informational technologies and infrastructure									
	Data collection, analysis, dissemination								GFATM, donors	
	Performance management								GFATM, donors	

GFATM-Activities within GFATM

9.6. PERFORMANCE

Judging HIV/AIDS programme performance in this study has been challenging because of weaknesses of HIV/AIDS surveillance presented earlier in this chapter. There are substantial uncertainties with regard the scope of the epidemic. A unified M&E system has not been applied at the time of data collection, though reportedly has been developed nearly three years ago. The M&E system has not been approved by the relevant Ministries. For GFATM grants application and UNGASS reporting, HIV/AIDS programme actors report indicators as defined by the UNAIDS (UNAIDS, 2010).

Each major donor or project has its own indicators systems, data management requirements (e.g. computer data bases), and reporting requirements. Though respondents have noted that some indicators are similar, reporting requirements add an unnecessary administrative burden. According to respondents, there are a number of M&E indicator systems used by donor agencies to monitor implementation of their grants. Through there has been a tendency in recent years to harmonise the M&E systems. For example, a M&E system developed within Central Asian Harm Reduction Project (CARHAP) project has been adapted by the principal recipient of the GFATM, and Central Asian AIDS control programme (CAAP). A major issue, from the perspective of domestic respondents, is rather, a preoccupation on the side of international projects with reaching indicators rather than focusing on how things may be done in response to fast changing local demands or realities.

'...each donor has own policy, and donors are not very flexible. For example, Global Fund – it has monitoring system and evaluation; indicators are being discussed and agreed upon in advance on stage of grant signing. Global Fund does not have flexibility in terms of how things may be done.' (Respondent HIV06).

Quality of services provided by NGOs to their clients (e.g. IDUs, sex workers, other groups) has not been systematically defined, assessed or collected routinely.

9.6.1. Effectiveness

By the end of 2009, Kyrgyzstan reported 231 PLHIV receiving ART, nearly half of whom (n=101) were children. At that time, Kyrgyzstan reported 450 PLHIV, among those who were registered and needed ART. UNAIDS estimates number of persons who needs ART - <1000 (95% CI, 1900-2700). This might translate into 12% (95 CI 9%-24%) coverage of those HIV-

positive who needs treatment according to WHO criteria (UNAIDS, 2010). There are substantial uncertainties whether current efforts have any impact on reduction of HIV transmission or survival of PLHIV. Given a very low ART coverage and problems of adherence to therapy mentioned by the respondents, current efforts are likely have no or minimal impact.

As was mentioned OST is delivered in 18 locations, and there are reportedly 990 IDUs who were enrolled into OST programme. Kyrgyzstan reports 17000 IDUs are reached by any HIV prevention intervention, including needle and syringe exchanges⁸⁹ (NSP).

'So we say we reached quantity... but quantity does not mean effectiveness. The ways the system works – we [NGOs or other service providers] do not know yet whether we duplicate each other, weather the same client is registered in different organisations. Main challenge at present relates to quality of services provided and to quality of monitoring system.' (Respondent HIV06)

Thus far, coverage of interventions provided by NGOs is concentrated in the regions understood as most affected by IDUs epidemic:

'As relates to geographic coverage, particularly remote areas, for example we do not have any syringe exchange points in Naryn or Issyk-Kul oblasts.....epidemiological situation with HIV and drug use problem is more serious in Bishkek city, Osh and Jalal-Abad. Therefore, the response is being organised based on priorities.' (Respondent HIV04)

Given uncertainties with the size and changes over time in regards to IDUs population outlined in the earlier section, it is also difficult to conclude whether current harm reduction measures have any impact on public health.

9.6.2. Efficiency

Assessment of efficiency was not possible in this study. Cost-effectiveness analysis of any HIV/AIDS interventions has never been conducted in Kyrgyzstan. Cost-effectiveness analysis was beyond the scope of this study. I discuss overall challenges with HIV/AIDS interventions efficiency analysis in Chapter 10 'Discussion and conclusions'.

⁸⁹There were reportedly 46 Needle and Syringe exchange (37 in public services including 14 in penitentiary sector, and 9 in NGOs). Source: Republican AIDS Centre.

9.6.3. Equity

Respondents noted that stigma and discrimination against marginalised groups such as ex-prisoners, IDUs and sex workers persists. Studies conducted by the Open Society Institute and Soros Foundation/Kyrgyzstan (OSI/Soros, 2008 -a, OSI/Soros, 2008 -b) demonstrated that health care providers often discriminate these population groups. Care provided to these population groups is often inadequate; and their rights of marginalised for fair and equal treatment are often violated.

SUMMARY FINDINGS

This study finds several factors that might potentially create impediments for sustainability of HIV/AIDS programme.

The Government of Kyrgyzstan declaratively demonstrates political commitment to the HIV/AIDS problem, including addressing the IDUs problem. The Government has formulated comprehensive strategies for HIV/AIDS control as well as prevention and treatment of illicit drug dependency. These strategies are in line with international recommendations. However, the comprehensive and multisectorial response is not supported either by regulatory or financial environment. Despite progressive provisions explicitly stating protection of PLHIV from discrimination, stigma, and protection of their confidentiality, regulatory mechanisms to implement these statutes have not been developed or are not being enacted effectively. Legislation is focused on drugs control and criminalises IDUs. Such regulatory environment contributes to persistence of discrimination and stigma against PLHIV, IDUs and other marginalised groups, and creates barriers for their access to prevention and care.

Formally, the CMCC governs and coordinate HIV/AIDS response. However, CMCC has limited interactions with other country governance mechanisms, including SWAP/health sector development. Regulatory framework is not clearly defined. The HIV/AIDS programme operates without a clearly defined performance framework to monitor, evaluate and prioritise allocation of resources. Accountability lines among key domestic actors (i.e. state organisations and NGOs) are not developed. Programme's financing mechanisms (both domestic and international) affects establishment of effective multi-sectorial coordination. In absence of robust M&E system, combined with weak CMCC oversight, donors funding often influences what is being implemented (vs. Local needs or epidemiological evidence). Similarly, the same factors often contribute to tensions between, and within, the state and NGOs actors. These all

combined consequently negatively affect the formation of a unifying and collaborative domestic leadership of the programme.

Implementation of developed comprehensive HIV/AIDS response is financed (i.e. up to 80%) by international organisations. This financial assistance is channelled as parallel targeted assistance for HIV/AIDS. HIV/AIDS programme has a weak domestic capacity for implementing HIV/AIDS interventions. Infrastructures and human capacity are concentrated in large urban centres. These relates to funds, development of human resources (e.g training on innovative approaches, new skills), and key commodities such as medicine, syringes, and condoms. Financial mechanisms for HIV/AIDS programme pose challenges for the programme's sustainability. Domestic financial mechanisms are fragmented. Planning of interventions implemented by variety of public services does not address needs of patients. Donor funding for HIV/AIDS has not been integrated into overall health system financial mechanisms.

NGOs emerged as important providers of HIV-services covering the service delivery gaps caused by overall health system fragmentation (i.e. a number of specialised services). HIV-service NGOs substantially depend on donor funds. NGOs have weak formal interactions with health and social welfare systems (e.g. there is no financial mechanisms), thus posing questions of their long term viability as organisations.

Overall the HIV/AIDS programme's actors demonstrate considerable flexibility. Programme's actors are willing to implement innovative approaches in HIV/AIDS control. Capabilities to implement and expand innovations are limited by weak resources capacity. OST operate as pilots without clearly defined regulatory mechanisms, and remain vulnerable to changes in the political environment.

Delivery of ART and OST remain centralised within exclusive jurisdiction of corresponding specialised services, with limited capabilities to ensue coverage, access and quality of services to marginalised groups or population groups residing in rural areas. General health system is not sufficiently prepared to undertake tasks of managing HIV/AIDS patients or people with narcotic drug dependency.

HIV/AIDS programme is complex and fragmented, with limited interactions with general health system. Where models of comprehensive service deliver exist, these are facilitated by NGOs and limited to donor-supported initiative.

Performance of HIV/AIDS programme is overall sub-optimal. Main issues relate to weak performance in terms of reaching populations at risk, identifying HIV-positive patients, and importantly effectively providing ART treatment (problems of adherence to ART are largely not solved). Similarly, the programme (and health system) does not effectively address the problem of narcotic drug dependency, fully assess performance of HIV/AIDS programme, or extrapolate on programme's impact on HIV incidence and associated mortality is not possible. This is because of a lack of a robust HIV surveillance system and gaps in data on population at risk of HIV infection.

CHAPTER 10 DISCUSSION AND CONCLUSION

INTRODUCTION

This study sought to understand whether and how integration of a communicable disease programme with other health system components influences the sustainability of the programme. Applying a case study approach, this overarching question has been addressed through development of a novel conceptual framework for the sustainability of a communicable disease programme. A case study exploring the sustainability of TB and HIV/AIDS programmes has been conducted in Kyrgyzstan, a central Asian country of the FSU.

The aim of this chapter is to review and discuss the conceptual developments, analytical approach taken, and empirical findings of this PhD research. The discussion is organised into five sections. The first section discusses the development of the conceptual framework for analysis applied in this PhD research. As was presented earlier, the development of the conceptual framework was based on the results of the literature reviews on sustainability and integration (Chapters 3 and 4, respectively). I begin this section with a brief summary on contemporary conceptual understandings of sustainability and integration⁹⁰. Then I continue with the discussion of the theories that explain conceptual relations between these two notions (sub-section 10.1.2). This is followed by the assessment of strengths and limitations in identified frameworks for studying sustainability and integration in health systems (sub-section 10.1.3). I discuss the conceptual framework applied in this PhD study (sub-section 10.1.4) by highlighting how this study's analytical approach addresses the gaps identified in previous conceptual developments to understand sustainability and integration in health systems. Additionally, this section reiterates on how previous approaches, upon which I draw, have been extended in the development of the analytical approach for this thesis.

The second section discusses the empirical findings of this research. The empirical findings of a case study in Kyrgyzstan were presented in Chapters 7, 8 and 9. In chapter 7, I reviewed the health system and the broader contextual environment within which the TB and HIV/AIDS programmes operate. Chapters 8 and 9 presented the analysis of the TB and HIV/AIDS programmes' characteristics. In section 10.2, I bring these findings together by discussing the similarities and differences in the potential for sustainability of these two programmes. The discussion of the empirical findings is provided in the context of existing studies in the FSU and

⁹⁰ The objectives of the study to review and clarify contemporary understanding and analytical approaches to sustainability and integration (Chapter 1).

beyond, and broader knowledge on factors determining the sustainability of health programmes in a health system.

Throughout the discussion I identify the contribution of this research to knowledge, both theoretical and empirical. This is summarised in the third section, 10.3. In this section, I also revise the representation of the framework for analysis applied in this study (Chapter 5, Figure 5.1) and offer an empirically tested framework drawing on the implemented research and reflections on limitations. The limitations of this PhD research are defined and discussed in the fourth section. Recommendations to the government and donors working in Kyrgyzstan, and to central Asian governments more generally are made in the fifth section.

10.1. SUSTAINABILITY AND INTEGRATION

10.1.1. Conceptual definitions

The theoretical and conceptual developments related to sustainability evolved in the research on the behaviour of ecological and socio-economic systems, an interdisciplinary research area referred to as sustainability sciences. The concept is inherently complex and contested, and difficult to put into an all-encompassing definition (Kajikawa, 2008). Inherent to sustainability is a focus on the future needs and co-evolution of systems with mutual benefits across environmental and socio-economic systems (Kemp, Parto, and Gibson, 2005). There is therefore a fundamental tension between short-term gains and long-term needs. Because the future is a concern, efficiency is the key for sustaining systems.

Contemporary views of sustainability in the health system echo, to some extent, those of sustainability sciences. Common themes in definitions of sustainability are meeting current and future needs of population in terms of improving well-being and health, continued public health impact of health interventions, maintenance or viability of structural or functional health system's components or of the health system overall. Sustainability in health systems is understood as a complex and multidimensional phenomenon influenced by multiple, often interrelated, contextual factors (Greenhalgh, Kyriakidou, and Peacock, 2004, Gruen and others, 2008, Humphreys and others, 2008, Sibthorpe, Glasgow, and Wells, 2005).

In my assessment and synthesis of attributes or dimensions of sustainability in health systems (Chapter 3), I identified at least five broad attributes:

- Capability of stakeholders to lead, govern, and manage
- Availability of resources and ability to plan, implement and evaluate activities
- Capability to build and maintain relationships and interactions inside and outside an organisation
- Capability to learn, adapt, renew or be flexible
- Ability to perform, bring results or attain goals.

Among these attributes of sustainability is the notion of integration. In my literature review (Chapter 4) on integration and health systems, I found that integration is defined, understood and pursued differently in different settings. Through assessing and summarising various typologies of integration, I identified at least three broad dimensions:

- Aim and/or rationale for integration (the *why* of integration).
- Structures and/or functions at different levels of the health system that are affected by integration, or the lack thereof (the *what* of integration). These include, but are not limited to, health system components such as governance, financing, planning, service delivery, monitoring and evaluation as well as integration of ideas or professional goals.
- Interactions between health system's components or stakeholders (the *how* of integration). There is a range of interactions, ranging from collaboration, cooperation, coordination, linkage, integration, mergers.

10.1.2. Sustainability and integration: theoretical link

As has been mentioned, the review of conceptual approaches to sustainability in health systems revealed that integration (though defined differently) is viewed as one of the attributes or determining factors for sustainability. However, these views on sustainability and integration have not provided theoretical insights to explain what the link between these two concepts is. The findings of the literature reviews on sustainability (Chapter 3) and integration (Chapter 4) suggest that both notions have their roots in theories of complex systems (Kajikawa, 2008, Kodner and Spreeuwenberg, 2002, Nolte and Mckee, 2008). The integration concept is central to system theory (Checkland, 1981, Scott, 2002). Systems are composed of multiple, interacting and interdependent agents (e.g. individuals, organisations). Inter-relationships and connections among agents are the necessary conditions for forming and maintaining systems.

Theories rooted in systems perspectives provide conceptual insights on the role of integration in sustaining systems. In social research, some explanations of the potential influence of integration on sustainability of organisational systems were found within organisational theories, particularly within open system perspectives. I review these perspectives below.

Perspectives from organisational theory

Though the term 'sustainability' is not commonly used by organisational theorists, an organisation's viability, survival, adaptation and performance are among the central questions. These notions in turn are viewed as central aspects of sustainability in sustainability research (Chapter 3, Table 3.1). The central argument proposed by the open system model is that all organisations depend on exchanges with other systems (Jaffee, 2001, Scott, 1987). The environment is an ultimate source of resources, support, energy and information, all of which is vital for the existence and continuation of the organisational system (Scott, 1987). A more complex and uncertain environment drives organisations to adapt and change their arrangements for the purposes of survival (i.e. performance, viability, legitimacy). One of the strategies that organisations undertake in adapting is to build integrative relations, both within an organisation and with other entities.

The contingency theory (Galbraith, 1973, Lawrence and Lorsch, 1967b) and resource dependency theory (Aldrich, 1979, Pfeffer and Salancik, 1978) argue that organisations generally strive for performance. Therefore, they often build integrative relations with other organisations (or modify internal structure) in the interest of effectiveness and efficiency. In the view of institutional theory (Meyer and Rowan, 1977), organisational survival depends on two potentially contradictory conditions that may conflict. These are legitimacy and productive efficiency. Decisions to build linkages (or not) with other organisations may be also driven by social pressures to conform to conventional beliefs or institutional rules that produce support in obtaining resources or legitimacy (Jaffee, 2001). However, conformity to the institutional rules or conventional beliefs may be in conflict with efficient realisation of organisational objectives.

The abovementioned theoretical perspectives argue that organisations are capable of acting effectively in determining their arrangements. In an alternative perspective, population ecology theorists (Hannan and Freeman, 1984) view organisations as structurally inert in response to changing environmental demands. According to this view organisational survival is dependent on selection by the environmental forces. Those organisations that 'fit' with the environment (including their interactions with other organisations) are favourably selected. Success requires the establishment of predictable routines that produce consistent results over time, which often

locks organisations into established and fixed procedures (Jaffee, 2001). This works well in a stable environment, but becomes an issue for organisational survival when the context becomes complex and uncertain.

The theoretical perspectives reviewed here identify that integration (e.g. coordination, collaboration, mergers) is important for an organisation's adaptation to the constraints and opportunities posed by the external environment. There are tensions in organisational theorizing (Jaffee, 2001), as maintaining independence and autonomy is also related to organisational survival and viability. Additionally, integration may have negative effects on organisational viability. It was argued, for example, that in some contexts tighter systematic integration may reduce adaptive potential, or extensive coordination may reduce the quality of services of the overall system/network, and hinder innovativeness (Whetten, 1981). Organisational theorists generally view the environment as external to an organisation, and evolving separately (Begun and Zimmerman, 2003). Ultimately, the best way to organise depends on the environment within which an organisation operates, thus the influence of integration initiatives on sustainability is highly context specific.

Perspectives from complex systems theories

Complexity theories represent multidisciplinary ideas and theories to address the non-linearity and dynamics of the real world systems, often known as complex adaptive systems (Holling, 2001, Plsek and Greenhalgh, 2001, Sturmborg and Martin, 2009). Within this discourse, systems operate in a constantly changing environment in which uncertainty, risks and surprises are unavoidable, thus the essence of a system's sustainability is increasingly understood as the system's resilience⁹¹ (Folke and others, 2002, Gunderson, 2000).

Among key characteristics of a resilient system is the notion of integration, which is referred to as interconnectedness or connectivity (Fiksel, 2003). The role of connectivity in a system's sustainability relates to several properties of complex adaptive systems (Box 10.1). In complex systems, the numerous and diverse interacting agents are typically organised as hierarchical nested networks (e.g. a sub-system nested in a larger system). Structured this way, agents interact in a dynamic and non-linear manner, and are capable of relatively autonomous functioning without external control (i.e. locally controlled). Because of such properties,

⁹¹ One of the definitions of resilience on which I build, has been provided by the cited authors (Folke and others, 2002). Resilience is defined as an ability to adapt to internal and external pressures yet retain functioning and performance, and initiate changes through innovations in order to continuously improve performance

systems are potentially capable of self-organisation, which is forming a collective behaviour (Box 10.1).

Both the absolute number of connections and the strength of these connections (i.e. frequency) have consequential roles in a system's functioning and adaptations (Eidelson, 1997). In a sense, a system's connectivity relates to internal controllability, a measure that reflects flexibility or rigidity of internal control (Holling, 2001). It determines the degree to which a system can control its own destiny, and adapt to internal and external changes (Holling, 2001). Inadequate connections can make it difficult for a system to coordinate an adaptive response. On the other hand, excessive connections can also endanger a system. In the latter case, the system's agents' may be unable to devise an adaptive response when faced with an overload of conflicting influences.

Box 10.1 Properties of complex adaptive systems

- Composed of multiple agents and components, these agents are interacting and interdependent.
- Structured as hierarchical nested networks. Connection close to a focal point or a hub is stronger than with neighbouring components; in turn connections with neighbouring components are stronger than with the distant ones.
- Open to the environment, the system's agents continuously interact with and co-evolve with its environment.
- Interactions are non-linear and dynamic; some sequences of interactions involve feedback loops, both positive and negative. Small changes in the environment or within a system may lead to massive system change and vice versa.
- Capable of self-organising, a pattern of behaviour emerges iteratively through dynamic and non-linear interactions among the system's components. As a result the organised behaviour of a system is larger and more complex than the sum of its parts.
- Path-dependent, non-reversible processes have similar starting points yet lead to different outcomes, even if they follow the same rules. Outcomes are sensitive not only to initial conditions, but also to choices made along the way.

Adapted from Paina and Peters, 2011, and Sturmborg and Martin, 2007

Along with connectivity, insights from theories of complex systems provide somewhat competing explanations suggesting that multiple factors may determine a system's sustainability. Independence and diversity of system's agents (both structural and functional) are also necessary for a system's resilience. Diversity provides opportunities for innovations and development as it is a source of learning and a resource base for adaptation and

reorganisation (Kay and others, 1999, Kemp, Parto, and Gibson, 2005). Complexity theorists emphasise that each complex system is unique (Begun and Zimmerman, 2003). Systems evolve in a way that multiple outcomes are possible depending on history (i.e. path-dependence, Box 10.1), choices made along the way and influences over time.

10.1.3. Analytical approaches to sustainability and integration in health systems

Frameworks for analysis of sustainability

I found that theoretical and analytical developments related to sustainability in health systems are evolving and less advanced as compared to sustainability sciences. Additionally, my assessment of the conceptual literature also identified the lack of theory-based conceptions of sustainability of communicable disease programmes. The traditionally applied view of a disease control programme has been as a set of disease control interventions (e.g. biomedical, structural, health promotion) without indications of the health system's arrangements for delivery of these interventions.

Identified frameworks⁹² for analysis of sustainability in health systems were focused on three areas: i) sustainability of a health innovation or intervention, conceptualised as institutionalisation of the intervention into routine organisational settings; ii) sustainability of international initiatives (e.g. interventions or health reforms) proposed within the international development discourse; and iii) sustainability of complex programmes or services (Table 10.1). Frameworks which I grouped in i) and ii) (Table 10.1) build upon theoretical propositions, or researchers' experiences, that do not fully provide explanations to capture the multiple dimensions of sustainability, interrelated factors that influence it, or the issue of time. These frameworks and approaches tend to be deterministic in nature where sustainability is an end goal, assuming linear and predictable processes.

For example, frameworks that conceptualise the sustainability of an intervention as its institutionalisation into routine organisational settings build on propositions from diffusion of

⁹² I identified 26 frameworks that were proposed or applied in exploring the sustainability of health interventions, organizations, services or a health system (Appendix 3). Seventeen of the identified 26 frameworks were frameworks for assessing sustainability of a health intervention or a programme, six were developed for sustainability of a health organization, and three aimed at the assessment of a health system. Sixteen papers explicitly draw on theoretical perspectives. The rest were based upon researchers' experience and/or literature review.

innovation theory⁹³ (Rogers, 1995). The underlying assumption in these frameworks is that the new intervention should be sustained indefinitely, thus there is potential resistance to further innovation and development (Greenhalgh, Kyriakidou, and Peacock, 2004). Sustainability as institutionalisation does not provide insights on whether activities are achieving effective outcomes (Scheirer, 2005).

Table 10.1 Frameworks for analysis of sustainability in health systems

Frameworks	Theoretical underpinnings or background	References
(i) Sustainability of interventions as institutionalisation in routine organisation settings	<p>Diffusion of innovations theory (Rogers, 1995)</p> <p>Organisational learning theory (Argyris, 1993, Argyris and Schön, 1978)</p> <p>Institutional theory (Powell and DiMaggio, 1991)</p>	<p>Bowman and others, 2008, Goodman and others, 1993, Pluye, Potvin, and Denis, 2004, Shediach-Rizkallah and Bone, 1998, Virani and others, 2009, Johnson and others, 2004</p> <p>Virani and others, 2009, Pluye, Potvin, and Denis, 2004</p> <p>Pluye, Potvin, and Denis, 2004</p>
(ii) Sustainability of interventions or health services within international development initiatives	<p>Institutional theory, strategic management</p> <p>Guides or experiences with implementing international development initiatives (e.g. USAID, UNAIDS, WB)</p> <p>Frenk, 1994, and concept of sustainable development</p>	<p>Brinkerhoff, 1992</p> <p>Bossert, 1990; Bamberger and Cheema, 1990, Knippenberg and others, 1997, LaFond, 1995b, Sarriot and others, 2004, Stephenson, Tsui, and Knight, 2004, Torpey and others, 2010</p> <p>Berman, 1995</p>
(iii) Sustainability of complex programmes or services	<p>Organisational theory, open systems perspective (Katz and Kahn, 1978)</p> <p>Ecological systems theory</p> <p>Complex organisational networks (Nohria and Eccles, 1992)</p> <p>Researchers' experiences</p> <p>Organizational theory, formation of interorganisational relationships</p> <p>Diffusion of innovation theories, theories of organizational change and innovation</p>	<p>Olsen, 1998</p> <p>Gruen and others, 2008 ; Hanson and Hanson, 2005</p> <p>Nelson and others, 2007</p> <p>Mancini and Marek, 2004. Humphries, 2008</p> <p>Rog and others, 2004, Alexandre and others, 2007.</p> <p>Greenhalgh and others, 2004</p>

⁹³ Classical diffusion innovations theory, set out by Everett Rogers in 1995, draws on a simple law of natural growth in a closed system, postulating that adoption of innovations by individuals follows a predictable linear pattern.

In international assistance discourse, conceptual frameworks make a particular focus on the operational and/or financial self-sufficiency of local organisations or institutions after the withdrawal of international assistance. With few exceptions (Berman, 1995, Brinkerhoff, 1992), these frameworks are guided by a theory. Most encompass the views of international actors (e.g. WB, USAID). Though resources are important for sustainability, it is unclear how long after the withdrawal of funding an organisation should remain self-sufficient to qualify as being sustainable.

It has been acknowledged in research on sustainability in health systems that sustainability is difficult to predict, conceptualise or explain. Authors (Greenhalgh, Kyriakidou, and Peacock, 2004, Gruen and others, 2008, Humphreys and others, 2008, Nelson and others, 2007, Olsen, 1998) have proposed utilizing systems' theories, or apply a 'whole system' approach to analysis (grouped in (iii), Table 10.1). These frameworks aimed to explain and understand complexities surrounding the sustainability of health interventions, programmes or organisations. The proposals emphasise, in various extents, the need to maintain resource capacity, the importance of interactions and interdependence among the system's structural and functional components, the role of individual actors, adaptability, and performance. A main limitation of all identified frameworks for the analysis of sustainability and integration is the lack of an explicitly outlined conception of a health system. Though the context is acknowledged, sustainability of health interventions or programmes tends to be analysed in isolation from the overall health system. Consequently, the offered frameworks cannot fully provide explanations on what role the different health system's functions, including integration of programmes with the health system's components, may play in sustainability of interventions or programmes.

A number of frameworks for analysis of sustainability of health programmes or services have included notions of integration as one of the determinants, or a dimension, of sustainability (Alexander and others, 2003, Bossert, 1990, Gruen and others, 2008, Hanson and others, 2005, Humphreys and others, 2008, Mancini, 2004, Olsen, 1998, Sarriot and others, 2004, Shediak-Rizkallah and Bone, 1998). In these frameworks, definitions of what integration entails differed (e.g. collaboration, coordination, supporting relationships, alignment). With few exceptions (Berman, 1995, Knippenberg and others, 1997, Olsen, 1998), identified frameworks address questions of efficiency, which is a cornerstone in sustainability discourse.

Frameworks for assessment of integration in health systems

According to my assessment (Chapter 4), the most conceptual and analytical approaches to integration in health systems originate from research in high-income countries⁹⁴ (Appendix 3, section A3.3). All identified frameworks were focused on integration of structural and/or functional components of a health system. Theoretical perspectives applied⁹⁵ in the proposed frameworks include theories explaining the formation and maintenance of inter-organisational relationships, namely contingency theory, resource dependency, institutional theory, agency theory. The underlying assumption in most frameworks is that integration plays a positive role in a health system. Authors stated a need for integration (i.e. *why* of integration⁹⁶) as a necessity to reduce a health system's fragmentation and/or duplication of services, reduce health care cost, or improve the overall performance of services (Appendix 3, section A3.3). I did not find any frameworks for assessment of integration in the health system that aimed at exploring the influences of integration on sustainability. A main limitation of all frameworks, similar to frameworks for the analysis of sustainability, is the lack of an explicitly defined conception of a health system. There was only one exception in my analysis, which is the framework proposed by Atun and others (2008), which conceptualised integration based on the explicitly outlined conceptualisation of a health system.

Synthesis of empirical studies: influence of integration on sustainability

With few exceptions (Le Loup and others, 2010), my research finds that empirical studies did not aim to explore explicitly the influence of integration on sustainability. One of the main findings of the assessment of empirical studies on sustainability (Chapter 3) is that integration is one of the determining factors⁹⁷ for sustainability of interventions or health organisations. As was presented in the Chapter 3, relationships (e.g. coordination, partnerships) within and with other organisations were found as a determinant in all studies that included this component into the assessment. However, notions of integration and sustainability were viewed differently in the assessed studies, what prevented me from forming any additional conclusions.

⁹⁴ 9 out of 41 identified frameworks (Chapter 4) were proposed for exploring integration in low middle income countries; the rest – high income countries (Appendix 3, section A3.3).

⁹⁵ 22 frameworks build on explicitly outlined theoretical perspectives; the rest draw on researchers' experiences or literature reviews.

⁹⁶ Frameworks for integration in health systems were assessed from the point of how they reflect on three questions – i.e. what, why and how of integration (Chapter 4).

⁹⁷ In empirical studies (Chapter 3), I found at least five determining factors, broadly grouped as leadership, capacity, flexibility, integration (notion of integration is defined differently) and performance.

10.1.4. Conceptual framework for sustainability applied in this study

In the development of the conceptual framework for analysis in this PhD study, I took into account the following considerations:

- The main limitation in the previous frameworks for sustainability and integration was the lack of an explicitly outlined conception of a health system.
- To build a framework on theoretical and analytical approaches that can provide plausible explanations of sustainability, a phenomenon that is multidimensional, dynamic and influenced by multiple and interrelated factors.

I took the work by Atun and others (2004) and Coker, Atun and McKee (2004a) as a starting point for the developing the conceptual approach in this study. I began with defining what constitutes a communicable disease programme. Drawing upon Pawson and Tilley's 'realistic evaluation' (Pawson and Tilley, 1997), Atun and others (2004) proposed conceptual and analytical frameworks for understanding the functioning of a communicable disease programme within a health system. Their developments explicitly outline a conception of, and analytical approach to, a health system and a communicable disease programme.

Because of its underlying ontological perspectives within the philosophical school of critical realism⁹⁸, 'realistic evaluation' (Pawson and Tilley, 1997) appeared to be a promising analytical approach for studying a complex phenomenon such as sustainability of a health programme. Several authors (Byrne, 1998, McPake, Blaauw, and Sheaff, 2006, Reed and Harvey, 1992) argued that critical realism ontology provides a relevant philosophical perspective for understanding and explaining complex social phenomena. Both critical realism and complexity sciences view the reality as open, dynamic and non-linear, where multiple explanations and causations are possible. A realist's conception of causality is generative. The explanation of *outcomes* and observations can be traced back to *generative mechanisms* which are triggered or not depending on the *context*. Realists contend that causative mechanisms that explain a phenomena can be known by first constructing ideas about these mechanisms (Olsen, 2010, Pawson and Tilley, 1997). Based on the conception of sustainability developed in this PhD research, I extended the work of Atun and others (2004) by proposing *mechanisms* that can explain why a programme is likely sustainable or why not. I explain my contribution below.

⁹⁸ Pawson and Tilley, 1997 draw on critical *realism* tradition in the philosophy of science, particularly works Bhaskar, 1975, Harré, 1986, Hesse, 1974

In this research, a programme's sustainability is defined as being continuously effective in reducing a disease problem, responsive and adaptive to changes in the nature of disease epidemics, population needs or contextual environment. I build on theoretical insights of complex adaptive systems which view a system's resilience as an essence of sustainability (Fiksel, 2003, Fiksel, 2006, Folke, 2006, Kemp, Parto, and Gibson, 2005). This view accepts the uncertainty of sustainability phenomena, which is difficult to measure empirically (Alexander and others, 2003, Altman, 2009). What is possible is to identify a potential for sustainability through an analysis of sustainability by proxy fashion on the basis of observable capabilities or characteristics, which are hypothesised precursors of sustainability. In my conception of sustainability, the precursors of a programme's sustainability include leadership, capacity, interactions, flexibility and performance⁹⁹ (also labelled throughout the thesis interchangeably as a programme's characteristics, in Chapters 8 and 9). These precursors for sustainability are the underlying *mechanisms* which, as proposed in my research, can explain a potential for sustainability. Figure 10.1 represents a schematic presentation of the conceptual framework by Atun and others (2004) with *mechanisms* as assumed in this research.

