

Uwimana, J., et al. (2012). Health system barriers to implementation of collaborative TB and HIV activities including prevention of mother to child transmission in South Africa. *TROPICAL MEDICINE AND INTERNATIONAL HEALTH*, 17(5): 658–665



Health system barriers to implementation of collaborative TB and HIV activities including prevention of mother to child transmission in South Africa

J. Uwimana¹, D. Jackson¹, H. Hausler^{1,2} and C. Zarowsky¹

1. School of Public Health, University of the Western Cape, Cape Town, South Africa
2. TB/HIV Care Association, Cape Town, South Africa

Abstract: In South Africa, the control of TB and HIV co-infection remains a major challenge despite the availability of international and national guidelines for integration of TB and HIV services. This study was undertaken in KwaZulu-Natal, one of the provinces most affected by both TB and HIV, to identify and understand managers' and community care workers' (CCWs) perceptions of health systems barriers related to the implementation of collaborative TB/HIV activities, including prevention of mother to child transmission of HIV (PMTCT). We conducted 29 in-depth interviews with health managers at provincial, district and facility level and with managers of NGOs involved in TB and HIV care, as well as six focus group discussions with CCWs. Thematic analysis of transcripts revealed a convergence of perspectives on the process and the level of the implementation of policy directives on collaborative TB and HIV activities across all categories of respondents (i.e. province-, district-, facility- and community- based organizations). The majority of participants felt that the implementation of the policy was insufficiently consultative and that leadership and political will were lacking. The predominant themes related to health systems barriers include challenges related to structure and organisational culture; management, planning and power issues; unequal financing; and human resource capacity and regulatory problems notably relating to scope of practice of nurses and CCWs. Accelerated implementation of collaborative TB/HIV activities including PMTCT will require political will and leadership to address these health systems barriers.

Keywords

health systems, barriers, collaboration, integration, tuberculosis, HIV/AIDS, prevention of mother to child transmission of HIV

Introduction

South Africa carries 17% of the global burden of HIV infection (UNAIDS 2010), is ranked fifth among the 22 countries most highly burdened with TB (WHO 2010) and has a TB-HIV co-infection rate of 75-80% in some settings such as KwaZulu Natal (KZN) province (Abdool Karim et al. 2009). TB is the main killer among PLWHA (Maher et al. 2005), and HIV is the main driver of the TB epidemic (Corbett et al. 2006). Yet, the

implementation of collaborative TB/HIV activities has been challenging in SA, as it is in most sub-Saharan African (SSA) countries with histories of vertical TB and HIV programmes (Maher et al. 2005; Harries et al. 2006) and weak health systems (Coovadia et al. 2009). In addition, a national perspective is insufficient: both epidemiology and health system performance are highly uneven across South Africa's nine provinces and 52 districts, with 2008 antenatal sero-prevalence ranging from 2.2% to 45% across districts (Department of Health 2010). In 2009, the National Department of Health (NDOH) identified 18 target districts needing particularly intensive technical, financial and leadership investment to help turn around weak health system performance and poor health outcomes. It was recognized that 'one size fits all' approaches were not suitable for the unevenness and diversity of South Africa's epidemiological and socio-political geography, but that careful documentation and analysis of the diverse experiences could help to develop lessons for adaptation - not transplantation - elsewhere. This study examines the implications for integration of other policies than those directly addressing integration and reports on the perspectives of managers and community organizations on the performance of a key strategy - integration of TB, HIV and prevention of mother to child transmission (PMTCT) services - in one of these 18 priority districts, Sisonke District in KZN province.

