

Original Research Article

Health system barriers and facilitators influencing TB/HIV integration in Ghana

Abstract

Aim

To explore the health system barriers and facilitators influencing TB/HIV integration in Ghana.

Study design

Qualitative study with one-on-one interviews

Place and Duration

Atua Government Hospital, St. Dominic's Hospital, Akwatia, and Koforidua Central Hospital, all in the Eastern Region of Ghana between May and July 2009.

Methodology

Three hospitals were purposively selected as study sites. One-on-one in-depth interviews were conducted with purposively sampled TB/HIV patients, providers and managers. The audio recorded interviews were transcribed and thematically analysed using emergent codes.

Results

Twenty nine participants made up of 18 HIV-positive TB patients, eight providers and three managers were identified. Barriers included inadequate capacity, poorly motivated staff, different financial and information systems, irregular and misapplied funds and differences in access. Facilitators included political will, direct supervision, regular supply of drugs, and privacy and confidentiality.

Conclusion

The impact of facilitators needs to be enhanced to address related barriers. Standardisation of norms and values, as well as new staff training methods should be used to achieve staff behavioural changes towards integration.

1.0 Introduction

Integration of health services is the organisation and management of health services to provide timely needed care that achieves results [1]: to reduce fragmentation and provide a comprehensive approach to service delivery [1-3]. The integration of tuberculosis (TB) and HIV services has become relevant due to the synergistic interaction of the two epidemics which led to a resurgence of TB and the escalation of HIV-related morbidity and mortality in sub-Saharan Africa [4-6].

TB and HIV programmes in Ghana have differences [7] that have limited interaction in the past. Focus was on implementing individual core activities, but the changing determinants and distribution of both diseases resulting from their

interaction, demands a broader approach. Integration is therefore seen as a mechanism to rise above the differences between the two programmes to facilitate the changes needed to address current TB/HIV challenges. In Ghana, 24% of TB cases were HIV positive in 2012 [4] and the TB/HIV policy [8] seeks to strengthen the health system to respond to the dual epidemic, decrease the burden of TB in people living with HIV (PLHIV), and decrease the burden of HIV among TB patients.

TB patients are to be screened for HIV, and positive cases provided with co-trimoxazole preventive therapy (CPT) and antiretroviral therapy (ART) where indicated. HIV patients are also to be regularly screened for TB and managed appropriately. Introduction of TB/HIV activities was done in initial pilot sites to be scaled up nationwide. The purpose was not to integrate TB and HIV activities into routine primary care but to increase collaboration between the two programmes.

Health systems are highly differentiated units that require integration to be effective [9]. Differentiation leads to structural, cultural and political differences which foster fear of loss of territory, influence and resources in the face of integration [10]. Mechanisms for facilitating integration include direct supervision, standardisation and mutual adjustment [9, 11]. Others are funding, administrative, organisational, service delivery and clinical strategies [12], as well as thorough preparation and planning, strong leadership, teamwork and a shared vision [13].

Few studies on barriers of integration exist, and current literature suggests the need for more research on effective means of addressing health system-related factors [2, 14-16]. This paper explores the health system barriers and facilitators influencing the integration of TB and HIV services in Ghana.

2.0 Methodology

A qualitative approach was used to explore patient and provider perspectives in their 'real' and natural settings. Three hospitals were purposively selected as study sites as each of these implemented a different model of TB/HIV service integration (Table 1).

Table 1: TB/HIV intervention delivery at TB treatment centres at study sites [17]

Characteristic	One-stop shop	Partial integration	Referral
HIV pre-test counselling	Available	Available	Available
HIV testing and counselling	Available	Refer to HIV unit	Refer to HIV unit
CPT initiation and/or continuation	Available	Available	Refer to HIV unit
ART initiation and/or continuation	Available	Refer to HIV unit	Refer to HIV unit

The sampling frame included all TB/HIV patients registered at the three sites during data collection from May to July 2009, service providers working during that period, and national managers. Purposive sampling was used to identify eligible participants based on the inclusion criteria to ensure diversity of opinion and inclusion of key informants (Table 2). Sample size was informed by adequate representation of key informants.