The notion of integration (which I have chosen to call 'interactions') is one of the precursors for a programme's sustainability. In defining integration, I extended the conceptual approach to integration and health systems developed by Atun and others (2008) (whose work also builds upon Atun and others 2004), who conceptualised a health system as a complex adaptive system (Atun and Menabde, 2008 -a). Integration is viewed as occurring at any of the health system's structural or functional components (i.e. *what* of integration), including governance, financing, service delivery, and monitoring and evaluation (Chapter 5, Table 5.1). My contribution includes bringing the insights from propositions of the literature on inter-organisational relations (Kodner and Kyriacou, 2000, Konrad, 1996, Leutz, 1999) defining interactions (i.e. *how* of integration) between programmes (or a programme and other health system component). These are viewed as ranging from no formal interactions to linkage, coordination and full integration (Chapter 5, Table 5.2).

⁹⁹ The definitions are presented in the Chapter 5.

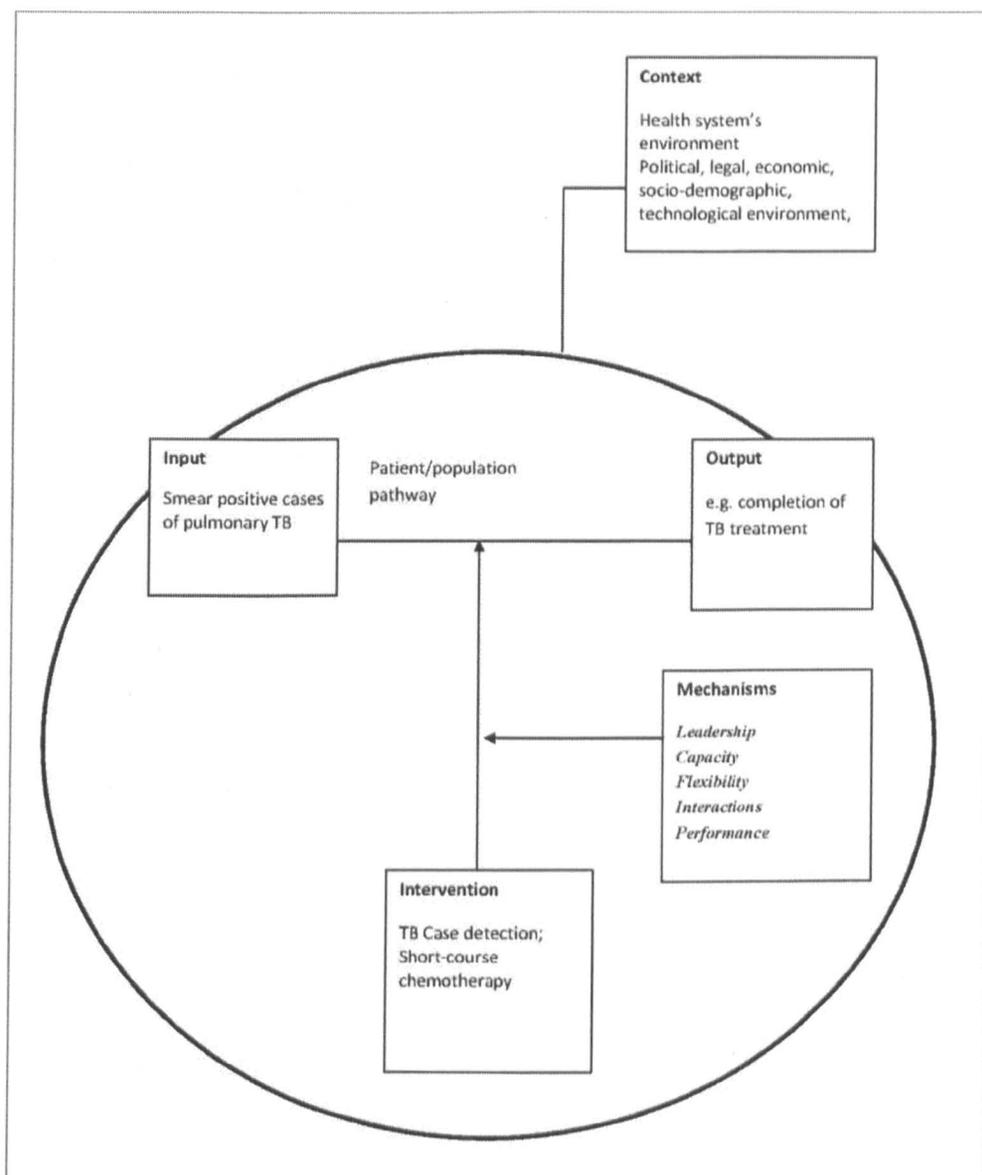


Figure 10.1 The schematic representation of conceptual framework for communicable disease programmes by Atun and others (2004), using the example of a TB programme

Source: Presented with permission from Coker and others (2004a). The framework is extended through defining mechanisms (shown in *italics*) for sustainability of a programme.

Whether proposed precursors (i.e. mechanisms) for a programme's sustainability exist, act and affect the delivery of interventions and consequently contribute to the reduction of a disease problem depend on several factors, including the inter-relationships among them. In the analytical framework (Chapter 5), I follow Atun and others (2008)¹⁰⁰ as outlined previously, and Gruen and others (2008)¹⁰¹. These authors draw on the theories of complex systems and relevant empirical evidence. The mentioned analytical frameworks emphasise a key role of stakeholders and relations among them in establishing, changing and sustaining health programmes. In my analytical framework, factors (and interdependence among them) that potentially act upon precursors of sustainability (i.e. mechanisms) are the nature of the disease problem, actors, the health system's and programme's arrangements (both structural and functional), and the broader context. Based on the application of the framework for analysis (Chapter 5) in the case study, I propose a modified framework in section 10.3.2.

¹⁰⁰ Atun and others (2008) developed a conceptual framework for analysis of integration and health system.

¹⁰¹ Gruen and others (2008) proposed an integrated framework for exploring the sustainability of a health programme.

10.2. SUSTAINABILITY OF TB AND HIV PROGRAMMES IN KYRGYZSTAN: DISCUSSION OF FINDINGS

As was outlined in the preceding section, the potential for the sustainability of a disease control programme in this study has been analysed through assessing the existence of and actions of the precursors of programme sustainability in the delivery of disease control interventions. The analysis also included identification of key enabling and constraining factors that influence these five precursors of sustainability.

10.2.1. Overview of main findings

Over the last two decades, Kyrgyzstan has witnessed a worsening TB epidemic and emerging IDU-driven HIV/AIDS epidemic. The country had inherited approaches that were not effective in controlling the expanding epidemics. By the middle of the 1990s, Kyrgyzstan's government had declared a political commitment to achieving global targets of TB and HIV/AIDS control. In the next decade (the 2000s), several potentially effective innovative interventions were introduced to central Asian countries, including Kyrgyzstan, through GHIs and other efforts of international organisations. Among these novel approaches were DOTS and MDRTB management for TB control, and harm reduction interventions among IDUs and ART for HIV/AIDS control. As was presented in Chapter 6 on 'Methods', these interventions were at the centre of my analysis.

Precursors for sustainability of TB and HIV/AIDS programmes

My analysis of the five precursors of sustainability of TB and HIV/AIDS programmes suggests that the programmes have differences and similarities in their potential for sustainability. The programmes had differences in terms of leadership style, available domestic resource capacity, and flexibility. The programmes appeared to face similar challenges as relates to the development of interactions with other health systems components and performance.

- The TB programme is predominantly represented by the specialised TB services. The leadership of the TB programme is characterised by centralised and formal authority dominated by one institution, the NCPH. Political commitment is partially supported by dedicated domestic resources for maintenance and functioning of specialised TB services. Since 2000, the government allocates an estimated 50-70% of total spending on TB

control¹⁰². Implementation of innovations and key consumables are funded externally. A main impediment to sustainability of the TB programme is inherent inefficiencies caused by overcapacity of specialised TB services and concentration of the programme's resources in these. The TB programme is characterised by limited adaptability (flexibility) and limited formal interactions with other health system components. Despite nearly 10 years of implementing DOTS, no major shift in the financing and organisation of TB care has taken place. Over-reliance on hospitalisations for treating TB and social care persists. The response to MDRTB is structural and reliant on hospitalisations. It was not possible to fully assess the programme's performance in this study because of weaknesses of disease surveillance and M&E systems. Analysis of available data suggests that the TB programme likely remains ineffective in reducing TB transmission and associated mortality and morbidity, including the emergence and transmission of MDRTB.

- The HIV/AIDS programme is complex, involving the state, civil sector and international actors. The programme's leadership is evolving with an intention to establish multisectorial coordination among many actors. A main obstacle to sustainability for the HIV/AIDS programme is nearly full reliance on external financial resources for implementing a comprehensive HIV response strategy. During the last decade, the government allocates less than 20% out of total expenditure on HIV/AIDS programme¹⁰³. Domestic actors demonstrate adaptability and openness to innovations, as was evident from changes in HIV legislation, piloting of harm reduction including in prisons, and involvement of NGOs. Novel interventions and governance approaches such as the CMCC are not integrated into mainstream regulatory, social and health systems. The scale up of interventions is potentially impeded because of limited formal interactions between specialised services involved in the HIV/AIDS programme, and between NGOs and the state organisations. Data on programme performance are nearly absent. Available M&E indicators are not informative of whether the programme contributes to the reduction of HIV transmission among risk groups or reduces risky behaviours. Existing data suggest that the HIV/AIDS programme is likely not effective in reaching risk groups and preventing HIV transmission.

¹⁰² The estimates for the years 2000-2008, Chapter 8, Figure 8.4

¹⁰³ The estimates for the years 1998-2009, Chapter 9, Figure 9.6.

Factors acting upon the five precursors for sustainability

Several interrelated factors emerged in the analysis as enabling or constraining factors influencing the five precursors of sustainability of both programmes:

- The distinct histories of TB and HIV/AIDS as public health problems, including in the contemporary period, have led to differences in the programmes' potential for sustainability. The TB and HIV/AIDS programmes have evolved along different historical trajectories in the health system. The TB control programme has historically established Soviet era institutions with professionally embedded approaches to TB care. The HIV/AIDS programme, addressing a new communicable disease and its drivers such as IDU, is an innovation on its own in the health system. These factors, among others, emerged as determinants of the programmes' differences in terms of leadership, flexibility and available domestic resources.
- Political and institutional interests and priorities of both domestic and international actors determined how health system resources are allocated and utilised to deliver innovative interventions. Institutional interests of domestic actors were profound in the case of the TB programme, impeding development of patient-centred care. In the case of the HIV/AIDS programme, international actors emerged as having a substantial influence on implementing control strategies and distribution of resources.
- Prevailing health system arrangements, including the Soviet legacy upon which they are founded, impedes the development of interactions between the two programmes, and between the programmes and general health system. Delivery of interventions is affected by historically embedded social and regulatory control of persons with communicable diseases and other risk factors such as IDU. Delivery of interventions for diagnosis, care and support for people with TB, HIV/AIDS and narcotic drug dependency remain centralised with strict control over clinical management. Historically fragmented governance and financial mechanisms (both domestic and international), combined with such domestic traditions of management of patients within single speciality services, limit the programmes' adaptability. The health system fragmentation creates impediments to changes in the organisation of the delivery of disease control interventions, and consequently impedes the scale up of interventions and effectiveness of innovative interventions.

- Weak TB and HIV/AIDS surveillance systems create barriers for developing disease control policy and planning of resources. Capabilities for planning, evaluating and using scarce resources efficiently are weak. Effective M&E systems for evaluation of the impact of innovative control interventions (such as DOTS for TB and harm reduction initiatives for HIV) on public health have not been put into operation. Consequently, this poses one of the key obstacles for assessing performance of disease control programmes in Kyrgyzstan. A central question for sustainability, that is efficiency, is not addressed in the M&E systems of both programmes.
- Providing development assistance to countries with weak health systems and difficult socio-economic conditions presents challenges. The study reveals tensions between the need to promptly deliver necessary interventions to save lives and the necessity of overall capacity building of local organisations for the long-term impact. Limited financial resources capabilities in the health system create vulnerabilities in terms of long-term, secure and sufficient funding for both programmes. On one hand, an increased global attention to TB and HIV/AIDS provided Kyrgyzstan opportunities for implementing control efforts, particularly initiating innovative interventions. On the other hand, international actors focusing on each disease separately have often been acting in parallel with broad health system reform processes. Opportunities for establishing efficient and integrated approaches for planning and delivery of disease control interventions, which were created by the health system reform programme, have not been fully utilised by actors of the respective programmes.

Further in the discussion, I reflect on the central challenges for sustainability of TB and HIV/AIDS programmes as identified in this research. I first focus on the differences between the programmes in their prospects for sustainability. In discussing the sustainability of the TB programme in the next sub-section, I explore the main reasons that contribute to the persistence of inefficient practices of TB care, and interrelated consequences. This is followed by a discussion of the key obstacle to the sustainability of the HIV/AIDS programme, namely dependence on donors, including potential consequences for sustainability. Then, I focus the discussion on three main factors that potentially affect the sustainability of both programmes. These are interactions of the programmes with the broader health system, disease surveillance systems, and challenges with providing international assistance for TB and HIV/AIDS in Kyrgyzstan.

10.2.2. Tuberculosis control programme: the legacy of the Soviet phthisiatry

My study concludes that a key impediment to the sustainability of the TB programme in Kyrgyzstan is inherent inefficiencies rooted in the legacy of Soviet practices of overreliance on hospitalisations for TB care. From the standpoint of sustainability, given considerable TB burden and potentially increasing number of MDRTB cases, the overreliance on hospitalisations raises questions as to whether the health system could afford expensive inpatient TB care in the long run. In addition to inefficiencies, overreliance on hospitalisations may have negative consequences for programme sustainability for reasons of effectiveness. Lastly, the Soviet legacy of social and regulatory control of patients with TB likely negatively affects the equity of TB care.

This thesis adds to the empirical studies on TB control in the FSU region, highlighting that history (i.e. the legacy of the Soviet phthisiatry) is a profound factor shaping policies and practices of contemporary TB control in the region. In contrast to the inefficiencies of the Soviet-style in-patient care mode, international agencies favour models of out-patient based care, especially for drug-sensitive cases of TB through the DOTS programme. Despite considerable international investments, these latter models of care have not been fully realised in Kyrgyzstan. Though treatment of TB patients using the WHO-recommended standardised treatment protocol has been adopted, inefficient clinical care of TB patients in specialised TB hospitals persists. Additionally, it appears that, in the absence of state provision of social care to TB patients, TB medical services in Kyrgyzstan continue to fulfil this role, as was reported from Russia (Atun and others, 2005c, Atun and others, 2005d). Emerging studies in the FSU region demonstrate that even though treatment in hospitals mitigates social care for some low income patients, long-term hospitalisation indeed is one the key reasons for defaults among patients. Considerable defaults among hospitalised patients were reported from Ukraine (Vassall and others, 2009a), Russian hospitals (Belilovsky and others, 2010), and Uzbekistan (Hasker and others, 2010, Hasker and others, 2008). There is also emerging evidence from the demonstration projects on the feasibility of community-based MDRTB treatment, including in Russia (Keshavjee and others, 2008, Mitnick and others, 2003, Shin and others, 2004).

The findings of my study echo the previous studies on health system responses to the TB epidemic, which were conducted in the early 2000s at the inception of DOTS in the FSU region (Atun and Olynik, 2008, Atun and others, 2005e). This similarity is an important finding on its own. This may suggest that in the context of the FSU, irrespective of resource availability, the TB system is reluctant to change despite important changes in TB epidemiology (i.e. emergence of MDRTB), health system reform and broader changes in global TB policies. Three broad

factors appear to have supported the interests of specialised TB services and contributed to their reluctance for a systematic change of structural and functional arrangements. These are legitimacy of regulatory control over patients with TB, tensions between a need to establish comprehensive and patient-centred TB care and lack of capacity to do so, and financial mechanisms of the TB system.

Social and regulatory control of patients with TB

The legacy of the Soviet approaches has been evident in the analysis of perceptions of people at risk of TB or with TB disease. As has been presented in Chapter 2, the Soviet health system put a strong emphasis on the interests of the public and the state (Field, 2002, Kimerling and Banatvala, 2001a). TB was seen as a threat to the public. Coercive measures were applied to those who were perceived as difficult to treat or who did not comply with ordered measures or prescriptions (USSR_Government, 1960). My analysis of interviews shows that there is a tendency, on the side of domestic respondents working in the TB system, to single out marginalised groups such as ex-prisoners and internal migrants, label them as difficult to find, and perceive that they are likely not to comply with treatment. As existed during the Soviet period, perceptions that weaknesses in TB control are often determined by faults of patients' persist in Kyrgyzstan.

MDRTB is shaped by domestic actors as a threat, as a problem pertinent largely to TB transmission and the lack of control over persons who are difficult to treat or follow-up. Isolation of patients refusing treatment was voiced by domestic respondents as an intervention. Administrative and legal liabilities for refusing compliance with TB control interventions are written into the law (TheLaw, 1998b). In the context of weak capabilities to diagnose and treat MDRTB, traditions of social control of TB patients might have several consequences related to the equity and effectiveness of TB control measures. Involuntary detention or other coercive measures have no evidence base (Coker, 2001b, Coker and others, 2007, Coker, 2003). There is empirical evidence however that hospitalisation in special hospitals, physical separation of TB departments, isolation or any coercive measures contribute to TB stigma (Dodor and Kelly, 2010, Kelly, 1999). Other studies have also shown that TB stigma in turn prevents patients from seeking health care or creates barriers to completion of TB treatment (Courtwright and Turner, 2010, Woith and Larson, 2008).

Barriers for the development of comprehensive TB care in Kyrgyzstan

My study contributes to the understanding of health system challenges in the establishment of comprehensive patient-centred TB care in a setting with potentially high rates of MDRTB.

An important barrier is the false dichotomy between TB and MDRTB that has been created by the global policies on TB control (Keshavjee and Farmer, 2010, Keshavjee and Seung, 2009). Over the last decade the international response to MDRTB has been unclear. Countries have received fragmented assistance, which was centralised and controlled by the GLC. As was presented in the introductory Chapter 2, for a long time countries were advised to focus on drug-susceptible TB. As a result, Kyrgyzstan's response has been slow and largely structural. The domestic policy makers envision further specialisation of TB hospital care, and justify this because of the increase in MDRTB rates. At the time of the research, MDRTB patients in Kyrgyzstan were treated in a hospital setting for 18-24 months.

Another barrier is the unpreparedness of the general health system to manage patients with communicable diseases. There is an absence of infection control in hospitals which creates a risk of TB transmission. Clinical management of MDRTB is complex and often requires specialised inpatient care and advanced medical skills. There is no capacity in Kyrgyzstan's health system to properly diagnose resistant forms of TB, with the exception of a few donor-supported pilot sites. Lastly, there is no capacity yet to establish effective community-based TB care. Primary care services are still weak. In contrast to the HIV/AIDS programme, there is a near absence of NGOs or community support groups addressing the needs of TB patients.

Critical role of financing in changing approaches to TB treatment

This study confirms previous finding of studies in Russia (Floyd and others, 2006, Marx and others, 2007) that in the FSU context a shift to patient-centred TB care is not likely without changes in financial mechanisms and regulations of TB services. I highlighted in Chapter 8 that despite health reform efforts to restructure and downsize inpatient infrastructure, TB services retained a substantial TB bed capacity. This continues to encourage unnecessary hospitalisations¹⁰⁴. It appears that Roemer's law of '*beds exist, beds occupied*' (Roemer, 1961) stands in Kyrgyzstan similar to other settings (Kroneman and Siegers, 2004, Marx and others, 2007).

¹⁰⁴ In 2008, there were 5333 new TB cases notified and the country reported 14 727 admissions for TB treatment nationally (Table 8.8, Chapter 8). This is equivalent to 2.7 admissions per each new TB case. Review of historical data indicated a similar, or higher, ratio of number of new cases to number of admissions.

The budget formation for TB services changed¹⁰⁵ in 2008. However, financing of TB services in Kyrgyzstan remains input-based (i.e. per hospitalised case), keeping incentives for retaining specialised TB beds and/or potentially increasing the number of admissions. In general, policy makers, representing both the state and international actors, viewed the changes as timely and a step forward. There were tensions however. Positions on the rationale for financing reform of TB services differed. International actors viewed changes in financial mechanisms as a way to reduce unnecessary hospitalisations. Domestic policy makers in TB control viewed the changes as a way to retain the funds for the specialised TB services¹⁰⁶.

The lack of linkages in resources planning and allocation between TB services and primary care providers arguably impedes further development of outpatient TB care. Generally, TB case detection and observation in the ambulatory phase by primary care providers is viewed as an achievement, by both international actors and representatives of TB services. However, this has not been supported in the way funds for the TB programme are allocated. Spending on TB activities at primary care level is low. For example, in 2007¹⁰⁷ primary care providers spent 4.1% of the total programme budget (from all sources), versus 79% allocated to specialised TB services (Table 8.3, Chapter 8) (Akkazieva and others, 2009). In this regard, this study finds tensions between the TB services and primary care providers. Whilst TB service representatives argue that primary care has sufficient resources to conduct TB activities, the representatives of primary care interviewed in this study insisted that allocated resources are not sufficient to implement TB activities effectively. Indeed, most respondents generally agree that primary care providers, whilst capable of detecting TB cases, are not effective in providing DOT.

There is emerging evidence from other settings that providers' incentives and mechanisms such as pay-for-performance may improve outcomes of TB care (Beith, Eichler, and Weil, 2009, Li and others, 2010, Tsai and others, 2010). In Kyrgyzstan, providers' payment mechanisms are not linked to considerations of performance.

¹⁰⁵ During the Soviet period and up to 2008, the formation of the budget for TB services was based on number of beds and personnel. At the time of data collection, the budget formation for TB services was based on historical data on number of treated patients in the previous year (Chapter 8, section 8.4).

¹⁰⁶ In the past, allocated budget was to be returned to the state if not used/appropriated in accordance with the budget line.

¹⁰⁷ This is the only review of TB programme expenditure (National Health Accounts) that has been conducted in Kyrgyzstan at the time of data collection.

10.2.3. HIV/AIDS control programme: a novel programme in the health system

This study emphasises the challenges facing the novel HIV/AIDS programme. The evolution of the HIV/AIDS programme in Kyrgyzstan over the last decade has been shaped by international HIV/AIDS initiatives. The contribution of this study is in demonstrating that the potential for sustainability of the HIV/AIDS programme in Kyrgyzstan mirrors, to a considerable extent, the opportunities and challenges of international assistance for HIV/AIDS in low income countries. Increased international commitment to HIV/AIDS combined with substantial funding for the HIV/AIDS response have turned the political attention of domestic actors to the problems of people with HIV/AIDS, of IDUs, and other marginalised groups. NGOs became important actors in delivering HIV interventions, including in policy making processes. Piloting of OST, other harm reduction interventions and actual involvement of the civil sector in the HIV response are achievements on their own in the context of the FSU. In spite of these opportunities, the health system response has not yet gone beyond implementation of pilots. As was stated earlier, novel governance approaches (i.e. CMCC) and control interventions are not institutionalised into the mainstream health, social and regulatory systems.

In addition to challenges to sustainability created by resource vulnerability, the HIV/AIDS programme is affected by the legacy of the Soviet system. In the following discussion, I further explore this issue. Then I return the discussion to three main challenges related to sustainability of the HIV/AIDS programme. These are the governance of the HIV/AIDS response, financial mechanisms particularly allocation of resources, and the role of NGOs.

Social and regulatory control, stigma of people at risk of HIV and PLHIV

This study illustrates that changes in the legal system and in public perception about marginalised groups are slow and challenging. In Kyrgyzstan, stigma and discrimination against drug users persists. The respondents in this study, particularly domestic actors, noted that aside from international projects, domestically-supported attention to IDUs health care and social needs remains limited. The restrictive legal framework, which criminalises drug users, and the weak regulatory base to prevent stigma and discrimination were commonly identified by respondents as contradicting the country's strategic aims for HIV/AIDS control. According to respondents, the legal and regulatory environment, if not changed, will continue posing fundamental barriers for implementing HIV/AIDS prevention and treatment interventions among IDUs.

Health system responses to HIV/AIDS and IDUs epidemics interact with geopolitical influences and the social milieu surrounding the HIV/AIDS epidemic concentrated among IDUs. This finding echoes empirical studies conducted in the central Asian region (Latypov, 2008, Latypov, 2009, Latypov, 2010) and other states with a history of strict state and social control over IDUs and other marginalised groups (Herington, 2010). In such states, IDUs, sex workers and other risk groups such as prisoners were viewed as 'social evils' or 'badly behaving' persons (Herington, 2010, Tkatchenko-Schmidt and others, 2010). Evidence from elsewhere consistently illustrates that fear of stigma and coercion prevents IDUs from accessing health services and impedes timely diagnosis and treatment, if sick (Beyrer and others, 2010, Bobrova and others, 2007a, Bobrova and others, 2008, Bobrova and others, 2007b, Jurgens and others, 2010, Sarang and others, 2010).

Another key factor that potentially impedes implementation of drug-use reduction policies in the central Asian region, including in Kyrgyzstan, is geopolitical influences from historically important allies such as Russia (Latypov, 2009). Since September 11, 2001, drug control policies in the region have been framed as global security concerns and a 'fight' against terrorism (Latypov, 2009). Kyrgyzstan is a member of regional initiatives on drug control led by Russia. Russia promotes initiatives to harmonise drug control laws regionally, including the adoption of legislation based on the Russian template (Utyasheva and Elliott, 2009). Russia has a zero tolerance policy on drug use and forcefully opposes OST (i.e. opioid substitution therapy). The decision of Russia to prohibit OST has been often mentioned in my interviews with domestic actors (both NGOs and the government) as an important factor that potentially might influence decisions of Kyrgyzstan's government and lawmakers to prohibit this intervention.

Coordination of the HIV/AIDS response

This case study adds to previous reports on challenges in establishing one coordination body for the HIV/AIDS response (Spicer and others, 2010). In Kyrgyzstan, as in many public health systems, multisectorality, involving private and non-state actors, and fairness in decision making among many actors, are new (Caceres and others, 2010, Tkatchenko, McKee, and Tsouros, 2000). Putzel (2004) has noted that prioritizing HIV/AIDS and ensuring cooperation and coordination in managing substantial financial resources is a political question rather than technical. I find similar traits in Kyrgyzstan. The amount of external assistance for HIV in Kyrgyzstan is considerable. As was pointed out by a respondent, one of the SWAp partners, the amount disbursed and committed for HIV/AIDS has been US\$ 45 million for 2005-2010 compared to US\$ 60 million that is planned to be spent by the SWAp for health system

development in the same period. Domestic respondents noted that there were attempts in the past, from the side of high level political elite, to put interested groups as principal recipients of the GFATM grant for HIV/AIDS.

Other researchers have raised concerns about requiring countries to establish a stand-alone coordination body for HIV/AIDS, in addition to existing governance mechanisms, as a condition for obtaining financial support (Godwin and others, 2006, Putzel, 2004). Though Kyrgyzstan followed international recommendations with setting up the CMCC, the CMCC was not integrated into existing governance and regulatory systems. As a result, similar to many other countries (Caceres and others, 2010, Spicer and others, 2010), the CMCC has been given *'responsibility to coordinate without authority to control and ensure coordination'* (Godwin and others, 2006).

International funding as a determinant of the HIV/AIDS response

Domestic oversight over financial resources is a key pre-requisite for ownership of innovations. However, this study suggests that country-level actors have limited influence over decisions regarding international spending on HIV/AIDS. There was a common opinion among domestic actors interviewed in this study that they have little influence in decisions on what and how HIV projects are to be conducted in Kyrgyzstan. International actors, on the other hand, ensured that they are operating under agreements with the Government of Kyrgyzstan, and their activities fall within the current state strategy for HIV response. Development partners also pointed out that the country set priorities for international funds allocation through the GFATM grant application processes. However, as one of the domestic actors elaborated, given the weaknesses of the CMCC and M&E system, priorities for the GFATM grant often have been set based on recommendations of international actors working in Kyrgyzstan.

Additionally, the main issue for sustainability, I argue, is the lack of efficiency considerations in decisions of international actors. Lack of assessment of whether resources for HIV/AIDS are allocated and used effectively and efficiently is not unique for Kyrgyzstan. Overall, there have been limited studies on optimal resources allocation for HIV/AIDS in the context of health systems in the FSU (Alistar, 2010). This situation mirrors overall problems that have been encountered internationally. Recent assessments indicate that many countries did not allocate HIV/AIDS funds in a way that is most effective or efficient (Bautista-Arredondo and others, 2008, Forsythe, Stover, and Bollinger, 2009). Identified factors include lack of robust epidemiological data, perceived overemphases on multisectorial response, poor planning and evaluation capabilities, general inefficiencies in use of resources, and lack of domestic control

over resources (Bonnell, 2009, Forsythe, Stover, and Bollinger, 2009). Often resource allocation decisions are influenced by political factors such as international and regional priorities identified by international actors rather than epidemiological or economic evaluations (Lasry, Carter, and Zaric, 2011, Poku, 2006, Sridhar and Gomez, 2011). Broader analysis conducted by other authors suggests that global or regional priorities remain drivers of aid allocation in many low- and middle-income countries (Piva and Dodd, 2009).

NGOs

There has been a key expectation from GHIs that civil society organisations would provide the backbone of the response to HIV/AIDS. In Kyrgyzstan, as in several other settings, donors' development assistance has resulted in a proliferation of HIV-service NGOs (Kelly and Birdsall, 2010, Rau, 2006). NGOs have become recipients of the funding; on balance the state has not benefited to the same extent (Bonnell, 2009). As has been reported from other countries (Bonnell, 2009), what has been evident in Kyrgyzstan is a lack of overall oversight, quality assurance and indeed coordination of HIV-prevention efforts implemented by NGOs. NGOs report principally to donors and follow guides dictated in the grants. Whilst the role of NGOs is undeniably important in Kyrgyzstan's context, one of the unintended spill-over effects of donors' policies to work directly with NGOs is that such an approach creates barriers for building trust between the State and NGOs. In the long run, this may impede the development of effective and long-term partnerships between the state and NGOs. This conclusion is supported by others (Rosenberg, Hartwig, and Merson, 2008) who showed that sustainability of donor-supported projects implemented by NGOs depends substantially on interactions between the state and NGOs.

10.2.4. Interactions between TB and HIV/AIDS programmes, and between programmes and the general health system: potential implications for sustainability

One of the contributions of this PhD research is empirical exploration of how integration¹⁰⁸ of a communicable disease programme with other health system components influences the sustainability of communicable disease programmes. I find that health system fragmentation impedes programmes' adaptability¹⁰⁹, another dimension of sustainability, limiting options for

¹⁰⁸ Integration in this research is defined as occurring at any health system component (i.e. governance, financing, service delivery, M&E) and to a different degree of interactions – no formal interactions, linkages, coordination, full integration (Chapter 5).

¹⁰⁹ I define flexibility in Chapter 5. Flexibility (adaptability) is defined as willingness and ability of actors to adapt or change disease control strategy (strategic objectives and priorities), policy (strategy, legislation, regulations), or a programme's structures or functions (e.g., approaches to funds mobilization, resources allocation mechanisms,

effective implementation and scaling up of innovative interventions. In particular, fragmentation of governance and financing prevents the development of effective interactions at service delivery between TB and HIV/AIDS programmes, and between these programmes and primary care. Similar challenges were found as relates to the establishment of long-term interactions between the HIV-service NGOs and the state organisations (i.e. state specialised services). In turn, I find that the limited formal interactions at service delivery have important implications for sustainability of both programmes for reasons of effectiveness and efficiency. It has been long recognised, and shown empirically, that health system fragmentation in the FSU context creates barriers for effective delivery of disease control interventions such as ART, OST and TB treatment (Bobrova and others, 2007b, Tkatchenko-Schmidt and others, 2010, Wolfe, 2007). Similar accounts were expressed in my study (Chapter 8 and 9). On the other hand, this study reveals tensions around the feasibility of integrating disease control interventions (e.g. ART, OST) with the general health system because of its limited capabilities. These latter services operate with limited financial and human resources and diagnostic capabilities to manage patients with TB, HIV/AIDS or narcotic drug dependency.