South Africa's experience as part of the WHO-ProTEST study (WHO 2004a) was central to the development of the 2004 WHO policy for collaborative TB/HIV activities aimed at tackling this double epidemic (WHO 2004b). South Africa also acted directly on the lessons learned from the ProTEST study, establishing a national TB/HIV unit to foster collaboration between TB and HIV programmes. At provincial and district level, the HI-V/AIDS, sexually transmitted infections (STI) and TB (HAS) unit was established to promote integration. National strategic plans for HIV and AIDS and STI (NASP) as well as for TB prevention and control 2007-2011 were developed, as were guidelines for management of HIV/AIDS and TB programmes including the provision of integrated TB/HIV services (DOH-NASP 2007; DOH- NSP 2007). Policy as well as implementation guidelines to address this public health disaster has thus existed at global, national, provincial and district levels for several years. We sought to learn whether integration was perceived to be occurring and effective, in the presence of what appear to be coherent policy guidelines, and how managers perceived health systems barriers to successful integration compared to dominant expert models (Atun et al. 2010).

The South African health system is rooted in the concept of primary health care (PHC). The PHC services are provided through the district health system as illustrated in Figure 1. PHC facilities at district level are the only easily accessible health services and provide basic health care in SA, including TB and HIV services (Peltzer 2009). However, health sector governance is centred within provincial health departments and both funding and broad policy guidelines in the NDOH. This matrix of funding, policy and accountability

has contributed to lack of autonomy and poor performance of district health systems (Coovadia et al. 2009).

The exponential rise in HIV has driven high demand for health workers, for whom most districts cannot afford (Schneider et al. 2006) particularly in rural areas such as Sisonke district where 66% of the medical officer posts and 45% of professional nurse posts are vacant (Sisonke DHIS 2011). Although the South African health system is considered comprehensive (Lush et al. 1999), with integrated TB and HIV programmes including PMTCT of HIV, these programmes are not yet fully integrated into the health system functions as defined by WHO framework on health systems (WHO 2000) and other conceptual frameworks for analysis of integration of health interventions into health systems (Cairncross 1997; Atun et al. 2010).

Available literature on collaborative TB/HIV activities locally (Friedland et al. 2007; Loveday & Zweigenthal 2011) and internationally (Gunneberg et al. 2008) and our own experience over the past decade suggest that it is essential to look beyond policies and structures for integration and address health systems factors influencing collaborative activities. Using an interpretive paradigm, we sought to explore and understand health systems barriers related to implementation of collaborative TB/HIV/PMTCT activities at provincial, district, facility and community levels from the perspectives of key actors in the health systems. The study was conducted in a rural South African district - Sisonke¹ in KZN province. Provincial and district managers, health facility managers, non-governmental organisations and community healthcare workers (CCWs) were included in the study.

Methods

We examined relationships between key actors and structural components linked to goals of a particular health programme/intervention, to understand factors influencing health system performance and resistance to change (Davies 2002; Hsiao 2003). We sought to identify and understand barriers affecting health systems performance for collaborative TB/HIV/PMTCT activities. The interview guides for key Informant Interviews (KIIs) and focus group discussions (FGDs) addressed organizational and managerial issues, financing, human resources, service delivery mechanisms at facility and community levels including NGOs and M&E. A purposive sample was constructed to capture a range of perspectives across different managerial levels, roles and responsibilities. Table 1 illustrates the sample size and study population.

¹Sisonke district is one of the 11 districts of KZN province, the epicentre of TB and HIV epidemics. The district is mostly rural with poor roads and has a geographic area of 11 128 km² with a population of approximately 500 000, unemployment of 79% and poverty levels of 71%. The HIV prevalence among ANC in the district is estimated at 35% compared with 38.7% provincial overall in 2008–2009 (DOH 2010). The total number of TB cases (new) was 1079 per 100 000 population with HIV co-infection rate of 81% compared with 52% overall in SA (DOH-KZN 2010).

