

live full, economically active lives will be condemned to a premature, preventable death.

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## **Tuberculosis in prisons in sub-Saharan Africa – a potential time bomb**

The World Health Organization (WHO) estimates that there are 10 million new cases of tuberculosis (TB) reported worldwide each year, and 1.7 million people die from the disease.<sup>1</sup> The incidence of TB in sub-Saharan Africa (SSA) remains very high at over 300 new cases of TB per 100 000 population in 2007.<sup>2</sup> The TB epidemic in SSA is fuelled by the HIV epidemic, and up to 70% of adults with TB are co-infected with HIV.<sup>2</sup> There are few data on drug-resistant TB from SSA,<sup>3</sup> probably owing to poor TB programme performance, inadequate laboratory facilities for drug susceptibility testing (DST), and poor surveillance, data collection and reporting procedures. The WHO estimated that 69 000 cases of MDR-TB emerged in 2008 in Africa, which is most probably an underestimate.<sup>1</sup>

The global focus on TB control is on early diagnosis and treatment of people in the community in high TB- and TB/HIV-endemic countries. People concentrated in confined situations, such as prisons, are important but often neglected reservoirs for TB transmission, and

threaten those in the outside community. The European Academies of Sciences Advisory Committee on drug-resistant TB in Europe emphasised the poor TB control in prisons and the rapid spread of TB between prisoners and prison staff.<sup>4</sup> Data from SSA prisons indicate a similar ominous situation in prisons in Africa. The prevalence of TB in SSA prisons is estimated to be 6 - 30 times higher than that in the general population.<sup>5</sup> The TB incidence rate in Zambian prisons is 5 285 cases per 100 000 inmates per year, which is about 10 times that of the outside population.<sup>6</sup> A Center for Disease Control study of Botswanian prisons led to important recommendations, including active screening, contact investigation, reduction of transmission, and isoniazid preventative therapy for HIV-positive prison inmates and guards.<sup>7</sup>

TB in prisons threatens inmates and prison staff (wardens, cooks, clinical staff etc.), who are at particular risk of acquiring TB because of the conditions and working environment. Staff also interact with

their families and community and may thus transmit the disease further. The restricted and confined conditions for prisoners and prison staff, poor nutrition, poor ventilation, stress and inadequate prison health services, conduce to the emergence and enhanced transmission of drug-resistant TB, which may then spread into the community.

Alarming data from SSA show that the incidence of multi- and extensively drug-resistant tuberculosis (MDR-TB and XDR-TB) is increasing.<sup>7-9</sup> Drug-resistant TB threatens all SSA national TB programmes because of problems with rapid identification, providing appropriate and effective treatment, and poor treatment outcomes.<sup>10,11</sup> Disease surveillance and reporting of TB in prisons is often weak or non-existent, and the problem of TB and drug-resistant TB remains poorly defined. The WHO status report<sup>12</sup> on TB in prisons reports an urgent need to ensure effective and efficient diagnosis and treatment of drug-resistant forms of TB. It recommends the development of an effective national TB programme to reduce the emergence of new drug-resistant strains of *Mycobacterium tuberculosis*, both inside and outside prisons, by effectively detecting and treating all MDR-TB cases. However, these guidelines have generally been ignored and not implemented in SSA, illustrating the large gap between the WHO recommendations and the reality in SSA prisons. Drug-resistant TB has been demonstrated in Zambian<sup>8</sup> and Botswanian<sup>7</sup> prisons. These countries have no data on drug-resistant TB in prisons or adequate drug resistance surveillance systems in place, 7 years after the studies. An article entitled *Death and disease in Zimbabwe's prisons* describes the terrible conditions faced by prisoners in SSA.<sup>9</sup> Overcrowding, poor nutrition, poor sanitation, HIV infection and poor health care are obvious causes for the escalating death toll in Zimbabwe's prisons; TB is reported as the biggest killer disease.

Prisons in SSA have no proper isolation facilities to treat MDR/XDR-TB. Such facilities are also scarce in district and referral hospitals, highlighting this wider problem. Since many XDR-TB patients are untreatable, where should prison inmates with XDR-TB be housed and what will happen to them? There is a great need to improve prison health services and to introduce rapid point-of-care diagnostics for TB and screening for drug resistance in prisons.<sup>13</sup> Recommendations for infection control isolation of patients and protection of medical staff apply to all institutions but are not in place and not practical or applicable in SSA prisons. Isolation of prison inmates with active TB during the infectious phase is important for TB control but is impossible in the SSA prison infrastructure. The best method of infection control remains the early diagnosis of infectious cases and the prompt initiation of effective treatment to prevent the emergence of drug-resistant TB.

Treatment of MDR/XDR-TB is expensive and will stress national health budgets. Without basic epidemiological data, it is difficult to justify investment to improve health services for prisoners in the face of competition for limited national budgets and resources by other

important health problem areas. TB control will not be achieved in SSA until governments focus and take action on all aspects of the TB problem, which must include TB in confined institutions such as prisons. Other serious infectious diseases are also rapidly transmitted in prisons, including HIV, respiratory and skin infections, and STDs. Serious political and funding attention is required urgently<sup>14</sup> to improve health services in SSA to prevent the potential time bomb of drug-resistant TB exploding and undermining the gains of TB control programmes.

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