

European Respiratory Society Annual Congress 2013

Abstract Number: 2342

Publication Number: 3527

Abstract Group: 10.2. Tuberculosis

Keyword 1: Tuberculosis - diagnosis **Keyword 2:** Epidemiology **Keyword 3:** Immunosuppression

Title: Population-based outcomes of HIV-TB co- infections in England and Wales

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Body: Introduction Globally, HIV and Tuberculosis (TB) co-infections are an important cause of morbidity and mortality. Analysis of setting-specific survival in the UK is needed to inform health policy. The aim of the study is to analyse the survival of individuals diagnosed with HIV in the UK, with particular emphasis on late HIV diagnosis (LD, CD4 <201 at diagnosis) and TB co-infection. Methodology We present a retrospective cohort study based on data linkage between the national HIV and TB surveillance databases. Including individuals diagnosed with HIV between 2000-2008 in the UK and within-cohort deaths until mid-2010, we analysed survival rates by calculating hazard ratios (HR) using Cox regression modelling. Results A total of 44,050 HIV-diagnosed individuals with a cohort time of 149663 person-years were enrolled in the study. Of these, 3,188 individuals (7.2%) developed TB during the follow-up time (TBHIV) and of these, 2062 patients (64.7%) had LD. About 1,880 individuals died during the observation time; 341 (18.1%) had TBHIV of whom 270 (79.2%) had LD. Cox regression indicated that TBHIV and LD significantly affect survival, and there is evidence of statistical interaction (HR16.7; CI13.7-20.2 for the LD-TBHIV group compared with individuals without TBHIV and CD4 of >350 at diagnosis). Survival was also affected by AIDS, exposure route, region of birth, age and sex. ARV was protective. Discussion Our study confirms that decreased survival amongst HIV patients was affected particularly by TBHIV and LD. Important policy lessons learnt from the study include the need to raise awareness, encouraging TB case finding among HIV patients, considering earlier TB treatment initiation and increasing adherence to ARV.