Interactions at the governance and financing levels

It is recognised that the establishment of inter-organisational relations often depends on factors that broadly can be grouped into two intervening factors, namely money and authority (Benson, 1975). The extent by which authority and resources are concentrated or disbursed in the organisation's environment influences an organisation's traits or options in interacting with other organisations (Benson, 1975, Pfeffer and Salancik, 1978). In Kyrgyzstan, parallel domestic governance structures and separate financial streams are service-oriented and not focused on patients' needs. Each communicable disease service (including narcology services) operates within its own separate budget. There is neither room for diversification of funding streams nor flexibility in resources allocation (for example, shifting of allocated resources to where most needs are). Each service is dependable on allocated funds, which are often very tight. Such arrangements create disincentives for establishing a unified implementation strategy, joint resources planning and allocation among health care organisations that deliver disease control interventions to overlapping population groups (Atun and others, 2008).

The important contribution of this study is adding to the literature on the impact of international financial mechanisms on health systems' development. My study suggests that in the context of the FSU, parallel and targeted donors' financing for each disease prevents integration initiatives,

service provision, re-training of personnel, reporting and evaluation approaches) in response to external pressures, changes in nature of a disease or introduction of innovations.

albeit unintentionally. Indeed, most international actors working in Kyrgyzstan put improvement of coordination between organisations as one of their strategic objectives. Several models of integrated and comprehensive care have been implemented within donors' initiatives, reportedly successfully¹¹⁰. Yet, according to several domestic respondents, most such partnership efforts stop functioning well after the withdrawal of funding. I find that one of the spill-over effects of targeted international funding streams and their limited time horizons (e.g. 5 years grant cycles) is creating the tensions between domestic actors competing for resources. Uncertainties in funding ultimately negatively affect coordination and/or development of partnerships and collaboration. Additionally, domestic respondents noted inflexibility of donors' funding and the project's implementation policies as an impediment to their responsiveness to the changing needs of their clients or contextual conditions (e.g. changes in local regulatory framework).

Previous studies on sustainability appear to support the findings of this thesis, though these were conducted in different health system contexts. Earmarked funding streams targeted to a specific intervention or dependence on one or few funding sources emerged as a factor impeding sustainability of health initiatives or programmes in a number of studies (Bossert, 1990, Bratt, Foreit, and de Vargas, 1998, LaFond, 1995b, Rog and others, 2004, Stevens and Peikes, 2006, Stroul and Manteuffel, 2007). Inflexibility of donors' policies on implementation of grants was a factor limiting chances for sustainability in studies in the international assistance context (Ashwell and Barclay, 2010, Humphries, Gomez, and Hartwig, 2010) as well as in industrialised countries (Israel and others, 2006, Wakerman and others, 2005).

Is integration of TB and HIV/AIDS programmes with primary care a solution for the programmes' sustainability?

Historically, international policy discourse on integration of priority health programmes has been focused on integration at the service delivery level, particularly with primary care (Mosneaga and others, 2008, Unger and others, 2006b). A similar approach has been recommended by international actors to Kyrgyzstan's policy makers (WB, 2008). The TB and HIV/AIDS programmes included into their strategic objectives integration of delivery of interventions with primary health care. As has been presented in Chapters 8 and 9, it was evident from the study findings that specialised services on their own are not likely to achieve effective coverage of interventions. However, my analysis of the domestic documents suggested that there is a lack of clear implementation strategy, required resources, or clarity on what is meant by integration. Additionally, I find that primary care in Kyrgyzstan is not

¹¹⁰ For example, the Capacity project funded by USAID; MSF programme in prisons which applies an integrated model of management patients in prisons; several successful international projects implemented by domestic NGOs.

sufficiently prepared to undertake communicable diseases management responsibilities, including management of narcotic drug dependency. Challenges included management of potentially infectious patients (in the case of TB patients) in the context of lack of infection control in health care settings, weak diagnostic capabilities, and negative attitudes towards patients with TB and HIV/AIDS including stigma. Indeed, domestic respondents representing the HIV programme in my study highlighted that stigma against marginalised groups is notable in the general health system settings.

In summary, findings of this case study support previous propositions that effective interactions of disease control programmes with the broader health system are likely factors that would improve the prospect of a programme's sustainability (Mosneaga and others, 2008, Unger, De Paepe, and Green, 2003, Visschedijk and others, 2003). The study highlights however that the decisions in choosing integration strategies, including their timing, need to be based on considerations of whether integration is feasible, possible and opportune (Criel, Kegels, and Van der Stuyft, 2004). I agree with arguments of several authors (Atun and others, 2010b, Yang, Farmer, and McGahan, 2010) that a 'horizontal' versus 'vertical' divide is an oversimplified view of the complex processes occurring in health systems. There is an emerging evidence that options and feasibility for integration of disease control programmes with other health system components differ in different health systems (Desai and others, 2010, Hanvoravongchai, Warakamin, and Coker, 2010, Mounier-Jack and others, 2010, Rudge and others, 2010). This PhD study adds to this emerging research.

10.2.5. Importance of disease surveillance for studying sustainability of programmes

This study emphasises critical challenges in measuring the impact of TB and HIV/AIDS interventions on public health in settings with weak health systems (Bennett, Boerma, and Brugha, 2006, Boerma and Stansfield, 2007, Cox, Ford, and Reeder, 2009, Murray, 2007, Murray and Frenk, 2008). Despite substantial efforts from all actors involved and financial assistance provided to Kyrgyzstan for the development of M&E systems for both programmes, it is not possible to conclude whether TB or HIV/AIDS incidence or associated mortality have declined. Answers to the simple question of whether implemented interventions improve public health outcomes were not found in this PhD research. Additionally, as was discussed earlier, this study highlights that both programmes have not addressed a key question for their sustainability, namely efficiency.

This study illustrates that the lack of robust communicable disease surveillance systems, and limited capabilities to apply epidemiological and analytical techniques, sometimes leads to misinterpretations of available data and divergent opinions about the course of TB and HIV/AIDS epidemics. Crude national statistics are often used by domestic actors to judge the occurrence of TB or HIV/AIDS and are communicated to the public. Available data are also used to formulate policy objectives, apply for grants, and judge programme performance. Similar to previous reports, the study respondents representing domestic HIV/AIDS services and some local NGOs suggested that having several M&E platforms adds to the administrative cost, and has been viewed as being designed to meet donors' interests (AbouZahr and Boerma, 2005, Ashwell and Barclay, 2010). Analysis of interviews also suggested that weaknesses in surveillance, and in how data are being disseminated, contribute to shaping perceptions among domestic actors, and potentially form social narratives around persons with TB and HIV and affected marginalised populations. Some domestic respondents tended to blame marginalised population groups (e.g. prisoners, IDUs) as the main causes of epidemics. During the interviews, such statements were not backed up with epidemiological or operational research data.

Pre-occupation of international actors with achieving targets and measuring indicators is well-documented. However, even a robust indicators system has limited value without systematic quality assurance, and information on the quality of data collection, analysis and interpretation. This is especially problematic when meeting targets is attached to obtaining financial support or reporting on grants' implementation.

I discuss these challenges further below, taking the TB programme as an example.

DOTS indicators (i.e. 75% case detection rate and 85% treatment success rate among sputum positive TB cases) were developed based on a mathematical modelling exercise, with a proposition that reaching these indicators would contribute to reduction of TB incidence and mortality (Dye and others, 1998). Under these propositions, these measures were included as core indicators for assessing the performance of national TB programmes. However, TB transmission patterns and the propensity to developing TB disease intrinsically has considerable heterogeneity among and within population groups (Anderson, 1998, Anderson, 1991). Thus, the application of such targets may not result in the same public health benefits in different social settings. Additionally, the focus on measuring a TB programme's performance based on treatment success of sputum positive TB cases arguably does not provide a whole picture of whether the programme works or does not (Cox, Ford, and Reeder, 2009). This is particularly relevant in the context of the central Asian FSU, where diagnostic capabilities are weak and

where the destiny of TB patients who do not fall into the WHO definitions is often not known¹¹¹.

In a setting with a potentially high prevalence of drug-resistant forms of TB, such as in Kyrgyzstan, the key indicator of the quality of TB care should be the emergence of MDRTB. In particular, one of the approaches could be monitoring of changes in the drug resistance pattern and development of MDRTB over the course of treatment (Richard Coker, personal communication). Such monitoring does not exist in Kyrgyzstan. This study reasserts the need for a robust surveillance system to monitor the emergence of MDRTB, determine the causes of this emergence (including patient, professional and health system), and provide insights into the effectiveness of interventions aimed at controlling this disease. In Chapter 8, I have shown that the response to MDRTB in Kyrgyzstan is being shaped by the key domestic actors in TB control (i.e. specialised TB services) as caused by the lack of regulatory control over persons who are difficult to find and treat. The health system's failures (e.g. application of improper treatment regimens, access to TB treatment) are not routinely monitored and rarely acknowledged.

10.2.6. Global health initiatives in Kyrgyzstan

Sustainability of donor-supported initiatives has been a central concern of international assistance historically (Atun and others, 2005e, Bossert, 1990, Gonzalez, 1965, LaFond, 1995b, Le Loup and others, 2010, Lienhardt and Ogden, 2004, Stefanini, 1992, Yang, Farmer, and McGahan, 2010). The concerns have been often centred on an inherent contention of sustainability, that is tensions between a necessity to promptly address current needs and the long-term needs of the population for health system development, well being and health. These sustainability concerns have been embedded in the vertical vs horizontal debate, in which 'vertical' programme proponents argued for an efficient and prompt impact, and proponents of the 'horizontal' approach insisted on a long-term health system development. The contribution of my study to this debate is demonstrating the need of both, targeted assistance for addressing communicable diseases of public health importance and efforts to strengthen the overall health system.

This study highlights challenges with ensuring continuity of donors-supported innovations in Kyrgyzstan, a country with a difficult socio-economic context compounded with political

¹¹¹ The TB system historically manages so-called 'chronic' patients, who do not fall into the WHO definition of chronic TB patients and who often do not have bacteriological confirmation of TB disease.

instability. Since the disintegration of the USSR, international actors have played an important role in assisting Kyrgyzstan to reform socio-economic and health systems. Whilst the health system reform programme has reportedly made important achievements (Falkingham, Akkazieva, and Baschieri, 2010, Rechel and others, 2011), the health system remains weak with limited capacity to manage the public health crisis or provide quality health care. The country is one of the poorest states in the FSU region, with estimated spending on health per capita of US\$ 152 in 2009 (WB, 2010).

The role of GHIs in addressing TB and HIV/AIDS epidemics in Kyrgyzstan is important, as has been discussed throughout the previous sections. In summary, one of the key challenges for continuous implementation of disease control innovations in Kyrgyzstan is financial and political dependence on GHIs. Domestic respondents of both programmes expressed concern that continuous implementation of innovations, if donors' funding stops, would likely be impossible. International actors, on the other hand, argued that they have contributed to building the country's capacity for implementing novel TB and HIV interventions.

Vulnerability to donors' funding and policies was profound in the case of the HIV programme. GHIs in HIV/AIDS have turned political attention to marginalised groups who are at risk of HIV. However, this study indicates that the political support has not reached a level to embed novel interventions into mainstream political, social and health systems. Arguably, the question exists of whether national policy makers would keep problems of HIV and IDU as a priority, if international priorities should change. This is in contrast to TB services, which historically are viewed by domestic decision-makers as legitimate and politically important. The main challenge for the TB programme is that, in the absence of international attention, the programme might end up in a 'vicious cycle' to continue building its strategies based on the legacy of the inefficient practices that existed in the Soviet Union.

In the preceding discussion, I also highlighted that an effective response to TB and HIV/AIDS epidemics in Kyrgyzstan would not be possible without strengthening the capabilities of the general health system. There are efforts in Kyrgyzstan to coordinate donors' aid through the sector-wide approach (SWAp) (Chapter 7). Though the effectiveness of SWAp in strengthening the overall health system has not been empirically proven, there is arguably a need for better coordination of TB and HIV/AIDS funds with other efforts in Kyrgyzstan. Channelling substantial amount of funds specifically for TB and HIV/AIDS has resulted in unintended spill-over effects such as preventing development of interactions between key actors of both programmes.

10.3. CONTRIBUTION TO KNOWLEDGE

10.3.1. Application of ‘systems thinking’ to the study of sustainability of communicable disease programmes

The main contribution of this thesis is to the conceptual developments aimed at understanding the role of health systems in the sustainability of communicable disease programmes. I did this by extending the conceptual framework of Atun and others (2004) on the functioning of communicable disease programmes in health systems, and bringing some perspectives of complex systems theories¹¹². The novelty of my work, as compared to the authors upon whom I build, includes the clarification of conceptual understanding on what constitutes integration, sustainability and the link between these two notions. In contrast to linear and deterministic explanations of sustainability, which are traditionally applied in research on sustainability in health systems, theories of complex systems highlight multiple causations and dynamics relations (both temporal and spatial) among system components and agents (e.g. individual, actors, organisations, institution). Uncertainty in predicting outcomes is a norm as multiple system pathways are possible. To sum up, my contribution to the development of theories explaining sustainability of communicable disease programmes highlights:

- Integration of a programme with other health system components is likely one, but not the only, precursor of the programme’s sustainability;
- Though integration with other system components is important, its role in sustainability is context specific and difficult to predict (as sustainability overall). The focus in my proposal is on recognition of the patterns of system evolution and not on searching for bi-directional relations between integration and sustainability.

10.3.2. Framework for analysis of sustainability

A realist’s research starts with building an initial model of structures and/or mechanisms that can provide better representations of the phenomenon being studied (Bhaskar, 1975, Blaikie, 2007, Healy and Perry, 2000, Olsen, 2010). These propositions then explained or new explanations found in an empirical study to generate empirically based conceptual framework

¹¹² As discussed in the section 10.1.4, I build on theoretical insights on sustainability originating in theories of complex adaptive systems. I extend upon the framework by Atun and others (2008) on integration and health system, and by Gruen and others (2008). Both these developments draw upon theories of complex systems.

(Sobh and Perry, 2006). The initial framework for analysis (Chapter 5, Figure 5.1) applied in this study provided a guide for understanding the existence and influences upon sustainability precursors at different levels of the health system (e.g. national, regional, local). The schematic representation of the framework for analysis had several limitations. At the inception of this research, I did not put precursors of sustainability schematically into the Figure 5.1 (Chapter 5), instead I outlined these relations in Box 5.1 of the Chapter 5.

The Figure 10.2 offers a modified representation of the conceptual framework for analysis a programme's sustainability (i.e. a potential for sustainability) based on the empirical findings of this research. Briefly, the results of my study have suggested that all five presumed precursors of sustainability (i.e. *mechanism*) may act upon the functioning of a *disease control programme*, the choice and delivery of *disease control interventions*. Consequently, these mechanisms influence the scale and the actions of interventions on a disease problem, leading (or not) to a reduction of disease incidence or associated mortality and morbidity (i.e. *outcomes*). The precursors of sustainability, in turn, depend upon complex interrelationships among *actors* and their institutional roles and interests, structural and functional arrangements of a *health system* and a *disease control programme*, and *context*. Historical paths of health system, disease control programmes and disease itself may play the important role in determining the existence and actions of mechanisms such as the programme's capacity (i.e. dedicated resources), flexibility and interactions. Additionally, the proposed framework suggests that political and economic environments, institutional interests of actors and health system's arrangements may directly affect the existence and functioning of a disease control programme, choice and continuous implementation of interventions.

My research is about the theory-building. The modified framework was generated based on one case study. The framework may require further operationalisation before generalisability of the propositions offered in my thesis are tested in further empirical studies. I reflect on this further in the section 10.4.1, where I discuss the limitations of a framework approach to the study of complex systems.

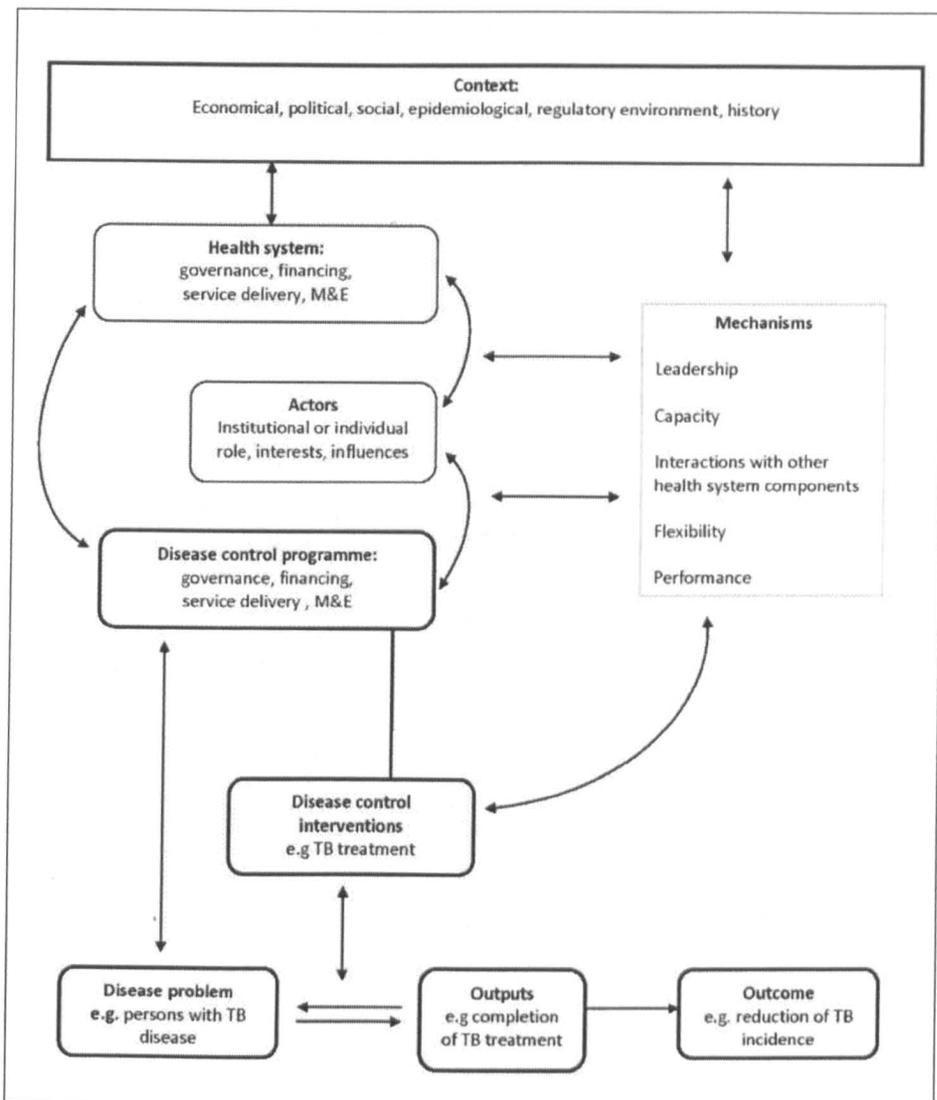


Figure 10.2 The revised framework for the analysis of sustainability of a disease control programme

10.3.3. Implications of the study's empirical findings for TB and HIV/AIDS control in central Asia

This PhD research contributes to the scarce literature on health systems responses to communicable diseases epidemics in the central Asian region of the FSU. Overall, this study highlights the profound influences of a health system's historical path on the evolution of TB and HIV/AIDS programmes. I emphasised, as other authors (Coker, 2001a, Sbarbaro, 2002), that structural changes in the health system are difficult to implement. Strikingly, several findings of my case study, which was conducted in 2009, were similar to conclusions of the studies conducted in Russia and Ukraine in 2001/2002. This is despite Kyrgyzstan's relative progress in moving forward with the health system's reform (Rechel and others, 2011) and considerable investments in TB and HIV/AIDS programmes (presented in Chapters 8 and 9). It is likely, that in other central Asian countries, health systems responses to TB and HIV/AIDS epidemics are influenced by the legacy of the Soviet health care system. Among factors that have shown profound persistence in Kyrgyzstan are practices of managing persons within a single speciality, and regulatory control over people at risk of and with TB and HIV/AIDS.

A key implication of this study is that targeted financial assistance for priority diseases such as TB and HIV/AIDS, though having benefits in the short-medium terms, would not likely ensure sustainability of programmes. It is likely that in the central Asian region, with a history of high health systems fragmentation, targeted international assistance might have unintended consequences such as preventing the establishment of interactions of programmes with other health system's components. Health problems in central Asian countries have become more complex, requiring the establishment of comprehensive and integrated approaches to addressing the overall public health crisis and weaknesses of health systems. At the same time, I also argue that there is a need for international political attention focused on the problems of the IDU-driven HIV epidemic and persistent TB problem in the region. This is relevant for both political and financial reasons. Momentum in national political attention to IDU and HIV problems needs to be maintained including in economically advanced Kazakhstan. For low income and vulnerable states such as Kyrgyzstan and Tajikistan, there is a need for financial assistance to address specific challenges relevant to TB and HIV/AIDS epidemics.

10.4. LIMITATIONS OF THIS RESEARCH

10.4.1 Applying a framework approach for studying complex systems

Though I argue that my thesis makes a contribution by bringing perspectives of complexity theories to the study of sustainability of communicable diseases programmes, I recognise the limitations. A framework approach to studying complex social systems has its limitations as frameworks include selective constructs putting emphasis on some information and minimizing the other (Coker and others, 2010).

Despite that the conceptualisation of sustainability in this thesis builds on established theories that explain sustainability (i.e. resilience of complex systems), these theoretical perspectives have their roots in natural and physical sciences. There is a long-standing recognition of complexities in social systems, including health systems, and growing attraction in applying concepts and constructs from complex systems theories (Anderson, 1999, Kernick, 2006, Plsek, 2003, Sturmberg and Martin, 2009). However, diffusion of application of complex theories in health systems research has been relatively slow (Begun and Zimmerman, 2003, Martin and Sturmberg, 2009), including as applied to health systems in low- and middle-income countries (Paina and Peters, 2011). Many applications of complexity theory to social systems research have been limited to metaphorical use of underlying assumptions (e.g. self-organisation, emergence, feed-back loops, phase transition) (Begun and Zimmerman, 2003). One of the key impediments, as Begun and Zimmerman (2003) argue, is under-developed analytical and methodological approaches. Social systems, in contrast to natural systems, are difficult to model¹¹³. In my conception of sustainability, the abovementioned challenges particularly concern the flexibility (adaptability) dimension, which only to some extent encompassed insights on notions of innovations, learning and change. In future developments of this construct, there is a need to incorporate theoretical perspectives from sociology, organisational learning and organizational psychology, including theories explaining dynamics within interests groups such as neoinstitutional theory.

In the conceptual framework for analysis (Chapter 5), my focus has been particularly on formal structural and functional arrangements of a health system, whilst neglecting the individual level such as individual providers and patients. Thus, my framework does not fully address *informal*

¹¹³ A main approach in studying economic and ecological systems within complexity sciences is mathematical modelling, non-equilibrium statistics. Another relevant issue is the lack of well-agreed meanings and definitions of key constructs (e.g. self-organization) in complexity sciences (Anderson, 1999, Eidelson, 1997).

interactions and relations between providers and patients, national and international policy makers and others. Informal interactions, on the other hand, indeed may play one of the key roles in the evolvement of complex social systems (Atkinson, 2002, Gilson, 2003, Gilson, 2006, McPake, Blaauw, and Sheaff, 2006, Schneider, Hlophe, and van Rensburg, 2008).

Another important aspect that was not addressed in my work is dynamics of biological systems. On reflection, the future studies on sustainability of communicable diseases programmes may apply the methodologies to encompass dynamic relations in the biological and human systems such as non-equilibrium statistics, network analysis, agent-based modelling or scenario modelling (Anderson, 1999, Paina and Peters, 2011).

Lastly, though I build upon a body of theoretical and empirical literature (Chapters 3 and 4) in the conceptualisation of sustainability, my literature reviews have limitations. Literature has been limited to those papers published in English and accessible through the University of London libraries. There is likelihood that I have missed developments in the study of sustainability in health systems that were published in other languages or in journals that were not accessible to me at the time.

10.4.2. Limitations of the realistic evaluation

In my research, I applied systematically a validated analytical and methodological tool (Atun and others, 2006) drawn on principles of realistic evaluation (Pawson and Tilley, 1997). Pawson and Tilley's evaluation model proposed the Context-Mechanisms-Outcome configuration to explore the phenomenon in question (e.g., why an intervention works, for whom and in what circumstances). The way in which my conceptualisation of sustainability builds on, and extends, the work of Atun and others (2004) is presented in Figure 10.1.

During the analysis, I had difficulties in separating influences on the delivery of interventions (and consequently outcomes) between the precursors of sustainability and the health system or the context. Additionally, the mechanisms themselves, for example interactions and flexibility, appeared to interact in a complex way. The application of realistic evaluation as the methodological approach did not allow me the assessment of what exact contribution each mechanism makes on delivery of intervention. I did not provide an answer on what precursors for sustainability are the most important in Kyrgyzstan's context. What my research provided are the explanations on the existence and actions of multiple and interrelated determinants of the potential for TB and HIV/AIDS programmes' sustainability on the national level (section

10.2.1). Among these many factors were the interactions of programmes with broader health system. However, application of realistic evaluation did not allow the insights on relative importance of each level of interactions (i.e. linkages, coordination or full integration) in ensuring sustainable outcomes.

The case study also had several limitations. The methodological tool of Atun and others (2004) was developed to be applied by a research team with various disciplinary backgrounds and expertise (e.g. sociology, economics, epidemiology), including triangulating different perspectives on the reality based on these different expertises. I relied on secondary sources to explore programme outputs and on surveillance data to elaborate on outcomes (i.e. occurrence of infection and disease). As has been presented, available approaches to surveillance of both TB and HIV/AIDS in Kyrgyzstan have substantial limitations; conducting studies on TB and HIV/AIDS incidence and prevalence is not feasible within a PhD project. Additionally, several potential respondents were unavailable for an interview despite numerous attempts to arrange a meeting. The important decision makers, who represent the Parliament's section that oversees social programmes, were not recruited into the study.

A study of sustainability of a communicable disease programme should ideally attempt a longitudinal empirical assessment of changes in disease transmission, occurrence of disease and population's risk behaviour, an assessment of the programme's characteristics (e.g. leadership, capacity, connectivity, flexibility and performance) at all the health system's levels (e.g. individual providers and institutions, specific interventions, programmes, and overall health system), and include multiple geographic sites at all administrative levels (e.g. national, provincial, district). To encompass all this within a PhD project's financial and time constraints was not feasible. Due to these constraints, the case study in Kyrgyzstan has been limited to the national level.

10.4.3. Conducting PhD research in central Asia – personal reflections

In addition to the methodological limitations outlined above, there have been administrative challenges related to implementation of this research in central Asia. Originally a case study in central Asia was planned to be conducted in Kazakhstan. As I mentioned earlier (Chapter 6), my position has been that of an independent researcher. I was not affiliated with, nor had financial support from, any national or international institution. Being a native of

Kazakhstan¹¹⁴, prior to the upgrading seminar I had established arrangements with the National TB institute in Almaty, Kazakhstan to conduct the PhD project. The original PhD research project was aiming to focus primarily on questions of financial sustainability of the TB programme, and included in-depth analysis of spending on TB control, which required access to accounting information. However, during the initial stages of the field trip the director of the Kazakhstan's institute withdrew an agreement to provide me with access to financial data despite prior commitments.

As a result, I had to refocus the project on questions of integration and sustainability. Attempts to establish support for re-focused research in Kazakhstan were not successful. A case study thus was conducted in Kyrgyzstan. In Kyrgyzstan, substantial efforts, including time, were put into building working relations with key actors, and obtaining access to documents and information (presented in Chapter 6, 'Field work'). Data was often difficult to obtain. For example, I did not manage to obtain data on costs of disease control interventions.

Despite considerable changes that have occurred in central Asia since the disintegration of the USSR, there is still a fundamental need for disseminating the value of public health, economic and health policy research in the region. Most research is conducted in the region under the umbrella of key international organisations such as WB, WHO, GFATM and so on. Thus, only relatively few domestic researchers are involved in health policy and public health research. There remains relatively limited empirical research in the area of TB, HIV/AIDS control or overall health system reform conducted in the region and published in peer-reviewed journals. International partnerships between research and educational institutions need to establish. Ultimately, there is a need for building local capacity for public health and health policy research.

10.5. RECOMMENDATIONS

This study revealed several inter-related factors that affect the potential for sustainability of TB and HIV/AIDS programmes in Kyrgyzstan. Among overarching challenges for sustainability of both programmes are overall weak capacity of the health system and the reliance on international assistance for implementing the efforts to control the epidemics. This thesis also highlighted the importance of health system's structural and functional arrangements in sustaining the programmes into the future. In Kyrgyzstan, the factors such as fragmentation of

¹¹⁴ I have emigrated from Kazakhstan, becoming a Canadian national.

governance and financing impede the development of effective interactions at the level of service delivery. In turn, fragmentation of service delivery remains the key impediment for efficiency, effectiveness and equity of disease control interventions. The prospects for sustainability of both programmes are constrained by institutional interests of domestic and international actors, who rarely consider the central question for sustainability that is efficiency of resources allocation and use. Weak disease surveillance and M&E systems emerged as one of the key barrier for development of effective disease control policies in the country and efficient planning of resources. Because of weaknesses of surveillance, this study could not provide the answer whether disease control efforts have resulted in the reduction of mortality and morbidity associated with TB and/or HIV/AIDS.

Sustainability of disease control programmes is difficult to predict. The government and international policy makers in Kyrgyzstan and other central Asian FSU countries can contribute to the establishment of the supporting environment for sustaining the programmes into the future. Several specific efforts may include:

- Changing the financial mechanisms for TB and HIV/AIDS programmes. For TB programme, there is a necessity to consider the reform of providers' payment mechanisms to remove incentives of unnecessary hospitalisations, to include considerations of performance and to strengthen financial interest (and therefore responsibility) of primary care providers in delivering TB care. For HIV programme, there is a need to evaluate cost-effectiveness of implemented interventions in order to improve efficiency of resources allocation and use.
- International policy makers may consider the balanced approach to financing of TB and HIV/AIDS control programmes in low income FSU countries such as Kyrgyzstan. One of the options could be aligning, at least partially, financial mechanisms with approaches such as SWAp.
- Establishing mechanisms for financing NGOs from domestic sources. NGOs may play an important role not only in service provision but also in advocacy for legislative change and protection of rights of the marginalised groups and people with communicable diseases such as TB and HIV/AIDS.
- Building knowledge base and capacity of institutions governing public health systems and individuals on all levels of health system. This includes, but not limited to, capabilities to

conduct epidemiological and economic research, strengthening disease surveillance, skills in planning and allocation of resources in accordance with epidemiological evidence. In this regard, the government and international actors may collaborate to strengthen relevant training programmes in the mainstream educational system.

- Strengthening communicable disease surveillance and M&E systems. Stakeholders need to consider the development of surveillance systems that encompass fundamental principles such as monitoring accuracy and quality of data, timeliness and efficiency of data collection.