Table 1 The sample size and study population

Sample size (n = 33)	Study population
6 Provincial managers	HIV/AIDS, STIS and TB (HAST) manager TB programme manager HIV/AIDS programme manager PMTCT programme manager Home and Community Based Care programme (HCBC) manager M&E manager
6 District managers	District Health manager Manager for PHC programmes M&E district manager HAST coordinator TB programme coordinator HIV&AIDS and HCBC programme coordinator
11 Facility managers and district managers	4 District Hospitals 1 Community Health Centres 6 PHC clinics
5 NGOs involved in TB and HIV activities and managing CCWs	Edmumzikulu NGO KwaZulu natal progressive primary Healthcare (PPHC) – NGO SIYABONGA NGO Turn Table Trust NGO Valley trust NGO
6 FGDs with CCWs	2 FGDs with CHWs 2 FGDs with HBCs
1 FGD size = 6 participants per FGDs	1 FGDs with HIV lay counsellors 1 FGD combining all CCWs

CCWs, Community Care Workers; FGDs, focus group discussions; HBCs, Home-based carers; PHC, primary health care; PMTCT, prevention of mother to child transmission.

Structure of the South African health system

1. National Department of Health responsible for national health policy.

2. Nine provincial departments of health responsible for developing provincial policy within the framework of national policy and public health service delivery
3. Three tiers of hospital: tertiary, regional, and district
4. The primary health-care system—a mainly nurse driven service in clinics—includes the district hospital and community health centres
5. Local government is responsible for preventive and promotive services
6. The private health system consists of general practitioners and private hospitals, with care in the private hospitals mostly funded through medical

Figure 1 South African Health system structure. Adapted from Coovadia et al. (2009).

Key Informant Interviews were conducted by the first author in English, and FGDs were conducted in isiZulu by a research assistant. Interviews were recorded on audio- tape and transcribed verbatim by an independent transcriber. Transcripts from FGDs were translated back into English and transcribed. Ethical clearance was obtained from the University of the Western Cape and the Research Unit of the KZN-DOH. Written informed consent was obtained from all participants.

Analysis

A total of 33 transcripts were captured, coded and thematically analysed, using a constant comparison process supported by ATLAS.ti software (Muhr & Friese 2004). An analytical grid of key themes was developed based on the study aims and familiarization with the first few transcripts and then applied to the rest of the transcripts, following the approach described by Pope et al. (2000). Triangulation and member checking were used to enhance rigour.

Member checking occurred through meetings with the district management team and stakeholder workshops to feedback preliminary results and inform further analysis (Creswell & Miller 2003).

Results

Data saturation appeared to have been reached. The results of this study are arranged by themes generated by the data in relation to the perceptions and experiences of participants with regard to the process of implementation of collaborative TB/HIV/PMTCT activities, and health systems barriers.

Overall perceptions on implementation of collaborative TB/HIV/PMTCT activities

Respondents reported only a moderate degree of implementation of the policy and integration of services, supporting the available documentation, and specifically identified a gap between policy formulation and consultation and supportive guidance necessary for implementation. According to the 2008 district report on TB/HIV/PMTCT programmes, 67% of the 2492 new patients with TB were offered HIV counselling and testing (HCT), of whom 74% tested positive; 41% of patients with TB-HIV were started on cotrimoxazole preventive therapy and only 10% on antiretroviral treatment (ART). Of the 5878 patients with HIV, 69% were screened for TB symptoms; none were screened and started on isoniazid preventive therapy (IPT). Of 1699 pregnant women who visited antenatal clinics (ANC), 33% tested HIV positive of whom 54.9% were screened for TB symptoms and none were on IPT (Sisonke - DHIS 2008). Nationally, at the end of 2009, only 45% of HIV-positive clients were screened for TB symptoms, and only 3% of HIV-infected clients were prescribed IPT (UNAIDS 2010). It is clear that the implementation of collaborative TB/HIV/PMTCT activities is slow.

