Providing HIV care for tuberculosis patients in sub-Saharan Africa

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SUMMARY

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Human immunodeficiency virus (HIV)/acquired immune-deficiency syndrome (AIDS) and tuberculosis (TB) cause an immense burden of disease in sub-Saharan Africa. A large amount of knowledge has been gathered in the last 15 years about the negative impact that HIV has on TB control, both at a programme level and at the level of the individual patient. Equally, interventions that are known to benefit patients have been tested and piloted, and these form important components of international TB-HIV guidelines, a TB-HIV strategic framework and an interim policy on TB-HIV coordination. Unfortunately, in sub-Saharan Africa there is little evidence that these interventions are being implemented on the ground, and one of the reasons for this paralysis is that the operational details are not well developed. This paper takes the three important HIV interventions of HIV testing and counselling, cotrimoxazole preventive treatment and antiretroviral treatment, and discusses some of the practical details of on-the-ground implementation. We hope that this will generate discussion, but above all, the impetus to start delivering services to patients.

KEY WORDS: HIV; TB; Malawi; ART; cotrimoxazole

IN SUB-SAHARAN AFRICA, tuberculosis (TB) and the human immunodeficiency virus (HIV)/acquired immune-deficiency syndrome (AIDS) are inextricably intertwined, resulting in a dual epidemic of huge dimensions. In 2000, of the 24 million people worldwide estimated to be co-infected with HIV and Mycobacterium tuberculosis, the large majority lived in sub-Saharan Africa.1 In these co-infected persons, the annual risk of active TB is 5–15%. Within the first year of HIV infection, the risk of TB is almost double that of a non-infected person,2 and it then increases as the immune system becomes more compromised. Across sub-Saharan Africa, one third of TB cases are currently HIV-infected, although in several countries, such as South Africa, Namibia, Botswana, Zambia and Malawi, HIV infection rates in TB patients exceed 50%.3

HIV has important adverse effects on TB control. In sub-Saharan Africa, case notification rates have escalated during the last 10–15 years, throwing an immense strain on TB control programmes in terms of human resources, drugs, supplies and all the logistics that accompany programme delivery. At the individual patient level, HIV reduces the chance of a favourable treatment outcome. Compared with non-HIV-infected patients, case fatality rates are increased,4 and in those who successfully complete anti-tuberculosis treatment there is a high rate of recurrent TB.2

It is now well recognised that in sub-Saharan Africa at least, the DOTS strategy alone cannot control TB, and the TB-specific Millennium Development Goals of reducing the prevalence and death rate of TB by 50% by 2015 will not be achieved unless additional strategies and interventions are put in place. Under the leadership of the World Health Organization (WHO) and the Stop TB Partnership, TB-HIV guidelines,6 a TB-HIV strategic framework7 and an interim policy on TB-HIV coordination8 have all been developed to try and reduce the burden of HIV-TB disease in those countries most hard hit by the dual epidemic. However, despite a clear policy and specific interventions that are known to benefit patients, there is little evidence of on-the-ground implementation. Of the estimated number of HIV-positive African patients that develop TB, 3% are tested and found to be HIV-positive, 1.4% receive cotrimoxazole preventive treatment (CPT) and 0.06% receive antiretroviral treatment (ART).5,9 However, CPT has been shown in a controlled trial in Côte d’Ivoire10 and in several cohort studies in other African countries11–13 to significantly reduce case fatality rates in TB patients. The largest impact on
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case fatality, and possibly on reducing recurrent TB, is likely to come from the adjunctive use of ART. Following the WHO ‘3 × 5’ initiative, many African countries are rapidly scaling up ART, and by the end of 2005, an estimated 820,000 patients in the region had been placed on ART.14 HIV-positive patients with TB are all potentially eligible for ART, either because they are classified as WHO Clinical Stage 3 (pulmonary tuberculosis [PTB]) or WHO Clinical Stage 4 (extrapulmonary [EPTB]).15 Data from one district in Malawi indicate that most HIV-infected TB patients do not have access to this lifesaving treatment,16 despite the fact that a large percentage of TB patients are HIV tested and counselled and offered ART. The largely centralised nature of ART clinics (district hospital-based) in this rural district, and the highly decentralised nature of the TB treatment, probably explain why many TB patients do not bother to return for ART after they find themselves recovering on anti-tuberculosis treatment at home. The opportunity costs for travelling large distances to access health care are huge for this very poor patient population, as has been well documented in Malawi.17

When it comes to implementation, the devil often lies in the detail, and it is important to make details simple, straightforward and embedded within well-established, functioning structures. We present the ideal scenario of how an HIV-infected TB patient should be managed and we discuss some of the practical issues that may help turn the rhetoric into action. In a previous correspondence publication,18 we presented a brief outline of some of these steps; we now wish to expand on how these are carried out and add a few more steps to the action plan.