CONCLUSION

A lack of common conceptual understanding and agreement on what constitutes integration has impeded empirical analysis of integration in health systems. Similarly, frequently used rhetoric of influence of integration on sustainability has never been justified through empirical studies. I have developed a novel conceptual framework for analysis of programme's sustainability in a health system, building on body theoretical and empirical work. The framework might serve as a basis for further evaluations in understanding complex interplay between programmes and broader health systems in the development of sustainable responses to communicable diseases. By applying this framework in the case study in Kyrgyzstan I have demonstrated the importance of effective interactions of communicable disease programmes with other health system components in increasing the potential for long term sustainability of these programmes. This study concludes that increased input of external funds channelled separately for each communicable disease, which functions in parallel to domestic financial mechanisms, does not ensure sustainability of programmes. This study highlights importance of robust communicable disease surveillance systems, and their use in informing public health actions beyond selected health problems.

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APPENDICES

Appendix 1. Ethics Clearance, study assessment tool and interview guides

A1.1. Ethics Clearance

1) Ethics committee of the London School of Hygiene and Tropical Medicine

**LONDON SCHOOL OF HYGIENE
& TROPICAL MEDICINE**

ETHICS COMMITTEE



APPROVAL FORM

Application number: 5254

Name of Principal Investigator Altnay Shigayeva

Department Public Health and Policy

Head of Department Professor Anne Mills

Title: Tuberculosis control reform in Central Asia: Health system challenges to sustainability

Amendments to this application have been approved by the Ethics Committee.

Chair of the Committee..... 

Date28 April 2009.....

Approval is dependent on local ethical approval having been received.

Any subsequent changes to the application must be re-submitted to the Committee.

2) **Ethics approval of the Committee of Bio-ethics at the Medical Academy of the Ministry of Health (in Russian).**

Центр развития здравоохранения

Комитет по биоэтике МЗ КР, рассмотрев пакет документов по проведению исследования: «Задачи систем здравоохранения Центрально-Азиатского региона по обеспечению устойчивого функционирования национальных программ борьбы с туберкулезом и ВИЧ/СПИД, на заседании 1 июня 2009г (протокол № 29) принял решение одобрить программу, инструмент исследования при выполнении следующего:

1. Предоставление решения этического комитета партнеров по исследовательскому проекту.
2. Предоставление данных на любом этапе исследования и возможности проведения мониторинга.
3. Получение разрешения Комитета по биоэтике Министерства здравоохранения Кыргызской Республики для оглашения и публикации в печати результатов исследования.

Председатель Комитет по биоэтике МЗ КР

доктор мед. наук



У.М. Тилекеева



3) Translation from Russian of the Ethics approval of the Committee of Bio-ethics at the Medical Academy of the Ministry of Health.

To The Centre for Health System Development

The Bioethics Committee of the Ministry of Health of the Kyrgyz Republic has reviewed the ethics application for the study 'Health systems challenges in Central Asia to ensure sustainability of national tuberculosis and HIV/AIDS control programmes' at the meeting on June 1, 2009 (approval protocol 29) and decided to approve the study, instruments under the following conditions:

1. Approval is dependent upon the approval from the counterpart agency;
2. Provide information about the study processes at any point of its implementation;
3. To obtain an approval from the Bioethics Committee of the Ministry of Health of the Kyrgyz Republic to disseminate the study results in mass media or peer-reviewed journals

Dr. Tilekeeva U.M.,
Chair, the Bioethics Committee
of the Ministry of Health of the Kyrgyz Republic,

the official stamp of the Ministry of Health Kyrgyz Medical Academy

the official stamp of personal signature of Dr. Tilekeeva

4) Supporting letter from PhD supervisor to the Kyrgyz Ethics Committee

London School of Hygiene & Tropical Medicine

(University of London)



Keppel Street, London WC1E 7HT

Tel: 020 7636 8636 Fax: 020 7436 5389 Web site://www.lshtm.ac.uk

Improving health worldwide

Dr. Tilekeeva U.M.,
Chair, the Bioethics Committee
of the Ministry of Health of the Kyrgyz Republic,
Kyrgyz State Medical Academy,
92 Ahunbaev Street,
Bishkek 720020, Kyrgyzstan

July 28, 2009

Dear Ulankul Muchtarovna,

The Communicable Diseases Policy Research Group at the Department of Public Health and Policy, London School of Hygiene and Tropical Medicine (LSHTM) would like to thank the Bioethics Committee of the Ministry of Health of the Kyrgyz Republic for reviewing the ethics application for the study 'Health systems challenges in Central Asia to ensure sustainability of national tuberculosis and HIV/AIDS control programmes'.

This letter is to confirm that the principal investigator of this study is Ms. Altynay Shigayeva, a PhD graduate teaching assistant at the Health Policy Unit, Department of Public Health and Policy, LSHTM. The LSHTM Ethics Committee has approved this study under application number 5254 on January 31, 2008; an amendment to conduct a case study in Kyrgyzstan was approved on April 28, 2009. The principal investigator for this study should provide you with copies of standard electronic LSHTM Ethics Committee approval forms.

In Kyrgyzstan, the study is being conducted in collaboration with the Health Policy Analysis Centre, Bishkek, Kyrgyzstan (formerly - Health Policy Analysis Unit at the Centre for Health System Development).

Please feel free to contact me or Ms. Altynay Shigayeva at altynay.shigayeva@lshtm.ac.uk if you have any questions or require additional information.

Sincerely,



Professor Richard Coker,
Head, the Communicable Diseases Policy Research Group,
Department of Public Health and Policy,
London School of Hygiene and Tropical Medicine,
Keppel Street, London, WC1E 7HT, UK
Richard.coker@lshtm.ac.uk
Tel: +44 (0) 20 7636 8636



for Richard Coker
by Nicola Lord

26-July



A1.2. Study participant information sheet and consent form

Study title: Health systems challenges in Central Asia to ensure sustainability of national tuberculosis and HIV/AIDS control programmes

Principal Investigator: Altynay Shigayeva, PhD candidate, Health Policy Unit,
London School of Hygiene and Tropical Medicine
e-mail: altynay.shigayeva@lshtm.ac.uk
phone: + (996) 312 54 39 96 ; (+996) 555 261 051 (in
Bishkek)
(+44) 7960514451 (in London)

In Kyrgyzstan, a case study is being conducted as collaborative effort between the Communicable Diseases Policy Research Group, Health policy unit, Department of Public and Policy, LSHTM and the Centre for Health system development , Togolok Moldo 1, Bishkek (the Centre for Health System Development 2nd floor)

This informed consent has two parts: 1) Study participant information sheet, and 2) Study participant consent form.

Part 1. Study Participant Information Sheet

You are being invited to participate in a research study aimed to explore how integration of tuberculosis (TB) and HIV/AIDS control programmes with broader health system can influence sustainability of these programmes.

Methods for this study involve review of relevant policy and programme documents and interviews with stakeholders and specialists from national, regional and international agencies, working in Kyrgyzstan in the areas of health system reform and response to TB and HIV/AIDS epidemics.

You are being invited for an interview because of your expertise and experience. Your insights are critical for in-depth understanding of health system responses to TB and HIV/AIDS epidemics in Kyrgyzstan.

The participation in this study is voluntary. Before you decide whether take or do not a part in an interview, please take your time to read (*or let me read you*) the following information about study rationale, interview process, how your confidentiality will be protected, and ask me if there is anything that is not clear or if you would like more information.

Interview procedures

A questionnaire includes open-ended questions about role of your organization/department in health system reform in Kyrgyzstan, particularly role in formulating and implementing HIV/AIDS and/or TB control policies and participation in decision-making regarding functioning and capacity development of both programmes. Questions are also concerned your views on HIV/AIDS and TB problems in the country, and opinion about overall health system responses to both problems – leadership, coordination mechanisms, and capacity (e.g. funds, services structures, human resources, etc) of local organizations/services for implementing effectively disease control interventions. A focus will be made on achievements and barriers in involving of general health services in delivery of TB and/or HIV/AIDS interventions, and development of closer interactions between TB and HIV/AIDS services. Because HIV/AIDS epidemic is driven by intravenous-drug use, I also would like to ask your opinion or experience about policy development related to harm reduction among IDUs.

An interview will last approximately from 45 minutes to one hour. You will be interviewed individually by the principal investigator; the session be conducted either in English or Russian. With your permission, the interview will be audio-taped; otherwise, it will be recorded in writing.

Potential risks to you are minimal. You may feel discomfort or become afraid to disclose/answer some questions. You have the rights to decline answering questions that make you feel uncomfortable or concerned; or to withdraw from the interview completely.

You will not be paid or receive any material incentives for taking part in this research.

Confidentiality

Principal investigator of this study is solely responsible for assuring and maintaining your anonymity (if requested) and confidentiality. Prior to interview, you will be asked whether you wish to remain anonymous. If you do, this request will be respected. In addition, if you would wish any parts of or all interview to be 'off the record' this request will also be respected.

Regardless whether anonymity is requested or not, all information collected during the course of the interview process will be treated as confidential. No personal identifiers such as your name, job title or position will appear on interview's transcripts, audio tapes or summaries; nor will these be listed in any future research reports or publications. Signed consent forms will not be linked to study materials. The results of interviews will be described and presented in non-attributable manner, thus, it will not be possible to identify you or any other study participant. Only if you consent, the information you provide will be quoted in a research report, thesis or consequent publications.

A copy of consent form will be provided to you for your records. The consent forms and hard copies of interview records will be kept in a locked cabinet until the end of this study (scheduled for September, 2010), afterwards these will be destroyed. Similarly, any electronic records of transcribed interviews or audio records will be password protected; and these materials will be destroyed at the end of study.

This study has been approved by the Ethics Committee of the London School of Hygiene and Tropical Medicine (application number 5254, approved April 28, 2009), and the Bioethics Committee of the Ministry of Health of the Kyrgyz Republic (protocol of the Committee 29, June 1, 2009) .

Part 2. Study Participant Consent Form

Study title: Health systems challenges in Central Asia to ensure sustainability of national tuberculosis and HIV/AIDS control programmes

Principal Investigator: Altynay Shigayeva
e-mail: altynay.shigayeva@lshtm.ac.uk
phone: (+44) 7960514451 (in London)
(+996) 555 261 051 (in Bishkek)

I have read the information sheet concerning this study [or information has been provided to me verbatim] and understand what will be required from me and what will happen to me if I take part in the study;

My questions concerning this study has been answered by the principal investigator; I understand that if any further questions arise I can contact the principal investigator;

I understand that I have the rights to refuse answering any question and to withdraw from the interview at any time without giving a reason;

I hereby fully and freely consent to participation in this study, I understand that I will receive a copy of this consent form.

Please tick the appropriate box:

- I agree my interview to be audio recorded (*if not checked, an interview will be recorded only in writing by the principal investigator*)
- I would like to remain anonymous
- The information I provide or my statements *can be quoted* in a PhD thesis or future publication(s); provided these will meet my requirement for anonymity
- The information I provide or my statements *can not be quoted*, either anonymously or otherwise
- The information I provide or my statements *can not be used* for analysis and have to be kept 'off record'.

Study participant _____
(*participant signature, or type 'anonymous'*)

Date _____

Principal Investigator _____
Ms. Altynay Shigayeva signature

Date _____

* 1 copy for participant, 1 copy for investigator

A1.3. Systematic rapid assessment toolkit

BROADER CONTEXT

1. What is the nature of political, economic, social, technological, regulatory, cultural contexts, how these have been changing during the last decade?

Using published data and reports identify:

- a. trends in key economic indicators
- b. trends in key medico demographic indicators (life expectancy, death rate, birth rate, population growth, major causes of mortality and morbidity, maternal and infant mortality)
- c. changes in political system, including current national policy on socio-economic development;
- d. major changes in technological context (access and development of new health care technologies, access to international health information/evidence based medicine,);
- e. major changes in socio-cultural context; (
- f. health legislation (e.g. health protection, right for health care,).

HEALTH SYSTEM

2. What health system reforms initiatives have been undertaken within last decade, and are currently underway?
 - a. major achievements and impediments

Governance

3. What organisations/institutions are involved in the strategic planning and policy formulation in health sector (including financial decisions) ? Include parallel health structures such as those provided within the prison service, military, police forces, etc.
 - a. How these organizations/institutions relate to each other? (e.g. formal linkages)
 - b. How and whether available evidence is used for priority settings and health policy development (e.g. whether economic evaluation is conducted, epidemiological/health services research, etc). How policy making is changed in the last decade?
 - c. Is there a clearly articulated accountability framework within the health system? How is this framework applied, monitored, and enforced?
 - i. What feedback mechanisms exist from users to providers, managers and policy makers?
 - ii. How are complaints about services dealt with?
4. What is the structure of the health system? Has health system's structural arrangements changed in the last decade?

Financing

5. What are sources of funds for health system? Using published data, identify trends , and contribution of each source
6. What are trends in health expenditure in the last ≥ 5 years (total, % of GDP, etc)
7. What are the pooling arrangements for the health funds?
 - a. How these have changed in the last decade (years)?
8. Do budgets correspond to actual expenditure?
9. What are mechanisms for funds allocation?
 - a. How providers are paid
 - b. Is there transferability of funds between health programmes? What are mechanisms?
 - c. How these changed in the last decade?

Service delivery

Pattern of provision

10. What is the number of hospital beds per capita for general health care and specialised health programmes? (If possible provide distribution in urban and rural areas)
11. What is the number of hospitals?
12. What is the number of primary health centres, the average size of population served and average distance a patient must travel to a primary health centre?
13. Do the hospitals and primary health centers have adequate infrastructure (road and transport links, communication, electricity, appropriate buildings)?
14. How above indicators changed in the last decade? Why and why not?
15. Is service quality assessed? If so, how?
16. In your view, are services provided equitably?

Human resources

17. Using published data, summarise the number of nurses, doctors, laboratory personnel (total and per capita) and their distribution (rural/urban)
 - a. Is there perceived shortage/excess of human resources?
18. Are health managers, economists, public health specialists employed in the health system? (perceived shortage/excess of these specialists)
19. Medical/Clinical training and accreditation system, how these changed in the last decade?
20. How are human resource requirements planned for?
21. What formal and informal incentives are available to staff?

Pattern of utilization

22. Using published routinely collected data; identify key trends in healthcare utilisation. (disaggregated by age, sex and region if possible)
 - Hospitalisation rates
 - Average length of stay for hospital admissions
 - Average number of visits made by a person to a primary health centre or an outpatient facility per year
 - How these indicators changed in the last decade?

Performance assessment

23. Are performance targets set at each level of the health system?
 - Are targets process or outcome based?
 - Who determines the targets?
 - How are they measured?
 - Are they being achieved?

Informational system

24. Is there a national or regional policy on Health Information Systems or is one planned?
 - What is the overall organisational structure of the national or regional HIS?
 - What are financial resources available to the HIS?
 - What information and communication technologies are available for the Ministry of Health HIS and what is their distribution?
 - What IT technologies and skills are available for health information systems?
 - What are the flows of information between the levels of the health system?

25. What information is collected routinely?
26. How collected information is used? (e.g. for strategic planning, decision making, economic evaluations, epidemiological surveillance)
27. What data quality assurance (QA) systems are in place at different levels of health [information] system?

TB CONTROL PROGRAMME

TB problem

1. How character of TB epidemic has been changing during the last decade?

Using published data and reports identify trends:

- a. TB case notifications [all new, pulmonary (proportion smear positive/culture confirmed), extra-pulmonary, children/adults, males/females, by age, by risk groups/unemployed/etc [as collected by the national programme]; civil/penitentiary sector), recurrent TB/chronic TB]
 - b. TB mortality (all, pulmonary, extra-pulmonary, children/adult, males/females, by age, by social groups-unemployed/etc [as collected by the national programme])
 - c. Pattern of ant tuberculosis drug resistance, including MDRTB/XDRTB in newly diagnosed/previously treated patients (identify whether drug susceptibility testing is performed routinely, and since when)
 - d. Pattern of registered TB/HIV cases
2. In your view or based on your knowledge of statistics which socio-demographic groups are more likely to contract TB?
 3. Are there any socio-demographic patterns that impact on TB control (e.g. migration, unemployment, high imprisonment rates, etc.)?
 4. What is the estimated national economic burden of TB?
 - a. How has this been estimated?
 - b. What is the burden relative to other diseases?

Governance

5. What changes in national TB control policy have occurred in the last decade, and what are currently underway?
6. Does a country have a national strategic plan for TB control?
 - a. According to national plan, what are the priorities?
 - b. How this plan changed in the recent years/decades?
7. Which institutions and organizations are involved in decisions making regarding strategic planning, development and implementation of TB- control policies?
 - a. Who are the international development agencies involved in the TB control programme? What is their role, particularly in TB policy development/strategic planning?
 - b. Are there well-established and recognised advocacy/lobbying organisations for TB patients? What is their role, particularly in TB policy development/strategic planning?
8. What are relationships among organizations/institutions which are involved in policy development/strategic planning?
 - a. Have structures and relationships changed in recent decade (recent years)? If yes, what were the reasons?

9. What laws and regulations cover TB control? (in areas of vaccination, screening, diagnosis, treatment, isolation, detention)?
 - a. What organizations/institutions involved in developing legislative and regulatory framework for Tb control?
 - b. How existing laws are applied in practice?
 - c. Have laws and regulations changed in recent years/decade? If yes, what were the reasons?
10. Which organisations are responsible for administration and performance management of provision of TB interventions?
 - a. What are performance management mechanisms?
 - b. Who are these organizations are accountable to?
 - c. Is performance of TB interventions available to public?
 - d. How are complaints about services dealt with?
11. Is performance information used for policy formulation and decisions making about TB programme's structures and functioning?
12. How needs assessment and priority setting for TB control programme is conducted?
 - a. By whom?
 - b. How TB organizations in civil and penitentiary sectors interact in needs assessment and setting priorities?
13. What formal [and informal] interactions exist with other health programmes?
 - a. In particular, what are interactions with general health system? Is there a need, as perceived by the stakeholders, for developing formal interactions (e.g. linking, collaborating or integrating) with other programmes so to improve programme's capacity and/or performance ?

Financing

14. What is total annual expenditure on TB control at present? How has the expenditure been changing over the last decade [or available trend]?
15. What proportion/percent of overall health system expenditure is going for TB control (how is this changing)
16. What are sources of funding for TB control?
 - a. Is there an identified budget line for the TB programme/specific TB interventions within the government health budget?
 - b. What proportion of funding is from external sources such as donor agencies?
 - c. What is trend in donor funding over the last decade [or available trend]?
 - d. Has funding from external donors impacted governmental allocation for TB control?
17. What are mechanism of funds generation? How different sources of funding pooled?
18. How budget for TB control activities is formed, who are involved and what are mechanisms?(what indicators are used?)
 - a. Does budget for TB control in civil and penitentiary sectors prepared jointly?
 - b. Have financial planning mechanisms been changing over the last decade/recent years? If yes, what changes and what are the reasons?

19. What are mechanisms of funds allocation?
 - a. Is there a resource allocation formula for allocating funds to TB control?
 - b. Are there relationships between priority settings and funds allocation?
 - c. How funds are allocated across programme's interventions (prevention, screening, diagnostics, treatment, rehabilitation,)?
 - d. How funds are distributed across levels of care [primary, secondary, tertiary]?
 - e. How funds are distributed geographically? [per capita allocation for TB]
 - f. How expenditure is distributed on items – salary, equipment, consumables, maintenance, and capital expenditure?
 - g. How are service providers within TB control programme paid?
 - i. Are there outcome-related performance incentives built in the service payment system (any informal incentives)
 - h. How mechanisms of resource allocation/providers payment have changed over the last decade? If changes occur, what changes and what are the reasons?

20. Do budgets for TB control activities correspond to actual expenditure? What is funding gap [estimate]?
 - a. If gap exists, what measures are/should be undertaken to close the gap (any alternative sources of finances, areas to safe funds?)
 - b. In your opinion, is funding for TB control activities adequate? If not, what activities are especially needed additional funding? What options exist to gain additional funding, or [improve efficiency]?

Service delivery

21. How delivery of TB control interventions is organised [what organizations, what interventions]?
[General Q about content of services Which organisations are involved in the administration, control/monitoring and provision of TB prevention, diagnosis, treatment and rehabilitation]?
 - a. In civil sector
 - b. In penitentiary sector
22. How service delivery infrastructure and relationships among providers changed in the recent decade (including structures and relationships between civil and penitentiary sectors)? What are the reasons for these changes?

Service delivery infrastructure/Patterns of provision

23. In your opinion, is there sufficient availability of inpatient facilities for treatment of TB patients and treatment of MDRTB patients?
 - a. How these are distributed geographically [urban/rural]?
 - b. How supply of inpatient facilities changed since introduction and implementation of DOTS strategy?

24. Are TB inpatient facilities equipped with infection control supplies and equipment (negative pressure ventilation, respiratory masks) ?

25. In your opinion, is there sufficient availability of outpatient TB ambulatories/offices to provide diagnostic/treatment services for TB patients?
 - a. How these are distributed geographically [urban/rural]?
 - b. How supply of outpatient facilities changed since introduction and implementation of DOTS strategy?

26. How many laboratories are involved in TB control?

- a. Microscopy, Culture, DST
 - b. How these are distributed geographically [urban/rural]?
 - c. What proportion of these laboratories are in general hospitals? [rather than in specialised TB organizations]?
 - d. In your opinion, is there sufficient supply/availability of microscopic and other lab. equipment
27. In your opinion, is there sufficient availability of fluorography equipment? .
28. Do hospitals, outpatient facilities, and laboratories have adequate infrastructure (roads, communication, electricity, water supplies, appropriate buildings)?

Drugs logistics and distribution

29. How first line and second line drugs are procured?
- a. Are they procured from local suppliers or overseas?
 - b. How supply chain is managed?
 - c. What quality control/assurance in place?
 - d. In your opinion, is there sufficient supply of the first line drugs? Second line drugs?
 - e. Are drugs available in open market? First line/second line? Is it possible to buy drugs without prescription?

Human resources

30. What is availability of human resources for TB control programme (Tb doctors per 100 000; nurses per 100 000)
- a. How these changed in the last decade, why and why not?
 - b. In your opinion is availability of health personnel (TB facilities doctors, TB nurses, community workers) sufficient at present? and in a long term perspective?
31. What is skill mix of personnel involved in diagnosis, treatment and rehabilitation of TB patients?
- a. Which specialist diagnose and treat TB patients?
 - b. Which health specialist oversee treatment? [TB nurses? General nurses? Community health workers?]
 - c. How these changed in the last decade, why and why not?
32. What TB clinical training available?
- a. What is accreditation system for TB clinicians?
 - b. What is on-going training and development opportunities are available? [international, national, local?]
 - c. Is personnel from civil and penitentiary TB services cross-trained (that is have the same training programmes on diagnostics and clinical management of TB patients)?
 - d. Information and access to international research journals? [including English language training?]
33. What are staff turnover rates?
34. How the salary payment level comparing to specialist working in other health services/programmes?
- a. What other incentives mechanisms exist (e.g. bonuses, overtime pay, food, housing)?
 - b. How would you rate overall motivation level of TB personnel?
35. Are public health managers, economists employed in TB programme?

- a. Are principles of public health/epidemiology/evidence based medicine included in regular training/staff development programmes?
36. How needs for human resources are assessed (what criteria are used?)
- a. what changed in recent years; what is done to cover shortage of human resources, if such exists

Provision of TB interventions

37. How is TB case finding organised?
- a. What organizations/providers
 - b. Is there compulsory x-ray screening practices? If yes, what population groups are screened?
 - c. What proportion of cases detected by active, and what proportion by passive case finding? [approximately]
38. What providers are involved in diagnosis of TB disease?
- a. What criteria are used for confirming diagnosis? [x-ray, microscopy, culture]?
 - b. What providers are involved in diagnosis of TB infection? (how is TB infection diagnosed?)
 - c. *How would you rate quality of diagnosis?*
39. What laboratory quality assurance is in place?
- a. External quality assurance?
 - b. Is there a nationally designed reference laboratory?
40. How TB prevention is organised? What primary and secondary prevention interventions are used?
- a. What organizations are involved in delivering BCG?
 - b. Is re-vaccination practiced?
 - c. What criteria are used for starting preventative treatment with isoniazid (or other regimen)?
41. What health organizations provide TB treatment services?
- a. How treatment is organised in civil sector?
 - What proportion of patients are treated in-patiently and what in ambulatory settings? For how long patients are treated in inpatient facilities? (what are criteria for inpatient treatment?)*
 - What are criteria for admission/discharge?*
 - What criteria are used for re-admitting patients?*
 - What methods are used to encourage adherence in patients (especially in ambulatory settings) – e.g. food packages, transport support.*
 - What are barriers for patients accessing ambulatory facilities for DOT?*
 - What are barriers/incentives for health care providers to provide DOT? (visit patients)*
 - What, in your opinion, should be done to improve compliance with TB treatment?*
 - b. How treatment is organised in penitentiary sector? (*prompts as above*)
 - c. How transition of patients between civil and penitentiary sectors is managed?
 - d. What treatment regimen is applied for drug sensitive TB?
 - What criteria are used to change treatment regimen?*
 - e. What treatment regimen is applied for drug-resistant TB (MDR-TB)? What proportion of MDR-TB patients receive treatment under DOTS-plus (what is DOTS-plus coverage?)
 - f. How many patients are undergoing surgical interventions? (on average, annually)
 - g. For how long patients remain registered in the national registry after the completion of treatment?
 - h. How treatment quality is assessed?

- i. What health facilities provide rehabilitation services? *What patients are eligible for rehabilitation services?*

Informational system

42. What information system is currently in use?
*What information and communication technologies are available within TB control programme;
How is information shared among TB service providers? [and organizations/institutions]
How is information shared between civil and penitentiary TB services? [on what level-rayon,
oblast, national?]
Is there parallel TB information system? (e.g. those collected by SES, CDC, other agencies?)*
43. What is the system of recording diagnosis, treatment progress and final outcomes?
What is the system of reporting? [to what organizations? By whom][assessment of data?]
What information [indicators] is collected routinely?
*Organizational structure (facilities, beds)
Human resources
Patient flow
Service provision (occupancy, ALOS, etc)
Financial data, and cost
Outcomes of treatment
What changes in information collected have occurred in the last decade?*
44. Do civil and penitentiary TB services have unified or separate reporting, monitoring and evaluation systems?
 - a. If yes, how information between sectors is shared?
45. How patients' personal information is kept? What is done to protect their confidentiality?
*What data quality assurance is in place?
How data is protected?*
46. How is collected information (what information is collected) being used?
*Who analyses the data? [what training exists for data analysis?]
Is the information gathered used to inform decisions at various levels of the TB programme?
Are decision-makers adequately trained in analysing data? (e.g. epidemiology)*

Programme's outputs/outcomes

47. What is the overall national DOTS coverage?
What is the overall national DOTS-plus coverage? [any geographic differences?]
48. What is the overall TB case detection rate? How was it changing over the last decade?
What proportion of overall pulmonary TB cases confirmed by any laboratory procedure (microscopy, culture, PCR)?
 - a. What is the proportion of pulmonary TB confirmed by positive smear microscopy?
 - b. What is the proportion of pulmonary TB confirmed by culture?
 - c. What proportion of pulmonary smear positive cases are culture positive?
 - d. What proportion of smear negative cases are culture positive?
49. What proportion of drug sensitive TB patients become drug resistant on therapy per year?
Are there any particular risk groups that develop drug resistant TB?

50. What cure, default, and death rates are among drug susceptible TB? How these were changing over the last decade?
- What criteria are used for declaring TB patient cured?
 - What is the proportion of those declared cured, have microscopic/culture confirmation,?
 - What is the proportion of those declared cured, completed treatment?
 - What patients are likely to default?
 - What patients are likely to die?
 - In your opinion, how would you rate quality of TB treatment? What are areas of concern and suggestions for improvement?
51. What cure, default, and death rates are among MDRTB patients? How are these changing [is surveillance/monitoring in place?]
- What criteria are used for declaring MDRTB patient cured?
 - What is the proportion of those declared cured, have microscopic/culture confirmation,?
 - What is the proportion of those declared cured, completed treatment?
 - What patients are likely to default?
 - What patients are likely to die?
 - In your opinion, how would you rate quality of MDRTB treatment? What are areas of concern and suggestions for improvement?
52. What is average length of stay in the hospital?
 What is average length of stay in sanatoria?
 What are bed occupancy rates?
 How these changed over the last decade? Why and why not?
53. What is estimated cost of treatment of one drug susceptible TB?
 What is estimated cost of treatment of one MDRTB patients?
 Are economic evaluations of TB control activities being conducted? By whom? How information is being used?
 What in your opinion are the ways to improve efficiency of TB services? TB treatment? [or lower cost?]

HIV/AIDS CONTROL PROGRAMME

HIV/AIDS problem

- How character of HIV/AIDS epidemic has been changing during the last decade?
Using published data and reports identify trends:
 - Number of registered HIV cases per year (*all new, children/adults, males/females, by age, by social groups- unemployed/etc [as collected by the national programme]; by risk groups – IDUs, sex workers, civil/penitentiary sector, by risk groups – IDUs, sex workers.*);
 - Estimated HIV prevalence (estimated by whom; prevalence in risk groups, etc)*
 - Number of registered AIDS cases per year (*all new, children/adults, males/females, by age, by social groups- unemployed/etc [as collected by the national programme]; civil/penitentiary sector*);
 - Number of AIDS-related deaths per year (all new, children/adults, males/females, by age, by social groups- unemployed/etc [as collected by the national programme]; civil/penitentiary sector)*;
 - Pattern of registered TB/HIV cases
- What is pattern of STDs case notification rates (trends in syphilis, gonorrhoea, chlamydia, etc)?

3. What is magnitude of IDUs epidemic (what indicators are used?)
4. In your view or based on your knowledge of statistics which socio-demographic and risk groups are more likely to acquire HIV? (e.g prisoners, IDUs, sex workers, unemployed, MSM, etc)
5. Are there any political, economic, socio-demographic factors that impact on HIV/AIDS epidemic (e.g. migration, unemployment, lack of political attentions, economic transition, patterns of sexual behavior.)?
6. What is the estimated national economic burden of HIV/AIDS?
 - a. *How has this been estimated?*
 - b. *What is the burden relative to other diseases?*

Governance

7. What changes in national HIV/AIDS control policy have occurred in the last decade, and what are currently underway?
8. Does a country have a national strategic plan for HIV/AIDS control?
 - a. According to national plan, what are the priorities?
 - b. How this plan changed in the recent years/decades?
9. Is there a country's coordinating committee that oversee multsectorial response to HIV/AIDS epidemic?
 - a. What are functions of this structure?
 - b. What organizations/representatives are involved in functioning of this committee?
10. Which governmental institutions and organizations are involved in decisions making regarding strategic planning, development and implementation of HIV/AIDS- control policies?
 - a. Who are the international development agencies involved in the HIV/AIDS control programme? What is their role, particularly in HIV/AIDS policy development/strategic planning?
 - b. Who are civil society/non-governmental organizations involved in HIV/AIDS control or in advocacy/lobbying interests of HIV/AIDS patients? What is their role, particularly in HIV/AIDS policy development/strategic planning?
11. What are relationships among organizations/institutions which are involved in policy development/strategic planning?
 - a. Have structures and relationships changed in recent decade (recent years)? If yes, what were the reasons?
12. What laws and regulations cover HIV/AIDS control? (in areas of prevention, screening, diagnosis, treatment, social support/stigma)?
 - a. What organizations/institutions involved in developing legislative and regulatory framework for HIV/AIDS control?
 - b. How existing laws are applied in practice?
 - c. Have laws and regulations changed in recent years/decade? If yes, what were the reasons?
13. Which organisations are responsible for administration and performance management of provision of HIV/AIDS interventions?
 - a. What are performance management mechanisms?
 - b. Who are these organizations are accountable to?