Table 2: Inclusion and exclusion criteria for participants and study sites

	Inclusion criteria	Exclusion Criteria
Participants		
Service providers	Facility TB/HIV co-ordinator DOTS centre treatment room nurse HIV centre nurse/physician Trained in TB treatment or HIV clinical care Training on TB/HIV co-infection	Not currently active in clinics
Patients	TB patients who are: - HIV positive - Male or Female - Completed at least a month of the intensive phase or in the continuation	Critically ill patients

phase		
National Leadership	Programme Manager or representative TB/HIV Coordinator	None
Study sites		
	District Hospital	
	TB diagnostic and treatment centre	
	Use of new national TB Register for facilities	
	ART centre	
	Staff trained in TB/HIV co-infection & management	
	Use of national TB/HIV management guidelines	
	Urban location	

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80 Eligible patient participants identified from the TB registers who were due for review
81 during the study period, or could be contacted by telephone, were initially
82 approached by their provider to inform them about the study and seek their
83 participation. Following an initial verbal consent, an interview date was scheduled.
84 Face-to-face in-depth interviews were used for data collection to generate rich and
85 relevant data from key informants. Before the interviews, the study was explained to
86 each participant and written consent obtained. Particular attention was given to
87 voluntary participation, use of the information collected, and measures to preserve
88 the privacy and confidentiality. Interviews were held in English and interpreted into
89 two local languages by teachers of the local languages who had been trained on the
90 study as well as the questionnaire where relevant. Interview guides were used to
91 explore participant experiences and perspectives on the implementation of TB/HIV
92 integration.

93 Being an exploratory study, sampling sufficiency was the objective as
94 opposed to saturation. For patients, the interviews explored living with TB/HIV,
95 accessing care, and experiences and perspectives relating to TB/HIV. The service

96 provider interviews focused on delivering TB/HIV services while implementation,
 97 monitoring and evaluation of the policy were topics discussed with the managers. All
 98 interviews were audio-recorded. The interviews were transcribed verbatim (after
 99 translation and back translation where relevant), and a thematic approach used to
 100 analyse data in Microsoft Excel using emergent codes. Ethical approval was
 101 obtained from the University of Leeds as well as the Ghana Health Service. The
 102 issues of reflexivity addressed relate to methodological and theoretical openness,
 103 awareness of the social context of the research, and the wider social and political
 104 contexts [18].

105 3.0 Results

106 Twenty nine participants were interviewed (Table 3). The provider participants
 107 included seven females and four males and their level of experience of working in TB
 108 or HIV ranged from one to 14 years. Among the 18 patient participants, 10 were
 109 males and 8 females. The youngest patient participant was 18 years and they had
 110 been living with HIV for 2 months to 15 years.

111 **Table 3: Sample size and study population**

Sample size (29)	Study Population
National Managers (3)	TB Programme Manager HIV Programme Manager Representative TB/HIV Co-ordinator
Facility Providers (8)	2 HIV nurse prescribers 1 TB/HIV nurse prescriber 4 TB nurses District TB Co-ordinator
TB/HIV Patients (18)	5 in Intensive Phase of TB treatment 13 in Continuation Phase of TB treatment

Patient and provider interviews were held in the hospitals and lasted between 15 and 60 minutes, averaging 30 minutes. Interviews with managers occurred in their offices and lasted a minimum of 60 minutes, with the longest lasting 75 minutes.

There were six sub-themes identified: working in TB/HIV, living with TB/HIV, managing TB/HIV, paying for care, TB/HIV perspectives, and barriers and facilitators. Codes from patient and provider findings were initially identified and then integrated by combining them to obtain the six sub-themes. The results presented here relate to health system barriers and facilitators of integration.

3.1 Barriers of integration

3.1.1 Financing

Different financial systems: Although both programmes are funded through the Global fund, this is vertical and comes for specific activities. One manager reported that TB and HIV staff get pre-occupied with satisfying funding agencies and forget to plan and merge activities, to the detriment of integration.

Irregular and misapplied enablers' funds: participants stated that the enablers' fund used to support needy patients was irregular, making it difficult to plan with effectively. Another manager also responded that due to delays in the payment of government funds, some district managers use the enablers' fund to support other health system functions.

‘the District Director of Health Services does not use (the money) for only enablers... they are saying that it is the ‘enablers’ that is running the medical system, because monies are not coming in the way it should’ (Manager 1).

3.1.2 Workforce

Inadequate capacity: Respondents reported that the lack of adequate numbers of staff especially at the district level and below was a major barrier due to attrition or

138 transfer of trained staff, , and unwillingness of trained staff to work as TB/HIV staff.

