

## Round Table Discussion

### Lessons from TB/HIV integration in Cambodia

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#### Background

Cambodia ranks 22nd among countries with the highest burden of TB.<sup>1</sup> WHO estimates that in 2004, Cambodia's incidence rate for all forms of TB was 510/100 000, and for smear-positive pulmonary TB, 226/100 000.<sup>1</sup> Although HIV prevalence among adults aged 15–49 years has decreased from 3% (1998) to 1.9% (2003), Cambodia continues to have one of the most serious documented epidemics in Asia, with an estimated 123 100 adults living with HIV/AIDS.<sup>2</sup> Given an estimated 64% of Cambodians infected with *M. tuberculosis*,<sup>3</sup> the overlap of the TB and HIV epidemics is inevitable. HIV prevalence among TB patients has increased from 2.5% (1995)<sup>4</sup> to 10% (2005).<sup>5,6</sup> As discussed in the base paper by Laserson & Wells, the impact of HIV-associated tuberculosis must be addressed by scaling up collaborative activities.

In response to these dual epidemics and separate national programmes to deal with each disease, the Cambodian Ministry of Health established the subcommittee on TB/HIV in 1999 and two frameworks in 2002, the Framework for TB/HIV in Cambodia and the Continuum of Care (COC) for People Living with HIV/AIDS Operational Framework.<sup>7</sup> In line with these policy documents, the National TB/HIV Subcommittee selected four pilot sites in 2003 (Phnom Penh, Battambang, Banteay Mean Chey and Sihanouk Ville) for rapid TB/HIV programme development. It designated the international partners Japan International Cooperation Agency, Family Health International/Gorgas TB Initiative, CDC/Global AIDS Program and WHO to provide technical assistance and support. In 2005, the national TB and HIV/AIDS programmes released a joint statement and standard operating procedures (SOP) for testing of TB/HIV.

Under the COC framework and the WHO “3x5” Initiative, access to ART for HIV-infected TB patients became available. The National TB Programme (NTP) has called for expanded access to ART for all eligible HIV-infected TB patients. Since 2003, the NTP has strengthened surveillance of co-infection among TB patients through national surveys. District TB registers were revised to capture HIV information, and patient referrals are made to voluntary counselling and testing (VCT) centres, home-based care programmes and ART clinics where co-trimoxazole preventive therapy is provided.

#### Results of integration

The impact of HIV co-infection on TB case fatality is evident in surveillance data. As the rate of co-infection rises, so does the

reported death rate among sputum smear-positive patients.<sup>8</sup> Early indicators of TB/HIV programme linkage among the four pilot sites show important variations. While each site differs in size and conditions, the capacity to test TB patients for HIV co-infection is less uniform across sites than the ability to screen for TB among newly diagnosed HIV-positive patients. In 2005, the sites were able to screen from 70–100% of all newly diagnosed HIV-infected persons, but only 14–83% of TB patients were tested for HIV co-infection (NTP surveillance data).<sup>9</sup> The rate of active disease found upon screening ranged from 9% to 26%. IPT is provided on a trial basis at only one site after routine sputum culture to rule out active TB. To date, nearly 200 persons have received IPT and are being followed upon completion of a 9-month regimen.<sup>10</sup>

#### Lessons learned

From the TB-control programme perspective, the main challenges to TB/HIV co-management and linkage can be divided between issues regarding health systems/infrastructure and human resource capacities. The first set of issues reflects where the patient enters the health service. Routine TB screening is accessible for HIV-infected persons through a well-established, decentralized infrastructure for TB diagnosis and treatment. The main barrier relates to limited access to culture for diagnosing sputum smear-negative disease, and a lesser extent, to tools to diagnose extra-pulmonary TB. The provision of isoniazid for IPT is not a limiting step; rather, it is the limited diagnostic capacities, including chest radiograph interpretation. For patients entering the health system through the TB clinic, the limited (TB) staff capacity to conduct HIV counselling adversely impacts the availability of routine patient testing. The lack of training is compounded by a decentralized TB programme that provides diagnostic and treatment services in the periphery, beyond the direct reach of current VCT services. Once TB patients are at home, they rely on transportation support or home-based care services to keep appointments for routine TB/HIV care.

