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Health systems in the Republic of Congo: challenges and opportunities for implementing tuberculosis and HIV collaborative service, research, and training activities



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SUMMARY

The Republic of Congo is on the World Health Organization (WHO) list of 'high burden' countries for tuberculosis (TB) and HIV. TB is the leading cause of death among HIV-infected patients in the Republic of Congo. In this viewpoint, the available data on TB and HIV in the Republic of Congo are reviewed, and the gaps and bottlenecks that the National TB Control Program (NTCP) faces are discussed. Furthermore, priority requirements for developing and implementing TB and HIV collaborative service activities are identified. HIV and TB control programs operate as distinct entities with separate case management plans. The implementation of collaborative TB/HIV activities to evaluate and monitor the management of TB/HIV co-infected individuals remains inefficient in most regions, and these activities are sometimes non-existent. This reveals major challenges that require definition in order to improve the delivery of healthcare. The NTCP lacks adequate resources for optimal implementation of control measures of TB and HIV compliance and outcomes. The importance of aligning and integrating TB and HIV treatment services (including follow-up) and adherence support services through coordinated and collaborative efforts between individual TB and HIV programs is discussed. Aligning and integrating TB and HIV treatment services through coordinated and collaborative efforts between individual TB and HIV programs is required. However, the WHO recommendations are generic, and health services in the Republic of Congo need to tailor their TB and HIV programs according to the availability of resources and operational feasibility. This will also open opportunities for synergizing collaborative TB/HIV research and training activities, which should be prioritized by the donors supporting the TB/HIV programs.

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1. Introduction

Tuberculosis (TB) is now the most common cause of death from infectious disease and remains a global emergency.¹ An estimated

9.6 million new TB cases worldwide were reported by the World Health Organization (WHO) in 2014. The WHO Africa Region had more than twice the global average TB caseload, with 281 per 100 000 population. An estimated 1.2 million out of the 9.6 million new cases were HIV-positive, and Sub-Saharan Africa accounted for 74% of these cases.¹ The synergistic epidemics of HIV and TB have had a devastating impact in high prevalence, resource-limited settings such as Asia and Sub-Saharan Africa.^{2–4} Apart from socio-economic

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factors and HIV co-infection, there are other operational issues relating to national TB and HIV programs, which continue to fuel the TB epidemic in Sub-Saharan Africa.⁵

The Republic of Congo is considered a ‘high burden’ country for TB and HIV infection.^{1,6,7} In this viewpoint article, current practices in the management of patients within the Republic of Congo national TB and HIV programs are described, and the gaps in structural, functional, operational, and resource factors that need priority attention are identified.

2. Need for more accurate data on TB and TB/HIV co-infection in the Republic of Congo

In the Republic of Congo, the management of patients with TB and HIV co-infection is associated with several diagnostic and therapeutic challenges. HIV and TB control programs operate as distinct entities with separate case management plans and protocols. The implementation of collaborative TB/HIV activities to evaluate and monitor the management of TB/HIV co-infected individuals remains inefficient in most regions, and these activities are non-existent in others. The Republic of Congo National TB Control Program (NTCP) faces major operational and structural issues and identifying these will help improve the development of TB and HIV collaborative service activities. Despite the availability of national diagnostic algorithms for TB diagnosis,⁸ making an accurate diagnosis of patients with HIV/AIDS or TB or TB/HIV co-infection is often delayed, resulting in high mortality rates.⁹ However, co-morbidity with other prevalent tropical diseases may contribute to mortality and remains to be defined (<http://www.msf.fr/pays/congo-brazzaville>).

Available data show that in the Republic of Congo, the HIV prevalence rate was 3.5% nationally, with peaks at 5% in urban areas. HIV testing is not systematically performed among TB patients and the actual prevalence of TB/HIV co-infection remains unknown.⁹ In the Republic of Congo, there is no coordination between the TB and HIV programs (. 1a) and there is no common database or reporting system, which leads to separate reporting and monitoring. In 2013, an estimated 69 000 people were living with HIV infection, representing an HIV prevalence of about 2.5%;^{10,11} the incidence of TB in the Republic of Congo was 473 per 100 000 inhabitants (including TB/HIV co-infections), and 31% of TB patients were HIV-positive.