139 Some staff felt it was voluntary, while others attended training for the allowance.

140 “...the workload is heavy and we need a doctor. They come and work briefly,

141 and then they go on leave. Next, you are told that they have gone abroad;

142 they are going to do another course or travelled somewhere” (TB Nurse/HIV

143 Prescriber at PIS)

144 Poorly motivated staff: Respondents at the district and facility levels reported that

145 poor staff morale was a barrier due to the heavy workload, increasing patient

146 numbers and poorly furnished offices.

147 “even with the room here... it looks like nobody cares about the place...

148 personally, I’m not happy about the things...Look at our chairs. Look at the

149 chairs TB patients come to sit on... no cupboard...to pack these things to

150 make the place look neat” (TB Nurse at PIS)

151 **3.1.3 Statistics and information**

152 Differences in information systems: Participants felt documentation, data collection

153 and feedback was poor. The two programmes have separate and parallel recording

154 and reporting systems with different indicators from the facilities. TB/HIV indicators

155 reported on are exchanged at the facility level and then forwarded to the national

156 level. TB/HIV indicators were regularly reported on from the TB programme but not

157 from the HIV programme.

158 **3.1.4 Governance**

159 Inadequate collaboration at national level: Managers were of the opinion that:

160 ‘ joint monitoring and evaluation ... at the national level is weak. We do

161 independent monitoring, but we expect that twice in a year staff on the two

162 programmes get together’ (Manager 1)

163 **3.1.5 Service delivery**

164 Protecting functional territories: At the regional and district levels there were
165 professional jealousies among some providers who feared the loss of influence and
166 power that comes with integration, thus resisting the change.

167 ‘...when they give people money they tend to form kingdoms...forgetting that
168 at the end of the day we are looking at one patient...’ (Manager 3)

169 ‘people who ... are used to working in a certain way (are) asked to
170 immediately reconcile (their) activities with another... People feel threatened
171 by it’ (Manager 1)

172 Differences in access: At the time of this study comprehensive HIV/AIDS services
173 were available only in Teaching Hospitals, Regional hospitals and some District and
174 Mission Hospitals [19]. There were 422 HIV counselling and testing sites as
175 opposed to 1600 TB treatment sites [20].

176 ‘... initially, HIV was doctor-led. So, if you were not a doctor, you can’t give
177 ART...Doctors can’t be everywhere’ (Manager 1).

178 ‘ART treatment should be rapidly decentralised’ (Manager 3)

179 Development of local focus: Programme workers develop procedures, activities and
180 routines that are followed to achieve the goals of each unit with staff unable to move
181 away from these established ways of doing things. Some TB physicians therefore
182 failed to look for any other illness apart from TB, neglecting other co-morbidities that
183 may influence outcome. Some monitoring teams visiting service delivery points look
184 out for only TB or HIV activities instead of doing both to facilitate integration.

185 ‘Sometimes everybody is busily doing their activities; and we forget that we
186 have to merge some of our activities and plan them together. So I plan,, to
187 visit my TB sites. But I forget to add on that in the same TB clinic, I could be

188 looking at the HIV clinic and finding out the challenges they have... Some of
189 us do; some of us don't do'. (Manager 3)

190 Waiting times: An impact of the heavy workload and inadequate staff numbers is the
191 long patient waiting times and long working hours for staff during the HIV care clinics
192 which are held once or twice a week.

193 "when they come and then they think they are keeping long, they become
194 angry. They can say all sorts of things" (VCT nurse/HIV prescriber at RS)

195 **3.2 Facilitators of integration**

196 **3.2.1 Financing**

197 Paying for care: providers and patients were of the opinion that the National Health
198 Insurance Scheme should be extended to cover the antiretroviral drugs (ARVs), and
199 the enablers' package made more regular. And the provision for patients to be given
200 their ARVs on credit was a good strategy,
201 "...even if you don't have money, you come. We shall credit it (drugs) for you" (VCT
202 nurse/HIV prescriber at PIS).

203 **3.2.2 Workforce**

204 Standardisation of skills and knowledge: Different people had been trained in
205 different skills so that each one knows what is expected of them as well as what is
206 expected from others: nurses have been trained as adherence counsellors and
207 prescribers, and there were also data management staff specifically responsible for
208 record keeping and reporting. There were also plans to train doctors in the
209 management of TB co-morbidities and complications to strengthen capacity at the
210 district level.