#### Conclusions

The TB burden among the HIV-infected population of Cambodia is well documented, and co-management of TB/HIV is feasible at district level. However, HIV-related services are not yet centred at the community level, which impacts determination of HIV status for TB patients and subsequent access to HIV services in some settings. Since the original pilot sites were established, TB/HIV activities have been expanded to 15 additional districts under the COC framework. Patients' need for transportation support to keep clinic appointments is an indirect indicator of the effect of poverty. Sustaining and expanding the integration process will require long-term commitment on the part of donors and government agencies. Nongovernmental organizations and other health partners must be brought into the linkage process, under the Ministry of Health mandate, in support of a standard, comprehensive patient management system that will facilitate monitoring and evaluation according to international standards. Such a

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patient-centred approach is an essential component of the new Stop TB Strategy and a necessary condition for further scaling up of activities in Cambodia. ■

## References

1. *Global tuberculosis control: surveillance, planning, financing*. Geneva: WHO; 2006 (WHO/HTM/TB/2006.362).
2. *HIV sentinel surveillance (HSS) in Cambodia*. Phnom Penh: National Center for HIV/AIDS, Dermatology and STD, Cambodian Ministry of Health; 2003.
3. *National health strategic plan for TB control, 2001-2005*. Phnom Penh: Cambodian Ministry of Health; 2001.
4. *HIV sentinel surveillance (HSS) in Cambodia, 2000*. Phnom Penh: National Center for HIV/AIDS, Dermatology and STD, Cambodian Ministry of Health; 2000.
5. *National HIV seroprevalence surveillance amongst TB patients in Cambodia*. Phnom Penh: National Center for Tuberculosis and Leprosy Control, Cambodian Ministry of Health; 2003.
6. *National HIV seroprevalence surveillance amongst TB patients in Cambodia, January 2005*. Phnom Penh: National Center for Tuberculosis and Leprosy Control; 2005.
7. *Framework for TB/HIV, August 2002*. Phnom Penh: Cambodian Ministry of Health; 2002.
8. Tuberculosis joint review report, September 2006. Phnom Penh: Cambodian Ministry of Health; 2006.
9. Tan Eang M, Okada K, Jayavanth P. *CENAT annual tuberculosis report, 2005*. Phnom Penh: National Center for Tuberculosis and Leprosy Control; 2005.
10. Chheng P, Tamhane A, Eang C, Mak S, Kem A, Tan V, et al. Outcomes of isoniazid preventive therapy among HIV-positive persons, Battambang Province, Cambodia. *Int J Tuberc Lung Dis* 2006;10:S227-8.

## Tuberculosis in Rwanda: challenges to reaching the targets

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## Introduction

Rwanda has a generalized HIV epidemic: 3.1% of adults are living with HIV/AIDS.<sup>1</sup> Care, treatment and prevention services for the approximately 183 558 adults and 13 901 children living with HIV/AIDS have been rapidly scaled up over the past three years under the guidance of the Rwandan Ministry of Health's Treatment Research for AIDS Center. By November 2006, almost 33 000 HIV-infected adults and children were receiving antiretroviral therapy.<sup>2</sup>

Expansion and enhancement of DOTS in the six-point Stop TB Strategy described by Laserson & Wells have been implemented in Rwanda by the health ministry's national integrated programme to combat leprosy and TB since 1990. Through recent programme improvements, treatment success rates have increased from 58% in 2003 to 81% by the third quarter of 2006; however, case detection was an estimated 24%

in 2005.<sup>3-5</sup> Thus, Rwanda is close to achieving the WHO target for treatment success, but is below the target for case detection. Concerted efforts are being made to ensure that effective smear microscopy and directly-observed therapy are available nationwide. Further efforts are needed to reach the goals, especially for case detection. A recent national survey showing that the prevalence of multidrug resistance among new TB patients is 3.9% gives cause for concern.<sup>6</sup>

## TB/HIV collaborative activities

Addressing TB/HIV coinfection (another component of the Stop TB Strategy) through collaboration between programmes and integration of services is a priority for the Rwandan government. Implementation of TB/HIV collaborative activities began with the placement of a TB/HIV technical advisor and coordinators at the national programme to combat leprosy and TB and at the Treatment Research for AIDS Center, to establish coordination at a central level. In February 2005, key stakeholders from the health ministry and partner organizations held a workshop to jointly prioritize collaborative activities and establish a national TB/HIV integration working group. In October 2005, the health ministry approved a national policy on TB/HIV collaborative activities based on WHO interim policy.<sup>7,8</sup>

The technical manual for the programme to combat leprosy and TB was revised to include a chapter containing standards of care for patients with TB and HIV. Provider-initiated HIV counselling and testing for all TB patients have been adopted. TB treatment cards and case registers now include information on HIV status, care and treatment; these data are regularly reported by all TB diagnostic and treatment facilities.