Despite the 2004 and 2007 policies and implementation guidelines, historical patterns of service delivery persist. TB nurses do not routinely offer HCT to TB clients, and nurses in HIV clinics do not routinely screen HIV clients for TB symptoms, but instead refer to either TB or HIV clinic. Some managers felt that lack of consultation of relevant stakeholders at all levels at the onset of the implementation of the new guidelines (NASP and NTP) to clarify roles and responsibilities hindered the implementation of the policy. Technical gaps remained: for example, there was no guidance on TB prevention activities to be included in the PMTCT programme, thus maintaining the disjunction between TB/HIV and PMTCT programmes. Lack of leadership from provincial managers and constant changes in structures affected the implementation process.

Health systems barriers at province, district, facility and community level

Health system barriers are presented according to the implementation level and site: provincial and district, facility and community. While some themes were highlighted at different levels, the consistency among participants' reports - and even language - is striking.

Provincial and district levels

The main themes emerging from participants included structural, organizational, management and financing barriers. Subthemes included the location of TB/HIV/PMTCT programmes; understandings of the concept of integration, power struggles and lack of joint targets and planning.

Structural, organisational and management barriers

A major barrier to integration of activities and programmes is the legacy of decades of running the programmes vertically and separately which continues to influence the structural location of TB/HIV programmes and communication between managers. For instance at provincial level, only the HIV programme was hosted within the HAST unit, and the TB and MCH-PMTCT programmes were in another building. This physical separation impeded communication between programmes.

At district level, the HAST unit was in the same building with TB/HIV and PMTCT-MCHW programmes, yet these programmes continued to be run vertically and communication and joint planning was perceived as insufficient. This was reported to be due to the relative size of individual programmes and the attention given to HIV programme compared to other programmes nationally during the time this study was conducted. As a result, the HAST unit focused on HIV programme and not on collaborative TB/HIV/PMTCT activities.

Understanding of the concept of integration Participants reported that there were different understandings of integration, which contributed to poor implementation and management of joint TB/HIV/PMTCT from province to district level. Neither the WHO policy nor the national strategic plans define what 'integration' means, focusing instead on key interventions required for management of TB/HIV and to some extent PMTCT programmes at various levels. However, there was some preference among policy makers for providing these programmes under one roof, based on feasibility studies conducted on implementation of collaborative TB/HIV activities (Coetzee et al. 2004; WHO 2004b). Some managers thus perceived integration as reallocation of TB/HIV/PMTCT services into one building with a referral system, others referred to inclusion of selected activities of TB programmes such as TB screening and diagnosis into HIV services and HIV activities such as HCT and CD4 testing into TB and MCWH programmes (i.e. partial integration). Some felt integration meant provision of all TB/HIV/PMTCT services in one place by one healthcare provider together with other PHC services (i.e. full integration). At community level where these services are provided by CCWs through NGOs, there is no integration of services: each NGO focuses on a particular disease.

Power conflicts

Although there was some clarity on the intent of the HAST structure is meant for, the hierarchy and ranking system of managers within the health system played a significant role in power relations which ultimately affected the performance of managers. The rank of HAST manager is the same as TB and HIV/AIDS programme managers, causing power and role conflicts among TB and HIV programme managers vs. the HAST manager in relation to operational responsibilities and monitoring of collaborative TB/HIV/PMTCT activities.

Lack of joint targets and planning

Many participants noted that joint planning of activities at provincial and district levels was lacking. They felt that the workload and pressure to meet targets of each disease programme made it difficult to make time for the joint planning. Managers do not have sufficient incentives to realign their activities in relation to joint TB/HIV/PMTCT activities. Competition among TB and HIV programme coordinators to achieve better performance of their own programmes was also mentioned as a barrier to collaboration.

Financing

Due to the historical management of TB and HIV programmes as vertical programmes, the financing of these programmes has been uneven. The HIV programme receives funding from multiple external donors, and these funds are earmarked with no flexibility of using them for collaborative TB/HIV/PMTCT activities. In contrast, the TB programme is mainly government funded, but at a lower level. Although a structure (HAST) exists for coordination, there was no funding mechanism for actual collaborative activities. This contributed to lack of interest from managers for implementation of collaborative activities.

