

Session: OS172 Treating tuberculosis in the era of drug resistance

**Category: 2a. Tuberculosis and other mycobacterial infections**

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### Two decades of MDR-TB in Sweden - a cohort study

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**Background:** There is an urgent need of improving treatment outcomes of multidrug-resistant tuberculosis (MDR-TB), with cure rates worldwide of around 50%. Previous studies have shown that the drug susceptibility pattern of *Mycobacterium tuberculosis* (*Mtb*) influences treatment outcome, whereas less is known about the role of minimum inhibitory concentrations (MIC). The aim of this retrospective cohort study was to describe the MDR-TB epidemic in Sweden during 1992-2012 and for a subset of patients describe the MIC distributions of second-line drugs.

**Material/methods:** Sweden has a national TB-registry with full-coverage due to mandatory reporting by both clinicians and laboratories. Given the low numbers of MDR-TB patients in certain areas of Sweden, treatment advice is given by a national MDR-TB consilium. Medical records were obtained of all episodes of MDR-TB during 1992-2012. The MDR-TB episodes were reviewed in detail regarding demographic, epidemiological, clinical and microbiological data. In a subgroup of patients (n=36), MIC

determinations of the *Mtb* isolates were performed using the indirect proportion method on solid Middlebrook 7H10 media, for the major first- and second-line drugs.

**Results:** A total of 147 episodes of MDR-TB during 1992-2012 were included, affecting 134 patients. Most patients were male (no. 86, 64%) with a median age of 25 years and a majority originated from Sub-Saharan Africa. Resistance to the first-line drugs ethambutol and pyrazinamide were 40% and 42% respectively. Adverse events (AEs) were common and the patient's regimens were changed on average four times during the course of treatment. Serious AEs included hearing loss (14%, n=20) due to amikacin treatment and 13 patients (9%) suffered from peripheral neuropathy due to linezolid treatment. The patients were treated with a multi-drug regimen consisting of four drugs (median) for a total of 19 months on average. A successful outcome (defined as "cured" and "treatment completed") was observed in 81% of the patients and six patients (4,5%) died. The median MIC for levofloxacin and amikacin was 0.25 mg/L and 1 mg/L, which is considerably lower than current critical concentrations (1 and 4 mg/L respectively).

**Conclusions:** MDR-TB can be treated with excellent cure rates, given enough resources, an MDR-TB consilium and an individualized approach. The levels of pyrazinamide and ethambutol resistance were relatively low in our population, which could enable the WHO endorsed short-course MDR-TB treatment for many patients. The role of MIC-levels in relation to culture conversion and clinical cure deserves further studies.