Operational research on tuberculosis control in Malawi
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5. Prevalence of HIV, sexually transmitted disease and tuberculosis amongst new prisoners in a district prison, Malawi.

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Infectious diseases, particularly tuberculosis (TB) and the human immunodeficiency virus infection (HIV) are reported to be highly prevalent amongst prisoners in many countries of the world [1]. Sub-Saharan Africa has the highest rates of TB, HIV and sexually transmitted diseases (STDs) in the world [2,3]. However, there is a scarcity of information about the prevalence of these infections amongst prisoners. A study in Zomba Central Prison in Malawi [4] found a high prevalence of pulmonary TB (PTB) and HIV amongst prison inmates. This finding leads to the implementation of a system of screening patients for PTB in eight of the country's prisons in which there are medical staff. Unfortunately, there are another 14 district prisons in the country which do not have medical staff. Although new prisoners to such prisons are supposed to be assessed by staff from the nearest district hospital, in practice this rarely happens because of problems such as staff shortages and transport difficulties. We decided to perform a clinical assessment of new prisoners who were admitted to a district prison in Malawi in which there was no medical staff, with a particular focus on HIV, STDs and TB.

Ntcheu district is in the central region of Malawi, with a population of 500,000. There is one district hospital and one prison, situated in the township itself. There are no medical personnel attached to the prison, and prisoners are taken to hospital when sick. The total number of prison inmates varies from 60 - 120. There are five cells for male prisoners and one for female prisoners. These cells are small and poorly ventilated, and at maximum capacity, there is on average 0.6 m² of cell space for each prisoner. For the purpose of this study, a clinical officer from the district hospital visited the prison once a week and screened all new prisoners. A history and physical examination were performed, which included an examination for STDs according to World Health Organization Syndromic Management Guidelines. In all prisoners, whether they were coughing or not, an attempt was made to collect sputum specimens for detection of alcohol-acid fast bacilli (AAFB). Sputum smears were prepared and examined for AAFB using light microscopy and the Ziehl-Neelsen stain in the hospital laboratory. Prisoners were counselled for HIV-testing, and in those accepting the test post-test counselling was carried out according to the guidelines of the National AIDS Control Programme. Blood was examined for HIV using a particle agglutination test (Serodia-HIV, Fujirebio, Tokyo). Clinical illness, STDs and PTB were treated according to the country's established guidelines.

Between June and November 1997, 275 new prisoners were admitted to Ntcheu Prison, 272 men and three women, whose mean age was 28 years. Of these, 21 prisoners were discharged before they were examined, leaving 254 on whom an examination was carried out.
HIV status: 58 prisoners (23%) accepted HIV testing and 47 were actually screened. Of 47 prisoners tested, 15 (32%) were HIV-positive.

Sexually transmitted diseases: 27 prisoners (11%) had an active STD. Some prisoners had more than one STD, and these included - genital ulcer (15), urethral discharge (10), penile warts (3), scrotal swelling (1) and balanitis (1).

Pulmonary Tuberculosis: 111 prisoners submitted three sputum specimens and four were sputum-positive for AAFB (Table 1).

Other illness: a total of 126 other conditions were diagnosed and treated. These included 51 (20%) cases with lower respiratory tract infection, 26 (10%) cases of malaria, 11 (4%) cases of diarrhoea, 10 cases of headache and 28 cases with miscellaneous conditions.

<table>
<thead>
<tr>
<th>Duration of cough</th>
<th>No. of prisoners</th>
<th>Sputum examined</th>
<th>Sputum positive for AFB</th>
</tr>
</thead>
<tbody>
<tr>
<td>No cough</td>
<td>151</td>
<td>53</td>
<td>0</td>
</tr>
<tr>
<td>Less than 1 week</td>
<td>30</td>
<td>12</td>
<td>0</td>
</tr>
<tr>
<td>1 - 3 weeks</td>
<td>20</td>
<td>7</td>
<td>0</td>
</tr>
<tr>
<td>More than 3 weeks</td>
<td>37</td>
<td>29</td>
<td>3 (10%)</td>
</tr>
<tr>
<td>Unknown duration</td>
<td>16</td>
<td>10</td>
<td>1 (10%)</td>
</tr>
<tr>
<td>Total</td>
<td>254</td>
<td>111</td>
<td>4 (4%)</td>
</tr>
</tbody>
</table>

This study shows a high prevalence of HIV and STDs amongst prisoners admitted to Ntcheu prison. Although only one-quarter of prisoners agreed to and received HIV testing, HIV infection was found in one-third of those tested. Because of the overcrowding and poor ventilation facilities in the prison cells and the potential for rapid transmission of TB within this environment, we decided to screen all prisoners for smear-positive PTB, regardless of complaints of cough or duration of cough. Not surprisingly, smear-positive PTB was only found in those with a chronic cough, although we have found in Zomba Central Prison that five per cent of prisoners with a short duration of cough may also have smear-positive PTB [4]. Other illness such as lower respiratory tract infection and malaria were identified and treated at the time of the prison assessment.
Ntcheu prison is representative of many of the prisons without medical staff in Malawi. Assessment of new prisoners on a week to week basis identified a large number of treatable conditions. Screening for STDs seems to be particularly worthwhile as prompt and effective treatment may reduce the potential for further HIV transmission [5]. As a result of this study we shall be recommending that all prisons in Malawi without medical staff adopt a similar system of screening prisoners which can be sustained in the long term.

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References
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