(DILI) following anti-TB therapy. No such analysis has been performed in the UK.

**Aims** To assess
1. The prevalence of markers of HBV and HCV infection in patients undergoing anti-TB therapy.
2. Whether serological evidence of HBV/HCV increases risk of DILI.

**Method** A prospective study on 429 TB patients receiving anti-TB therapy in a diverse urban TB clinic. Serological markers of HBV/HCV/HIV infection were documented. ALT was measured prior to treatment and 2–4 weeks after treatment initiation. DILI was defined as an ALT rise of greater than 2-times upper limit of normal following a normal pre-treatment level (<40 IU/ml).

**Results** 58.7% of patients were from either South-East Asia or Africa. 61 (14.2%) patients were isolated anti-HBc antibody positive (Anti-HBc), 11 (2.6%) were Hepatitis B surface antigen positive (HBsAg) and 7 (1.6%) were HCV antibody positive. The prevalence of active HBV/HCV infection was significantly higher than the estimated UK prevalence in this urban TB clinic. Three (5.5%) patients with serological evidence of HBV/HCV had DILI compared to 25 (9.5%) of those without.

**Conclusion** HBV/HCV prevalence is higher among TB patients and routine screening for viral hepatitis should be considered in this group. DILI was not increased in patients with serological markers of HBV/HCV.

**P64** THE EFFECT OF WOOD SMOKE ON THE ABILITY OF HUMAN MACROPHAGES TO PHAGOCYTOSE AND KILL *MYCOBACTERIUM TUBERCULOSIS*

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**Introduction** Half of the world’s population are exposed to household air pollution from biomass fuels, which are increasingly recognised as a global risk factor for impaired respiratory health. Data from case-control studies has associated Tuberculosis (TB) with biomass fuel exposure. We hypothesised that particulate matter (PM) within alveolar macrophages of individuals exposed to biomass smoke detrimentally affects macrophage function by: (A) Reduced phagocytosis of TB, leading to increased infectivity and (B) Impaired macrophage killing of TB, leading to increased susceptibility to disease. This study assessed the ability of wood smoke exposed human monocyte-derived macrophages (MDMs) to phagocytose and kill *Mycobacterium* in vitro.

**Methods** MDMs, from buffy coats, were cultured in vitro for 12 days and then exposed to suspensions of wood smoke PM (Malawian (MW) and Norwegian (NW) wood, 10 μg/ml or 50 μg/ml) for 8 h. The PM loaded cells were then challenged with TB. Phagocytosis was assessed by manually counting infected macrophages, using fluorescent microscopy and by quantitative culture of day 1 supernatants and cell lysate. Remaining cells were maintained in culture for 7 days before lysis and quantitative culture to assess intracellular growth.

**Results** Microscopy data showed a reduced proportion of infected macrophages in the high dose NW smoke group (Abstract P64 figure 1A), and fewer TB bacilli per macrophage in the two NW smoke groups (Abstract P64 figure 1B). Quantitative culture of day 1 supernatant and cell lysate showed no difference between the groups (Abstract P64 figure 1C). Quantitative culture of day 7 lysate showed reduced *Mycobacteria* loads in the high dose NW smoke group (Abstract P64 figure 1D).

**Discussion** We have developed an in vitro model to assess the interaction between TB and wood smoke exposed macrophages. Phagocytic data does not fully support increased TB infectivity in biomass smoke exposed individuals. Quantitative culture data does not demonstrate a difference in the ability of wood smoke exposed MDMs to kill TB; high dose NW smoke led to a reduced intramacrophage growth of TB probably as a result of the toxic effect of PM on *Mycobacteria* growth. Modifications of this model are required to provide mechanistic evidence of an association of TB with wood smoke exposure.

**P65** TREATING TUBERCULOSIS IN RURAL SOUTH AFRICA

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**Methods** All the patients admitted to the male and female Tuberculosis wards at a rural hospital in KwaZulu-Natal, South Africa, during a 1-month period were entered into a database. Basic demographic data were collected as well as information about HIV status, medications, complications and 1-month mortality. The area’s tuberculosis (TB) incidence is 1046 per 100 000 and there is an HIV infection rate of 29%.

**Results** 70 patients were admitted during the time allocated. 39% were HIV positive. The mean CD4 count of the HIV positive patients was 114, however only 45% of patients were on ARVs at time of admission. 21% of patients had extrapulmonary TB. Only 17% were AFB positive, a further 9% had culture results back, two patients cultured proven multidrug resistant TB. Two patients had a history of completed XDR TB treatment. 10% patients developed drug induced hepatitis, 3% had pneumothoraces, 10% had coexistent renal impairment, 11% had neurological complications. There was a 23% 1-month mortality. No patients who were HIV negative died. 27% died of respiratory failure, 12% had hepatic failure, likely secondary to antituberculous medication.
Respiratory critical care

P66  INTER-OBSERVER RELIABILITY OF ULTRASOUND TO MEASURE RECTUS FEMORIS CROSS-SECTIONAL AREA IN CRITICALLY ILL PATIENTS

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Introduction Ultrasound is a relatively simple, non-invasive, non-irradiating effort-independent tool to measure quadriceps rectus femoris cross-sectional area (RFCSA) in critically ill patients. We investigated the inter-observer reliability of the technique to validate its clinical utility in this group of patients.

Methods Critically ill patients either in, or within 48 h discharge from, the Intensive Care Unit (ICU) underwent measurement of RFCSA using real-time B-mode ultrasonography using an 8 MHz 5.6 cm linear transducer (PLM605, Toshiba Medical Systems Ltd, Crawley, UK) at a distance three-fifths from the anterior superior iliac spine to the superior patellar border. Where complete visualisation of RFCSA was not possible at this point, a more distal point of 2/3 of this distance was used. Ultrasound measurements were performed in turn by two critical care clinicians trained in ultrasound in a random order. The average of three consecutive measurements within 10% was taken as RFCSA for each patient. Both clinicians were blinded to the results of the other.

Results 24 patients had RFCSA measurements performed using ultrasound (M:F 14:10; mean age 55.3 ± 20.1 years). Inter-observer reliability was assessed by considering the level of agreement between RFCSA measurements for each patient between the two clinicians using intra-class correlation coefficients (ICC) adopting a two-way, random effects model for absolute agreement. An ICC of 0.99 (95% CI 0.97 to 0.99) was observed. Abstract P66 Figure 1 shows RFCSA images from both clinicians for one patient.

Abstract P66 Figure 1  Ultrasound images from each clinician for one patients; RFCSA outlined in blue.

Conclusion These data demonstrate high levels of inter-observer reliability between two trained critical care clinicians using ultrasound as a measurement technique for RFCSA in critically ill patients. RFCSA can be used as a novel, reproducible technique to track the trajectory of muscle loss in critically ill patients.