Besides the unevenness of funding between programmes, some managers at provincial, district and community level perceived that the extensive external funding of HIV programmes attracted more community-based organization to focus on HIV/AIDS alone, though they had been established to serve wider community needs. Funding patterns also led to the creation of multiple cadres of CCWs and fragmentation of services at community level. Home-based carers (HBCs) are funded by a specific budget from national government to focus mostly on HIV/AIDS clients, whereas Community Health Workers (CHWs) are funded by the provincial DOH and focus on comprehensive health education and promotion. The Directly Observed Therapy strategy for TB adherence support is provided by volunteers and focuses on TB adherence support, without including ART adherence. As a result, co-infected patients were visited by two adherence supporters.

Barriers perceived at facility level

The themes identified by facility managers include vertical service delivery mechanisms (echoing the physical or programmatic 'location' of services at provincial and district levels), human resource capacity and development, staff shortage and high turnover, training and supervision of healthcare workers, scope of practice of healthcare workers and the M&E systems for TB/HIV/PMTCT programmes.

Physical and operational separation

The historical mechanism of providing TB/HIV services as vertical services located in different places at facility level is an obstacle for the provision of integrated TB/HIV/PMTCT services. Even in PHC facilities where TB/HIV/PMTCT services are under one roof, patients will have to be seen by one health worker in one consulting room

and then referred to another room. This resulted in the loss of patients in the referral process and creation of long queues. Most patients cannot afford to queue and wait for another service as they fear to miss the scarce available transport in rural areas.

Human resource capacity and development Most facilities run below staffing norms and cannot cope with the high case load of patients requiring skilled HCWs such as doctors and nurses. Staff retention is difficult in rural areas. Besides staff shortages, the complexity of management of TB and HIV co-infection demands special skills and training. In most PHC facilities, nurses are the frontline healthcare provider, and the majority of them are trained to manage TB and other PHC services (i.e. antenatal care, child care, treatment of minor ailments, etc.). While TB management was nurse led, the ART programme was primarily doctor led at the time of this study. Nurses were not trained or allowed to initiate patients with HIV on HAART. The limited scope of practice of nurses further hampered the provision of comprehensive TB/HIV care, particularly in clinics where there is no doctor.

Monitoring and evaluation (M&E)

There is no comprehensive M&E system to monitor the progress of policy implementation and evaluate its effectiveness. Although there are WHO-recommended indicators for monitoring implementation of collaborative TB/HIV activities, some of the indicators (e.g. patients with latent TB initiated on INH prophylaxis) were not included in the reporting and recording tools at national level at the time of the study. PMTCT recording tools do not have any indicators on TB prevention and treatment. As a result, reporting on progress on joint TB/HIV/PMTCT activities has been problematic. Despite the revision of reporting tools to incorporate collaborative activities, the M&E system for TB/HIV/PMTCT programmes is still vertical which makes planning of joint activities difficult. At community level, there is no consistent mechanism for reporting on collaborative activities due to funding requirements of each donor. 'We have got the different monitoring tools that CCWs are using because our caregivers are being funded by different funders.' (NGO)

Barriers perceived at community level

Community Care Workers are agent of healthcare delivery at a community level, and they are managed by NGOs. Some of these NGOs are fully funded by provincial DOH, but there are some that are funded by other external funding agencies such as PEPFAR. The service delivery mechanism of TB/HIV/PMTCT and the levels of training of CCWs depend on funder requirements. CCWs were not trained comprehensively to deal with TB/HIV/PMTCT cases until recently (after the time of this study), when PMTCT was declared as a national priority.