In August 2005, two TB/HIV integration model centres were established at one rural and one urban health facility. The purpose of these centres is to develop best practices and innovative strategies for TB/HIV integrated care, including evaluating strategies to enhance early diagnosis of TB among people with HIV/AIDS as well as developing methods to improve HIV testing of TB patients, to increase enrolment of TB/HIV infected patients into HIV care, and to provide cotrimoxazole and antiretroviral therapy through the TB services.

A TB symptom checklist developed to screen people with HIV/AIDS for TB was piloted at the two model centres and adopted as a national standard. Standardized paper-based registers (which include information on results of routine TB screening and treatment for TB disease) of patients before and after initiation of antiretrovirals have been developed, and complete roll-out is expected by the end of 2006. As of June 2006, preliminary data from 27 of 120 sites providing antiretrovirals report that 138 of 1581 (9%) people receiving care and treatment for HIV/AIDS are also receiving treatment for TB.

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In 2005, a baseline evaluation of access to and acceptance of HIV counselling and testing among TB patients was conducted at 23 geographically representative sites. Of 482 patients registered for treatment in the fourth quarter of 2004, 52% had a documented HIV test result. Other HIV-related information was poorly documented. When interviewed, TB patients reported high acceptance of HIV testing if offered (198 out of 207, or 96%). These results were used to inform policy-makers and providers, and to modify national guidelines to promote TB/HIV activities. This evaluation also revealed that mortality among HIV-infected TB patients in Rwanda was six times higher than among non-infected TB patients, supporting the case made by Laserson & Wells that TB is the leading killer of people with HIV/AIDS.

Implementation of the national TB/HIV policy and guidelines has resulted in a nation-wide increase in HIV counselling and testing of TB patients from 46% in 2004 to 81% by the third quarter of 2006. In that quarter, 49% of HIV-infected TB patients had initiated cotrimoxazole preventive therapy and 34% were receiving antiretrovirals.

## Conclusion

Rwanda's experience has demonstrated that it is possible to achieve rapid and successful implementation of TB/HIV collaborative activities as part of the Stop TB Strategy in the setting of a generalized HIV epidemic. This additional effort did not involve substantial additional costs and did not interfere with other TB control efforts. Indeed, it has enhanced case detection among people with HIV/AIDS, who are at the highest risk for TB. Challenges remain for sustained political commitment to support TB/HIV collaborative activities in the context of recent trends. These include decentralization of health services, expansion of HIV counselling and testing in settings other than TB outpatient facilities, provision of cotrimoxazole at all sites offering TB services, effective referrals between TB and HIV programmes, accurate recording and reporting of TB/HIV data, and establishing adequate human resources to supervise and monitor programme outcomes. ■

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## References

1. *Demographic and health survey – preliminary results on HIV seroprevalence*. Kigali: Rwanda Ministry of Health; 2005. Available at: [http://www.moh.gov.rw/press\\_release\\_dhs.htm](http://www.moh.gov.rw/press_release_dhs.htm)
2. *Monthly ART report, November 2006*. Kigali: Treatment Research AIDS Center; 2006.
3. *Quarterly Report July–September 2006*. Kigali: Programme National Intégré de lutte contre la Lèpre et la Tuberculose; 2006.
4. *Global tuberculosis control: surveillance, planning, financing*. Geneva: WHO; 2005 (WHO/HTM/TB/2005.349).

5. *Annual report 2005*. Kigali: Programme National Intégré de lutte contre la Lèpre et la Tuberculose; 2006.
6. Umubyeyi AN, Vandebriel G, Gasana M, Basinga P, Zawadi JP, Gatabazi J et al. Results of a national survey on drug resistance among pulmonary tuberculosis patients in Rwanda. *Int J Tuberc Lung Dis* 2007;11:189-94.
7. *Policy statement on TB/HIV collaborative activities*. Kigali: Rwanda Ministry of Health; 2005.
8. *Interim policy on collaborative TB/HIV activities*. Geneva: Stop TB Department and Department of HIV/AIDS/WHO; 2004.