211 **3.2.3 Medicines and Health Products**

212 Regular supply of drugs: Respondents at the district and facility levels attested to the
213 fact that there was regular supply of logistics, drugs and reagents:

214 ‘the only thing that makes it easier is that you have the things available. So,
215 when the patient comes, you don’t have to be running about’ (TB Nurse at
216 PIS)

217 “the drug for the disease itself I always get there” (Female patient at RS)

218 Access to care: Other interventions like the community-based care, patient health
219 education, and the use of fixed dose combination drugs with the elimination of
220 injections for treatment of new TB cases were identified as facilitators.

221 there has been no default because there are no injections...

222 **3.2.4 Statistics and information**

223 Standardisation of output: The TB/HIV policy therefore identifies a number of outputs
224 whose indicators are used to monitor the integration [8]. At all the three sites all the
225 indicators were reported on except the number of TB cases identified through the
226 HIV clinics.

227 **3.2.5 Governance**

228 Leadership and political will: Leadership demonstrated responsiveness by regularly
229 reviewing guidelines and protocols in order to achieve set objectives of TB/HIV
230 integration. The TB screening tool was introduced to facilitate TB screening of
231 PLHIV,

232 “if you did a thorough analysis of the (HIV patient) booklet...it’s gone through
233 a lot of phases. And it’s been revised about twice”. (Manager)

234 Direct supervision: All three managers stated that the leadership role of the Regional
235 Deputy Directors of Health, who are also responsible for Public Health, had been
236 instrumental in ensuring coordination at the district level. They provide leadership

and ensure that the teams collaborate and do monitoring together. In districts where there was one person as the coordinator for both TB and HIV, integration worked better.

Standardisation of work: The availability of a national policy and treatment guidelines which were used to train staff ensured that common procedures and tasks are clearly specified. Coordination therefore occurs through the design of work.

3.2.6 Service delivery

Mutual adjustment: The existence of TB/HIV teams in hospitals, districts and regions is a further strength of integration, as this encourages both formal and informal communication at all levels. Managers have been particularly interested in team building as a means of promoting integration at all levels through flexible communication between the integrating units: they adapt as work progresses. Providers also described situations where nurse prescribers identified and managed routine HIV cases so the doctors handled those who were ill or had complications. This helped to reduce the waiting time. There were instances where the different teams at the site coordinated to supply both TB and HIV drugs on the same day, especially for patients who travelled long distances.

Privacy and confidentiality: Both providers and patients attested to the fact that private one-on-one counselling services were provided for HIV testing and counselling services. In addition, providers ensured secure storage and restricted access to patient folders. Only TB/HIV staff had access to these folders. Patients determined who to disclose their status to.

‘I do not disclose someone’s status to another person. If someone else will do it, I cannot tell’ (TB Nurse/HIV Prescriber).

4.0 Discussion

This study explored the health system-related barriers to and facilitators of TB/HIV integration in Ghana.

4.1 Barriers to integration

The study observed that inadequate human resources and existing financial management practices were key barriers to integration as identified by Gyapong et al. [13]. Staff felt overburdened and were poorly motivated as observed by previous research [14-16, 21, 22], and this was probably aggravated by the high attrition among trained staff. However contrary to their other observations, staff in this study felt they were well trained with well defined roles and responsibilities. This was probably because training of staff has been a strong component of each programme, and leadership had prioritised inclusion of TB/HIV in all training sessions and reviews. Although staff are well trained in the TB/HIV guidelines, this knowledge has yet to be translated into appropriate attitudes and behaviours to overcome fear of loss of territory, influence or resources to support integration.

The financial challenges were not due to lack of resources but how available resources were managed. Stringent demands by different funding agencies were limitations to collaboration between the two units as noted by Uwimana et al. [14], while other administrative decisions and procedures led to delays in release of monies to the districts for health system functions.

National level collaboration was weak, re-echoing observations of Uwimana et al. [14]. The study identified poor documentation and data collection, and lack of feedback as barriers, as did Okot-Chono et al [16]. Improving data quality should therefore be prioritised. Fraser et al. [23] suggest that electronic information systems can be used to support overwhelmed staff to track and follow-up patients, provide

access to extensive data for providers and address challenges of referrals, feedback, and duplication.

The HIV programme's doctor-led approach to patient management restricted access to care as TB services are highly decentralised and managed mostly by nurses, while HIV services are facility-based. This corroborates the observations of other studies [14,15] that treatment of TB and HIV by different health professionals limits service integration, and delays ART initiation. Rapid decentralisation of HIV care and ART initiation using nurse-led service delivery models is necessary.