Stigma and lack of disclosure

In South Africa, particularly in rural areas, there are still high levels of stigma related to HIV which results in non-disclosure and delays in seeking medical attention either at facility or community level. Other cultural beliefs and norms also influence health-seeking behaviour. For instance, in KZN province, pregnant women are not supposed to disclose their pregnancy until in the last semester, and some people still believe that HIV infection is from witchcraft. This has hampered the provision of TB and HIV at community level. 'The main problem in the community is stigma. People are afraid to disclose their status to us. But we try to explain them why it is important to disclose their status so that they can get further help' (FGD)

Discussion

In South Africa, policies have been enacted to enhance implementation of collaborative TB/HIV/PMTCT activities. However, at the time of this study, managers and NGOs in a high-priority rural district reported only moderate attainment of implementation of the policy and integration of TB/HIV/PMTCT services. Our findings indicate that the implementation of TB/HIV collaborative activities has been hampered by health systems barriers emanating from structural, organizational, managerial and financing systems as well as other factors affecting the health systems, such as community cultural practices and norms. The latter have not been considered in the literature as a factor that influences health systems performance in integration of health priority interventions (Atun et al. 2010), but they strongly shape healthcare utilization. Lack of role clarification for managers across TB, HIV/AIDS, PMTCT and HAST programmes has created tension among them and has contributed to poor implementation of joint TB/HIV/PMTCT activities, as it did in Uganda (Chono et al. 2009). Lack of a common understanding of the concept of 'integration' among managers and health providers was identified as a barrier that contributed to poor quality of services, again echoing earlier findings in Tanzania (Oliff et al. 2003).

Human resource capacity is a major barrier at facility and community level, reflecting the increased volume of HIV-associated TB cases, funding restraints hindering the creation of posts and difficulties recruiting and retaining staff. National efforts to strengthen nurse-initiated management of ART (NIMART) offer an opportunity to align the scopes of practice of HIV and TB nurses. Similarly, national and provincial policy developments in 2011 suggest that cautious optimism is warranted regarding task shifting, integration and up-skilling of multiple cadres of CCWs, as recommended in many studies addressing strategies for expanding human resources for health and moving towards universal coverage (Zachariah et al. 2008).

We note that integration of TB prevention and care with antenatal care and PMTCT is particularly weak as has been documented in recent studies (DeLuca et al. 2009; Uwimana et al. 2010). Lack of integration of TB services risks undermining the impact of South Africa's recent efforts at improving PMTCT programmes.

Different and unequal sources of funding between TB and HIV/AIDS programmes persist as a key barrier to implementation of collaborative TB/HIV/PMTCT activities, again reinforcing other literature (Wang et al. 2007). Our findings further indicate that external funding contributed to the creation of many cadres of CCWs and fragmentation of services at community level.

The locally grounded interpretive approach used in this study limits generalisability of the findings. Nevertheless, these findings suggest a broadly shared understanding among managers and CCWs alike of what underpins good performance and what key barriers need to be addressed to enhance implementation. Undertaking the study itself created opportunities for consultation and communication identified by participants as essential to overcoming both structural and attitudinal barriers to integration.

Finally, we note that managers and NGO perspectives on health systems barriers do not contradict current expert models, but emphasize the day-to-day impacts of programme structure, accountability and funding in ways which current models do not. At district level, good policies on integration and good high-level leadership are insufficient to overcome the effects of micro-level line management and macro-level financing decisions.

Conclusion

Implementation of collaborative TB/HIV/PMTCT activities in South Africa has been slow.

Enhancement of implementation of collaborative TB/HIV/PMTCT activities in South Africa requires political will and leadership to move beyond setting national objectives and policy to begin to address health systems barriers to implementation at the provincial, district, facility and community level. In addition to continued work on structural and funding issues at higher levels, this new kind of leadership and action will require close and sensitive attention to context, organizational culture and the perspectives and roles of the individuals and institutions whose active engagement is crucial if integration is to succeed.