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## Tuberculosis in the Dominican Republic: addressing the barriers to sustain the achievements

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The base paper calls for urgent implementation of activities to achieve the targets for TB control set by the 1991 World Health Assembly, the 2015 Millennium Development Goals and the Stop TB Partnership. Laserson & Wells conclude that the greatest challenge is the devastating impact of the HIV epidemic. They suggest that countries will only achieve success with an accelerated political commitment to TB/HIV collaborative activities through national revised plans built upon the Stop TB Strategy and the Global Plan to Stop TB 2006–2015.

The Dominican Republic faces several challenges in addressing these targets.

While the incidence of all forms of TB in the Dominican Republic has been estimated to be among the highest in the Americas (91 cases per 100 000 people in 2005),<sup>1</sup> much progress has been achieved since the implementation of DOTS in 1999. By 2005, DOTS services had been made available to 80% of the population and detection of infectious cases was 83% for the whole country and 76% in DOTS areas. The 2003 cohort analysis suggested 80% treatment success.<sup>1</sup> Funding for TB control has been secured for the next 3 to 5 years and technical support has been provided. A steady supply of high-quality anti-TB drugs has been assured via the Global Drug Facility, fixed-dose combinations have been introduced and a MDR-TB unit has recently been created. This impressive list of achievements was realized in a short period of time.

However, to ensure sustainability and guarantee that targets are reached, 5- to 10-year national planning in line with the Global Plan to Stop TB 2006–2015 and implementation of the new Stop TB Strategy are vital. The Dominican national TB programme and its partners face several of the barriers acknowledged in the base paper. Notably, the latest data suggest that progress to address TB/HIV, MDR-TB and XDR-TB has been slow.

Data on TB/HIV coinfection, which are limited to certain areas of the country, suggest that between 6% and 11% of TB patients are infected with HIV.<sup>2,3</sup> A recent survey suggests that young adults, provinces with a high rate of tourism

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and sugar-mill camps should be targeted for interventions.<sup>3,4</sup> While the country has introduced some TB/HIV collaborative activities (e.g. isoniazid prophylaxis for HIV-infected people and provision of antiretroviral drugs), there are no data on the number of HIV-infected TB patients receiving antiretroviral drugs. There is no surveillance of HIV among TB patients, no information is available on coinfecting patients receiving cotrimoxazole, and a proper referral/counter referral mechanism for patients has not been established. Collaboration between TB and HIV/AIDS programmes needs to advance immediately and concretely in line with the new Stop TB Strategy.<sup>5</sup> The recent development of national TB/HIV guidelines and inclusion of TB/HIV activities on national plans are steps in this direction.

MDR-TB has been one of the greatest challenges for the Dominican Republic, which was classified by WHO in the mid-1990s as one of the world's hot spots for MDR-TB.<sup>6</sup> This high rate of MDR was associated with poor programme performance and lack of political will to fight the disease. TB control has now been implemented according to internationally recommended guidelines for more than 7 years, and a project to manage MDR-TB has recently started. The use of second-line drugs must be fully supervised to prevent the rise of extensively drug-resistant TB. New data on the magnitude of MDR-TB is urgently needed. In addition, a strengthened national network of properly-equipped laboratories with trained personnel and a fully functioning national reference laboratory are necessary to ensure access to quality-assured sputum smear microscopy, culture and drug-susceptibility testing.

Surveillance efforts in the Dominican Republic, although following WHO/PAHO standards, need to be strengthened. While case reporting in DOTS areas suggests a steady increase in the number of cases detected, nationally there is an inconsistent pattern of increases and decreases. The quality of case finding across the country and TB programme/health system issues, such as the quality of the workforce, may be contributing factors explaining disparities.

The national TB programme needs to develop and maintain a strong stewardship capacity to guide and oversee collaboration between private and public providers. Public-private approaches, including monitoring and evaluation, should be explored and implemented. Increased advocacy and social mobilization to engage civil society in TB-control efforts is also needed to increase access to DOTS services in urban and rural areas.

The implementation of locally relevant operational research can also be useful in identifying programme limitations and strengths, as well as mechanisms to facilitate scaling up of activities.