Separation of services with patient referral to other facilities for TB or HIV services was a barrier. Some studies propose co-location of services as a preferred TB/HIV mode of service delivery [2,15, 24, 25]. However in a previously published study we suggested that the real impact of the degree of integration of TB and HIV on service delivery may be masked by health system barriers [26].

The development of local focus is a manifestation of lack of flexibility and external orientation in the work processes resulting in duplication and inefficient use of resources as identified by Uwimana et al. [14], undermining integration.

Standardisation of norms can be used to create new values and cultures so that stakeholders in TB/HIV integration can do things differently and create new lived experiences [27]. More research is therefore recommended to identify strategies, interventions and training needed to initiate appropriate changes in the functioning of the health system.

4.2 Facilitators of integration

Leadership and political will were identified as facilitators by all participants, corroborating the findings of Gyapong et al. [13] and Harris et al. [22]. These

attributes however have to be strengthened at all levels to address policy and implementation barriers.

Strategies to improve financial access to care including NHIS coverage of ARVs, the enablers' fund, ARV credit facility, and NGO support were also identified as facilitators as found by Gandhi et al. [28] and Dong et al. [29]. Other facilitators were identified as standardisation of work, skills and knowledge, and outputs. Others were direct supervision and mutual adjustment [9,11].

Privacy and confidentiality becomes an essential determinant of utilisation of services as identified by Heunis et al. [21], particularly in the presence of stigma. Availability of drugs was also reported as a facilitator, in contrast to the findings of Okot-Chono et al. [16] in Uganda. This was probably due to the fact that apart from the national management making drugs and logistics available, there were also well defined pathways for accessing these supplies. Other facilitators that improved access to care were the use of fixed dose combinations and elimination of injections for new cases.

The use of purposive sampling limits the representiveness of this data. A selection bias occurred from the recruitment process as patients who could not be contacted on telephone or were not due for review during the data collection period were excluded from the study. Another limitation was the use of nurses for recruitment, which may have compelled some to participate. This impact was mitigated by emphasising voluntary participation prior to interviews. There was also some loss of meaning in translation, which was minimised by back translation.

Selection and access of study sites, data production and analysis have been explicitly outlined. Interactions between the researcher, a medical doctor, and the providers were influenced by existing social context: the managers were medical

doctors and related at par in terms of power relations while other providers (nurses) related as subordinates. The researcher's previous experience in TB control facilitated the use of technical language. The use of service providers in recruiting patients may have influenced patient participation. This impact was mitigated by emphasising voluntary participation, and assurance of confidentiality and privacy. Participants were also assured that non-participation would not influence their care. Strategies used to ensure rigour in this study included methodological coherence and transparency, sampling sufficiency, reflexivity, and relevance.

5.0 Conclusion

Health system barriers to integration were lack of committed trained staff, existing financial management practices, and provider resistance to change due, differences in TB and HIV programmatic approaches, and separation of services. Facilitators included political will, direct supervision, improved access to services, privacy and confidentiality, as well as standardisation of work, skills and knowledge, and outputs. Standardisation of norms and values, as well as new staff training strategies should be used to achieve staff behavioural changes towards integration. Further studies are also needed to explore patient-related barriers to and facilitators of TB/HIV integration.

Ethical approval: Obtained from the University of Leeds and the Ghana Health Service

References

1. WHO (2008) Integrated Health Services – What and Why? Making Health Systems Work. Geneva: World Health Organization. Accessed 5 March 2015. Available: http://www.who.int/healthsystems/technical_brief_final.pdf