Acknowledgement

The KwaZulu Natal Department of Health and its staff in Sisonke district are thanked for authorizing and facilitating the research. The authors' special gratitude goes to the participating NGOs and Community Care givers. Appreciation is also extended to research assistants for conducting interviews and FGDs. This research was made financially possible by the African Doctoral Dissertation Research Fellowship (ADDRF) of the African Population and Health Research Centre in partnership with the International Development Research Centre and Ford Foundation. SATBAT (a South African/US research training collaboration funded by a Fogarty International Center

Grant). We also appreciate the editorial support provided by Cathy Emrick, UNC, centre for AIDS Research. This study contributed to the PhD degree of JU.

<https://repository.uwc.ac.za/>

References

Abdool Karim SS, Churchyard JG, AbdoolKarim Q & Lawn DS (2009) HIV infection and tuberculosis in South Africa: an urgent need to escalate the public health response. *Lancet* 374, 921-933.

Atun R, Jongh TD, Secci F, Ohiri K & Adeyi O (2010) Integration of targeted health interventions into health systems: a conceptual framework for analysis. *Health Policy and Planning* 25, 104-111.

Cairncross S (1997) Vertical health programmes. *The Lancet*

349(Suppl. 3), 20-22. Chono OR, Mugisha F, Adatu F, Madraa E, Dlodlo R & Fujiwara P (2009) Health system barriers affecting the implementation of collaborative TB-HIV services in Uganda. *International Journal of Tuberculosis and Lung Disease* 13, 955-961.

Coetzee D, Hildebrand K, Goemere E, Matthys F & Boelaert M (2004) Integrating tuberculosis and HIV care in the primary care setting in South Africa. *Tropical Medicine & International Health* 9, SA11-SA15.

Coovadia H, Jewkes T, Barron P, Sanders D & McIntyre D (2009) The health and health system of South Africa: historical roots of current public health challenges. *Lancet* 374, 817-834.

Corbett EL, Marston B, Churchyard GJ & De Cock KM (2006) Tuberculosis in sub-Saharan Africa: opportunities, challenges, and change in the era of antiretroviral treatment. *Lancet* 367, 926-937.

Creswell WJ & Miller LD (2003) Determining validity in qualitative inquiry. *Theory into Practice* 39, 125-130.

Davies OTH (2002) Understanding organizational culture in reforming the National health service. *Journal of the Royal Society of Medicine* 95, 140-142.

DeLuca A, Chaisson ER & Martinson AN (2009) Intensified case finding for tuberculosis in prevention of mother to child transmission programs; a simple and potentially vital addition for maternal and child health. *Journal of Acquired Immune Deficiency Syndrome* 50, 196-199.

Department of Health (2007) National tuberculosis strategic plan 2007-2011. <http://www.doh.gov.za/tb/docs/stratplan/2007-2011/>.

Department of Health (2007) HIV & AIDS & STI Strategic plan for South Africa, 2007-2011. <http://www.doh.gov.za/docs/misc/stratplan/2007-2011/part1.pdf> (accessed 27 March 2010).

Department of Health (2010) National Department of Health Strategic plan, 2010/11-2012/13. <http://www.doh.gov.za> (accessed 10 December 2011).

Department of Health (2010) National antenatal sentinel HIV and syphilis prevalence survey in South Africa 2009. http://www.doh.gov.za/docs/reports/2010/hiv_syphilis2009.pdf.

Department of Health KwaZulu-Natal (2010) KwaZulu-Natal tuberculosis programme, Sisonke District: TB progress report Q1-2010. <http://www.kznhealth.gov.za>.

Friedland G, Harries A & Coetzee D (2007) Implementation issues in tuberculosis/HIV program collaboration and integration: 3 case studies. *The Journal of Infectious Diseases* 196, S114- S123.

Gunneberg C, Reid A, Williams BG, Floyd K & Nunn P (2008) Global monitoring of collaborative TB-HIV activities. *The International Journal of Tuberculosis and Lung Disease* 12, (3 Suppl. 1), 2-7.