- c. Is performance of HIV/AIDS interventions available to public?
 - d. How are complaints about services dealt with?
14. Is performance information used for policy formulation and decisions making about HIV/AIDS programme's structures and functioning?
15. How needs assessment and priority setting for HIV/AIDS control programme is conducted?
- a. By whom?
 - b. How HIV/AIDS organizations in civil and penitentiary sectors interact in needs assessment and setting priorities?
 - c. How HIV/AIDS governmental and non-governmental/civil society organizations interact in needs assessment and setting priorities
16. What formal [and informal] interactions exist with other health programmes?
- a. In particular, what are interactions with general health system? Is there a need, as perceived by the stakeholders, for developing formal interactions (e.g. linking, collaborating or integrating) with other programmes so to improve programme's capacity and/or performance ?
17. How functioning of TB control programme is coordinated? What are regulatory mechanisms?

Financing

18. What is total annual expenditure on HIV/AIDS control at present? How has the expenditure been changing over the last decade [or available trend]?
19. What proportion/percent of overall health system expenditure is going for HIV/AIDS control (how is this changing)
20. What are sources of funding for HIV/AIDS control?
- a. Is there an identified budget line for the programme/specific HIV/AIDS interventions within the government health budget?
 - b. What proportion of funding is from external sources such as donor agencies?
 - c. What is trend in donor funding over the last decade [or available trend]?
 - d. Has funding from external donors impacted governmental allocation for HIV/AIDS control?
21. What are mechanism of funds generation?
- a. How different sources of funding are directed to the programme pooled?
22. How budget for HIV/AIDS control activities is formed, who are involved and what are mechanisms?(what indicators are used? What organizations are involved? – e.g. do civil society/non-governmental groups involved in budget planning processes?)
- a. Have financial planning mechanisms been changing over the last decade/recent years? If yes, what changes and what are the reasons?
23. What are mechanisms of funds allocation?
- a. How funds are allocated across programme's interventions (prevention, treatment, palliative care, social support] and activities (human resources development, etc)?
 - i. What proportion of national (regular) HIV/AIDS budget is allocated to activities implemented by civil society/non-governmental organizations? (UNGASS indicator)
 - b. How funds are distributed across levels of care [primary, secondary, tertiary]?
 - c. How funds are distributed geographically? [per capita allocation for HIV/AIDS]

- d. How expenditure is distributed on items – salary, equipment, consumables, maintenance, and capital expenditure?
 - e. How are service providers within HIV/AIDS control programme paid?
 - i. Are there outcome-related performance incentives built in the service payment system (any informal incentives?)
 - f. How mechanisms of resource allocation/providers payment have changed over the last decade? If yes, what changes and what are the reasons?
24. Do budgets for HIV/AIDS control activities correspond to actual expenditure? What is funding gap [estimate]?
- a. If gap exists, what measures are/should be undertaken to close the gap (any alternative sources of finances, areas to safe funds?)
 - b. In your opinion, is funding for HIV/AIDS control activities adequate? If not, what are as are especially needed additional funding? What are options exist to gain additional funding, or [improve efficiency]?

Service delivery

25. How delivery of HIV/AIDS control interventions is organised [*what organizations, what interventions*]?
- [General Q - about content of services , which organisations are involved in the administration, control/monitoring and provision of HIV/AIDS prevention, diagnosis, treatment and palliative care and support]?*
26. How structures, relationships among organizations providing HIV/AIDS interventions changed in the recent decade/years? Why and why not?

Service delivery infrastructure/Patterns of provision

27. What is availability of HIV prevention services?
- a. How many VCT testing sites?
 - i. How are VCT sites (or per 100 000 population) distributed geographically? (urban/rural, by oblasts)
 - ii. In your opinion, is supply/availability of VCT sufficient? How supply of VCT sites is changing during the recent decade/years)?
 - b. How many sites provide Prevention of Mother to Child transmission interventions?
 - c. STD management , including condoms provision (need to include whether STD services have HIV prevention activities)
 - d. Sites/organizations conducting information and education campaigns,
 - e. How many sites/organizations provide harm reduction interventions among IDUs;
 - f. [universal infection control in hospitals/blood safety/blood banks]
28. How many sites provide ART treatment, treatment of opportunistic infections and palliative care?
- a. How these sites are distributed geographically?
 - b. In your opinion, is supply/availability of ART treatment sites sufficient? How supply of ART sites is changing during the recent decade/years)?
29. How many laboratories are involved in HIV/AIDS control?
- a. How many laboratories conduct diagnostic testing (ELISA, Western blot, ?rapid tests)? How many conduct CD count? Viral load testing? Screening of blood and blood products?
 - b. How these are distributed geographically [urban/rural]?
 - c. What proportion of these laboratories are in general hospitals/or other health services? [rather than in specialised HIV/AIDS centres]

- d. In your opinion, is there sufficient supply/availability of laboratories that provide diagnostic testing for HIV and monitoring of treatment progress (CD count, viral load)? Are these laboratories well-equipped?
30. Do HIV/AIDS centres, facilities providing HIV/AIDS interventions, and laboratories have adequate infrastructure (roads, communication, electricity, water supplies, appropriate buildings)?

Drugs and medical technologies logistics and distribution

31. How ARV drugs, and other medication are procured?
- a. Are they procured from local suppliers or overseas?
 - b. How supply chain is managed?
 - c. What quality control/assurance in place?
 - d. In your opinion, is there sufficient supply of ARV drugs?
 - i. Drugs for treating opportunistic infections (e.g, isoniazid for TB)?
32. How essential preventative commodities (condoms, drugs for treating STD, sterile needles) are procured and distributed?

Human resources

33. What is availability of human resources for HIV/AIDS control programme (HIV/AIDS specialists per 100 000; nurses per 100 000)
- a. How these changed in the last decade, why and why not?
 - b. In your opinion is availability of health personnel (HIV/AIDS doctors, community workers) sufficient at present? and in a long term perspective?
34. What is skill mix of personnel involved in diagnosis and treatment of HIV/AIDS patients (including diagnosis and treatment of OI, and palliative care for AIDS patients)?
- a. What specialist diagnose and treat HIV/AIDS patients?
 - b. What health specialists oversee ART treatment? [infectious diseases specialist? General nurses? Community health workers?]
 - c. How these changed in the last decade, why and why not?
35. What HIV/AIDS clinical training available?
- a. What is accreditation system for HIV/AIDS clinicians?
 - b. What is on-going training and development opportunities are available? [international, national, local?]
 - c. Information and access to international research journals? [including English language training?]
 - d. What are staff turnover rates (at governmental services/non-governmental organizations)?
 - e. How the salary payment level comparing to specialist working in other health services/programmes? What incentives mechanisms exist (e.g. bonuses, overtime pay, food, housing)?
36. What specialist provides preventative interventions?
- a. VCT counselling
 - b. PMTC
 - c. Information, education, communication,
 - d. STD management (?this is STD services)
37. Are public health managers, economists employed in HIV/AIDS programme?

- a. Are principles of public health/epidemiology/evidence based medicine included in regular training/staff development programmes?
38. How needs for human resources are assessed (what criteria are used?)
- a. what changed in recent years; what is done to cover shortage of human resources, if such exists

Provision of HIV/AIDS interventions

39. How HIV/AIDS prevention is organised?
- a. What interventions are provided by governmental HIV/AIDS services?
 - b. What interventions are provided by community groups and non-governmental organizations?
 - c. Is there substitution treatment for IDU in prisons?
40. How is HIV case finding organised?
- a. What organizations/providers (e.g. at TB services, STD clinics, prisons, so on?)
 - b. Is there compulsory screening practices? If yes, what population groups are screened?
41. How HIV testing is organised?
- a. Is pre-testing counselling conducted (How? By whom? Any differences among sites, other than specifically designed VCT?)
 - b. How people are informed about the results? How confidentiality is protected?
 - c. Post testing counselling (How? By whom? Is psychological support provided?)
42. How diagnosis of HIV infection is confirmed?
- a. (ELISA, Western blot, rapid tests)?
43. What laboratory quality assurance is in place?
- a. External quality assurance?
 - b. Is there a nationally designed reference laboratory?
44. How HIV/AIDS treatment is organised?
- a. How treatment is organised in civil sector?
 - i. Are there criteria for prioritisation of patients for ARV treatment?
 - ii. What criteria are used for monitoring progress of a disease and response to first line treatment? (CD count, toxicity, viral load)
 - 1. What supporting therapy is applied (e.g. nutritional supplements, etc)
 - 2. What therapy is used if patient does not respond to first line regimens?
 - iii. How patients care is managed (by whom? By a HIV/AIDS specialist or at general health care facilities?
 - 1. Where patients are treated for OI? E.g. TB?
 - 2. Where AIDS patients receive palliative care?
45. How treatment is organised in penitentiary sector?
46. What physiological/social support available for PLWHIV?
47. What are barriers for persons accessing HIV testing and for HIV patients accessing ambulatory (other) facilities for HIV/AIDS treatment?
- i. What are barriers/incentives for health care providers to provide ARV treatment?

- ii. What methods are used to encourage adherence in patients to ARV (or TB treatment, etc)
- iii. What, in your opinion, should be done to improve compliance with ARV treatment?

Informational system

48. What information system for HIV/AIDS programme is currently in use?
- a. *What information and communication technologies are available within HIV/AIDS control programme;*
 - b. *How is information shared among HIV/AIDS service providers? [and organizations/institutions]*
 - c. *How is information shared between civil and penitentiary HIV/AIDS services? [on what level-rayon, oblast, national?]*
 - d. *Is there parallel HIV/AIDS information system? (e.g. those collected by SES, CDC, other agencies?)*
49. What information [indicators] is collected routinely?
- a. *Organizational structure (facilities, beds)*
 - b. *Human resources*
 - c. *Patient flow*
 - d. *Service provision*
 - e. *Financial data, and cost*
 - f. *Outcomes of treatment*
 - g. *What changes in information collected have occurred in the last decade?*
50. How patients' personal information is kept? What is done to protect their confidentiality?
- a. *What data quality assurance is in place?*
 - b. *How data is protected?*
51. How is collected information being used?
- a. *Who analyses the data? [what training exists for data analysis?]*
 - b. *Is the information gathered used to inform decisions at various levels of the TB programme?*
 - c. *Are decision-makers adequately trained in analysing data? (e.g. epidemiology)*

Programme's outputs/outcomes

52. *Using available reports (UNAIDS, GFTAM grant reports, national programme reports) identify:*
- a. Percentage of :
 - IDUs reached by prevention interventions (what interventions exactly):
 - Percentage of IDU on OST (numerator: number of IDU patients receiving OST; denominator: number of opiate IDU)
 - [Availability of OST for IDUs in prisons]
 - CSW reached by prevention interventions (what interventions exactly)
 - Prisoners reached (what interventions exactly)
 - MSM reached
 - Percentage of persons in risk groups (IDUs, CSW, prisoners, MSM) tested for HIV in the last 12 months
 - Percentage of donated blood units screened for HIV in quality assurance manner
 - b. How these indicators are changing in the recent years? Why?
 - c. How these indicators have been collected/estimates made? (any survey? By whom?)
 - d. What are main obstacles and achievements in improving coverage of HIV/AIDS interventions? What is done to improve? Give examples.

53. Using available reports (UNAIDS, GFTAM grant reports, national programme reports) identify:

- a. Percentage of PLWHIV receiving ART therapy
 - i. Percentage of HIV-positive mothers receiving ART
 - ii. Percentage of HIV-positive IDUs receiving ART; percentage on ART and Opioid Substitution Therapy
- b. Number (proportion) of patients on ART receiving TB preventative treatment (isoniazid)
- c. Percentage of HIV-positive patients known to be on treatment 12 months after initiation of therapy
- d. How treatment outcomes are monitored?

Any available indicators? E.g.:

- i. Percentage of HIV-positive patients alive 12, 24 (more) months after initiation of treatment
 - ii. Number of HIV-positive patients on treatment who changed regimen; interrupted treatment
 1. What patients are likely to interrupt treatment?
- e. How these indicators are changing in the recent years? Why?
 - f. How these indicators have been collected/estimates made? (any survey? By whom?)
 - g. What are main obstacles and achievements in improving access to and quality of ART treatment? What is being done to improve? Give examples.

54. Using available reports (UNAIDS, GFTAM grant reports, national programme reports) identify:

- a. Number of HIV-positive children infected through mother-to-child transmission (in a period)
- b. Number of HIV-cases who acquired HIV in health care setting (nosocomial transmission and blood transfusions)

55. What is estimated cost of ART treatment of a HIV positive patient (e.g. with advanced disease)? Are economic evaluations of HIV/AIDS control activities being conducted? By whom? How information is being used?
What in your opinion are the ways to improve efficiency of HIV/AIDS services? HIV/AIDS treatment?

INTERACTIONS BETWEEN TB AND HIV/AIDS PROGRAMMES

TB/HIV problem

1. Number of PLWHIV diagnosed as co-infected with TB (?annually)
2. Number of TB patients diagnosed as HIV-positive (?annually)
3. Is there an overlap of population groups who are at risk for both TB and HIV?
 - a. Age, gender
 - b. IDUs
 - c. Unemployed
 - d. Prisoners
4. How TB/HIV problem is perceived by drivers of both programmes? (this will be assessed in interviews with drivers)
 - a. Is there a consensus that a problem of [potential/existing] TB and HIV co-epidemics should be addressed jointly?

- i. If yes, then how?
- ii. If not, then what are the reasons?

Governance

5. Is there a policy that addresses TB/HIV problem? (e.g. national plan for collaborative TB/HIV activities)
 - a. If yes, what is content of TB/HIV policy (e.g. what are collaborative activities?)
 - b. If not, how TB and HIV/AIDS control policies address TB/HIV problem separately? And what is content of these policies.
 - i. What programme/entity is accountable to TB/HIV patients?
 - c. For both a) and b) –
 - i. Is policy in place to screen HIV-positive patients for TB?
 - ii. Is policy in place for TB prophylactic treatment of HIV-positive patients?
 - iii. Is policy in place for VCT of TB patients?
6. Do TB and HIV/AIDS programmes have at present common strategic and/or operational goals?
7. Is there a structure that governs collaborative activities conducted by TB and HIV/AIDS programmes?

(e.g. Coordinating committee; an unit at MOH, or a staff member responsible for collaborative activities)

 - a. If yes, what are functions of this structure?
8. What are regulatory mechanisms that govern collaborative activities?
 - a. For funding, how allocation of funds for joint activities is regulated;
 - b. For service delivery, are there guidelines for referral procedures of patients between programmes or procedures for managing patients who present with both, TB and HIV?

Financing

9. Are funds for both programmes pooled, if yes on what level –national, regional, local?
10. Do both programmes depend on the same external agencies for resources (e.g funds, or technical expertise)?
 - a. If yes, are programmes financed separately (that is earmarked?)
 - b. Do donors support collaborative TB/HIV activities? If yes, how both programmes are financed for these activities?
11. Do TB and HIV/AIDS programmes perform budget planning (funds allocation) jointly?
 - a. If yes,
 - i. Is there an administrative structure where budget planning for both programmes is performed?
 - ii. Is joint planning includes functioning of programmes overall, or restricted to only collaborative activities?
 - iii. how decisions about budget for both programmes are made, by whom? (e.g. who participate)
 - iv. If collaborative activities exist, how decisions about budget for these activities are made?

Service delivery

12. Do clinical personnel of TB programme trained on VCT for HIV?
 - a. Where TB patients undergo VCT for HIV?
 - b. If TB programme carry responsibility of HIV testing, what laboratories are used?

- c. How TB programme is informed about HIV status of a TB patient? How HIV/AIDS programme is informed about HIV status of a TB patient?
- 13. Do clinical personnel of HIV programme trained on TB diagnosis?
 - a. Where HIV-positive patients undergo TB screening/diagnosis?
 - b. If HIV/AIDS programme carry responsibility of TB screening/diagnosis, what laboratories (microscopy, culture, DTS) are used?
 - c. How TB programme is informed about TB status of a HIV patient? How HIV/AIDS programme is informed about HIV status of a TB patient?
- 14. Is there a joint training for clinical personnel of TB and HIV programmes on clinical management of TB/HIV patients?
 - a. Is management of TB/HIV a part of governmental medical training and development programme?
- 15. Where TB/HIV patients undergo treatment for TB and HIV?
 - a. Does staff of HIV clinic also administer, in addition to ART, TB therapy?
 - b. Does staff of TB clinic also administer, in addition to TB chemotherapy, ART? [limited to duration of TB treatment]
 - c. If separately for each disease, what are referral procedures?
 - i. Is there a clinical care coordinator for patients with TB/HIV, who coordinates transition of patients between programmes and facilitates informational exchange between two programmes (e.g. clinical progress, on-going test results, so on)
 - ii. If not i), how information about clinical progress is shared between programmes?
- 16. Do TB and HIV/AIDS programmes share drugs procurement and distributions system (e.g. isoniazid,)?

Informational system

- 17. Do programme have a common informational system?
- 18. If not in 17,
 - a. What programme is responsible for monitoring and evaluating joint activities and/or TB/HIV problem?
 - i. TB programme
 - ii. HIV/AIDS programme
 - iii. Responsibilities shared
 - b. How information is shared between TB and HIV/AIDS programmes?
 - i. Regular reports
 - ii. Upon request
- 19. If yes in 17,
 - a. How information used for decisions about joint activities? Policy making?

A1.4. Interview guides

INTERVIEW GUIDE, TB PROGRAMME ACTORS

- Bullet points are prompts

- 1. Role and responsibilities in TB control efforts**
 - What are your organization's current (and long term) objectives and priorities in controlling TB?
- 2. Role in formulating and implementing TB control policies**
 - What are other organizations/groups/individuals play key role in TB policy making processes?
 - Are there other organizations/groups/individuals which play most important [leading] role?
 - How you/your organization interact and coordinate your activities with these organizations/groups?
- 3. Role in making decisions regarding resource capacity and functioning of TB control programme**
 - What are other organizations/groups/individuals play key role in decisions about resources
- 4. Resource capacity**
 - Are there alternative source of funds/or other ways of mobilizing additional finances
 - What structural or functional changes in health system are possible/feasible
- 5. Opinion about current TB epidemiological situation [in the country]**
 - changes in TB epidemiology observed during the last decade
 - features in TB epidemic are most serious? (e.g. risk groups, etc)
 - what aspects/issues of TB epidemic require a priority attention?
- 6. Opinion about HIV/AIDS epidemic**
- 7. How does the government support national TB control programme**
 - Please provide examples
- 8. Changes in TB control policies that have occurred during the last decade/recent years**
 - Changes in regulatory and legislative framework governing TB control?
 - How implementation of these policy changes contribute to achievement of programme goals?
 -
- 9. Main achievements and challenges with implementing the national TB control efforts**
- 10. Implementation of WHO-recommended strategy for TB control.**
 - Main achievements and difficulties with implementing DOTS and DOTS-plus
 - How and whether WHO strategy has been adapted to Kyrgyzstan health system
 - Any changes in financing, service delivery, M&E
 - What expectations did you have from implementing DOTS/DOTS-plus (or generally, WHO recommendations)? Where these expectations met?
 - In your opinion, what benefits has WHO strategy provided to health system overall, and your organization in particular?
- 11. Interactions between TB control and HIV/AIDS programmes in Kyrgyzstan.**
 - Is closer interaction/collaboration necessary? If yes or no, then why?
 - Do you participate in developing a policy on integrating these two programmes?
 - If yes, how do you see an optimal way of integrating these programmes?
 - What benefits would integration of TB and HIV/AIDS programmes bring to health system overall, and TB control programme in particular? E.g:
 - What are potential barriers in implementing integration of TB and HIV/AIDS programmes?
- 12. Interactions between TB services and primary care providers**
 - Main challenges and achievements with developing closer interactions between TB providers and general health services?
 - What benefits would involvement of general health services in TB control would provide to health system in overall, and TB control programme in particular?
 - What are potential barriers in implementing integration of TB control and general health services?

INTERVIEW GUIDE HIV/AIDS PROGRAMME ACTORS

- Bullet points are the prompts

- 1. Role and responsibilities in HIV/AIDS prevention, treatment, care**
 - b. organization's current (and long term) objectives and priorities in controlling HIV/AIDS
- 2. Role in formulating and implementing HIV/AIDS control policies**
 - What are other organizations/groups/individuals play key role in HIV/AIDS policy making processes?
 - Are there other organizations/groups/individuals which play most important [leading] role?
 - How you/your organization interact and coordinate your activities with these organizations/groups?
- 3. Role in making decisions regarding resources**
 - What are other organizations/groups/individuals play key role in decisions about resources (ie. Funds, human resources, medicines)
- 4. Resource capacity**
 - Are there alternative source of funds/or other ways of mobilizing additional finances?
 - What structural or functional changes are possible/feasible?
- 5. Opinion about current HIV/AIDS epidemiological situation [in the country]**
 - changes in HIV/AIDS epidemiology observed during the last decade
 - what trends in HIV/AIDS epidemics are most serious? Why?
- 6. How does the government support national HIV/AIDS control efforts**
 - Please provide examples
 - What is governmental policy on broader involvement of civil society and non-governmental organizations in HIV/AIDS control?
- 7. Opinion, or experience, in developing (or implementing) multisectorial response to HIV/AIDS**
 - Main challenges and achievements with developing closer interactions between governmental HIV/AIDS services and other health programmes? With civil society? With educational and social protection services? With law enforcement and justice?
- 8. Changes in HIV/AIDS control policies that have occurred during the last decade/recent years**
 - Changes in regulatory and legislative framework governing HIV/AIDS control?
 - In your opinion, how implementation of these policy changes contribute to achievement of programme goals?
- 9. Main achievements and challenges with implementing the national HIV/AIDS control efforts**
 - What challenges/issues require a priory attention?
 - aspects of HIV/AIDS programme capacity (funds, human resources, infrastructure, supplies) require improvements or changes so to achieve HIV/AIDS programme goals?
- 10. IDU treatment and support, implementation of harm reduction interventions**
 - Main achievements and difficulties with developing policy/implementing opioid substitution therapy and NSP
 - How financing, service delivery for drug dependence have changed in the last decade
 - What changes are necessary to improve effectiveness of harm reduction interventions?
- 13. Interactions between TB control and HIV/AIDS programmes**
 - Is closer interaction/collaboration necessary? If yes or no, then why?
 - Do you participate in developing a policy on integrating these two programmes?
 - If yes, how do you see an optimal way of integrating these programmes?
 - What benefits would integration of TB and HIV/AIDS programmes
 - What are potential barriers in implementing integration of TB and HIV/AIDS programmes?
- 14. Interactions between HIV/AIDS sevices and primary care providers**
 - Main challenges and achievements with developing closer interactions between HIV services and general health services?
 - What benefits would involvement of general health services in HIV prevention and control
 - What are potential barriers

A1.5. List of organizations involved in the study and interview timeline

LIST ORGANIZATIONS S INVOLVED IN THE STUDY

WB
DFID
WHO/ Kyrgyz Office
UNODC
UNDP
KfW Chief Health Sector
GFATM,
International Society Red Cross&Crescent
Medicines de Frontiers
USAID
International NGO AFEW
Central Asia Harm Reduction Project
Central Asia AIDS Control Project (WB)

Ministry of Health
Ministry of Justice, Health services
National TB Institute
Chui Oblast TB centre
Rayon TB coordinator
National Narcology centre
National AIDS Centre
Bishkek city AIDS centre
HIV-service NGOs
National Association of Family Medicine
Bishkek city Family Medicine Centres
Chui Oblast Family Medicine Centres
Red crescent society of Kyrgyzstan
Sanitary epidemiological services

INTERVIEW DATES

Respondent study code	Date
Respondent HS01	Oct-29, 2009
Respondent HS02	Nov-25, 2009
Respondent HS03	Oct-22, 2009
Respondent HS04	Sep-17, 2009
Respondent PHC01	Sep-23, 2009
Respondent PHC02	Nov-26, 2009
Respondent PHC03	Sep-24, 2009
Respondent TB01	Sep-01, 2009
Respondent TB02	Spet 03, 2009
Respondent TB03	Sep-08, 2009
Respondent TB04	Sep-08, 2009
Respondent TB05	Oct-14, 2009
Respondent TB06	Oct-15, 2009
Respondent TB07	Oct-15, 2009
Respondent TB08	Sep-21, 2009
Respondent TB11	Nov-25, 2009
Respondent TB12	Oct-08, 2009
Respondent TB13	Oct-09, 2009
Respondent TB14	Oct-09, 2009
Respondent HIV01	Oct-20, 2009
Respondent HIV02	Oct-27, 2009
Respondent HIV03	Nov-02, 2009
Respondent HIV04	Nov-03, 2009
Respondent HIV05	Nov-05, 2009
Respondent HIV06	Nov-05, 2009
Respondent HIV07	Nov-18, 2009
Respondent HIV08	Nov-19, 2009
Respondent HIV09	Nov-20, 2009
Respondent HIV10	Nov-20, 2009
Respondent HIV11	Nov-17, 2009
Respondent HIV12	Sep-09, 2009
Respondent HIV13	Sep-10, 2009
Respondent HIV14	Sep-11, 2009
Respondent HIV15	Dec-03, 2009
Respondent OPHC	Sep-16, 2009
Respondent OHIV	Oct-16, 2009
Respondent OHIV	Nov-03, 2009
Respondent OHIV	Oct-29, 2009
Respondent OTB	Sep-10, 2009
Respondent OHS	Dec-02, 2009
Respondent OHS	Nov-06, 2009

Appendix 2. Systematic literature review on sustainability in health systems

A2.1. Literature search approach

Search strategy used for electronic databases

	Medline	Embase
Search terms	1. resilience\$.mp. 2. viability\$.mp. 3. institutionalization\$.mp. 4. routinization\$.mp. 5. durability&.mp. 6. stability\$.mp. 7. persistence\$.mp. 8. continuation\$.mp. 9. sustainab\$.mp 10. 6 or 3 or 7 or 9 or 2 or 8 or 1 or 4 or 5 11. exp health services/og 12. exp delivery of health care/og 13. (health adj system).mp. 14. exp Health Care Reform/ 15. (health adj program\$).mp. 16. (health adj intervention).mp. 17. 11 or 16 or 13 or 12 or 15 or 14 18. 10 and 17	1. resilience\$.mp. 2. viability\$.mp. 3. institutionalization\$.mp. 4. routinization\$.mp. 5. durability&.mp. 6. stability\$.mp. 7. persistence\$.mp. 8. continuation\$.mp. 9. sustainab\$.mp. 10. 6 or 3 or 7 or 9 or 2 or 8 or 1 or 4 or 5 11. health care delivery/ 12. health program/ 13. health service/ 14. health care system/ 15. (health adj intervention).mp. 16. (health adj system).mp. 17. health care/ 18. health care reform.mp. 19. 11 or 18 or 16 or 13 or 17 or 12 or 15 or 14 20. 19 and 10
Limits	English, Humans, year-1980-current	English, Humans, year-1980-current

Papers selection criteria

General criteria:

- 1) Relevant to sustainability of -Health interventions, health programmes, health services, health organizations (NGOs or coalition working on health issues), or health systems.
- 2) Sustainability is a central focus of a paper, and it is not just simply mentioned in passing whilst discussing other central issues of a paper.

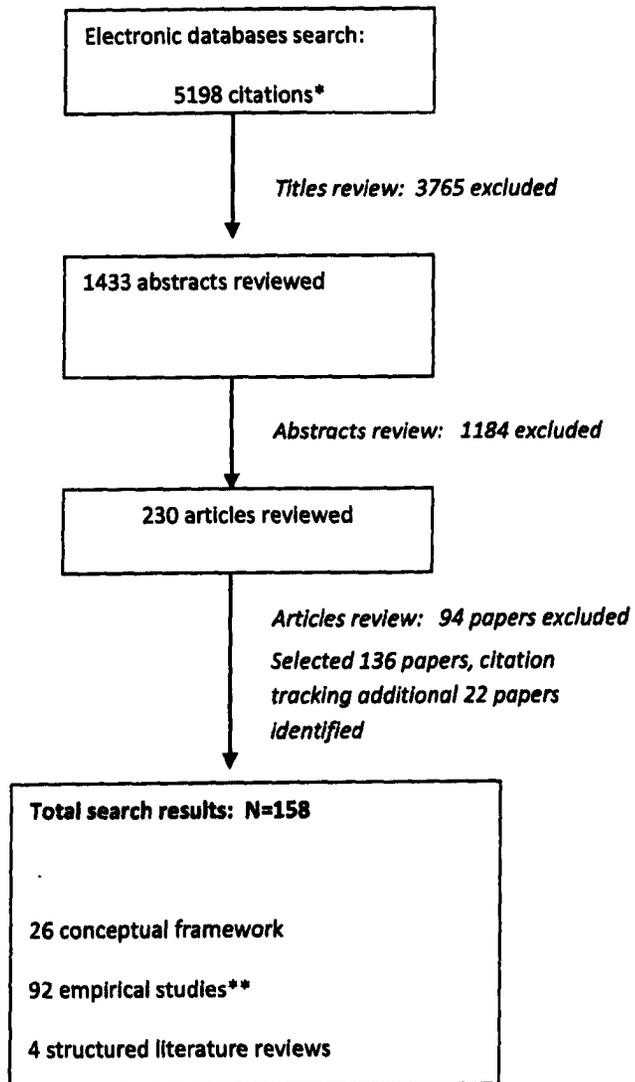
Types of articles:

1. Conceptual papers on sustainability including conceptual or analytical frameworks;
2. Empirical studies evaluating, assessing, or analysing sustainability, explicitly stating it in the objectives/aim of the paper.
3. Meta-analysis, systematic, or structured literature of empirical studies on sustainability ;
4. Narrative literature review of conceptual, methodological and empirical approaches to sustainability;
5. Editorials and opinion papers

1.1. Data extraction form for selected papers

Relevance	Yes/No (see general criteria)
Type of paper	1- Theory or conceptual framework (or analytical framework) 2- Editorial review/ commentary or opinion 3- Systematic lit review 4- Narrative lit review 5- Randomised controlled trial 6- Non-randomised experimental or quasi experimental study 7- Survey 8- Case study approach (multi-case, single case) 9- Ethnographic, anthropological study 10- Action/operational research 11- Evaluation report, multi-method evaluation 12- Guideline/protocol 13- Other
Assessment of frameworks	Definition of sustainability Unit of analysis <ol style="list-style-type: none"> 1. Intervention 2. Programme 3. Organization (including NGOs, networks, coalitions) 4. Services 5. Health system Theoretical framework (or what view or perspective is drawn upon) Factors influencing sustainability
Assessment of selected studies	
Research question	Research question is clearly stated, or research purpose, or hypothesis, or general line of inquiry.
Unit of analysis	<ol style="list-style-type: none"> 6. Intervention 7. Programme 8. Organization (including NGOs, networks, coalitions) 9. Services 10. Health system
Study design	Study design or research approach is articulated
Definition of sustainability	Present/Not present – concept is defined, clearly outlined what is meant by sustainability
Theoretical, or conceptual, Analytical framework	Yes/No
Methods of data collection	
Time	Whether time factor is articulated
Data analysis	An approach to data analysis is specified
Results	Results are outlined and clear?. Limitations of methodological approach are outlined?. <ol style="list-style-type: none"> 1) Summarise main results 2) Factors influencing/critical for sustainability – hypothetical, assumed, actual, etc 3) Any limitations/reflections for measuring sustainability

A2.2. Search results



*duplicates excluded at any stage

** 19 referred by others or according to abstract - were not accessible

A2.3. Frameworks identified and assessed

HEALTH INTERVENTION (PROJECT, INNOVATION)				FRAMEWORK	
Reference	Background	Unit of analysis	What of sustainability	Factors determining sustainability/or dimensions	Project characteristics - negotiation process, institutional and managerial aspects (vertical vs integrated; implementing institution); financing, content (design, training, tech assistance); community participation, project effectiveness.
1 Bossert, T. J. (1990).	International aid	A project (USAID)	Continued benefits, continued project's activities (assumed that these provide expected health benefits). Project considered sustained if its activities and benefits continued at least 3 years after life of the project	Context - political, socio-cultural, USAID-national relations; economic, donors coordination, commitment.	Project characteristics - negotiation process, institutional and managerial aspects (vertical vs integrated; implementing institution); financing, content (design, training, tech assistance); community participation, project effectiveness.
2 Sarriot, E. G., Winch, P.J, et al. (2004).	Research and experiences in implementation of Child Survival projects	A primary care program, child survival focus (NGO- implemented, development assistance	Health (population's health, addressed through coverage, child growth, health behaviours, etc); Health services (accessibility, quality, costs, appropriateness, coverage)	1) Health outcomes; 2) Characteristics of health services (quality, accessibility and equity), 3) Institutional capacity of local government or civil society with long-term responsibility for outcomes; 4) NGO's organizational viability for continued operations; 5) Capacity of recipient community; 6) Context - social, economic, political, ecological, human environment.	Context - political, socio-cultural, USAID-national relations; economic, donors coordination, commitment.
3 Stefanini, A. Ruck. N. (1992).	draws on Brinkerhoff. Strategic management of donors' assistance	A health project (donors' supported)	Benefits produced by the project itself to be sustained over time after the end of external support, either through the same activities set up during project implementation or through other activities.	Analytical domains: 1) Looking out - political, economic, social context, national policies, HS service delivery, human resources, financial resources; donors' policies and goals. Institutional capacity of implementing institutions - ability to deliver resources, but also in learning and adapting to the external environment; 2) Looking in - 'fit' between project design (donors' guided) and content, and external environment; 3) Looking ahead - performance efficiency, effectiveness and equity.	1) Health outcomes; 2) Characteristics of health services (quality, accessibility and equity), 3) Institutional capacity of local government or civil society with long-term responsibility for outcomes; 4) NGO's organizational viability for continued operations; 5) Capacity of recipient community; 6) Context - social, economic, political, ecological, human environment.
4 Bamberger M, Cheema S, 1990.	Experiences development assistance, WB and review of available reports at the time.	a development project	continued delivery of services and production of benefits (efficiency, quality of services, satisfactions of beneficiaries, distribution of benefits);	1) continued delivery of services and production of benefits (actual and intended benefits, efficiency, quality of services, satisfactions of beneficiaries, distribution of benefits); 2) maintenance of physical infrastructure ; 3) long term institutional capacity 4) Political support	1) continued delivery of services and production of benefits (actual and intended benefits, efficiency, quality of services, satisfactions of beneficiaries, distribution of benefits); 2) maintenance of physical infrastructure ; 3) long term institutional capacity 4) Political support
5 Stephenson, R., A. O. Tsui, et al. (2004).	experiences, development assistance, family planning , USAID-funded projects	A national family planning program	Access to high quality contraceptive services.	1) outcome level conditions in a country that support its continued decline in fertility; what include institutional (donors, organizations implementing the programme) and demographic factors (fertility, maternal &child mortality, etc) 2) programme level - conditions of a national programme to deliver quality services over time; what include finances, management, cooperation; donors' input and population demand for service provision; 3) organizational level - characteristics supporting organization's ability to achieve its mission and deliver quality of services over time.	1) outcome level conditions in a country that support its continued decline in fertility; what include institutional (donors, organizations implementing the programme) and demographic factors (fertility, maternal &child mortality, etc) 2) programme level - conditions of a national programme to deliver quality services over time; what include finances, management, cooperation; donors' input and population demand for service provision; 3) organizational level - characteristics supporting organization's ability to achieve its mission and deliver quality of services over time.