- 360 2. Uyei J, Coetzee D, Macinko J, Guttmacher S. (2011) Integrated delivery of HIV
361 and tuberculosis services in sub-Saharan Africa: a systematic review. *Lancet Infect*
362 *Dis* 11:855–67. DOI: [http://dx.doi.org/10.1016/S1473-3099\(11\)70145-1](http://dx.doi.org/10.1016/S1473-3099(11)70145-1)
- 363 3. Kodner D & Spreeuwenberg C (2002) Integrated care: meaning, logic,
364 applications, and implications – a discussion paper. *Int J of Integr Care* 2:e12.
365 Accessed 4 March 2015. Available:
366 <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1480401/>
- 367 4. WHO (2013) Global Tuberculosis Control. Geneva: World Health Organization;
368 2013. Accessed 4 March 2015. Available:
369 [https://extranet.who.int/sree/Reports?op=Replet&name=%2FWHO_HQ_Reports%2](https://extranet.who.int/sree/Reports?op=Replet&name=%2FWHO_HQ_Reports%2FG2%2FPROD%2FEXT%2FTBCountryProfile&ISO2=GH&LAN=EN&outtype=pdf)
370 [FG2%2FPROD%2FEXT%2FTBCountryProfile&ISO2=GH&LAN=EN&outtype=pdf](https://extranet.who.int/sree/Reports?op=Replet&name=%2FWHO_HQ_Reports%2FG2%2FPROD%2FEXT%2FTBCountryProfile&ISO2=GH&LAN=EN&outtype=pdf)
- 371 5. Getahun H, Harrington M, O'brien R, Nunn P. (2007) Diagnosis of smear-negative
372 pulmonary tuberculosis in people with HIV infection or AIDS in resource-constrained
373 settings: informing urgent policy changes. *Lancet* 369:2042–9. DOI:
374 [http://dx.doi.org/10.1016/S0140-6736\(07\)60284-0](http://dx.doi.org/10.1016/S0140-6736(07)60284-0)
- 375 6. Corbett EL, Marston B, Churchyard GJ, De Cock KM. (2006) Tuberculosis in sub-
376 Saharan Africa: opportunities challenges and change in the era of antiretroviral
377 treatment. *Lancet* 367:926–37. [Doi:10.1016/S0140-6736\(06\)68383-9](https://doi.org/10.1016/S0140-6736(06)68383-9)
- 378 7. Anderson S & Maher D (2001) An analysis of interaction between TB and
379 HIV/AIDS Programmes in sub-Saharan Africa. WHO. Accessed 2 March 2015.
380 Available: http://whqlibdoc.who.int/hq/2001/WHO_CDS_TB_2001.294.pdf .
- 381 8. GHS (2007) Implementation of TB/HIV collaborative activities in Ghana: technical
382 policy and guidelines Accra; Ghana Health Service. Accessed 1 March 2015.
383 Available:[http://www.ghanahealthservice.org/documents/Main%20Text_Technical%2](http://www.ghanahealthservice.org/documents/Main%20Text_Technical%20_%20Policy%20Guidelines%20TB%20HIV%2031%20Jan%202007.pdf)
384 [0_%20Policy%20Guidelines%20TB%20HIV%2031%20Jan%202007.pdf](http://www.ghanahealthservice.org/documents/Main%20Text_Technical%20_%20Policy%20Guidelines%20TB%20HIV%2031%20Jan%202007.pdf) .

- 385 9. Glouberman S & Mintzberg H. (2001a) Managing the Care of Health and the Cure
386 of Disease--Part II: Integration. *Health Care Manag R*, 26, 70.
- 387 10. Barki, H & Pinsonneault, A (2005). A model of organizational integration,
388 implementation effort, and performance. *Organ Sci* 16 (2): 165
389 <http://dx.doi.org/10.1287/orsc.1050.0118>
- 390 11. Sobczak A (2002) Opportunities for and constraints to integration of health
391 services in Poland. *Int J Integr Care* Apr-Jun 2: e23. Accessed 28 February 2015.
392 Available: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1480383/> .
- 393 12. Kodner DL (2009) All together now: a conceptual exploration of integrated care.
394 *Healthcare Quarterly* 13 Spec No: 6-15. Accessed 27 February 2015. Available:
395 <http://europepmc.org/abstract/MED/20057243> .
- 396 13. Gyapong JO, Gyapong M, Yellu N, Anakwah K, Amofah G, Bockarie M et al.
397 (2010). Integration of control of neglected tropical diseases into health-care
398 systems: challenges and opportunities. *Lancet* 375, 160-5. DOI:
399 [http://dx.doi.org/10.1016/S0140-6736\(09\)61249-6](http://dx.doi.org/10.1016/S0140-6736(09)61249-6)
- 400 14. Uwimana J, Jackson D, Hausler H, Zarowsky C. (2012) Health system barriers to
401 implementation of collaborative TB and HIV activities including prevention of mother
402 to child transmission in South Africa. *Trop Med Int Health* 17:658–65.
403 DOI: 10.1111/j.1365-3156.2012.02956.x
- 404 15. Loveday M & Zweigenthal V (2011) TB and HIV integration: obstacles and
405 possible solutions to implementation in South Africa. *Trop Med Int Health* 16 (4):
406 431- 8. DOI: 10.1111/j.1365-3156.2010.02721.x
- 407 16. Okot-Chono R, Mugisha F, Adatu F, Madraa E, Dlodlo R, Fujiwara P. (2009)
408 Health system barriers affecting the implementation of collaborative TB–HIV services
409 in Uganda. *Int J Tuberc Lung Dis* 13:955–61.