Harries AD, Boxshall M, Phiri S et al. (2006) Providing HIV care for tuberculosis patients in sub-Saharan Africa. *International Journal of Tuberculosis and Lung diseases* 10, 1306-1311.

Hsiao WC (2003) What is a health system? why should we care? <http://www.hsph.harvard.edu/phcf/Papers/What/>.

Loveday M & Zweigenthal V (2011) TB and HIV integration: obstacles and possible solutions to implementation in South Africa. *Tropical Medicine and International Health* 16, 431-438.

Lush L, Cleland J, Walt G & Mayhew S (1999) Integrating reproductive health: myth and ideology. *Bulletin of the World Health Organization* 77, 771.

Maher D, Borgdorff M & Boerma T (2005) HIV-related tuberculosis: how well are we doing with current control efforts? *International Journal of Tuberculosis and Lung diseases* 9, 17-24.

Muhr T & Friese S (2004) User's Manual for Atlas. ti 5.0, 2nd edn. Scientific Atlas. ti Development, Berlin.

Oliff M, Mayaud P, Brugha R & Semakafu AM (2003) Integrating reproductive health services in a reforming health sector: the case of Tanzania. *Reproductive Health Matters* 11, 37-48.

Peltzer K (2009) Patient experiences and health system responsiveness in South Africa. *BMC Health Services Research* 9, 117.

Pope C, Ziebland S & Mays N (2000) Qualitative research in health care: analyzing qualitative data. *British Medical Journal* 320, 114-116.

Schneider H, Blaauw D, Gilson L, Chabikuli N & Goudge J (2006) Health systems and access to antiretroviral drugs for HIV in Southern Africa: service delivery and human resources challenges. *Reproductive Health Matters* 14(27), 12-23.

Sisonke District Health Information System (2008) KwaZulu Natal department of Health, Sisonke DHIS, December 2008. <http://www.kznhealth.gov.za> (accessed 10 December 2011).

Sisonke District Health Information System (2011) KwaZulu Natal department of Health, Sisonke DHIS, September 2011. <http://www.kznhealth.gov.za>.

J. Uwimana et al. Health system barriers to TB and HIV care

UNAIDS (2010) South Africa: Country progress on the declaration of commitment on HIV/AIDS.

http://www.unaids.org/en/dataanalysis/monitoringcountryprogress/2010progress-reportsubmittedbycountries/southafrica_2010_country_progress_report_.

Uwimana J, Jackson D, Hausler H et al. (2010) Assessment of integration of TB into PMTCT services in Sisonke district, KwaZulu Natal. 2nd SA TB conference, abstract # 9, ICC-Durban 2010.

Wang Y, Collins C, Vergis M, Gerein N & Macq J (2007) HIV and TB: contextual issues and policy choice in programme relationships. *Journal of Tropical Medicine and International Health* 12, 183-194.

WHO (2000) World Health Report 2000. Health systems: improving performance. Geneva: World Health Organization. http://www.who.int/whr/2000/en/whroo_en.pdf (accessed 10 December 2011).

WHO (2004a) Interim Policy on Collaborative TB/HIV Activities. Stop TB Department and HIV Department, World Health Organization, Geneva.

http://whqlibdoc.who.int/hq/2004/WHO_HTM_TB_2004.330.pdf.

WHO (2004b) WHO report of a "lessons learnt" workshop on the six ProTEST pilot projects in Malawi, South Africa and Zambia.

http://whqlibdoc.who.int/hq/2004/WHO_HTM_TB_2004.336.pdf.

WHO (2010) Global Tuberculosis control: WHO report 2010.

http://whqlibdoc.who.int/publications/2010/9789241564069_eng.pdf (accessed 27 March 2010).

Zachariah R, Ford N, Philips M et al. (2009) Task shifting in HIV/AIDS: opportunities, challenges and proposed actions for sub-Saharan Africa. *Transactions of the Royal Society of Tropical Medicine and Hygiene* 103(6), 549-55

<https://repository.uwc.ac.za/>