3. The need for integrating TB and HIV care in the Republic of Congo

TB is the leading cause of death in the Republic of Congo, killing 3000 people in 2014.¹ No accurate data are available on the number of people living with HIV in the Republic of Congo. From the authors’ observations and small cohort studies, a significant proportion of people with TB appear to have HIV co-infection (out of 1313 new TB patients tested for HIV, 29% were HIV-positive), as is the case in other countries in Sub-Saharan Africa. There were 300 new cases with multidrug-resistant TB (MDR-TB) and the number of reported retreatment cases with drug-resistant TB was 59 in 2014,^{1,9} although these are underestimates due to the lack of widespread testing for MDR-TB.

Individuals with active TB or HIV disease or TB/HIV co-infection will require careful investigation and management,¹² with long-term follow-up. The treatment drug regimens for both diseases have to be taken daily, often have side effects, and may often be incompatible.^{12,13} Thus it is vital that health care providers have expertise and are trained with knowledge of recent WHO guidelines on the treatment of all clinical forms of TB.¹² WHO recommendations are that people living with HIV (PLWHIV) be routinely screened for TB, and as with non-HIV-associated TB, it is

also important that co-infection is addressed within the broader WHO directly observed therapy (DOTS) framework. If an HIV-positive person has a latent TB infection (LTBI), the WHO recommends the provision of isoniazid preventive therapy (IPT),¹⁴ which prevents the progression to active TB and has no interactions with antiretroviral medication. IPT reduces the risk of TB by 36% overall, and by 62% in HIV-infected people.^{1,12,14–16} A study conducted in South Africa showed that the full integration of TB and HIV care increased the chance of co-infected patients starting antiretroviral therapy (ART) by 60%, and reduced the time to ART initiation by an average of 72 days.¹⁷

4. Collaborations between TB and HIV national control programs in Sub-Saharan Africa

International agencies, such as the WHO and the Joint United Nations Programme on HIV/AIDS (UNAIDS), emphasize the importance of a collaborative approach for health services to tackle TB/HIV co-infection, including screening, testing, treatment, and follow-up^{1,10,11} (Figure 1b). Opportunities for collaboration between TB and HIV programs at the national level have been taken forward to varying degrees in some African countries like Malawi,¹⁸ Kenya,¹⁹ South Africa,²⁰ Lesotho, Cameroon,²¹ and Ethiopia,²² with significant effects in some but not others. The National TB and HIV control programs in the Republic of Congo are regarded as two completely dissociated and unrelated programs. As in the majority of Sub-Saharan African countries, adhering strictly to WHO guidelines for collaborative TB/HIV activities remains problematic,^{22–24,18} and the generic recommendations may not fit the requirements for all countries.²⁵ The need for the majority of Sub-Saharan African countries to reduce the burden of TB significantly in persons living with HIV/AIDS remains. WHO guidelines for the treatment of patients at risk of developing active TB, such as persons with HIV infection, recommend isoniazid-based preventive treatment.¹⁴ These are not yet implemented fully in the Republic of Congo. The diagnosis of pulmonary TB is recommended, using an algorithm that is in use throughout the country.⁸ Despite this, many cases of confirmed pulmonary TB and TB/HIV co-infection are diagnosed late or even missed, and cases of false-negative smear are treated with a non-specific treatment.⁸

5. Current status quo, challenges, and bottlenecks of establishing TB/HIV collaborative activities in the Republic of Congo

The current status quo of the TB and HIV health programs and their relationships in the Republic of Congo are outlined in Figure 2. Although TB and antiretroviral treatments are subsidized by the Republic of Congo government, disruptions in the supply chain lead to treatment failure and resistance to these drugs. Patients continue to be followed up at the TB center, and when HIV is suspected, the TB patients are referred to the National HIV Program for screening and management. There is no electronic monitoring database for HIV or TB. Establishing quality integration and implementation of TB/HIV services will address several priority areas: the current low rates of TB screening and HIV testing, insufficient referral of TB patients for ART, and ongoing high TB deaths among people with HIV and the low numbers on IPT.

In addition, the Republic of Congo TB/HIV healthcare services face significant resource and operational challenges.²⁶ These include limited staffing, limited TB diagnostic methods, crowded facilities, and poor infrastructure and resources. It should be emphasized that inadequate infrastructure and staffing are the main challenges that play against the successful integration of TB and HIV services in resource-constrained Republic of Congo. The implementation of TB and HIV collaborative services will require