THE IDEAL SCENARIO: HIV TESTING, CPT AND ART FOR THE TB PATIENT

Once diagnosed with TB, the patient should be offered HIV testing and counselling if the HIV status is unknown or was previously reported as negative. If the patient previously tested as HIV-positive, but has no documented evidence of this fact, then the test should be repeated. In Malawi, for example, a patient can only access ART if there is documented evidence of a positive HIV test result. Ideally, HIV testing is carried out soon after the diagnosis of TB has been made, and depending on circumstances, either before, during or just after the process of registration and the start of anti-tuberculosis treatment. If the patient is HIV-positive, interventions such as screening and management for any active opportunistic infections can be started, and CPT can be offered as soon as possible in line with national guidelines and provided that there are no contraindications. The patient can then be considered for ART.

The big question is when to start this medication. The WHO recommends that patients with a CD4 count <200 cells/mm³ should start ART as soon as anti-tuberculosis treatment is tolerated, i.e., within 2–4 weeks.15 For patients with a CD4 count >200 cells/mm³, ART should be started after the initial 2 months of anti-tuberculosis treatment have been completed. Many facilities in sub-Saharan Africa do not have access to CD4 count capability, and in these circumstances ART should be initiated after the first 2 months of anti-tuberculosis treatment. This is undoubtedly the safest approach, as early start of ART within a few weeks of anti-tuberculosis treatment is associated with a high pill burden, and may be complicated by additive side effects, drug–drug interactions and immune reconstitution disease.19 In a patient still sick with TB, this may be a dangerous practice. However, much of the case fatality in HIV-positive TB patients occurs in the first 2 months of anti-tuberculosis treatment,4 so delayed initiation of ART may reduce its potential benefits. This conundrum awaits the results of properly controlled clinical trials. Ideally, TB and HIV services should be made available in an integrated manner within the same health facility. Figure 1 shows the ideal management and care of HIV in a patient starting anti-tuberculosis treatment.

PLACING HIV PARAMETERS IN TB MONITORING AND REPORTING TOOLS

As all students and teachers know, it is the assessments that drive what students actually think they should
learn. Equally, in well-run TB programmes, the time-honoured quarterly cohort analysis is the standard assessment against which the programme is judged. Thus, it is imperative that HIV parameters are embedded in cohort reporting. This in turn means that the same parameters must be highly visible in the TB register and TB patient treatment cards, the two essential monitoring tools from which data are extracted to perform cohort analysis.20

The TB Register has a left-hand page for case registration data (TB registration number, age, sex, type and category of TB) and a right-hand page for treatment outcome data (sputum smear/culture results, end of treatment outcomes and remarks). There is ample room on either the left or right hand page for four additional columns: HIV-tested (Yes/No, Date); HIV-positive (Yes/No); on CPT (Yes/No, Date); on ART (Yes/No, Date). These parameters need to feature on the front of the TB patient treatment card and in the cohort reporting form.

If HIV testing and CPT are started within 2 weeks of anti-tuberculosis treatment, the numbers HIV-tested, HIV-positive and on CPT can be reported in the quarterly analysis of case finding. Because of the delay in patients starting ART, these numbers may be underestimated in the case-finding reports. Thus, in the cohort report of treatment outcomes, the number of patients who were placed on ART should be reported, and, for the sake of completeness, this report should also include the other three HIV parameters. Duplicate reporting of HIV data on the case-finding and treatment outcome forms also serves the useful purpose of allowing the data to be crosschecked.

**PROVIDER-INITIATED HIV TESTING OF TB PATIENTS**

Provider-initiated, diagnostic HIV testing should be implemented for TB patients.21,22 This is important in settings where co-infection rates are high, as a diagnosis of TB without knowledge of HIV status might constitute an incomplete diagnosis and may lead to substandard care. As described earlier, HIV testing should be carried out if the HIV status is unknown or was previously reported as negative. If a patient was previously tested as HIV-positive, but has no documented evidence of this fact, then the test should be repeated.

TB programmes that try to offer this service will usually see the diagnosed TB patient, complete the TB patient treatment card, enter details into the TB register, administer anti-tuberculosis drugs and then refer the patient for HIV testing and counselling. In the urban clinics in Malawi, where patients take their initial phase of anti-tuberculosis treatment at home, many patients take their anti-tuberculosis drugs and bypass the queues for HIV testing and counselling. Having waited for hours to complete the formal registration for TB treatment, it is quite understandable that patients would decide to go home rather than wait several more hours for HIV testing and counselling.