HEALTH INTERVENTION (PROJECT, INNOVATION) (CONT)

		FRAMEWORK		
	Background	Unit of analysis	What of sustainability	Factors determining sustainability/or dimensions
6	Shediac-Rizkallah, M. C. and L. R. Bone (1998).	A community-based health programmes	health benefits over time, institutionalization of a programme within organizational structures; capacity building of a recipient community	1) Factors within broader community environment (socio-economic, community participation); 2) factors within organizational settings - institutional strength; integration with existing programs/services; leadership; 3) programme design and implementation processes (negotiations/involvement of community in decision-making ; effectiveness, financings, training, etc)
7	Mancini, J. A., & Marek, L.I. (2004).	A community-based programme for families.	benefits to families and communities.	Three domains – 1) elements associated with sustainability; 2) middle range program results; 3) ultimate result of the programme being sustained - sustaining benefits to families and communities. <i>Elements of sustainability</i> : (1) leadership competence; (2) effective collaboration among stakeholders; (3) demonstrating programme' results;; (4) strategic funding; (5) staff involvement and integration; (6) understanding community (connections with community); (7) programme responsibility.
8	Pluye, P., L. Potvin, et al. (2004). "	a health promotion programme	maintenance programme's over a long period	Framework answers two questions - where a health promotion initiative is sustained, and when sustainability begins. Propositions: 1.) routinization is a primary process permitting sustainability of programmes within organization. Organizations are social structures. memory, adaptation, values and rules define organizational routines; 2) standardization constitutes the secondary process permitting sustainability, it offers higher degree of programme's sustainability - such standards are materialised by state-level rules and policies; 3) implementation and sustainability is concomitant processes, - recursive and reflective process of sustainability, or continuous adjustment and learning
9	Hanson, D., J. Hanson, et al. (2005). "	safety promotion interventions	improvements in the health status of individuals or the communities they target	3 interacting domains – 1) individual and behaviour; 2) the physical environment; 3) the social environment. <i>Sustainability analysis</i> : (i) Sustain What? - desired outcome is imperative when trying to identify and mobilise resources; (ii) Are there sufficient resources? – ability to maintain resources and an outcome within own 'ecosystem'; capacity building - ability to mobilise, identify, coordinate and develop local resources to solve local issues. Capability to adapt, to reinvest in the face of changing internal and external environment. (iii) who is responsible? - who is responsible for mobilizing, planning resources, developing necessary skills

HEALTH INTERVENTION (PROJECT, INNOVATION) (CONT)

		FRAMEWORK				
	Background	Unit of analysis	What of sustainability	Factors determining sustainability/or dimensions		
10	Nelson, D. E., J. H. Reynolds, et al. (2007). organizational systems (complex interorganizational networks). Public health view on sustainability	state tobacco control programme (5 states)	maintaining adequate service coverage that will provide continuing control of a health problem, continue to deliver benefits over long period of time, becoming institutionalised within an organization, and continuing to respond to community issues	<p>5 Components:</p> <ul style="list-style-type: none"> 1) State political and financial 2) Community awareness and capacity 3) Program structure and administration 4) Program surveillance and evaluation 5) Funding stability and planning 		
11	Virani, T., L. Lemieux-Charles, et al. (2009). organizational learning theory, diffusion of innovations -		sustainable changes refers to the continual presence in an organization of all or most of the practices/activities of an intervention or a programme (Pluye et al, 2004)	<p>Organizational learning theory - notion of organizational memory . Thus, sustainability can be thought of as ability of an organization to sustain new initiatives, to institutionalise the initiative in the organization's standard operating procedures, and to routinise the initiatives to make them permanent components of organization.</p> <p>sustainability requires systematic planning and actions to ensure that changes are embedded into various knowledge reservoirs of organization. Sustainability thus depends on how healthcare organizations use knowledge reservoirs to contextualise, retain and transfer new clinical practice.</p>		
12	Greenlaugh T, et al. 2004 A systematic review on [open up] on adoption, dissemination, Diffusion, and sustainability of innovations in health care organizations.	An innovation	[clarify here] - 'holding to gains made by innovation and allowing for further development'	<ul style="list-style-type: none"> (i) attributes of an innovation (ii) the adoption process as engaged by individuals (iii) nature communication and influence about innovation (iv) the inner organizational context (v) the outer context (vi) the nature of any active dissemination campaigns ['diffusion', 'dissemination'], which incorporates general principles of social marketing and knowledge construction; (vii) the nature of any active implementation processes, 		
13	Johnson, K, Hays, Center and Daley; 2004, systematic review of the literature, diffusion of innovations, organizational change	a prevention innovation		<p>Planning mode (two goals)</p> <p>A - factors for sustainability:</p> <ul style="list-style-type: none"> 1) infrastructure capacity building (structures and formal linkages to sustain innovation; leadership to sustain innovation; resources, policies and admin procedures; expertise); 2) sustainable innovation (alignment b/n innovation and needs of stakeholders; relationships among innovation's key stakeholders; implementation quality and integrity; effectiveness of innovation; ownership among innovation stakeholders). B - sustainability actions <p>C - Intermediate outcomes. D - Distal outcomes - a) innovation integration into system; b) stakeholders' benefits</p>		

HEALTH INTERVENTION (PROJECT, INNOVATION) (CONT)

FRAMEWORK					
	Background	Unit of analysis	What of sustainability	Factors determining sustainability/or dimensions	
14	Bowman, C, Sobo, , 2008, and empirical literature (Implementation research - Fixsen, and Overtveit, and diff inn - Trisha G)	QI initiatives in healthcare setting	1) continued use of core elements of the intervention; 2) persistence of improved performance.	Four prerequisites for realizing programme benefits over time – 1) adequate financial resources; 2) clear responsibility and capacity for maintenance; 3) intervention that will not overburden the system in maintenance requirement; 4) an intervention that fits the implementing culture and variations of patient population.	
15	Goodman, R, M., K. R. McLeroy, et al. (1993).	Diffusion of innovations	An innovation	Nature of innovations, characteristics of organizational setting (leadership, resources)	
16	Gruen, R. L., J. H. Elliott, et al. (2008).	existing perspectives, empirical research on health programme sustainability, and propose practical framework for understanding health programme sustainability, and to propose an approach for planning for health programme sustainability	a health programme	reconsidering programmes as elements embedded in complex systems emphasising the dynamics across time and place of interactions between programmes, communities and stakeholders; Encouraging concepts such as equilibrium, connectivity, alignment and adaptation. Sustainability if increased to the degree to which components of the system are connected and alignment - an indication of system equilibrium.	Three interacting domains - health concern, programmatic interventions to address the health concern, and drivers (actors) of a programme. Interaction: 1) <i>quality cycle</i> - health problem informs programme design. Programme's functioning, in turn, modify health problem. Planning based on a sound M&E and ongoing programme refinements. 2) <i>political economy</i> - of interactions among actors, and their influences on programme. Determines existence, design, resources for the programme. 3) <i>Problem definition</i> - the way stakeholders identify, define, prioritise health problems (how and why policy issues are formulated). <i>Context</i> – socio-cultural, political, geographical, health system characteristics, and availability of resources.
17	Torpey, K., et al, 2010	UNAIDS, etc; development assistance in HIV/AIDS	MOH/donors partnership, HIV services	the capacity to maintain health programmes and services at a level that will provide ongoing prevention and treatment to a health problem after termination of major financial, managerial and technical assistance from external donor.	<i>Technical sustainability</i> - continuous provision of quality HIV/AIDS services, etc; <i>Programmatic sustainability</i> - effective management, coordination of facility based services); social sustainability (continued demand for services); <i>Financial sustainability</i> - adequate and continuous funding, irrespective of the source; <i>Operational sustainability</i> (strategies employed to achieve technical and programmatic sustain). <i>Context</i> -

Health organizations		FRAMEWORK		Factors determining sustainability/ or dimensions	
	Background	Unit of analysis	What of sustainability		
18	Brinkerhoff, D, and Goldsmith, 1992, [institutional development in foreign aid context],	institution	institutional sustainability - ability of organization to produce outputs of sufficient value so that it acquires enough inputs to continue production at a steady or growing rate. Another words - sustainable inst is one that gets continued encouragement and support it needs to handle, at a minimum, a stable volume of transactions	Theoretical propositions: 1) survival of organization over long run is affected by its internal capabilities and external environment; 2) to remain viable organization must develop and stick to a strategy, which has a fit among its internal strength & weaknesses, and external threats and opportunities. <i>Inward (internal factors)</i> – organizational complexity (more complex - difficult to sustain); technology and structures (centrality of authority/decentralization, organizational formality, hierarchy). <i>Outward (external environment)</i> stability and flexibility (openness to change; ability to regroup/experiment); demands for goods that an institution produces; political, economic, socio-cultural factors <i>Strategy</i> to attain goals - setting attainable goals taking into account internal/external factors.	
19	Olsen, I. T. (1998), "organizational - open system theory by Katz, Schaffer, review of available farms to date (development assistance).	health organization (e.g services), proposed 'to be used in developing countries'	It is primarily organization's ability to produce certain desired activities and support functions (benefits) which should be sustained.	<i>Activity profile</i> (e.g activity profile load - what services, do) <i>Organizational capacity</i> (defined as both inputs and processes; inputs (resources - funds, HR, information, etc) - <i>Context</i> - policy, socio-economic, financing mechanisms, including positions of stakeholders, roles), Regardless design of health service delivery – it is characterised common <i>inter-related and interdependent factors</i> that underpin sustainability: <i>Macro-level enablers</i>	
20	Humphreys et al, 2008 A systematic review of service delivery in remote/rural areas in Australia. PHC vision, etc.	A health services (rural or remote setting))	access to services, quality of care, cost – effective way of care provision.	supportive policy (presence of explicit policy framework for sustainable rural/remote health services) federal-state regulations (roles and responsibilities to develop models appropriate to community needs, avoid duplication of services, funding and reporting requirements), community readiness (community involvement in identification of health needs, planning, evaluation, maximizing communication among various stakeholders) <i>Service-level requirements:</i> workforce organization and supply; funding (adequate to meet all operational needs, ongoing and flexible, mechanisms to maximise efficiency, and respond flexibly to changing health needs, performance measurement); governance and leadership (clearly defined governance structure and processes; risk management plans with respect to workforce, service viability, etc); linkages (maximising integrated activities and ensure coordination with external agencies and services on every level and functions of health system; infrastructure (upgraded physical infrastructures, equipment and operating budget to maintain them; information management/information technology appropriate to services and M&E needs).	

Health organizations			
	Background	FRAMEWORK	Factors determining sustainability/or dimensions
		Unit of analysis	What of sustainability
21	Alexander, J. A., B. J. Weiner, et al. (2003).	Community health partnership interorganizational relations (community, partnerships), experiences with evaluation of collaborative organizational networks.	<p>values - consequential - efficiency, security, productiveness, legitimacy, adaptability of efforts or partnership especially relative to noncollaborative efforts (behaviours). Abilities to relate consequential values to contextual environment and circumstances</p> <p>Outcomes-based advocacy – the ability to effectively identify and communicate specific achievements of the partnership to internal and external stakeholders; Vision-focus balance - [to come] agreement on a broad, long-term vision of community health, and then to commit to a series of specific actions/initiatives designed to move the partnership toward that vision. Systems orientation – [leadership] to conceptualise community health problems; to envision the solutions to such problems in terms of a coordinated effort of different sectors and actors within and outside the community. Infrastructure development - to develop internal support systems that foster effective member participation, develop leadership, and avoid overburdening key members. Community linkages - to establish strong, working relationships to institutions and individuals in the community and to be inclusive with regard to direct community input and participation in the partnership. Context - four primary environmental dimensions: the historical/cultural, political, physical, and economic</p>
22	Edwards, J. C., P. H. Feldman, et al. (2007).	a collaborative (or a coalition)	Resources, structural arrangements, linkages with community, economic and political contexts
23	Rog, D., Boback, N., et al T. (2004).	a collaborative (or a coalition)	<p>Five stages of sustainability (development of coalitions) – no longer in operation, rebuilding (in process of rebuilding after crisis), strategic assessment (taking stock in current situation, developing strategic plan), likely expansion and expansion. Impetus (prior with funding).</p> <p>Factors: Membership (composition, sectors, resident involvement) Structure (definition of staff and roles) The focus (whether collaborative directly implements activities or facilitate work of others), Resources (diversity and level).</p>

HEALTH SYSTEM

		FRAMEWORK		
		Background	Unit of analysis	What of sustainability
24	Knippenberg, R., A. Soucat, et al. (1997).	international development, PHC /builds on LaFond's sustainability concept	?Framework reates to HS overall. PHC centers (approx 200 centers)	the sustainability of PHC as the production of health outputs and outcomes at optimised efficiency and uninterrupted inputs
			health system reform	population health and effective, efficient, and equitable health care
25	Berman, P. (1995).	explicitly links health , health system development with sustainable development. Builds on Frenk's HS framework	health system reform	the capacity of health system to function effectively over time with minimum external input. Two types of capacity - capacity to ensure sufficient resources locally, and capacity to use resources effectively and efficiently to meet health needs. To be sustainable HS must perform these two functions on continuous basis. (continuity and performance here)
26	LaFond, A. K. (1995). "	development assistance, review of issues and experiences (?which ones)	health system	the capacity of health system to function effectively over time with minimum external input. Two types of capacity - capacity to ensure sufficient resources locally, and capacity to use resources effectively and efficiently to meet health needs. To be sustainable HS must perform these two functions on continuous basis. (continuity and performance here)
				<p>Factors determining sustainability/ or dimensions</p> <p>Three main dimensions of sustainability - effectiveness with equitable coverage, efficiency, and financial viability.</p> <p>Three enabling factors:</p> <p>Self-reliance that is ability of health system to increasingly produce key inputs locally (staff, vaccines, drugs, equipment, etc).</p> <p>Managerial sustainability - ability of health system to plan, organise key resources (including manpower), supervise, monitor and evaluate itself on all levels of care.</p> <p>Social sustainability - this is demand side of sustainability 'that is that part of sustainability that is expected to guarantee that demand for minimum care packages becomes a habit and routine....'</p> <p>Goal - improve efficiency, equity and effectiveness of health sector.</p> <p>Four domains of health sector reform -</p> <ol style="list-style-type: none"> 1) demand factors; 2) package of services; 3) the organization of provision; 4) financing. <p>These domains are linked by institutional actors with diverse roles and interests, functional responsibilities; and their interactions. Changes in one domain "function, structures or actors within) necessarily impacts other; for reform process to achieve its goals - all domains needs to be orchestrated through harmonious change.</p> <p>Health system develops in response to different influences, both external and internal - 1) context - economics. Politics (including national and international aid policies); organizational structures, Actors ; an</p> <p>2) investment patterns (logic, strategies, methods, patterns) ; 3) system capacity/sustainability - effectiveness, continuity , self-reliance</p>

A2.4. Empirical studies identified and assessed

Sustainability of projects, initiatives or innovations Industrialised or high income countries

	Sources	Intervention/programme description	What to sustain?	Time	Analytical/methodological approach	Results- factors influencing sustainability (actual)
1	Baillie, R. S., G. Robinson, et al. (2006)	Chronic disease management interventions (Australia, community health centres)	maintenance of health benefits after the 'research' phase is over or special funding is withdrawn	Up to 3 years after end of funding/s support	A follow up study of patients (n=96) starting the research phase through 3 years after end of the funding. Measured clinical indicators. Congruent project evaluations - observations and interviews with providers and patients.	Solely capacity building is not sufficient to sustain outcomes. Impediments included loss of management support, lack of feedback to practitioners, lack of certainty among staff, lack of clear lines of roles . Need better understanding of causalities between outcomes and disease management interventions so to develop reliable indicators for measurement of complex interventions.
2	Barnett, L. M., E. Van Beurden, et al. (2004).	community-based health intervention to prevent falls among elderly (Australia, district health services)	institutionalization of a programme within organization; effect (benefits) of intervention	5 years post implementation	Surveys among providers delivering intervention - pharmacists (n=53), GP (n=139), community health staff, committees and councils (n-129); and beneficiaries (n=73). Survey - telephone or mailed in questionnaire. Focus groups.	Good fit with organizational goals and values, and with existing projects/programme; funding and resources; strong commitment among stakeholders.
3	Bracht, N., J. R. Finnegan, Jr., et al. (1994).	Community -based Minnesota Heart Health initiative, USA (heart health promotion in the communities)	Maintenance of specific interventions over time, after external funding ended (that is programme's integration into the communities)	3 years	annual survey of implementing sites (community groups or organizations) by sponsors (developers) of intervention	Early planning for incorporation and engagement of community leaders and boards (what leads to ownership and further incorporation) , flexibility in modifying programmes to meet changing needs and interests fit between programme and agency' mission and goals; supporting institutional context
4	Bradley, E. H., T. R. Webster, et al. (2005).	Care for hospitalised elderly, multifaceted innovation, USA	Institutionalization of intervention within an organization (hospital)	3 years	Longitudinal qualitative study (13 hospitals) 102 interviews (with 42 staff members) during a 3 years period.	Presence of clinical leadership (ongoing commitment and attention), adaptation (such as changing forms and documentation as some were so time consuming, etc), adequate resources and funding, qualified and trained staff, securing long-term funding, or finding synergies with other funding channels/sources
5	Goodson, P., M. Murphy Smith, et al. (2001)	An innovation, prevention intervention introduce into primary care settings- USA.	Institutionalization within an organization	6 years	Multi case study design (5 primary care clinics); interviews, documents, observations and charts review.. Used Goodman's Levels of Institutionalization frameworks to develop qualitative tool.	Institutional strength, integration of a programme within organization, visibility of the programme within and outside the site (fit of intervention), planning for termination of funding, presence of programme' champion in middle and upper-level managerial authority. Success of programme initiation did not predict institutionalization. All factors influenced not in isolation, but relationships are likely non-linear and complex.

Source	Intervention/programme description	What to sustain?	Time*	Analytical/methodological approach	Results- factors influencing sustainability (actual)
6 Casey, M. M., W. R. Payne, et al. (2009).	Health promotion interventions in sport and recreational facilities, Australia	Health benefits, institutionalization of an interventions, capacity building of a community	2 years	Multi-case study (had analytical framework), 4 sport and recreational facilities. Interviewed and documents review.	supporting organizational and broader contextual environment; importance of capacity building (e.g staff retention, etc) particularly as relates to funds mobilization and planning; relationships among stakeholders
7 Crone, M. R., M. Verlaan, et al. (2006).	An intervention to prevent second hand smoking by children , Netherlands	Institutionalization of an interventions; (innovation' longevity, continuation) .	2 years after introduction	A survey (had theoretical framework for study questions), developed Likert-type scales based on level of institutionalizations. 56 organizations (358 nurses, 157 MDs, 47 managers). Stat analysis.	MD's completeness of use primarily explained by perceived responsibility of educating patients. RN's completeness of use - by perceived level of institutionalization in production system. Self-efficacy (feeling important). Attendance to training - is weak indicator of participants' commitment to innovation. Participation in adoption decision - critical for completeness of use. Presence of programme' champions – positive affect.
8 Ewashwick, C. and M. Ory (2003).	Innovative community-based health innovative projects for older adults (falls prevention, mammograms, etc), implemented by health or social organizations	Health benefits, institutionalization, community capacity	up to 4 years	Qualitative study (20 sites that started innovation), a structured questionnaire. Framework analysis .	Positive for sustainability : Visionary leadership, community involvement (e.g links with community), involvement of key stakeholders , building supporting organizational infrastructure (those long established with developed structures and staff have higher likelihood of sustaining), conduct M&E and communicate and use for refining services, achieving financial self-sufficiency through changing org arrangements for example; maintaining shared organizational vision.
9 Fagen, M. C. and B. R. Flay (2009).	A health education project for minority (ethnic) youth, Chicago, USA. Schools-based health promotion interventions, implying participation from parents	Maintaining a project beyond research period (including technical and financial support) ; institutionalization	At 1st year of project implementation	A multi-case study (5 schools. Interviews with key actors(n=29), observations, documents, and a survey among students. [had analytical framework]	Interventions were not viable as planned at year 1 = due to fragile relationships among researchers, and unrealistic c expectations that parents would implement health education at home; need to assess community readiness for interventions and involve actors into all steps of implementation including into planning stage.
10 Nease, D. E., Jr., P. A. Nutting, et al. (2010).	An innovation to improve depression care at primary care practices . USA	Improvements in depression care	2 years	A qualitative study. Interviews with practices champions (n=15) [describe construct of questionnaires]	Improvements in depression of care have been sustained, but more complex intervention, which involves tracking and care management was challenging for most practices. Active management by practices is necessary.

(evaluated after end of funding or a research/pilot period)

	Source	Intervention/programme description	What to sustain?	Time*	Analytical/methodological approach	Results- factors influencing sustainability (actual)
11	Heath, E. M. and K. J. Coleman (2003). "	National Child and Adolescents Trial for Cardiovascular Health (CATCH). Community based prevention intervention delivered through schools. Low-income district, Texas, USA.	Institutionalization of intervention into organizational setting	5 years	Description of CATCH implementation, which has been successfully institutionalized covering 108 schools.	Broad involvement of stakeholders, administrative and financial support from educational board and health foundation; evidence based intervention showing results.
12	Hoelscher, D. M., H. A. Feldman, et al. (2004). "	National Child and Adolescents Trial for Cardiovascular Health (CATCH). Community based prevention intervention delivered through schools. 4 states, USA	institutionalization of intervention into organizational setting	5 – 7 years	Cross sectional study among schools that received CATCH intervention and those that did not (intervention schools = 56; non-intervention=20) . Measured indicators (Institutionalization score - fats in school lunches; pe spend in physical activities; class time devoted to CATCH topic)	Training had greatest impact ; school-based education programs need to be compatible with the school's organizational environment, goals, mandates. Overall, difficult to assess sustainability of complex health promotion interventions
13	McKenzie, T. L., D. Li, et al. (2003). "	National Child and Adolescents Trial for Cardiovascular Health (CATCH). <i>Physical education only in this study</i> . Community based prevention intervention delivered through schools. 4 states, USA	Maintenance of long term effects of physical education	5 – 7 years	Cross sectional study among schools that received CATCH intervention and those that did not (intervention schools = 56; non-intervention=20) . Measured indicators (Likert scale ; physical activities; class time devoted to CATCH topic) . Systematic observations of activities and classes; interviews with teachers.	Ensuring quality of educational classes is critical; need for supporting continued training for teachers
14	Mihalopoulos, C., L. Kiropoulos, et al. (2005).	Mental health interventions, at primary care, Australia	Economic sustainability (value for money)		Exploratory economic analysis from the perspective of health sector (cost to government and cost to individuals). Secondary data to estimate likely effectiveness of interventions, eligible population. Cost analysis (and uncertainty analysis) Economic modelling	Sustainability of interventions is affected by funding (availability and mechanisms), workforce availability, and acceptability to consumers and providers.

	Source	Intervention/programme description	What to sustain?	Time*	Analytical/methodological approach	Results- factors influencing sustainability (actual)
15	O'Loughlin, J., L. Renaud, et al. (1998). "	Heart promotion interventions initiated by a public health department, Canada	Maintenance of intervention in the community for a long time	up to 8 years	A survey, convenient sample of providers, (n=189 organizations implementing intervention in the past 8 years). Survey instrument included perceived permanence of an intervention, characteristics of interventions and organizational settings. Telephone interviews. Statistical data analysis	Used no paid staff, intervention modified during implementation, a good fit between local provider and intervention, presence of programme champion
16	Pluye, P., L. Potvin, et al. (2004).	Heart health project, health promotion in communities. Canada	sustainability as routinization of intervention into organization processes (adaptation, values, files, memory)	up to 10 years since inception of project	A multi-case study (5 community health centres). Semi-structured interviews with key actors and documents review. 12 actors were interviewed (2-3 per centre) (explicit theoretical/conceptual framework)	n/a - tested applicability of routinization to elaborate on sustainability
17	Pluye, P., L. Potvin, et al. (2005).	Heart health project, health promotion in communities. Canada	sustainability as routinization of intervention into organization processes		A multi-case study (5 community health centres). Semi-structured interviews with key actors (n=20) and documents review. (explicit theoretical/conceptual framework)	Planning for sustainability needs to be from the initial stages of implementing an innovation; risk taking and stabilization of resources appeared as precursor of routinization.
18	Kaas, S., Sondergaard, B., et al. M. (2010)	Innovation (inhaler 7 Danish community pharmacies, delivery of ITAS (inhaler technique assessment service)	Delivery an innovation		An exploratory multi-case study (7 pharmacies). Field observations, semi-structured interviews, group interviews and the collecting of documentary material. Data-source and method triangulation were applied. A cross-case analysis compared pharmacies with sustained and reduced numbers of services (theoretical frame)	Systematic evaluations, on-going staff development (the knowledge, skills and professional values of pharmacy staff must be developed). [author - Human resource leadership techniques would be useful in achieving this aim, as would focusing on the service by providing systematic evaluations].
19	Higgins, et al. (2007)	chronic disease prevention initiatives following a seed funding; implemented by a health community partnership; Canada.	[enter]		projects reports on implementation of short projects ('seed-funded'), and a follow up interviews with stakeholders (11 partnerships)	Partnerships with established partners, a history of working together and/or common goals and vision, presence of champions—used funds efficiently. Strong capacity (established), capabilities to use own resources, doing more for less. However, instability of short term funding and high expectations from the State (from getting benefits from short funds) is noted as impediment for overall prevention work in communities.

Source	Intervention/programme description	What to sustain?	Time*	Analytical/methodological approach	Results- factors influencing sustainability (actual)
20 Risse, C., J. Finnegan, et al. (1995).	Health promotion interventions introduced to community organizations, Minnesota, USA (Minnesota Health promotion project)	Continued ability of a program to meet the needs of its beneficiaries, ensure quality of health promotion; institutionalization of an innovation	6 years	a telephone survey (39 informants, stakeholders at community organizations); documents review.	ability of local staff to adapt to new circumstances, ongoing capacity of communities to maintain health prevention interventions
21 Scheirer, M. A., G. Hartling, et al. (2008). "	An on-line survey of community-based projects, which received 'seed' funding. To assess perspectives on sustainability of health projects as a primary focus of the study. Secondary, assessed perceived factors that allowed sustaining externally funded projects. USA	Continued benefits, institutionalization, community capacity building		An online survey (48 agencies, implementing projects). Descriptive statistics, qualitative analysis (thematic)	Funding (finding adequate funding sources); demand for services, leadership is important but not necessarily depends on one person (a champion),
22 Whittaker, S. L., S. Adkins, et al. (2004).	A tele diabetes intervention, introduced into an acute care medical centre 10 years ago. USA	Continuous use of intervention (long term functioning)	10 years	Medical records, observations of tel session, interviews with staff, and patients' survey [do not see clear frame, draw on complex systems]	Leadership with longterm vision on the value of telemedicine service; tele diabetes enabled structured use of staff time and facilities, and a well defined cycle of care within long term quality improvement program.
23 Williams, A., M. Harris, et al. (2007). "	A chronic diseases self-management initiative introduced to primary care providers, Australia	Continuous use of intervention, becoming a routine practice, benefits to patients		Interviews and focus groups were conducted with managers and clinicians involved in the project. Content analysis	Health system design issues including communication and continuity of care between service providers (fragmentation impedes), workforce supply and demands of acute care delivery in the community
24 Singh, R., Mathiassen, L., et al. 2010,	A telehealth innovation introduced to a rural district in Georgia, USA	Ability of a system to respond to external pressures, and to adapt to external constraints without detriment to its functioning.	20 years (assessed this period)	a case study (longitudinal). Interviews (n=25 with 19 actors), documents. Thematic/framework analysis [theoretical framework]	Contributed to sustainability - external and internal collaboration, presence of local leaders, well functioning outreach clinics, responding to internal needs and contextual dynamics in service delivery and operations. Available funding and support
25 Taylor, J., I. Blue, et al. (2001).	New model of primary care delivery, an intervention to retain medical students to work in rural areas, Australia.	Acceptability of health services, financial viability of services, and service structures		A case study, 73 structured interviews with primary care providers, a survey with consumers (n=80) and students (n=17).	Financial resources, attention to workforce recruitment and retention, maintenance connections with community

	Source	Intervention/programme description	What to sustain?	Time*	Analytical/methodological approach	Results- factors influencing sustainability (actual)
26	Stevens, B., and Peikes, D., 2006,	Projects (implemented by social services) funded by the Local Initiative Funding Partners Programme of the Robert Wood Johnson Foundation. USA	as survival of the project as in identifiable entity inside the same, or a new organization	average 4.8 years, range 2-13 years	A survey of 112 projects, followed by a multi-case study (10 organizations implementing projects). [outlined framework]. Case studies relied on interviews and documents reviews.	1) capacity to draw on the support of other organizations after loss of funding; stand-alone projects though enjoying independence, but have fewer resources to draw upon end of the grant; 2) host organization expertise - such as financing management, grant writing, fundraising; 3) charismatic leadership 4) strategic planning and long term vision ; 5) attainment of diverse funding streams - not depending on one source; 6) public recognition - gaining support from community, showing results, marketing. External factors - 1) public awareness of a problem addressed by the project; 2) demand generation & recognition by public importance of a project; support from influential stakeholders <i>Promotes sustainability</i> - support from local communities and government; community involved in governance; adequate financing for project and resources in the communities; flexibility in funding policy and funders' flexibility; adaptability to communities' need; regular and effective communication <i>Inhibitors</i> - lack of basic infrastructure; high staff turnover; geographically isolated areas; multiple competing priorities in policies; unclear roles and responsibilities; staff turnover; staff resistance to change; key individuals overcommitted and unable to focus on project.
27	Wakeman, J., E. M. Chalmers, et al. (2005). "	An initiative on chronic disease management, within a broader reform programme by the Australian Government enhanced primary care package. Remote communities, Australia.	Benefits to users of services (elderly and those with chronic and complex health problems) ; continuation of a demonstrator project after a trial period.	?	An evaluation of processes, impact and outcomes of the project. Reports, documents reviews and in depth interviews with 6 key informants	<i>Promotes sustainability</i> - support from local communities and government; community involved in governance; adequate financing for project and resources in the communities; flexibility in funding policy and funders' flexibility; adaptability to communities' need; regular and effective communication <i>Inhibitors</i> - lack of basic infrastructure; high staff turnover; geographically isolated areas; multiple competing priorities in policies; unclear roles and responsibilities; staff turnover; staff resistance to change; key individuals overcommitted and unable to focus on project.
28	LaPelle, N. R., J. Zapka, et al. (2006).	Tobacco control interventions implemented by various health and social organizations, and funded by Massachusetts dept of health, USA. Exploration after defunding of programmes.	maintain program services at a level that provide ongoing prevention and treatment for a health problem	3 to 9 months after end of the grant.	Qualitative study; interviews with key informants (77 organizations); grounded theory technique, thematic (emerged themes)	Strategies that worked to sustain - redefining scope of services (align services with organisational goals); select acceptable and affordable services); creative use of resources (find funding; adjust staffing pattern; create demand for services).
29	Glisson, C., Schoenwald, S. K., et al (2008)	Innovations in mental health clinics serving children, USA	continuation of new programmes	up to 50 months	A survey of 200 clinics (200 directors - interviewed, 100 clinics - on-site survey using measurement tool) . Statistical - generalised linear model (GLM)	organizations with norms and expectations that emphasised high level of proficiency and low level of rigidity and resistance (best cultures) had sustained programmes as twice longer .

