

Study setting Central Jail, Aizawl is the largest prison in Mizoram state. Inmates with radiographical signs suggestive of tuberculosis, such as mediastinal/hilar lymphadenopathy, consolidation seen as opacity in a segmental or lobar distribution, cavitation, pleural effusion, segmental or lobar atelectasis, lobar hyperinflation, mucoid impaction, postobstructive pneumonia, and/or randomly distributed diffuse nodules, were examined by the prison doctor and referred to DTC for initiating treatment. Proportions were calculated for pre-intervention socio-demographic, behavioral and clinical characteristics of prison inmates; post-intervention tuberculosis/HIV proportions, including bacteriological confirmed tuberculosis (based on sputum microscopy and/or CBNAAT), clinically diagnosed tuberculosis (based on chest radiography), HIV positive and HIV-tuberculosis coinfection. Intensified screening, done over two days, included a clinical examination by the prison medical officer, tuberculosis and HIV risk assessment by the counselors, tuberculosis symptom screening (cough > 2 weeks, fever > 2 weeks, significant weight loss, hemoptysis and night sweat) and collection of two sputum samples (spot and early morning) from presumptive tuberculosis cases by the nurse, chest radiography of presumptive tuberculosis cases by x-ray technician and opt-out HIV testing by the laboratory technician. The prison doctor referred all tuberculosis suspects either to the Designated Microscopy Centres (DMC) at Kulikawn Tuberculosis Unit, 10 kilometres from the prison, or to the District Tuberculosis Centre (DTC) at State Referral Hospital, Falkawn, 30 kilometres from the prison, for diagnosis and follow-up. Review of tuberculosis risk factors and symptoms, HIV test results, interpretation of chest radiography, sputum smear microscopy and Cartridge Based Nucleic Acid Amplification Test (CBNAAT) results were completed in 4–5 days. The smear was prepared using the yellow purulent portion of the sputum with stepwise addition of 1% carbol fuchsin, 25% sulphuric acid and 0.1% methylene blue as per standard operating procedure. Sputum samples of HIV positive inmates, collected in falcon tubes, were sent for CBNAAT (Cepheid) to DTC, Falkawn. Data collection Trained investigators used structured questionnaire in Mizo language to collect information on socio-demographics and TB/HIV-related risk assessment from the inmates. The prison had provision for a medical inspection room, with a doctor, three nurses, pharmacist, laboratory technician, three male inmates designated as medical assistants, and one female inmate designated as laboratory assistant. HIV counseling and testing was provided through mobile unit of integrated counseling and testing centre (ICTC) that visited the Central Jail once in three months. Inmates reactive to the first HIV test were confirmed when the mobile ICTC counselor and laboratory technician visited the Central Jail once every week during the study period. The tests were based on the development of color bands within 20 minutes of adding 20 microlitres of blood and the diluents to interpret the results as non-reactive or reactive for HIV 1/2 antibodies. The technician mixed 2–5 ml sputum sample with 8 ml sample reagent followed by incubation at room temperature and loading of the cartridge with 2 ml mixed sample into the genexpert. The test was performed for the second time only if the test results were "invalid" or "Rif Indeterminate". The test was repeated on the same sample after trouble shooting (as per the user manual) in case of "errors" or "no results". Furthermore, the prison officials ensured that none of the inmates would be penalised in any manner in case they did not wish to participate in the screening and continued to receive all medical services as needed. Inmates detected HIV positive were counselled by the mobile ICTC counsellor at the prison site.