We therefore think it is much better to embed the HIV testing and counselling process into that of TB diagnosis or TB registration. If provider-initiated HIV testing is being carried out in medical wards or TB clinics, then HIV testing can be done at the point of TB diagnosis (at the time of a positive sputum smear, or in the case of smear-negative TB at the time of a diagnosis of smear-negative PTB or EPTB), and the patient sent for TB registration with an HIV test result already at hand. In a country like Malawi, where provider-initiated testing is poorly developed in medical wards or out-patient clinics, HIV testing will have to be embedded into the TB registration process. In this situation, the patient should be seen at the TB office, the TB patient treatment card should be completed, and the patient referred for diagnostic HIV testing and counselling.22 The patient of course has the right to decline testing. The patient is then reviewed back in the TB office with the results, which are entered into the TB treatment card and the TB register along with the TB case-finding data. The patient can then be given anti-tuberculosis treatment, and if HIV-positive, be given a supply of CPT. In this way the important step of HIV testing and counselling cannot be ignored or forgotten, and the process ensures that by the time the patient leaves the TB office, three of four HIV parameters are entered into the TB register and TB patient treatment card.

Such an approach to HIV testing minimises any ‘disconnection’ between the time of TB diagnosis and knowledge of HIV status, and this might positively influence patient and provider perception of ‘two diseases, one patient’ and the eventual uptake of joint TB-HIV interventions. However, embedding HIV testing and counselling within the TB diagnosis and registration process will require a sensitive approach to ensure that patients are not coerced into having an HIV test against their will and to prevent an increase in the number of TB patients diagnosed who do not get registered and start TB treatment because they are afraid of the consequences and possible stigma of an associated HIV diagnosis. It is also important to ensure that good post-test counselling takes place, so that patients fully understand the consequences and help that can be provided upon a diagnosis of HIV infection.

**PROVISION OF COTRIMOXAZOLE PREVENTIVE TREATMENT**

This useful intervention is not provided to most patients, usually because of lack of HIV testing or other logistic hurdles. For example, in Malawi, during the last round of ART supervisions, which included site visits to all TB registration and treatment facilities between May and June 2006, 23% of the hospitals/
clinics had a complete stock-out of cotrimoxazole and most of the remainder had insufficient supplies to provide CPT (source: HIV Unit, Ministry of Health, Quarterly ART Report, March 2006). The current recommendation is that CPT, once started, should be given indefinitely if a CD4 count is not available for patient monitoring.\textsuperscript{23} If a CD4 count is available, then CPT can be discontinued if the CD4 count rises above the threshold for starting CPT, provided patients have been adhering to ART for at least 1 year and provided the count is above the threshold on two occasions 3 months apart.\textsuperscript{23} Thus, the health sector must consider and set in motion the logistics of long-term provision of CPT as an essential part of HIV care, as with ART, and not just for the duration of anti-tuberculosis treatment. Other issues, such as easy dispensing of 1-monthly or 2-monthly supplies (maybe by the provision of CPT bottles with 60 or 120 tablets of cotrimoxazole 480 mg each) and methods of monitoring (maybe with a simple card or register system in each pharmacy to record who is on CPT and record 1-monthly or 2-monthly dispensing of the drug to patients), need to be worked out if CPT is ever going to reach the thousands of patients who would benefit from it.

**REFERRAL FOR ART**

In Malawi, all symptomatic HIV-positive patients are referred to antiretroviral (ARV) clinics for assessment of eligibility for ART. Clinicians normally assess patients on any day of the week, and once judged eligible, patients are booked for a group counselling session.\textsuperscript{24} Patients are encouraged to attend with a guardian or family member, and they are educated about ART, side effects, importance of adherence, and compliance with follow-up. Patients are asked to return about 1 week later for further individual counselling and to start ART.

In most health facilities, CD4 count capacity will be lacking, so the HIV-positive TB patient will need to be referred to the ART clinic at some time during the initial phase of anti-tuberculosis treatment, probably at 6 weeks, to be assessed and booked for group counselling, so that at the start of the continuation phase the patient is ready to commence ARV drugs. The TB treatment card needs to include a reminder during month 2 about referring HIV-positive patients for ART.

**COLLECTING ANTI-TB DRUGS, CPT AND ARV DRUGS FROM THE SAME OFFICE**

In Malawi, HIV-positive TB patients who are on ART typically visit the TB office or TB clinic to collect antituberculosis drugs and CPT (for patients who are HIV-positive), and then the ARV clinic to collect ARV drugs. Although it has always been thought to be much more convenient for the patient to have antituberculosis treatment and ART administered from the same clinic, in practice this has been difficult to do. Health assistants or health surveillance assistants usually form the cadre of TB officer, and administer anti-tuberculosis treatment. The current National ART Guidelines do not permit this cadre to manage ARV drugs because they do not have a clinical training background. In the ART clinics, the escalating numbers on ART preclude the limited staff (usually one clinical officer, one nurse and one clerk) from managing anti-tuberculosis drugs as well as ARV drugs.