- 410 17. Ansa GA, Walley JD, Siddiqi K, Wei, X. (2012) Assessing the impact of TB/HIV
411 services integration on TB treatment outcomes and their relevance in TB/HIV
412 monitoring in Ghana. *Infect Dis Poverty* 1:13. Accessed 1 March 2015. Available:
413 <http://www.idpjournals.com/content/1/1/13>. doi: 10.1186/2049-9957-1-13.
- 414 18. Green J & Thorogood N. (2009) *Qualitative Methods for Health Research*,
415 London, SAGE Publications.
- 416 19. NACP (2009) 2008 Annual Report. Accra, Ghana Health Service.
- 417 20. NTP (2009) The National Tuberculosis Health Sector Strategic Plan for Ghana:
418 2009–2013. Accra; Ministry of Health.
- 419 21. Heunis JC, Wouters E, Norton WE, Engelbrecht MC, Kigozi NG, Sharma A et al.
420 (2011) Patient- and delivery-level factors related to acceptance of HIV counseling
421 and testing services among tuberculosis patients in South Africa: a qualitative study
422 with community health workers and program managers. *Implement Sci* 6:27.
423 doi:10.1186/1748-5908-6-27
- 424 22. Harris JB, Hatwiinda SM, Randels KM, Chi BH, Kancheya NG, Jham MA et al.
425 (2008) Early lessons from the integration of tuberculosis and HIV services in primary
426 care centres in Lusaka, Zambia. *Int J Tuberc Lung Dis* 12, 773-9.
- 427 23. Fraser HSF, Allen C, Bailey C, Douglas G, Shin S, Blaya J. (2007) Information
428 systems for patient follow-up and chronic management of HIV and tuberculosis: A
429 life-saving technology in resource-poor areas. *J Med Internet Res* 9:38.
430 doi:10.2196/jmir.9.4.e29.
- 431 24. WHO (2012) WHO policy on collaborative TB/HIV activities: guidelines for
432 national programmes and other stakeholders. Accessed 1 March 2015.
433 Available:
434 www.who.int/tb/publications/2012/tb_hiv_policy_9789241503006/en/index.h

- 435 [ml](#)
- 436 25. Kachiza C, Msiska T, Kaonga E, Moodie C, Wandwalo E, Kellerman S et al.
- 437 (2010) What is the best model of TB/HIV service delivery? Experience from Malawi. :
- 438 AIDS 2010 – XVIII International AIDS Conference: Abstract no. MOPE0858
- 439 Accessed 2 March 2015. Available: www.iasociety.org/Abstracts/A200740018.aspx .
- 440 26. Ansa GA, Walley JD, Siddiqi K, Wei X. (2014) Delivering TB/HIV services in
- 441 Ghana: a comparative study of service delivery models. *Trans R Soc Trop Med Hyg*
- 442 *108: 560-7*. DOI:10.1093/trstmh/tru110
- 443 27. Anderson-Wallace M & Blatern C (2005) Working with culture. In Peck, E. (Ed.)
- 444 *Organisational Development in Healthcare: approaches, innovations, achievements*.
- 445 First ed. Oxford, Radcliffe Publishing.
- 446 28. Gandhi NR, Moll AP, Lalloo U, Pawinski R, Zeller K, Moodley P et al. (2009)
- 447 Successful Integration of Tuberculosis and HIV Treatment in Rural South Africa: The
- 448 Sizong'oba Study. *J Acquir Immune Defic Syndr*, 50, 37-43. doi:
- 449 10.1097/QAI.0b013e31818ce6c4.
- 450 29. Dong K, Thabethe Z, Hurtado R, Sibaya T, Diwati H, Walker S et al. (2007)
- 451 Challenges to the success of HIV and tuberculosis care and treatment in the public
- 452 health sector in South Africa. *J Infect Dis* 196, S491-6. DOI: 10.1086/521111
- 453