Finally, TB-control efforts must progress hand-in-hand with strengthening of the health system as a whole. International cooperation, financial sustainability and strong political commitment to work at all levels with different stakeholders will be the recipe to achieve targets for TB control in the Dominican Republic. ■

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### References

1. *Global tuberculosis control report: surveillance, planning, finance*. Geneva: WHO; 2007 (WHO/HTM/TB/2007.376). Available at: [http://www.who.int/tb/publications/global\\_report/en/](http://www.who.int/tb/publications/global_report/en/)
2. Espinal M, Perez EN, Baez J, Henriquez L, Fernandez K, Lopez M et al. Infectiousness of *Mycobacterium tuberculosis* in HIV-1-infected patients with tuberculosis: a prospective study. *Lancet* 2000;355:275-80.
3. Baez J, Perez-Then E, Acosta I, Elias-Melgen R, Marcelino B, Tavarez M et al. HIV and tuberculosis co-infection in the Dominican Republic. *37th Union World Conference on Lung Health, Paris, France, October–November, 2006* (Abstract No. 61528).
4. Perez-Then E, Baez J, Acosta I, Elias-Melgen R, Marcelino B, Tavarez M et al. Clinical profile for tuberculosis patients co-infected with HIV in the Dominican Republic. *37th Union World Conference on Lung Health, Paris, France, October–November, 2006* (Abstract No. 61521).
5. *The Stop TB Strategy. Building on and enhancing DOTS to meet the TB-related Millennium Development Goals*. Geneva: WHO; 2006 (WHO/HTM/2006.37). Available at: [http://www.who.int/tb/features\\_archive/stop\\_tb\\_strategy/en/index.html](http://www.who.int/tb/features_archive/stop_tb_strategy/en/index.html)
6. Espinal MA, Baéz J, Soriano G, Garcia V, Laszlo A, Reingold AL et al. Drug-resistant tuberculosis in the Dominican Republic: results of a nationwide survey. *Int J Tuberc Lung Dis* 1998;2:490-8.

## Joint tuberculosis/HIV services in Malawi: progress, challenges and the way forward

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In the base paper, Laserson & Wells suggest that the greatest challenge to achieving global TB targets is the ever-expanding HIV epidemic and the resulting increase in HIV-associated TB, particularly in sub-Saharan Africa. Malawi, in southern Africa, is a poor country that has a huge HIV epidemic, and serves as an appropriate case study.

In Malawi, which has a population of 12 million, an estimated 790 000 adults are living with HIV, there are 80 000 AIDS-related deaths each year and 170 000 HIV-infected persons are in need of antiretroviral therapy.<sup>1</sup> The HIV epidemic has had a large negative impact on TB control services in the country. TB case notifications have risen from 5000 per year in 1985 to more than 25 000 per year for the past five years. An increase in the number of cases of TB that recur after treatment completion has contributed to this burden.<sup>2</sup> There has been a disproportionate increase in the number of patients with smear-negative pulmonary TB and extra-pulmonary TB, the diagnosis of which is not easy in a resource-constrained environment.<sup>3</sup> Case fatality rates in patients with smear-positive pulmonary TB have risen from 5% in 1985 to more than 20%, and are even higher among those with smear-negative TB, who are more severely immunosuppressed.<sup>3</sup> According to the last national survey, 70% of TB patients are infected with HIV.<sup>4</sup>

The government of Malawi has tried to respond to this challenge. Malawi was one of three African countries to pilot

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the WHO ProTEST initiative (1999–2002), which promoted HIV testing and counselling among TB patients as an entry point to HIV prevention, treatment and care services.<sup>5</sup> Subsequently, and with the support of bilateral and multilateral donors, a three-year TB/HIV plan (2003–2005) was developed and integrated into the five-year national TB control plan (2001–2005). The principal objectives were to scale up HIV testing among TB patients and, for HIV-positive TB patients, to provide cotrimoxazole preventive therapy and facilitate access to antiretrovirals.

What progress has been made between 2003 and 2005? From routine data collected and reported within the national programmes for TB and antiretroviral therapy, the proportion of TB patients tested for HIV increased from 15% in 2003 to 47% in 2005. During this time, the majority (90% or more) of HIV-positive TB patients started cotrimoxazole preventive therapy. In 2005, just over 20% of new patients starting antiretroviral therapy had active TB or a past history of TB. However, because the national database for antiretroviral therapy does not disaggregate patients with active TB or a past history, it is difficult to know how many HIV-infected TB patients starting anti-TB treatment that year also started antiretroviral therapy.