Two possible options can be considered. An assistant TB officer joins the ARV clinic on the clinic days and at a separate table administers the anti-tuberculosis treatment and CPT where necessary after ART has been dispensed. In settings where co-infection rates might be as high as 50–80%, the downside of this approach will be that the great majority of registered TB patients may understandably end up being seen in the ARV clinic, leading to a high risk of patient congestion and overload. The other option is that an ART clinician joins the TB clinic team to offer ART. The advantage of this approach would be that clinical capacity within TB clinics would be reinforced, and there is less risk that potentially infectious TB patients mix with a pool of TB-susceptible, HIV-positive individuals sitting around ARV clinics. Both options obviously raise organisational and human resource concerns that will require reinforcement. Organisational aspects will vary from hospital to hospital depending on the number of days per week that the ARV and TB clinics operate and the numbers of patients on ART and TB. Good organisational practice is essential in any case, as the assistant TB officer will need to bring TB treatment cards and anti-tuberculosis drugs to the ARV clinic or vice versa, depending on which option is chosen. TB treatment cards can be marked for those patients who are HIV-positive and on ART, and these can be kept in a separate pile for easy access for the day(s) when the ARV clinic operates. In the long run, it would seem logical to progressively try to increase the capacity of TB services to manage HIV infection.

**ARV CLINICS AND TB REGISTRATION OFFICES IN THE SAME HEALTH FACILITY**

If a country is serious about assisting its HIV-TB patients, then wherever an ARV clinic is set up there should be a TB registration facility, and vice versa. In Malawi, there are currently 101 ARV clinics in central, district, mission and community hospitals and in certain health centres and clinics around the country. There are only 44 TB registration facilities (where patients are referred for TB diagnosis, registration and initiation of anti-tuberculosis treatment), mainly based in central, district and mission hospitals. Thus, it is quite probable that TB patients who live 20 km from a TB registration facility may live 5 km from an ARV clinic and have to travel extra distances on different
days to collect drugs for the two diseases. It would be much more efficient for the patient to link the two at the same facility, as this would avoid any disconnection between TB and ART service delivery sites. Obviously there will still be patients who have difficulty in accessing facilities, but this approach is at least a start in the right direction. It requires resources and funding, but with the will and the money available for the two diseases the time is ripe for such a joint venture.

CONCLUSION

Much has been said on the subject of TB-HIV coordination. Discussion is good, but it is time for those of us who are working in the field to implement the policy and the strategy and start delivering the necessary services to patients. The introduction and scale-up of ART in many African countries has changed the environment in which we operate, and it is not good enough to say there are insuperable barriers to implementing interventions that we know will save patients’ lives. The dually infected patient deserves better from us, and there is no time to lose. Figure 2 summarises the practical steps that we think may make HIV care a reality for TB patients on the ground. As we have often said before in Malawi, we must learn as we do. We do not have all the answers and we will undoubtedly change some of the detail as we develop experience. The most important thing is to start.

References

RÉSUMÉ


Malheureusement, en Afrique sub-saharienne, il est peu évident que ces interventions soient mises en œuvre sur le terrain et une des raisons de cette paralysie est le fait que leurs détails opérationnels ne sont pas bien expliqués. Cet article s’intéresse aux trois interventions VIH importantes : le test et l’accompagnement, le traitement préventif au cotrimoxazole et le traitement antirétroviral ; il discute aussi certains des détails pratiques de leur mise en application sur le terrain. Nous esperons ainsi susciter la discussion et surtout la volonté de commencer à fournir ces services aux patients.

RESUMEN

La infección por el virus de la inmunodeficiencia humana (VIH)/el síndrome de la inmunodeficencia adquirida (SIDA) y la tuberculosis (TB) constituyen una carga de morbilidad considerable en África subsahariana. Durante los últimos 15 años se ha logrado gran acopio de conocimientos acerca de la repercusión negativa de la infección por el VIH sobre la lucha contra la TB a escala del programa y a escala del paciente individual. Asimismo, se han ensayado y experimentado las intervenciones reconocidas como útiles para los pacientes y estas constituyen en la actualidad componentes importantes de las recomendaciones internacionales sobre TB-VIH, del marco estratégico para la reducción de la morbilidad por TB-VIH y de la política interina sobre actividades colaborativas TB-VIH.

Desafortunadamente, en África subsahariana existen pocos indicios sobre el terreno de que estas intervenciones se estén aplicando ; una de las razones de esta parálisis es la falta de definición de los detalles operativos. En el presente artículo se analizan tres intervenciones importantes sobre la infección por el VIH : el asesoramiento sobre el VIH y las pruebas de detección del virus, el tratamiento preventivo con cotrimoxazole y el tratamiento antirretrovírico y se discuten algunos detalles prácticos de la introducción sobre el terreno. Los autores esperan que el artículo estimule el debate y sobre todo genere el impulso necesario a fin de comenzar el suministro de los servicios a los pacientes.