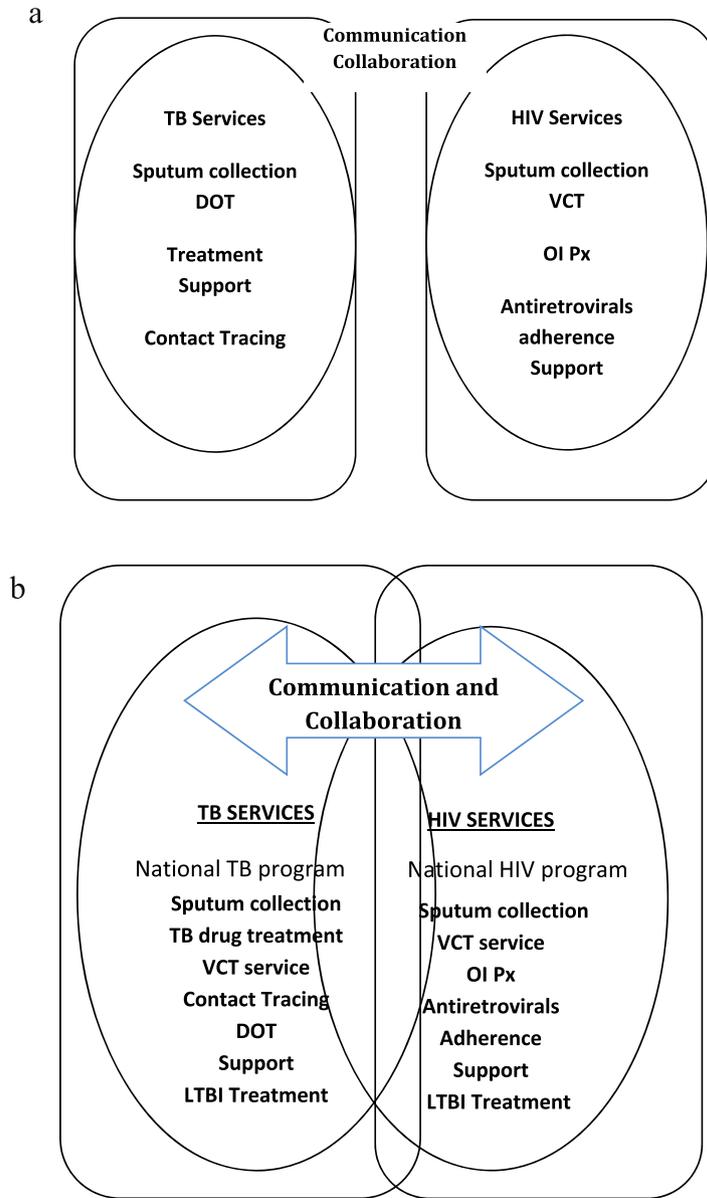


Figure 1. (a) Current TB and HIV program paradigms in the Republic of Congo. (b) Optimal TB and HIV program paradigms. (Adapted from Friedland et al.¹⁸).

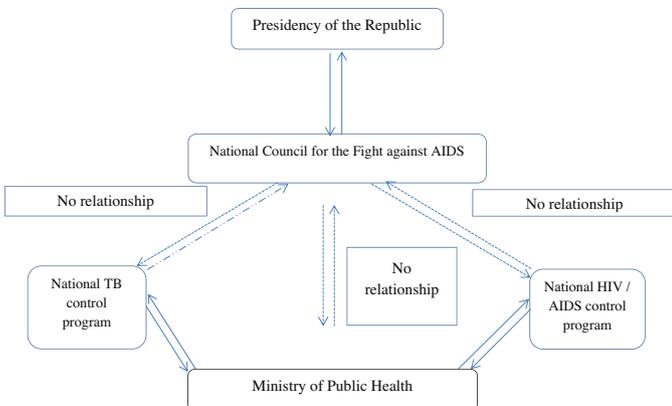


Figure 2. Relationships between the national HIV/AIDS and TB control programs in the Republic of Congo.

consideration of the specific context of the Republic of Congo, and careful tailoring of interventions is required for smoother introduction into existing resource-constrained programs, which are already overwhelmed with large numbers of patients. Several important bottlenecks need to be overcome and a workable and feasible strategy developed for joint TB/HIV care in the Republic of Congo.