Source	Intervention/programme description	What to sustain?	Time*	Analytical/methodological approach	Results- factors influencing sustainability (actual)
30	Savaya, R., S. Spiro, et al. (2008). Social programmes (health, social protection) funded by various national, international donors and NGOs. Assessment after end of initial funding; Israel	Continuation of a programme, its institutionalization into services (including legacy)	3-15 years	A multiple case study (6 organizations) interviews, and documents. Framework/thematic analysis.	Surviving/sustainable programmes had multiple sources of funding and funding raising strategies, independent NGOs, strong leaderships who recognised importance of funds raising and managerial flexibility and developing ties with funders and legislators. Closely linked with other programmes in their host organization. Close relationships with local and extended community, involved community members, etc.
31	Goetz et M. B. et al (2009) A multi-component intervention in health care systems to improve HIV testing. USA.	An intervention (HIV testing); routinization/institutionalization	1-2 years after intervention	Quasi-experimental design, output indicators measured during an intervention year and after. Output indicators - HIV testing rates, frequency of clinics visits	Concluded as sustainable - HIV testing rates - remained the same (at 11%). Facilitating factors - provider education and organizational support; Intervention was modified and appear to fit organizational culture and variations of the patient population.
32	Thorsen A. V et al. (2010) A worksite canteen intervention of serving more fruit and vegetables, (6 a day) Denmark	Healthy eating (increase fruits and vegetables intake), long term continuation of intervention	5 years	A follow up study (5 years after), 5 worksites canteens. Indicators - fruits&vegees consumed, sold, number of costumers, etc). Observations, records reviews, interviews with managers. Descriptive statistics (used anova)	Participatory and empowering approach; self-monitoring, environmental changes to the canteens, dialogue with suppliers and networking among worksite canteens.
33	Milne, S., S. Greenaway, et al. (2007) Alcohol use prevention interventions among youth. Implemented by a community-based organization. New Zealand	Reduction of local problems. Intervention, as institutionalization (embedding) within the community development strategies	over 3 years	On-going evaluation over 3 years. documents, interviews and focus groups with stakeholders and users of services, observations of media coverage	Need for significant relationships building with stakeholders, and integration into level of policies; need for formative evaluations to show results and benefits of interventions to communities
34	Jansen M, et al, 2008 A health counselling intervention for high risk cardiovascular patients, Cardiovascular Medical centre, Netherlands.	Institutionalization of intervention.	3 years after?	a case study; documents, focus groups (5 groups, total participants n-151) (yes, had a framework, focused on linkage system and adoption system)	Need for an effective linkage system between providers and change agents on final stages of change. Porcess of sustainability appear complex due unpredictable and unforeseen external factors.
35	Thompson, B., E. Lichtenstein, et al. (2000). A community based smoking cessation trial (health promotion), USA	Tobacco control activities in the communities	2 years	A Survey among participant (e.g. communities) of an original trial, which compared tobacco control activities between intervention/non intervention. 22 communities participated (total respondents 329)	No significant difference between exposed (to research) and comparison communities. Need to plan for sustainability on early stages, show effectiveness of interventions and develop measurement tools to assess sustainability.

	Source	Intervention/programme description	What to sustain?	Time*	Analytical/methodological approach	Results- factors influencing sustainability (actual)
36	Lee, P. W., Dietrich, A. J., et al. (2007)	An innovation of depression management in primary care setting, USA.	Improvements in health status of patients (reduce depression symptoms)	3 years	A descriptive evaluation at 2 time points - at 1 year and 3 years after the intervention 5 organizations, 6 practices. A survey among clinicians at each time point (n=188), review of medical charts.	Leadership and operational changes may negatively affect continuous use of innovation. Resources availability.
37	Hogg, W., Baskerville, N., et al (2002)	An intervention which use an outreach facilitator to improve preventative work. Canada	Improve delivery of preventative interventions by family practices	1 year	A multi-case study (7 family practices). Interviews with providers, cross-case analysis	Availability of resources (computers, human resources), individual characteristics of a facilitator; good links and relationships between a practice staff and a facilitator.
38	Stange, K. C., Goodwin, M. A., et al (2003)	An innovative preventative interventions community family practices, USA	Improvements in patients care	2 years	RCT with a 2-years group follow up (76 practices). Outcome measure – rate at which patients were up-to-date on preventive services; patients demographics and visits characteristics	A practice individualised approach, tailoring approaches to unique patient's characteristics.
39	Evashwick, C. and M. Ory (2003).	Innovative programs for older adults. USA	Continuation of benefits, institutionalization in organizational settings	4 years	Qualitative, structured questionnaire based with stakeholders (20 organizations)	Positive for sustainability - Visionary leadership, community involvement (e-g links with community), involvement of key stakeholders , building supporting organizational infrastructure (those long established with developed structures and staff have higher likelihood of sustaining), conduct M&E and communicate and use for refining services, achieving financial self-sufficiency through changing org arrangements for example; maintaining shared organizational vision.
40	Milne, S., S. Greenaway, et al. (2007).	Alcohol prevention among youth, community-based innovation. New Zealand	Integrating or embedding into the structures of institution, and within the community strategic programs		On going evaluation over 3 years (every 6 months). documents, interviews and focus groups with stakeholders and users of services, observations of media coverage (had framework)	significant relationships building with stakeholders, and integration into level of policies; need for formative evaluations to show results and benefits to communities

Low-middle income setting

Sources	Intervention/programme description	What to sustain?	Time	Analytical/methodological approach	Results- factors influencing sustainability (actual)
41 Bossert, T. J. (1990).	USAID-initiated development projects, African region.	Continued benefits. 'In most cases we have to assume that continued activities of the project provide expected health benefits' (Bossert, 1990)	at least 3 years after project ended.	Multi- case study, comparative analysis. evaluation - ?documents and interviews	Fragmented institutions with competing objectives, low skills levels, poor leadership, unresponsive bureaucratic centralizations less likely to sustain projects. Facilitates sustainability - perceived effectiveness or effectiveness; integration of project into domestic administrative structures . National financing important, but not necessarily determinant of sustainability. Mutually respective process (USAID - national, etc). Community participation - no clear relationships with sustainability; alone does not make much effect on sustainability. Strong training component.
42 Amazigo, U., J. Okeibunor, et al. (2007).	A community directed treatment of onchocerciasis with ivermectin; African Programme for Onchocerciasis control. African region (10 countries)	Effective functioning of a project, consistent drug delivery, with high treatment coverage	n/a	An assessment applying quantitative and qualitative indicators - predictors of sustainability [within a framework] developed and pre-tested. 41 projects in 10 countries (total 492 communities) randomly using multistage sampling technique. Interviews and documents, observations. A cumulative score was an overall measure of sustainability.	Key determinant of sustaining projects - full community ownership and participation, integration with existing formal health services; - perceived effectiveness was found important to community leaders. Solving problems which are directly under community control - flexibility in implementing activities, including decisions in regards to compensation and financial incentives. Overall health system's constraints impede sustainability even with strong community ownership - if there are no drugs, etc.
43 Edwards, N. C. and S. M. Roelofs (2006).	An innovative maternal and child health project, initiated by Canadian International Development Agency. China.	Benefits to communities, improvement maternal and child health. Integration of projects' activities into domestic health system		A description of project covering 10 counties; assessment of project's implementation.	Three mechanisms influenced uptake of project - maintaining good fit between program and health system; developing adequate organizational support; creating handover plan. Developing strong and transparent partnerships; presence of local champions who lead integration process.
44 Harpham, T. and R. Few (2002). "	An urban health project supported by the Swiss Government. Tanzania	Ability to maintain technical, managerial, and financial capacity; organizational development and systematic growth	at the end of 10 years support	A multi-method evaluation at the end of the project. Qualitative - documents and interviews with stakeholders and service users.	Financial viability, 'mainstreaming' (ensuring no parallel structures exist); integrating most roles and responsibilities into city' councils; establishment of coordinating committees is supported by the legal framework.

Sources	Intervention/programme description	What to sustain?	Time	Analytical/methodological approach	Results- factors influencing sustainability (actual)
45 Jana, S., I. Basu, et al. (2004).	A community based HIV prevention project among sex workers. Founded by Dr. Jana and India Institute of Hygiene and Public Health, India.	Effective HIV prevention	12 years	A historical overview of the project. (as a narrative)	Leadership and vision. strategy flexible and evolved over time in response to community needs; good links with users of services/community, their involvement into decision making; advocacy, monitoring and showing results; clients satisfaction (empowering clients self-interest). Established relations on national and international levels; gaining political support. .
46 Sivaram, S. and D. D. Celentano (2003).	A HIV prevention project, by USAID (implemented through international NGO). Rural districts; India.	Continuity of activities after the withdrawal of external funding	2 years	A case study (a project). evaluation reports; interviews with project implementation tea; community outreach workers; governmental officials, NGOs. . . content analysis.	the sustainability of their efforts was associated with the quality of interactions with the project implementation team, the strength and leadership of their own institutions, the perceived benefits of implementing AIDS education activities after project life . Organizational structures; financial interest and motivation of outreach workers. Links with key governmental and other permanent and authoritative organizations; community capacity especially ability to generate resources on their own, leadership
47 Wong, M. L., K. W. Chan, et al. (1998). "	An innovative intervention for brothel-based sex workers to increased use of condoms. Thailand.	Sustained decline in STDs, maintenance of project effects a (use of condoms)	2 years follow up (not related to funding)	Quasi-experimental pretest/post test with control group. (total 246 at baseline; intervention - 124; control -122) Questionnaire for clients, gonorrhoea tests to assess STD rates.	Comprehensive planning, involvement of sex workers in designing actions; reinforcement sessions, timely problem identification and response. Support from higher level decisions makers (STD control department), local leadership, and peer leaders
48 Wang, H., D. Gu, et al. (2008). "	New Cooperative Medical Scheme (NCMS) program, an innovative approach to payment for services. Introduced by the China Government in six study areas in rural Beijing	benefits to users of services in terms of access to services and satisfaction		A survey, a sample of 890 persons aged 15-88 from 890 households who were randomly interviewed from six rural counties/districts in Beijing	Sustainability of the program is only significantly related to knowledge about the policy and satisfaction with the overall performance of the program

	Sources	Intervention/programme description	What to sustain?	Time	Analytical/methodological approach	Results- factors influencing sustainability (actual)
49	Jacobs, B., N. Price, et al. (2007).	A pilot. A health equity fund to address adverse effect of low fees exemption rates. Implemented by an international NGO. Cambodia.	Health outcomes, Financial access for the poorest to health services		A case study (one health district). documents reviews, workshop, group discussions, and focus groups. (<i>Impedes sustainability</i> - constrained economic environment; the initiative is not likely viable without external funding. Local fundraising capacity is low (many citizens do not have money). Fundraising for equity fund (allocation of funds for pagoda) run s separately from routine activities. Need to strengthen interactions between actors; and support of persons in power or local leaders. Alternative financial mechanism needs to be explored to support ownership.
50	Humphries D, Gomez, Hartwig, (2010).	A capacity building regional initiative for NGOs by the Bristol Meyers Foundation. Establishment of a regional NGO training entity. 5 countries, African region	As institutionalization into regional/domestic operations		An evaluation relied on surveys (baseline and end of project) and qualitative interviews to assess outcomes. Thematic analysis	Ownership of initiative (was not sufficient, NGOs were just implementation), need of overarching entity with reputation and credibility in terms of training material, etc; the way funds were disbursed (need more flexibility, simplify), adequate funding and staffing, strong linkages within partner organizations (initiative was focused on bringing people under one umbrella)
51	Prasad, B. and A. M. Costello (1995).	An intervention for staff at an Indian hospital on initiation of breastfeeding and use of prelacteal feeds by mothers. UNICEF. India.	Quality of prenatal care	6 months after training	Intervention study with assessment prior and post interventions. Interviews of mothers (preintervention, 172 mothers; post – 195 mothers	training doctors improves mothers' practices, but soon fell off; need to ongoing refreshing training programmes
52	Rosenberg, A., K. Hartwig, et al. (2008).	Donors' initiatives (projects) – orphans and vulnerable children. Implemented by Yale university and sponsored Bristol Meyers Foundation. African region.	Long term care and welfare for orphaned children; the continuation of activities and benefits achieved during the project after the donors' funding ceased.	3 years	evaluations conducted by a funder (9 projects). Documentation and interviews with leaders of projects	Government-NGOs collaboration was shown as critical for sustainability is critical . Donors should concentrate, in addition to other factors, on developing strong partnerships with local and national government agencies for the sustainability of their projects. There are potential tensions with government partners in implementing donors' supported projects by NGOs.

Sustainability of health organizations (partnerships, health services, complex health programmes)

High income country's setting		Source	Organization	What to sustain?	Time*	Analytical/methodological approach	Results- factors influencing sustainability (actual)
53	Alexander, J. A., B. J. Weiner, et al. (2003).	Partnerships, Community Health Care Network, USA.	Value that collaborative capacity adds to the community and community health. Longevity of partnership	n/a	Multiple case study (4 partnerships), longitudinal, collected in 3 time points (different years). Interviews and documents; Thematic analysis. Clear theoretical/conceptual framework.	Outcome based advocacy – ability of partnership identify an disseminate contributions to community health and show it's value. Vision-focus balance – ability of partners to come in agreement on long term vision and goals, and complement it with realistic action plans and initiatives. Systems orientation – ability of leadership to conceptualise community problems and envision coordinated efforts with stakeholders inside/outside communities. Infrastructure development. Community linkages - strong ties with communities, participatory approach.	
54	Padgett, SM et al. (2005)	Turning Point Initiative of the Robert Wood Johnson Foundation to strengthen public health system. Turning Point innovation implied forming a public health state partnership (in participating States)	Continued efforts of Turning Point partnerships beyond funding period	7after	Descriptive study design (21 partnerships). Documents, interviews, focus groups, and discussions. (thematic, emergent themes by Mills and H)	Institutionalization (new local agencies, state level offices, coordination committee, linking with other programmes, incorporating goals of initiative into agency's mission); developing alternative structures outside government (relocation to independent non-profit organizations); leveraging other funds (expanding funding sources); fostering strategic relations (key - building political allies and champions); communications and visibility (social marketing, dialogues with various audiences)	
55	Feinberg, M. E., D. E. Bontempo, et al. (2008).	A community coalition, established within national-wide initiative Community That Care, USA. Aim is to conduct reduction of adolescent problem behaviours (teenage pregnancies, should drop outs)	'survival of community coalition', 'continued functioning'	After initial 3 years of funding	110 coalitions. Annual collection of data (over 3 years) on functioning of coalitions through TA reports and webbased questionnaires; Level of funding assessed through a web based survey questionnaire, secondary sources on socio-economic development in communities. Indicators – board functioning, collation fidelity,	Quality of CTC board functioning (that includes leadership's competence and style, goal setting and planning) was a strong predictor of survival; board functioning also predicted additional funding. Poorly managed, inefficient and conflicting - less likely to survive. Other factors in CTC board function are planning for sustainability. Community characteristics did not influence survival.	
56	Nilsen, P., Timpka, et al. (2005)	A community-based injury prevention programme, based on WHO Safe Community model (coalition type of organization, with coordination committees at municipalities. Sweden.	Coverage of interventions, promotion of safety among risk and vulnerable groups	15 years	A multi-case study (10 safe community programmes). Interviews and documents. One interview per each programme (n=10) Thematic analysis	Financial, human, and relational resources (that is interactions); integrated programmes facilitate sustainability. Programme's intensity depends on financial resources of the municipality and changes in priority settings by political decision makers. Sustainability may be compromised if programme depends only on few persons.	

	Source	Organization	What to sustain?	Time*	Analytical/methodological approach	Results- factors influencing sustainability (actual)
57	Rog, D., Boback, N., Barton-Villagrana, et al (2004).	A coalition funded by the National Funding collaborative on violence prevention; USA.	Prevention of violence; continuous functioning of coalitions.	Over 5 years	A multi-case study(12 coalitions), longitudinal. qualitative interviews and documents; thematic analysis. (conceptual frame)	Previous history of collaboration, a diverse and broad coalition with clear vision and goals, and operational guidelines; diversified and sufficient funding (e.g. flexible resources that can support the core operations of a collaborative in contrast to funding earmarked for specific programmatic function); a mix of professionals and grassroots representation; clear definitions of roles of staff and collaborative members.
58	Mancini, J. A., & Marek, L.I. (2004).	A community-based organization addressing families' health or social problems	Providing continued benefits. Capacity of programs to continuously respond to community needs.		Aim of the study is to develop and validate sustainability measurement tool. Measurement tool (52 items) was developed based on theory and qualitative open ended interviews (100 personnel), and some 1000 programme professionals. The instrument was tested and validated through a survey; and confirmatory factor analysis. The instrument shown acceptable level of validity.	Leadership competences (clear goals, planning, involve collaborators, strategic funding - implement evaluation of funding and planning; able to respond to community changes). Programme responsiveness (adaptability) – strong predictor of sustainability as well; was furthered by collaborations with others. Conversely, collaborations was enhanced with more responsiveness (adaptability). Neither strategic funding alone nor collaboration - are all-encompassing factors in sustainability. Issue of interrelationships among factors (need to further study, challenge).
59	Litaker, D., M. Ruhe, et al (2008).	A community-based primary care practices, Ohio, USA.	Continuous improvement of clinical outcomes and clinical practices		Used results from group randomised trial (73 practices). Quantitative (developed constructs/scores for capacity of change), and observations of practices. Statistical analysis assessed relationships between capacity for changes and clinical outputs/outcomes.	Primary care practices that had greater capacity for change were more likely to attain and sustain desired outcomes
60	Gruen, R. L., T. S. Weeramanthri, et al. (2002). "	A specialist outreach service, remote communities, Australia	Provision of health care services to remote communities; sustain outreach services	??3 years	A process evaluation of a specialist outreach service, using health service utilisation data and interviews with health professionals and patients.	Sufficient resources and staff ; integrated with other programmes; not dependent on one person; responds to and accountable to needs and demands; multidisciplinary framework centred in primary care; well coordinated; assessed regularly; uses training opportunities
61	McDermott, R., F. Tulip, et al. (2003).	A diabetes care services (comprising of outreach services, clinical management systems at primary care providers level, etc) remote communities, Australia	Improvements of patients' outcomes over time	3 years follow up	A three years follow up (after initial trial of intervention); 21 clinics; an audit of admission records in hospitals in pre 12 mo, diabetes patients outcomes.	Management strategies (audit and feedback to clinicians) and structure; feedbacks, workshops and training.

	Source	Organization	What to sustain?	Time*	Analytical/methodological approach	Results- factors influencing sustainability (actual)
62	Stroul, B. A. and B. A. Manteuffel (2007). "	A system of care (services) for children's mental health. Initially, State's funded initiative to establish services f care for children with mental health issues. USA.	Maintaining systems of care over time including services, infrastructure, goals, and philosophy.	During the phase out stage and 5 years after end of funding	A survey of sites (37 communities), web based questionnaire or mailed in questionnaire. (142 indicators, rated in Likert scale). 130 respondents. A follow up qualitative interview with keys stakeholders. Quantitative - t test to compare scores in two time periods; qualitative - content analysis. Data triangulation.	Contextual factors such as political and economic environments; changes in larger economic climate might lead to reduction of funds, or changes in elected or appointed official leads to changes in policies. Policy and regulatory changes to incorporate services into broader health system was reported as effective for sustaining services. Cultivating strong interagency relationships, involving stakeholders, partnerships with other organizations increase chances for sustaining. Creating strong family organizations. Using evaluation of results to build credibility. Mobilizing resources and generating political support. Financing mechanism are critical for sustaining services; diversity of funding sources is positive for sustaining.
63	Israel, B. A., J. Krieger, et al. (2006).	An urban research centre, originally funded through the US CDC initiative to promote community based participatory research . USA	Three dimensions – 1) relationships and commitment; 2) capacity, knowledge, partnership; 3) funding values generated by staff, policy changes and partnership itself.	8 years (after end of CDC support)	A multi-case study (3 Urban research centres in Detroit, NY city and Seattle). Interviews and document reviews. [conceptual frame]	1) <i>sustaining relationships</i> . Uncertain or shortage of funding negatively affects relationships; due to lack of time and resources and challenges/tensions for sharing resources; difficult to maintain morale an energy. Positive effect on relations - development and adherence to collaborative principles; combination of structure and flexibility in rules governing partnerships; long term commitment; presence of champions ; showing clear community benefit. 2) <i>knowledge and values</i> . Similarly, knowledge and values need time and resources for consolidating. Collaborations create safe and productive environment for self reflection and develop further expertise. 3) <i>sustaining structures, staff</i> . Overall challenging, but several funding sources; institutional base and flexibility in funding; continuous planning and reassessment. [there is more....]
64	Minkler, M., V. B. Vasquez, et al. (2006).	A community based research partnership for health promotion, USA.	Efforts to improve health; longevity of partnerships	10 years	A case study. interviews with stakeholders, observations, archives review Framework/thematic analysis. [had conceptual frame]	Mobilization of community, strong ties with communities and broad range of political stakeholders. Participatory approach including community members into research (lead by university). Broadened strategic focus, institutionalization of activities; importance of resources. M&E is important to show results, disseminate ensure value of partnership's activities.

	Source	Organization	What to sustain?	Time*	Analytical/methodological approach	Results- factors influencing sustainability (actual)
65	Plochg, T., D. M. J. Delnoij, et al. (2006).	A community-based partnership for integrated healthcare, Neitherland. (health care providers)	Improve population goal. Longevity of a partnership	30 years	A case study (historical). Documents and interviews (n=17 with members involved over time). Framework analysis. (had an analytical framework, by Jansen)	Partnership was flexible enough to adapt strategies and survive. Factors for sustaining - successfully realizing several projects (12), changing its strategic goals depending on changes in the context (national policies and guidelines, funding requirements), personal factors of leaders, leadership, trust and culture of working together.
66	Nelson, D. E., J. H. Reynolds, et al. (2007).	State's tobacco control programmes, USA	Maintaining adequate service coverage to control the health problem; delivery of benefits, institutionalization within an organization, continuing to respond to community issues	after/during 2002-2004 budget cuts	A multi-case design (5 states). results of previous empirical studies some discussions with actors. existing reports, studies, conferences presentations. Discussions with selected stakeholders.	Strong and experienced leadership, broad organizational and community ties; coordination of efforts; strategic use of surveillance and evaluation data; active dissemination of info about programme success; policy maker champions (more powerful stakeholders support - greater chances for success)
67	Nordqvist, C., T. Timpka, et al. (2009).	Safety promotion programmes [injury prevention], implemented by the municipalities, Sweden.	Health benefits (and safety) of citizens, long-term implementation of safety promotion	n/a as perceived. Around 10 years	Focus groups with key stakeholders; follow up telephone interviews. Content analysis. (had framework)	Collaboration was found a basis for sustainability; networking/info exchange and trust through personal contacts; position/status of a coordinator in relations to coordinating funding; political commitment and top-down support from politicians - key pre-requisite of functioning overall. Continuous adaptations to societal changes and events - as driving factor of sustainability.
68	Fuller, J. D., L. Martinez, et al. (2005).	A partnership between aboriginal health services and community organizations (mental health, counselling services) and hospital; rural area, Australia.	Longevity/continuity of this partnerships	n/a	A case study. Interviews n=17, literature review, workshops (n=3). Thematic analysis	Incentives for programme development; linkages processes (important personal relationships among key stakeholders); need to integrate into routine practices through formal policies and agreements; M&E - better collection and use of data to show value of the programme to communities and patients. Long term funding and expertise for this complex health problem.
69	Baum, F., G. Jolley, et al. (2006).	WHO Healthy cities concept, one city in Australia (implemented through a community based health service organization)	Community organization, that was born as a result of Healthy cities initiative. Sustain visio, ideas behind the initiative	18 years	One site (city) narrative documentary review - (evaluation reports)	Social health visions, leadership, model that can adapt to local conditions, ability to juggle competing demands, community involvement, and links with stakeholders outside the initiative (e.g. universities, international organizations), strong support community members, local politicians, and service providers
70	Wright, D. B. (2009)	Rural health centres, USA.	long term sustainability - survival/longevity	25 years	A historical multi-case study (4 organizations); Interviews and documents. Thematic analysis (analytical frame present)	Presence of advocates inside and outside the programme, willingness of programmes to employ innovative solutions to problems, organizational flexibility, well integrated with community, financial viability (e.g. context - state's funding for primary care)

Low-middle income setting

Source	Organization [or health system]	What to sustain?	Time*	Analytical/methodological approach	Results- factors influencing sustainability (actual)
71	Elison, R. N. (1999). " an international initiative. Rural Cameroon.	An ability of a project to meet the needs of is community	17 years (including during the donors' support	An evaluation, 16 primary care centres. Methodology is not described. (have theoretical framework; also referred to primary care concept)	<p>Village factors contributing to sustainability include community ownership, community financial self-reliance, village integrity in money management, annual continuing education for all health workers.</p> <p>At the <i>Integrated Health Centre</i> level contribution factors were: demand for services and capability to pay; the clinical expertise of health workers as well as their positive relationships with the community people; and continuing medical and LAP support.</p> <p>At the <i>Project Administrative level</i>, factors include adequate staffing, a close working relationship with government health authorities, and financial support from within the country as well as continuing donor agency support from outside.</p>
72	Ashwell, H., and Barclay, L., 2010, Challenges to	Maternal and child health outcomes; ownership of an approach, effectiveness, efficiency	2 years	End of project evaluation. Documents; 175 interviews (all levels); 93 community discussions and observations in 10 provinces [yes had framework]	<i>Impediments for sustainability</i> (long term outcomes, ownership, etc) : ambiguous donors; goals; inflexible donors' requirements (contractual), payment system requiring short-term productivity and excessive reporting requirements, inadequate measures of success (eg indicators sometimes are not reliable, etc); limited ownership of interventions; donors' pressure on local/provincial governments to 'collaborate' but allowing limited participation/decision making .
73	Knippenberg, R., A. Soucat, et al. (1997).	Health outputs and outcomes at optimised efficiency and uninterrupted inputs		Monitoring of BI initiative during implementation (5 years period). 200 primary care services. Methods are not presented (in other papers – take a look)	National commitment; decentralised decision making and management community resources; community financing mechanisms; clear objectives and performance indicators; building alliances and capacity of institutions on all levels ; building alliances, clear objectives and performance indicators.
74	Israr, S. M. and A. Islam (2006).	Continuity of gains, provisions needed services to population		A case study (one province) . Secondary data, documents review (project reports, miniatures of the meetings, monitoring and field reports). Thematic analysis (definition of sustain and governance)	Consensus building among stakeholders, participatory planning and development of strategy, leadership with long term strategic vision and stable, effective coordination mechanisms, participation of community/civil society organizations (but if they are unsustainable - they disappear after funding ends), ownership of reforms among locals.

Source	Organization (or health system)	What to sustain?	Time*	Analytical/methodological approach	Results- factors influencing sustainability (actual)
75	Sarriot, E. G., E. A. Swedberg, et al. (2010). "Pro-Guinea	Health outcomes, child health.	10 years implementation	Evaluation of projects results on health outcomes, estimation of lives saved from changes in outcomes; use of these estimates to model two scenarios (pro-sustainability and traditional); sensitivity analysis (explicit implementation framework, Sarriot, 2004, system approach to development).	Impact per dollar spent on a pro-sustainability strategy is 3.4 times that of a traditional approach over the long run.
76	Bratt, J. H., J. Foreit, et al. (1998).	Management capacity that is both effective and responsive to change, ensuring that services and supporting activities have sufficient resources to function over the long run.		Operational research, 3 family clinics operated by the NGO. Interviews, documents.	For sustainability – there is a need for multiple approaches depending on changing context (rather than one, e.g. cost recovery); entrepreneurial skills - finding new funding sources; close relations with sponsors and other stakeholders; use of operational research (what works, what does not); responsiveness to changing population/demands.
77	Melesaar, K. and M. Lember (2004).	Financial sustainability - stability of financing.	1998-2002	Use of routinely collected data by the Estonian Health Insurance Fund and Department of Statistics and Analysis of the Ministry of Social Affairs. Indicators for financial sustainability – 1) on national level – distribution of resources between primary and secondary care; 2) on service provision level – structure of budget of family doctor practices.	Indicators of financial sustainability show quite stable funding to primary care; however on the long run the whole health system needs high level of funding. Routine data sets pose challenges to elaborate on efficiency and sustainability due to potential issues with reliability of data; need empirical research.
78	LaFond, A. K. (1995).	Effectiveness, efficiency and self-reliance.		A multiple case studies. 5 countries - Ghana, Pakistan, Vietnam, Uganda, Nepal Documents and interviews (explicit conceptual framework for sustainability)	Many investment strategies employed by donors and health ministry's are contradictory to sustainability – 1) pursuit of many agendas (of donors, national players) at the expense of a single strategy for HS development; 2) investment generally favours the realization of production or output goals over capacity-building or process goals; 3) places the needs of development institutions above the needs of health care beneficiaries; 4) donors give money - this allows donors considerable influence over policy-making and budgeting. Vertical programmes limit scale up (spin off); parallel management and financial structures created by donors ensure control over funds, but fragment HS.