Despite progress, challenges to implementation remain. Less than half of all TB patients were tested for HIV in 2005, the main barriers being irregular supplies of HIV-testing reagents, staff forgetting to refer patients or patients themselves not undergoing HIV testing and counselling after being registered and placed on anti-TB treatment. Ways to improve HIV-testing uptake need to be found, including the integration of HIV testing into the TB registration process itself.<sup>6</sup>

Since cotrimoxazole is regularly out of stock in peripheral hospital pharmacies, the national TB programme procured its own supply for patients on anti-TB treatment. The challenge is the continuation of preventive therapy after completion of anti-TB treatment. In this regard, the health ministry is now implementing a national policy of long-term preventive therapy for all eligible HIV-infected patients (including those with TB) with cotrimoxazole procured via the Global Fund to Fight AIDS, Tuberculosis and Malaria.

HIV-positive patients with TB are potentially eligible for antiretroviral therapy if they are in either WHO clinical stage 3 (pulmonary TB) or stage 4 (extra-pulmonary TB).<sup>7</sup> It is preferable to perform a CD4-lymphocyte count before considering antiretroviral therapy; however, in Malawi there is a shortage of laboratories with this capability, and hence national guidelines recommend that all HIV-infected TB patients be considered for antiretroviral therapy.<sup>8</sup> Every year, an estimated 19 000 HIV-infected TB patients are registered

for anti-TB treatment, but currently only a small proportion access antiretroviral therapy.

There are several reasons for this. The policy is to start TB patients on antiretroviral therapy after they have completed the initial phase of anti-TB treatment, by which time the sickest patients have died and survivors may feel well enough not to need antiretroviral therapy. In the continuation phase, anti-TB treatment is decentralized to health centres, while antiretroviral therapy tends to be administered by central, district and mission hospitals, and therefore access to antiretrovirals is difficult for patients receiving their anti-TB treatment at health centres.<sup>9</sup> Offering earlier antiretroviral therapy to TB patients and expanding the availability of antiretroviral therapy to health centres are ways of potentially solving these problems.

Finally, the monitoring systems for HIV and TB need to explicitly include the relevant parameters.<sup>6</sup> For example, TB monitoring tools, including cohort reports, should include data on numbers of TB patients who have been tested for HIV, who are HIV-positive, and who have started cotrimoxazole or antiretroviral therapy. Only in this way will staff managers know whether TB/HIV interventions are making a difference to treatment outcomes. ■

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## References

1. *HIV and syphilis sero-survey and national HIV prevalence estimates report*. Lilongwe: Ministry of Health; 2005.
2. Harries AD, Chimzizi RB, Nyirenda TE, van Gorkom J, Salaniponi FM. Preventing recurrent tuberculosis in high HIV-prevalent areas in sub-Saharan Africa: what are the options for tuberculosis control programmes? *Int J Tuberc Lung Dis* 2003;7:616-22.
3. Hargreaves NJ, Kadzakanja O, Whitty CJ, Salaniponi FM, Harries AD, Squire SB. Smear-negative pulmonary tuberculosis in a DOTS programme: poor outcomes in an area of high HIV-prevalence. *Int J Tuberc Lung Dis* 2001;5:847-54.
4. Kwanjana JH, Harries AD, Gausi F, Nyangulu DS, Salaniponi FM. TB-HIV seroprevalence in patients with tuberculosis in Malawi. *Malawi Med J* 2001;13:7-10.
5. *Stop TB Department. Report of a "lessons learnt" workshop on the six ProTEST pilot projects in Malawi, South Africa and Zambia*. Geneva: WHO; 2004 (WHO/HTM/TB/2004.336).
6. Harries AD, Boxshall M, Phiri S, van Gorkom J, Zachariah R, Squire SB, et al. Providing HIV care for tuberculosis patients in sub-Saharan Africa. *Int J Tuberc Lung Dis* 2006;10:1306-11.
7. *Antiretroviral therapy for HIV infection in adults and adolescents in resource-limited settings: towards universal access. Recommendations for a public health approach (2006 version)*. Geneva: WHO; 2006.
8. *Treatment of AIDS. Guidelines for the use of antiretroviral therapy in Malawi, second edition*. Lilongwe: Ministry of Health; 2006.
9. Zachariah R, Teck R, Ascurra O, Gomani P, Manzi M, Humblet P et al. Can we get more HIV-positive tuberculosis patients on antiretroviral treatment in a rural district of Malawi? *Int J Tuberc Lung Dis* 2005;9:238-47.