

hospital outpatients is different but E coli still remains predominant. The same has been shown by this audit.

Data from the register lacked some useful information including age, sex and clinical information as to why a request for culture was made. All clinicians need to be reminded about the need to provide this information if meaningful analysis of data is to be made.

### Conclusion

Antibiotic policy for the management of UTI need to be reviewed in view of high isolate resistance to the two first line drugs used in the treatment of UTI in Malawi.

Studies should be conducted both in the community and hospitals to establish the best antibiotics for empirical treatment of UTI in Malawi. Ciprofloxacin should be considered in hospitals as first line treatment of UTI in Malawi.

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## High incidence of tuberculosis in prison officers in Zomba, Malawi

GS Kachisi, AD Harries, JR Kemp, FM Salaniponi

### Abstract

We conducted a study in four prisons in Zomba district, Malawi, to determine the tuberculosis case notification rate in prison officers during the year 2000. Of 201 prison staff, 9 (4.5%) were diagnosed with TB: 2 with smear-positive pulmonary tuberculosis (PTB), 4 with smear-negative PTB and 3 with extrapulmonary TB (EPTB). This incidence in prison officers (9/201) was significantly greater than the incidence in primary school teachers in a separate (unpublished) study in Malawi the previous year (78/4,289) (OR 2.58, [95% CI, 2.44 – 2.73],  $p < 0.015$ ). Expressed as annual TB case notification rates, the data for prison officers in these 4 prisons was 4,478 per 100,000, compared to 1,786 per 100,000 in teachers. There may be a high incidence of TB in prison officers. Further research needs to be carried out in this group to confirm these findings and to develop an occupational health service to reduce the risk of TB for these workers.

### Introduction

In a survey carried out in 1996 in Zomba Central Prison, we found the prevalence of tuberculosis (TB) in convicted prisoners to be 5%1. This was much higher than the national TB prevalence in the general population. As a result of that survey, an ongoing collaboration was started between the National Tuberculosis Control Programme and the Prison Medical Service. We hold bi-annual working meetings with the aim of controlling TB amongst prisoners in Malawi. The main control strategy is the active screening of prisoners for TB on entry to prison and during their prison sentence, and the treatment of prisoners diagnosed with TB according to standardised guidelines2.

There are 23 prisons in Malawi. The number of prisons with on-site clinical staff has varied over the last 4 years from 5 to the current number of 12. In those prisons with on-site clinical staff there is a high rate of TB amongst prisoners. In the year 2000, in Zomba, Chichiri, Maula, Mzuzu and Kasungu prisons there were 17,424 convicted and remandee prisoners of whom 108 were diagnosed with smear-positive PTB, 140 with smear-negative PTB and 24 with extra-pulmonary TB (EPTB) [source = National TB Control Programme Prison meeting minutes]. Of those with smear-positive PTB, 75 (69%) had a cough for longer than 3 weeks.

Prisons may correctly be regarded as "hot spots" for TB transmission because they are over-crowded, often poorly ventilated and have a high incidence of HIV/AIDS. As such, these institutions may be a risk for prison staff as well as prisoners. There is no information in Malawi about the risk of TB in prison staff. We therefore conducted a study in 4 prisons in Zomba district to determine the annual TB case notification rate amongst prison staff, and we compared results with those obtained in primary school teachers, (the teachers' study being carried out separately and in the previous year).



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## Methods

There are four prisons in Zomba District: Zomba Central Prison, Mikuyu Prison, Domasi Prison and Mpyupyu Prison. These prisons house male and female prisoners. In each prison an inventory was taken of prison staff for the year 2000 by looking at staff attendance registers which are kept either by the Assistant Human Resource Management Officer or the Officer in Charge of the Prison. The number of prison staff who were diagnosed and registered with TB at Zomba Central Hospital during the year 2000 was determined by examining the District TB Register (for the address of the patient being recorded as the prison) and checking the entry in the TB register against the staff attendance record.

The annual TB case notification rate in prison staff was calculated, and compared with the rate in primary school teachers in 1999 from 156 schools in all districts in the country (rates determined in a separate study on health care workers and teachers, AD Harries – personal observations) using X2 test, odds ratios (OR) and their 95% confidence intervals (CI). Primary school teachers were chosen as a control group because i) they are employed, as is the case with prison officers, within the government civil service, ii) they should be approximately the same age as prison officers and iii) their routine work involves being in close contact with large groups of primary school children who are unlikely to be infectious with TB.

## Results

There were 201 prison staff in the four prisons: 120 at Zomba Central, 33 at Mikuyu, 33 at Domasi and 15 at Mpyupyu. 9 patients were registered with TB: 6 from Zomba Central and 3 from Mikuyu. There were 6 men and 3 women with a mean age of 40 years (range 30 – 55 years). Of these, 2 had smear-positive PTB, 4 had smear-negative PTB and 3 had EPTB (2 with pericardial effusions and one with a pleural effusion). Of those treated, 6 completed treatment, 2 died and 1 patient had an unknown outcome.

The case notification rate in prison staff for 2000 was 4,478 per 100,000. The case notification rate in primary school teachers for 1999 was 1786 per 100,000 (78 of 4367 teachers with a mean age of 33 years developed TB in 1999). The rate of TB in prison officers was significantly higher than in teachers (OR 2.58, [95%CI, 2.44 – 2.73],  $p < 0.015$ ).

## Discussion

This study shows a high TB case notification rate in prison staff, which was several times higher than that found in the control group of primary school teachers in the previous year. It is possible that the risk of TB in prison officers has been overestimated because 7 of 9 prison staff had either smear-negative PTB or EPTB in which there is no microbiological confirmation of the diagnosis. The number of prison officers which formed the denominator was also small, and it is possible that these findings are not representative of the country-wide situation.

There is little information in the medical literature about risk of infection or risk of active TB in prison officers. A study in Huelva prison in Spain showed no additional risk of either tuberculous infection or active disease in prison officers<sup>3</sup>, but a report from California showed a high rate of newly positive tuberculin skin tests in prison officers who had been exposed for six months to a prisoner with multi-drug resistant TB<sup>4</sup>. There are no reports, to our knowledge, from sub-Saharan Africa.

There is no active occupational health service for prison officers working in Malawi prisons. If confirmed, these

data suggest that prisons are 'hot spots' for TB, requiring active screening and health promotion measures for both prisoners and prison officers.

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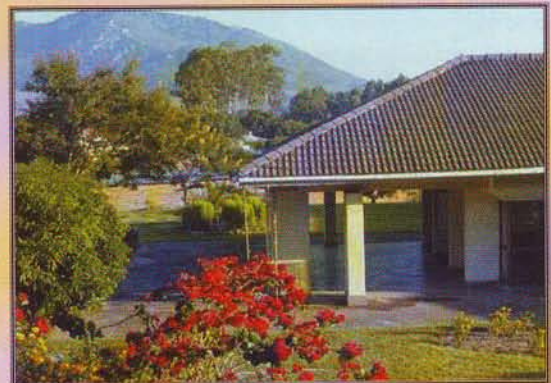
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