5.1. Bottleneck 1: Poor case management

In the Republic of Congo, both HIV and TB national control programs were created independently in terms of finance allocation and management, logistics, and human resources. Therefore, each program has its own agenda, including activities, with no bridge between them. There are very few TB reference centers in the country and the stock-out of HIV reagents and medicines is quite common as well. Moreover, the management of HIV supplies is not optimal, as sometimes reagents close to their expiry date are delivered to health facilities. The case management

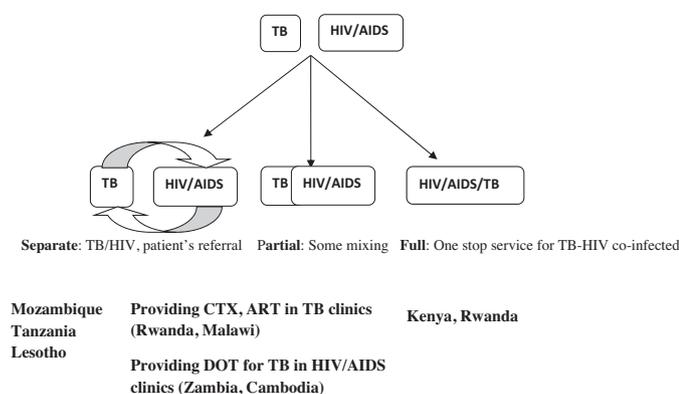


Figure 3. Full integration models of HIV/AIDS and TB national control programs.

of TB patients suffers from the limited stocks of reagents, including diagnostic and treatment tools.

5.2. Bottleneck 2: Poor health systems organization

Three major weakness points have been identified for the implementation of an effective collaboration between TB and HIV national control programs: (1) no coordination body for either program, (2) no common surveillance studies, and (3) no joint TB/HIV planning and actions. Referring to experience from other countries, three service models have been rolled out so far: (1) model of separate services for TB and HIV, (2) model of partial collaboration using mixed model of referral of TB/HIV co-infected patients,^{8,18,20} and (3) model of full collaboration, a 'one-stop' service for TB, HIV, and TB/HIV co-infected patients.^{17,27,28} All of these proposed collaborative models (Figure 3) were intended to initiate collaboration and cooperation of the HIV and TB programs and they have had varying degrees of success.

5.3. Bottleneck 3: Rapid diagnostic methods

A major obstacle in the fight against TB is the lack of a cheap, easy to use, rapid, and sensitive method to detect active TB in adults and children in the community. More advanced methodologies such as culture and PCR and the GeneXpert MTB/RIF assay^{29–31} are not in widespread use in rural areas due to operational difficulties. The Republic of Congo acquired GeneXpert equipment, which was installed at the Centre Antituberculeux (CAT) in November 2013; since then, the number of TB cases detected has been increasing.³¹ Unfortunately, the use of the GeneXpert is reserved only for patients with pulmonary TB category II. In a recent study conducted in Brazzaville, the number of HIV-positive cases detected was increasing dramatically, and this led to the local authorities being prompted to take urgent measures.³ The use of the urine Lipoarabinomannan (LAM) LAM-ELISA method could improve rapid screening for TB among HIV-infected individuals with advanced immunosuppression,³² although these are declining in numbers and the urine LAM may still miss a large number of patients with TB. This rapid diagnostic technique is still not implemented in the Republic of Congo, where the standard TB diagnostic technique remains light microscopy.⁸

6. An appropriate model of TB/HIV collaboration, integration, and implementation for the Republic of Congo

Rwanda has implemented a 'one-stop TB/HIV service' approach, one of the strategies recommended by the WHO for collaborative TB/HIV activities to address the burden of TB and HIV.³³ As in

Rwanda, the Republic of Congo could improve the health system, applying the early diagnosis and rapid initiation of treatment, which remains a key strategy to control both HIV and TB. The 'one-stop TB service' concept integrates new and existing diagnostic technologies into a new 'platform' for use at the place where the patient or risk group is, such as the point of care (POC). Under the 'one-stop shop' model, TB, HIV, and TB/HIV co-infected patients are able to access a full package of services at one location, managed by one health care worker or health care team. For example, TB patients coming for TB treatment are offered HIV counseling and testing, and HIV patients coming for ART are routinely screened for TB. TB/HIV co-infected patients are able to get both TB treatment and ART at once, from staff who are able to more closely monitor their dual treatment outcomes.

7. Towards implementing TB and HIV collaborative service, research, and training activities in the Republic of Congo

There are many challenges that need to be overcome in order to synergize both TB and HIV national control programs in the Republic of Congo and fulfill the WHO policy for the 12 collaborative TB/HIV activities (Table 1). Capacity strengthening through the provision of more staffing resources with adequate salaries, along with better training of health providers, is a priority. Improved coordination between providers of TB care and providers of HIV care in the Republic of Congo should lead to sharing of basic patient information. IPT for HIV-infected adults (including pregnant women) and children should be included in the HIV national control program.^{34–36,15,16,37} In resource-poor Republic of Congo, the current status quo will not allow for merger of the two separate programs. Whilst such resources are being sought, immediate priority areas for action are to increase communication and collaboration between programs, and to establish joint research and training activities. The Ministry of Public Health would play a vital role in establishing and strengthening a coordinated approach to both diseases and could follow the examples of other countries who have established joint TB/HIV care programs.