Communicable diseases programmes

	Source	Organization [or health system]	What to sustain?	Time*	Analytical/methodological approach	Results- factors influencing sustainability (actual)
79	Greco, D. B. and M. Simao (2007). "	A national HIV/AIDS programme. Focus on policy of universal access to HAART. Brazil.	Provide HIV care and medication to all in need	n/a	Overview of national programme – history, broad socio-economic context, HIV policies, health system arrangements, programme' financing, service delivery, cost of drugs, budgetary pressures as number of those requiring ART is growing, policies of pharma companies.	Sustainability would depend on governance and stewardship - country's driven policies to foster rational use of drugs, putting more stringent scientific for adding new drugs into regimens (promoted by pharma); increase local production and better formulation; international collaboration to reduce ART costs; and collaboration on all levels - national, civil society, PLWHIV, international organizations - to share innovations, research findings so to put more pressure on pharma to reduce cost.
80	Le Loup, G., A. de Assis, et al. (2009).	A national HIV/AIDS programme. Changes in national HIV policy - decentralization of handling HIV policy to municipalities through financial incentives to develop programs appropriate for local HIV epidemic. Brazil	Effective HIV response (coverage, reduce stigma and discrimination, etc)		A field study including 5 municipalities (5 municipal HIV programmes). Documents, interviews, literature review . Analysis focusing on institutional and NGO actors.	Collaboration between municipal and NGOs are important for implementation and sustainability; NGOs emerged as important for sustainability of HIV prevention activities; need to maintain actor mobilization without isolating AIDS programs.
81	Le Loup, G., Fleury, S., et al. 2010,	A national HIV/AIDS programme. Role of international actors in sustainability of public health problems. Brazil HIV/AIDS programme as a case study.			An overview of cooperation between National HIV/AIDS programme and World Bank.	Key for sustainability - 1) political and organizational monitoring of a public health programme (to see 'red flags' - e.g. high turn over of staff; rapid emergence of other co-diseases); 2) interventions of international donors must be adapted to type of threat; depending on path of national and local AIDS policies; 3) long term commitment of funds; funding should not be limited to NGOs but benefit broad range of stakeholders ; 4) link local mobilization and advocacy on one hand and integration within health system ensuring high coverage for poor on the other hand.

	Source	Organization [or health system]	What to sustain?	Time*	Analytical/methodological approach	Results- factors influencing sustainability (actual)
82	Atun, R. A., Y. A. Samyshkin, et al. (2005). "	TB control programme, Russia.	Effective and efficient TB control programme	2001-2003, during DOTS introduction/piloting	Systematic assessment - quantitative and qualitative data (interviews with stakeholders) routine financial data base, routine TB database, semi structured interviews with stakeholders Framework/thematic analysis [framework conceptual/analytical]	HS financial arrangements create perverse incentives for shifting TB care to community based care and support. Need to align WHO recommended approaches to TB care into health system's financial and regulatory arrangements.
83	Lydon, P., R. Levine, et al. (2008). & Kamara, L., J. B. Milstien, et al. (2008).	National immunization programmes. Low-middle income countries, recipients of Global Alliance for vaccines and immunization (GAVI) support. 50 low-middle income countries.	the ability of a country to mobilise and efficiently use domestic resources and supplementary resources on a reliable basis to achieve current and future target levels of immunization performance in terms of access, utilization	2000-2006, 1st wave of GAVI support -	Assessment of countries' financial sustainability planning. Retrospective review of data - country reports, GAVI evaluations, estimations, etc (50 countries)	Substantial financial gap exist globally. Some countries made a progress in financial sustainability planning, including mobilization of resources. Rising cost of vaccine, and need to introduce new ones, etc. Financial sustainability is far from assured. Need co-financing from national HS.
84	Soeung, S. C., J. Grundy, et al. (2006).	National Immunization programme. Financial sustainability planning. Cambodia.	ability of a country to mobilise and efficiently use domestic and supplementary resources on a reliable basis to achieve current and future target levels of immunization	projected up to 2010 from 2003	Costing and budget and expenditure analysis, financial gap analysis. Indicators developed by GAVI	Overall immunization indicators show improvements; programme would experience rising costs associated with new vaccines and new technologies. Programme also would experience expanding financial gap in the future as external resources decrease. Need to integrate financial planning for sustainability into overall health system financial planning (FSP is stand alone), extend process to sub-national levels; need more efficiency analysis (allocative and technical). Need coordination between financial planning and programme planning
85	Torpey, K., Mwenda, L., et al (2010)	HIV clinical services. Scaling up in 5 provinces. An initiative by Family Health International and Zambia's MOH (through PEPFAR grant) . Zambia	Maintain health programmes and services at a level that will provide ongoing prevention and treatment to a health problem		Descriptive - report on implementing an initiative (Authors of a paper - partnership) .	Promotes technical sustainability - M&E (quality assurance, etc) key (of all aspects of programme's functioning), national standards on clinical care. Need a transparent donors' exit strategy. Good and effective working relations among national, international and local stakeholders. Guaranteed long term donors' funding. Overall health system's weaknesses impede sustainability (e.g. human resources, despite trainings - personnel leave health care sector).
86	Sivaram, S. and D. D. Celentano (2003).	An outreach HIV prevention project in rural India.	ability of activities to continue appropriate to the local context after the withdrawal of external funding		Project evaluation. Evaluation reports, interviews with project implementation team; outreach workers.	Sustainability was associated with the quality of interactions with the project implementation team, the strength and leadership of their own institutions, the perceived benefits of implementing AIDS education activities after project life and the gender of the outreach worker.

	Source	Organization (or health system)	What to sustain?	Time*	Analytical/methodological approach	Results- factors influencing sustainability (actual)
87	Toledo Romani, M. E., V. Vanlerberghe, et al. (2007).	Dengue control programme, Cuba. Intervention /pilot – community-based approach with establishing community working groups. Supported by The Havana Tropical Institute and Belgium Development Organization.	Maintenance of health benefits and effects (e.g. behavioural changes); institutionalization of innovation; community capacity building	2 years	Compared areas with the intervention (creation new community based structures) and control (intensified routine activities) Used qualitative and quantitative indicators in each framework domain routine entomological surveys, interviews with stakeholders, documents. A cross sectional survey in 400 randomly selected households; administration of a questionnaire, observation of behaviours.	Community-based approach appears as having promising sustainability. <i>Impediments for sustainability</i> – budgetary constraints of health system; Resistance from vertical programme staff. There are needs to build capacity of new community structures, build skills in leadership, decision-making, conflict resolution, etc. Need to build linkage and coordination and inter-sectorial coordination; strengthen community involvement
88	Gurtler, R. E., U. Kitron, et al. (2007).	Chagas disease control programme, Community-based strategy in rural areas. Argentina.	Continuous benefit, impact of interventions' on Trypanosoma cruzi prevalence and transmission		baseline and annual entomological surveys vector surveys (dogs), human serological surveys, household surveys	Political commitment and leadership – key for sustainability. Health system - coordination efforts, decisions regarding resources allocation, availability of resources for neglected diseases. Local leadership at community level, community involvement and acceptance of control interventions ; Adaptability of interventions to local contexts
89	Akogun, O. B., Z. Audu, et al. (2001).	A community based onchocerciasis treatment programme. Nigeria.	Treatment coverage, acceptance and minimal cost.		A multi-methods study. Interviews (some 1744 persons interviewed) and secondary data (cost, health services, etc). Comparative analysis programme-designed and community designed strategies.	Flexibility in design and adapting strategy (personnel tasks, etc) to local cultural norms and acceptability to locals; reliable drugs distribution system; Local ownership and leadership
90	Kachur, S. P., P. A. Phillips-Howard, et al. (1999).	An intervention for malaria control – insecticide treated bednets. A trial conducted by CDC US and Kenya Medical research institute. Western Kenya.	continued use of bednets to reduce malaria transmission	3 years, after a trial	qualitative - 16 focus groups, quantitative - household survey (n=60)	Perceived effectiveness and relative value; affordability of bednets and accessibility (many can't afford new bednets, or spray to treat them); family's values (children more likely left without bednets if family can't afford)
91	Kay et al, 2010 (and Hanh et al, 2009)	A community-based mosquito control intervention, Vietnam	Effective prevention of dengue	7 years	A multi-method evaluation of sustainability (based on clearly outlined and tested framework) Qualitative in-depth interviews with stakeholders, KAP surveys (regular), clinical data review	Major reason for success lies on commune level - local leadership; tight linkage with community; creation of local microcredit schemes.
92	Dasgupta, R. and R. Priya (2002).	A national universal immunization programme, India.	financial sustainability (affordability of universal hep B programme)		Assess epidemiology of hep B in India, universal immunization coverage, health services infrastructure and processes of delivery and available resources.	Given health system's constrains and wide variation of hep B endemicity, financial sustainability - the author questions a need to introduce universal Hep B vaccination (as recommended by donors)

Appendix 3. Structured literature review on integration in health systems

A3.1. Literature search approach

Search strategy used for electronic databases

	Medline	Embase
Search terms	<ol style="list-style-type: none"> 1. "Delivery of Health Care, Integrated"/ 2. integrat*.mp. 3. link*.mp. 4. coordinat*.mp. 5. co-ordinat*.mp. 6. collaborat*.mp. 7. exp health services/og 8. exp delivery of health care/og 9. (health adj system).mp. 10. (health adj program\$).mp. 11. (health adj intervention).mp. 12. model.mp. 13. framework.mp. 14. measure*.mp. 15. 2 or 3 or 4 or 5 or 6 16. 7 or 8 or 9 or 10 or 11 17. 15 and 16 18. 1 or 17 19. 12 or 13 or 14 20. 18 and 19 	<ol style="list-style-type: none"> 1. integrat*.mp. 2. link*.mp. 3. coordinat*.mp. 4. co-ordinat*.mp. 5. collaborat*.mp. 6. integrated health care system/ 7. health service/ 8. health program/ 9. health intervention.mp. 10. health care/ 11. health system.mp. 12. 1 or 2 or 3 or 4 or 5 13. 7 or 8 or 9 or 10 or 11 14. conceptual framework/ or framework*.mp. 15. model*.mp. 16. measure*.mp. 17. 12 and 13 18. 6 or 17 19. 14 or 15 or 16 20. 18 and 19
Limits	English, Humans, year-1980-current	English, Humans, year-1980-current

Papers selection criteria

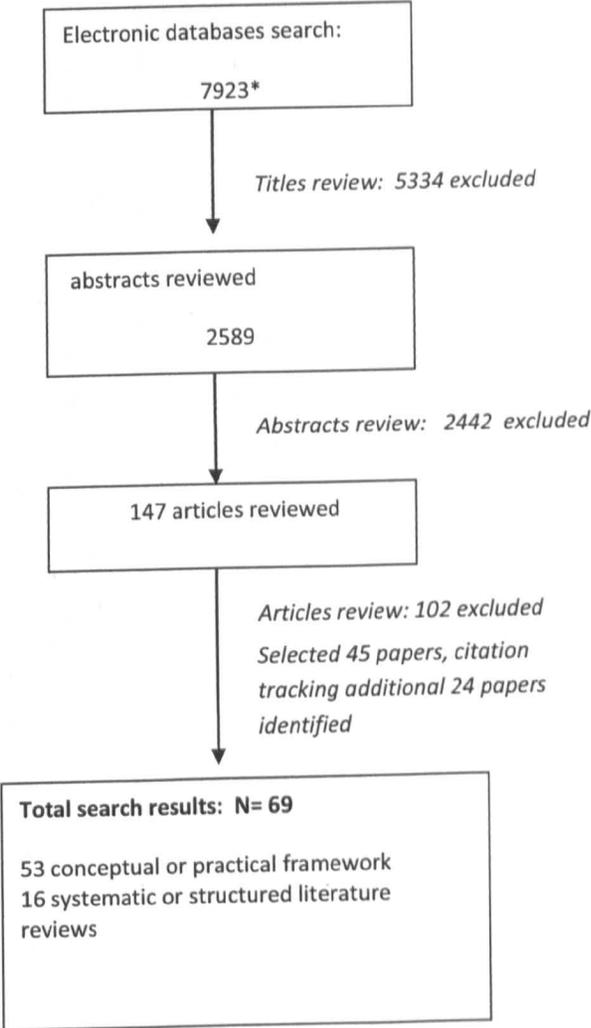
General criteria:

1. Conceptualizing, analysis or measuring integration in health system (i.e. health interventions, services, organizations, systems) is a central focus of a paper and it is not just simply mentioned in passing whilst discussing other central issues of a paper.

Types of articles:

6. Conceptual papers on integration ,including conceptual or analytical frameworks;
7. Proposed frameworks for integration (practical not necessarily for analysis)
8. Meta-analysis, systematic, or structured literature of empirical studies on integration in health system ;
9. Any literature review of conceptual, methodological and empirical approaches to sustainability;

A3.2. Search results



*duplicates excluded at any stage

A3.3. Frameworks selected for the review

HEALTH INTERVENTIONS OR PROGRAMMES		RESEARCH IN LOW-MIDDLE INCOME COUNTRIES			
References	Background	Concept	Framework	Why	
1 & 2	Criell et al, 2004 And Criell et al, 1997 (no difference in principal)	Integration [disease control programmes with basic health care]	Should be justified prior to integration takes place	Administrative (structural) or operational (functional)	Factors determining integration <i>Desirable</i> – what is added value <i>Possible</i> – whether general services have capacity to implement interventions <i>Opportunity</i> - impact on improvements of general service or programmes
3	Grepin et al, 2008	Organizational theory [Neglected Topical Diseases Programmes Partnerships]	Improvements in partnerships' effectiveness and efficiency	Levels – global, national, local Domains - Policy, activities [functional], structural . Degree – coordination, collaboration, consolidation	
4	Atun et al, 2010a	Diffusion of innovations [targeted health interventions into health system]	Adoption, assimilation and sustainability of interventions and programmes	Levels of health system – national/regional, district, local Health system functions [into] – governance, financing, planning, service delivery, monitoring and evaluation, and demand generation Level of integration – full, partial, not integrated	Nature of health problem, type of intervention, adoption system, health system characteristics, broad context
5	WHO, 1965	Integration [communicable diseases programmes with general health systems]	Though mass campaigns have a strong appeal, as have tangible results in terms of reducing prevalence, and can be carried out by staff requiring limited training mass campaigns can not lead themselves into satisfactory endpoint because such machinery is not suitable at terminal stages (that is eradication), and could get very expensive	Extend of participation of general health system could be analyzed from 3 points - nature of mass campaign, state of development of services, and stages of mass campaign. Gradual transfer of responsibilities towards general system. Largely relates to planning & supervision and service delivery itself.	Relationships depend on characteristics of disease itself, tools available to combat diseases, organization and efficiency of general services; chronological development of campaign (early, late stages, eradication, etc); and overall context (social, economic and general administrative conditions).
6	Mills, A, 1983	Integration	Cost effectiveness as a decisions making choice between vertical and horizontal	levels – (i) integration within health services (health programmes); (ii) broader health sector - e.g. population control or sanitation with health services; (iii) - integration of all public sector affecting goal of health improvement - multisectorial activities incorporating all sectors as agriculture, education, etc.	
				Within health sectors distinguish functional and administrative/structural; not necessarily both	

References	Background	Concept	Framework Why	What and/or How	Factors determining integration
7 Wang et al, 2007	Review of literature on TB and HIV/AIDS programmes organizational arrangements, interorganizational coordination (Rogers&Whetten, 1982)	Integration (TB and HIV/AIDS)	Why Growing TB/HIV problem	<p>Integration - means that the national disease control programmes are brought under responsibility of, incorporated or blended into the general health services; then operational and managerial</p> <p>Merger - two programmes a(TB and HIV/AIDS) amalgamate into one; rarely seen at national level, but could be at lower levels;</p> <p>Linking - two programmes are maintained as separate organizations and form collaborative activities between. These collaborative activities may have 5 forms - coordination, cooperation, nesting, referring and sharing</p> <p>- Implementation of collaboration through forming partnerships, contracts, or more informal of networks.</p>	Differentiation among these forms of integration could be understood in terms of content - service components; financing, or planning; and level - national scale or localized.
8 Stylla, I et al, 2007	Review of literature on TB, HIV/AIDS and drug treatment services integration	Integration and co-location (TB, HIV, and Drug dependency treatment)	because current policy paradigm of 'disease management' is fragmented, and is not fully equipped to address the complexity of care required to treat effectively HIV patients with IDUs problems. Need a 'more holistic' approach	<p>Three broad levels :</p> <p>(i) separate services with referral mechanism in place;</p> <p>(ii) site integration - models are co-located physically but not organically (eg - screening on site for both/all condition; co-training; providers cotrained but provide services within own speciality; or share the same administrative staff, memorandum of understanding, etc;</p> <p>(iii) complete integration - models are co-located physically as well as organically</p>	
9 WHO, 1996		Integrated health services	Horizontal vs vertical profra,,es	<p>integration of health services has several elements, which together build up a picture of the overall extend of integration</p> <p>(i) integration of service tasks within given setting - multipurpose clinics; multipurpose staff; integration of service functions; (ii) integration of management and support functions - planning, budget and financial processes; informational systems; training of staff; research; (iii) integration of efforts of different resource providers (public, private, etc) through coordinating mechanisms; merging provider organizations; integration of health and other development efforts</p> <p>integration of health care into community and family activities .</p>	

HEALTH CARE ORGANIZATIONS, HEALTH SERVICES, HEALTH OR PUBLIC HEALTH PROGRAMMES [RESEARCH IN INDUSTRIALIZED COUNTRIES]

References	Background	Concept	Framework Why	What and/or How	Factors determining integration
10 Konrad, 1996	Experiences in US	Integration [human services]	Improve service accessibility, continuity, reduce duplication, cost and inefficiencies, greater accountability	Levels of integration - information sharing and communication, cooperation & coordination, collaboration, consolidation, integration Levels as continuum with increased intensity and formality, across 12 dimensions of cross-agencies activities.	
11 Leutz, 1999	Experiences in US and UK	Integration [medical and social services]	Improve efficiency and users satisfaction, better outcomes	Levels of integration, - linkage, coordination, and integration, which are set against service needs of patients and operational domains of health services; where patients with complex, fluctuating, long term problems benefit from more integration	
12. Axelsson & Axelsson, 2005	Contingency theory, institutional economic theory	Integration and coordination [public health organizations]	High degree of fragmentation among organizations in public health field	Dimensions - horizontal and/or vertical Forms of integration - Coordination, cooperation, contracting, and collaboration.	Regulatory, financing, informational systems; , organizational norms, cultures and interests; management and leadership
13. Provan and Millward, 2001	Agency theory	Networks (community based for delivery of publicly funded health and human services)	effective cooperation within networks is necessary to address complex problems	relationships among actors (clients, agents and principals) on three levels - community , network and organizations	Legitimacy of a network, cost to community, changes in incidence of a problem (and client outcomes), relationships strength and minimum conflict, members' commitment.
14. Bazzoli, Stein et al, 1997	Inter-organizational relations (Alter and Hage, 1993), resource dependency theory, strategic management , community development theories	collaboration [public-private partnerships for health and human service delivery, community based]	Growing financial pressures on services providers, federal reforms, a need to respond to range of community health needs and rationalize allocation of local resources	There key dimensions- perceived need, willingness and ability to collaborate.	3 set of factors: 1) environmental context in which public-private partnerships operate (available resources, community health needs), 2) structure and configuration of participating organizations, 3) the nature of potential collaborative activities

References	Background	Concept	Framework Why	What and/or How	Factors determining integration
15. Lasker et al, 2001	Organizational theory, review of conceptualizations of partnerships and synergy	Collaboration, [partnerships in health field]	Increasingly interdependent health programmes	Extend to which resources, skills, perspectives contribute to and strengthen work of the group [synergy].	Resources, partners characteristics and relationships, partnership characteristics (leadership, efficiency, governance, administration and management); external environment
16. Howarth & Morrison, 2007	Organizational theory [inter-organizational relationships]. Review conceptual frameworks	Collaboration [children's services]	Increased requirements from governments and policy makers for collaborations in child welfare services	Levels – communication, cooperation, coordination, coalition - integration. Dimensions - goals and targets, resources and funding, service delivery, decision-making, accountability and responsibilities.	Pre-disposing factors, mandate, membership & leadership, machinery, processes, outcomes.
17. De Rijk et al, 2007	networks theory, organizational behaviour theory, resource dependency theory , new institutional theory	Cooperation [public health organizations].	Assumed to optimise delivery of services	Level of cooperation - number and variety of agreements in place, including follow-through agreements	Institutional context, goals, dependence on resources, perceptions of partners, willingness and ability to cooperate
18. King, G and Meyer, 2006	A review of the literature on the service delivery in the fields of health, social services and rehabilitation, provision of coordinated care for children	Coordinated care with children disabilities and their families)	To reduce service fragmentation, fill service gaps, and ensure smooth continuum of services for children (that is improve consumer's satisfaction); to increase efficiency and decrease duplication of services (that is reduce cost); and to decrease inappropriate service utilization.	Three approaches: (i) system/sector based service integration; (ii) an agency based service integration, (iii) a client/family based service coordination. Main types of coordination related functions: aggregate level planning of service; administrative functions and client-specific service delivery functions.	Mandate of integration efforts (voluntary vs legally mandated), the scope and nature of integration (client population, the services to be integrated, geographic area), organizational structures, philosophical basis (family centred or client centred); degree by which nature of activities matches the needs of clients; financial systems (public vs. privately funded services)
19. van Raak, A., Meijer, et al. 2005	Contingency theory, new institutional theory, and resource dependency theory	Partnership (partnerships for integrated care)	A need for sustainable partnerships within integrated care initiatives	Key for partnerships is nature of decisions of making during its organizational development	Context (organizational characteristics, actors, personal characteristics of actors) , subject (of decision making - complexity, conflicts of interest, etc), process dimensions (centralization, formalization, information); process course (of decision making and implementation); outcomes (effectiveness, efficiency, satisfaction, implementation)

References	Background	Concept	Framework Why	What and/or How	Factors determining integration
20. Kodner, D. L., and Kyriacou, C. K., 2000	Leutz, 1999. Experiences in the US	Integrated care (elderly health care and social support)	To enhance quality of care, quality of life and consumer satisfaction, and system efficiency for patients with complex problems	3 models – linkage, coordination, integration. 15 levels of integration: - jurisdiction boundaries, funding mechanisms, governance and management, strategic management, focus on continuum of care, comprehensive service packages, network relationships, patient screening, multidisciplinary assessment, primary care, care management, continuity of coverage and care, team work, information sharing, system outcomes	
21. Alexander, J. A., Waters, T. et al. 2001,	Contingency theory, configuration theory, organizational behaviour	Organizational linkages/alignment, (physician and health care systems)	Need to improve physician's alignment with delivery organizations	What of alignment in physician-system alignment - goals, strategies, policies, and norms. Inter-organizational linkages at three independent levels - technical core (e.g patient care); administrative level (e.g. decision-making); and institutional level (e.g. policies and strategies).	
22. van Raak, A., Mur-Veeman, I., and Paulus, A., 1999,		Integrated care, disease management	Patients with chronic conditions or complex terminal conditions require care for indefinite period and from numerous providers		Four independent variables which together influence emergence of integrated care provision - institutional context:(i) external factors - legislation and financial systems and (ii) local situation - roles, relations and positions of organizations; (iii) management actions - coping and steering; and (vi) commitment and support among actors - routines and actions
23. Bolland and Wilson, 1994	Open systems, resource dependency, social ecology theories	Integrative coordination (organizational networks, community based health and social services)	Need to reduce fragmentation among actors on all levels to address complex health issues such as mental health, substance abuse, etc	three domains in relationships - service delivery, planning, and administration	Barriers – geographical, legal, philosophical
24 D'Amour, D., Goulet, et al 2008	Organizational sociology	Collaboration (professionals in health care setting)	New policies for organizing services (integrative care) require increased collaboration	Four dimensions - formalization (structuring clinical care); governance (leadership function, centrality, connectivity) goals and vision, and internalization (mutual acquaintanceship, and trust).	Resources, financial constraints and policies

References	Background	Concept	Framework Why	What and/or How	Factors determining integration
25 Boon, H., et al. 2004.	International workshop, experiences	Integrative health care (Western health care systems)	A need to develop conceptual model for describing, comparing and evaluating the different models of team oriented health care practices	What: Philosophy, structure, processes and outcomes of team-oriented models of care. Models: parallel, consultative, collaborative, coordinated, multidisciplinary, interdisciplinary and integrative. As a continuum from non-integrative to fully integrated approaches to patients care. Along continuum - Structures - complexity increases; Processes - communication, number of participants; synergy; - importance of consensus - increases; outcomes - complexity and diversity of outcomes increases	
26 Messerli, P., et al., 2003	Intergovernmental relationships (Alter and Hage, 1993); social networks theory and builds on Konrad, 1996; Dennis Kagan, 1993; Dennis 2000.	Integration [HIV services]	Complex health problems facing HIV patients; need to integrate prevention and cure. Need to reduce service fragmentation and the expected improvements in both systems and client outcomes	Organizational locus - client-centred; programme centred; policy-centred; and government/funding centred (Kagan, 1993). System's integration (which includes policy and government/funding) - 'aimed at changing service delivery for a defined population as a whole'; Services integration - are primarily, but not exclusively, congruent with client-centred activities.	
27 Fletcher et al, 2009	Resources dependency theory,- interorganizational relations	Integration collaboration [criminal justice system and substance abuse treatment services]	Service' fragmentation preventing ability of drug-involved offenders to complete probation and parole and assimilate back to communities	intensity of integration (levels of cooperation and collaboration) as per Konrad, 1996 12 dimensions - as per Konrad, 1996	
28. Batterham, et al 2002,		Integration [general practitioners]	Integration of primary care with other HS components is identified as important components of system's reforms in a number of Western countries. Concept is unclear.	'Integration events' = structures and functions (sanctions, regulations, resources, incentives). 'patterns of execution' (frequency, nature and diversity). Levels - patients groups, community level, local service providers, hospitals (including specialist), health system (including planning and policy making).	Factors determining - structures which are supporting integration; capacity and predisposition of both providers and patients.
29. Conrad, D. A., and Shortell, S. M., 1996,	Contingency theory, strategic management, interorganizational relations	Integrated system [USA health system]	A dominant tendency in US health system to move towards major restructuring of health system towards integration. Need to clarify concepts, theory to identify determinants and ensure performance	Vertical, horizontal, virtual. Functional, clinical, physician integration . Key dimensions of integrated health system: (i) dominant forms of sponsorship (hospitals, health plans, physicians groups); (ii) linkage mechanisms (ownership, strategic alliances); (iii) decision making (centralized, decentralized)	Resources, organizational culture and mental models, management and governmental systems, leadership, external, market, legal and regulatory environment

	References	Background	Concept	Framework Why	What and/or How	Factors determining integration
30	Retchin, S. M., 2008		interprofessional care, collaborative models	Increasing calls for interprofessional care in response to care fragmentation, raising health care costs and threats to patient safety	health professionals, health care; interactions and structure [resource intensity]	depends on variables - temporality, urgency (of care required), degree of structured authority
31	Sicotte, C., et al. 2002	Contingency theory, interorganizational relationships	Interprofessional collaboration and integration [Canadian - primary care]		Intragroup processes depend on beliefs of benefits of integration, social integration, interdisciplinary logic, work group design	Structural characteristics of the programme, characteristics of management
32	Mur veeman, et al 2008	Actor-centred institutionalism	Integrated care	An overall health system policy direction in Western Europe	functional, organizational, financial, and/or clinical integration. Policy outcome as an outcome of interactions among and between actors; which are being shaped by institutional settings (legal rules, social norms, organizational practices). Actors form constellations (groups), wherein they play interaction games and from strategies; of modes of interactions such as unilateral action, negotiated discussion, building collations, and hierarchical directions	Principal characteristics of national health and social care systems; the structure of national health care system, legislation, funding, key players and sub-national variations
33	Brazil K., et al, 2004	Interorganizational relationships (Alter and Hage, 1993)	Coordination [cancer care in the community]	growing rates of cancers, and growing need for continuum of care and support, and palliative care	Coordination, as a measure of service system performance, whereby 3 objectives of service delivery must be met - comprehensiveness, accessibility and compatibility Administrative and operational. Administrative - inter-agency activities at senior administration and managerial levels. Operational - inter-agency activities at front-line or care manager levels.	
34	Rodriguez, C., Contandriopoulos, A. P., and Larouche, D., 2006, .	Political economy (Benson's 1975)	Integrated health care [diabetic patients]		Economic and political forces underpin structures of sentiments and cooperative interactions among actors (members of network); till equilibrium is reached; domains - ideologies, positive reciprocal evaluation and work coordination. Strategies that drive networks - disruptive (fight for resources); manipulative; authoritative, and cooperative.	Decision making, regulation modes, payment mode, availability of resources (financial, human, informational)
35	Wan T., et al. 2001	Contingency theory, strategic management, review of previous studies	Integrated healthcare networks		Integration strategies vertical (forward), clinical integration via case management, informational, financial integration Network performance - profit margin, technical efficiency.	Network size, number of physicians, bed size, presence of high tech services

References	Background	Concept	Framework Why	What and/or How	Factors determining integration
36 Browne, et al. 2004,	Literature review. Provan and Milward, 2001	integration [intersectoral health, education, social care, private and public sector]		<i>Extend of integration:</i> services and number of services involved in partnership. <i>Scope of integration:</i> the number of services that have some awareness or link with others <i>Depth of integration:</i> depth of link among all services and each service, along a continuum – no awareness, awareness, communication, coordination, collaboration	
37. Minkoff, K., 2006,		Integration	Complex health problems	Integration always include two components - client/family interface; and organizational functional level (both structures and functions of any types of integration). Types of integration are system, services, programmes, treatment, interventions, treatment relationships or scope of practice	
38 Adams, J., Hollenberg, D., Lui, C.-W., and Broom, A., 2009	social sciences perspective on issues surrounding biomedical, complementary and traditional medicine	integrative healthcare; medical integration [biomedical and complementary medicine]		critical role of contextual analysis of power, knowledge and clinical practice	state regulation, power and ideology; knowledge and technology; culture of science; historical context
39 Fluery , 2006	Organizational theory [inter-organizational relationships]. Review conceptual frameworks	integrated service networks [health care organizations] -	Efficiency, quality of services, health improvements and satisfaction of clients	<i>Main types</i> - mutual adjustment, alliance and integration [based on intensity of ties between organizations]. <i>Criteria for differentiate types</i> governance, strategies, accountability, scope, type of health problem <i>Integration strategies</i> – structural, functional, clinical	
40 Vazquez et al, 2009	Literature review	Integrated health care networks [evaluation of performance]	Intermediate outcomes – coordination, continuity of care, access Final outcomes - equity in access, efficiency	<i>Dimensions – systems' goals, strategies, organizational structures and culture, resources allocation and incentives system, health care model, and coordination mechanisms</i>	Policy goals on equity in access, equity and continuity, characteristics of insurance and health services, integration strategies, stakeholders and institutional context
41 Mitchell and Shortell, 2000	Organizational theory (open systems)	Partnership [community health]	Several health and societal problems are attributable to systemic community problems. There is a surge of community partnerships, whose effectiveness is difficult to evaluate	Typology of partnership depends on the nature of the problem addressed, partnership composition, differentiation, coordination and integration, accountability, centrality, alignment	Governance (strategic vision, determining resource needs and level, governance structures for coordination), management (engaging communication, conflict management, M&E), environment (capacity political systems, legal and economic systems, social systems)

LIST OF PRACTICAL FRAMEWORKS IDENTIFIED

	PRACTICAL or IMPLEMENTATION FRAMEWORKS (both international and industrialized)
1	Hollander, M., J. , and Prince, M., J. , 2008, Organizing Healthcare Delivery Systems for Persons with Ongoing Care Needs and Their Families: A Best Practices Framework: <i>Healthcare Quarterly</i> , v. 11, p. 44-54.
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