Rwanda has set up TB/HIV collaboration at the central level through the Ministry of Public Health (Figure 1b),³³ whose responsibility is to ensure that the directors of both programs work in close collaboration, share human and financial resources, and do not duplicate efforts. In Rwanda, a study reported that TB patients and staff at TB clinics were receptive to HIV testing. This supports the premise that TB clinics could be an important point of entry into life-saving HIV care and treatment services in Rwanda³³ (Figure 3). The Republic of Congo could adopt this strategy to

Table 1

WHO policy for collaborative TB/HIV activities

ESTABLISH THE MECHANISMS FOR COLLABORATION

1. Ensure a coordinating body exists for effective TB/HIV collaboration at all levels
2. Conduct surveillance of HIV prevalence among TB patients and TB prevalence among HIV patients
3. Carry out joint HIV/TB planning
4. Conduct monitoring and evaluation

DECREASE THE BURDEN OF TB IN PEOPLE LIVING WITH HIV

5. Establish intensified TB case-finding
6. Introduce isoniazid prevention therapy
7. Ensure TB infection control in health care and congregate settings

DECREASE THE BURDEN OF HIV IN TB PATIENTS

8. Provide HIV testing and counseling
9. Introduce HIV prevention methods

DECREASE THE BURDEN FOR PEOPLE LIVING WITH HIV AND TB

10. Introduce co-trimoxazole prevention therapy
11. Ensure HIV and TB care and support
12. Provide antiretroviral therapy

WHO, World Health Organization; TB, tuberculosis.

enable the introduction of ART in outpatient treatment centers dealing with TB. It could be important to begin implementing TB services in HIV clinics and implementing HIV services in TB clinics. This partial integration model of HIV service in the National TB control program was tested in Swaziland and Cambodia; in these countries there was a high coverage of co-trimoxazole preventive therapy (CPT) and ART uptake in TB/HIV patients.^{38,39} In Malawi, TB treatment is provided at TB offices and HIV testing is performed at the separate HIV voluntary counseling and testing (VCT) units based in the hospital. HIV-infected patients with TB are then referred to the ART clinic for staging.¹⁸ The lack of a clear job description including responsibilities for TB and HIV/AIDS control program managers created tension and contributed to poor implementation of joint TB/HIV activities in Uganda.⁴⁰ The lack of a common understanding of the concept of 'integration' was also identified as a barrier that contributed to poor quality of services.⁴¹ In Rwanda and Kenya, implementation started using a 'one-stop' TB/HIV integrated services model (Figure 3),^{17,33,42,43} on the WHO Three 'I's initiative (intensified TB case-finding, IPT, and infection control).^{14,15}

8. Financial support for HIV and TB national control programs

Over the past 10 years, the Global Fund has supported malaria, tuberculosis, and HIV/AIDS programs in the Republic of Congo for an amount totaling approximately 51 billion Central African Francs.⁴⁴ For 2015–2016, the Global Fund provided 16 156 313 Euros to support activities in six departments. However, detailed reports on the national resource contributions to HIV and TB activities in addition to those contributed by the Global Fund are not available. An important need exists to develop a national strategy for joint TB/HIV activities and present these to donor agencies such as the Global Fund. Future Global Fund applications could incorporate requests for funding to establish comprehensive TB/HIV collaborative activities. These could then be aligned to research and training activities, which are currently being rolled out through competitive grant calls from the European Developing Clinical Trials Partnerships.⁴⁵

9. Conclusions

The Republic of Congo is on the WHO list of 'high burden' countries for TB and HIV, and TB is a very common cause of death among the HIV-infected population. Available data on TB and HIV from the Republic of Congo and collaborative TB/HIV activities are scarce. There are major gaps and bottlenecks that the national TB and HIV program staff face, and developing and implementing TB and HIV collaborative service activities could lead to improvements in TB/HIV care. Since the WHO recommendations are generic, the Republic of Congo needs to perform a comprehensive program review, identify synergies between TB and HIV/AIDS services, and identify which collaborative model is best suited to the Republic of Congo, which should be a priority for funding agencies as well.

Author contributions

AZ, EP, and AZ conceived the TB series and topics. LSGL, FN, and AZ developed the initial drafts. All authors contributed to the writing of the manuscript.

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Conflict of interest: The authors declare that they have no competing interests.

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