Abstract S76 Table 1

		Greenwich (%) n = 86	Nepal (%) n = 34245
Age	–14	1.2	2.5
	15–24	34.9	20.5
	25–34	34.9	18.0
	35–44	10.5	12.0
	45–54	10.5	15.5
	55–64	3.5	15.5
Site	65+	4.7	12.0
	Pulmonary Smear +ve	11.6	51.8
	Pulmonary Smear –ve	47.4	24.4
	Extrapulmonary	41.0	23.8
Other	Treatment completion	98	91
	TB/HIV co-infection	1.1	2.4
	MDR	4.7	2.6

S77 PRE-TREATMENT CHEST X-RAY SEVERITY AND ITS RELATION TO BACTERIAL BURDEN IN PULMONARY TUBERCULOSIS

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Background Chest radiographs are commonly used for the diagnosis of tuberculosis and to assess the extent of disease. A relationship between the extent of disease as determined by smear grade and cavitation has been shown to predict 2-month smear results but little has been done to determine whether radiological severity reflects the bacterial burden at diagnosis.

Design/methods Pre-treatment chest X-rays from 1837 subjects with smear positive pulmonary tuberculosis enrolled into the REMoxTB trial were reviewed retrospectively. Two clinicians blinded to clinical details using the Ralph *et al* scoring system¹ (comprised of the percentage of affected lung field and presence of cavitation) performed separate readings. An independent reader (a radiologist) reviewed discrepant results for quality assessment and cavity presence. The final cavity assessment was combined with the average percentage affected value to give a severity score (maximum score 100% + 40 if any cavitation). The Ralph score was compared to the time to positivity (TTP) of liquid cultures as measured by MGIT 960. The association between CXR severity score and time to positivity (log scale) was evaluated using Spearman's rank correlation coefficient. A Welch t-test was used to compare TTP of those with high and low disease extent and those with and without cavitation.

Results Matching sets of data were available for 1422 subjects. The median severity score was 53.75/140 (IQR 32.03–66.25) and median time to culture positivity 117 h (4.88 days). CXR severity score was weakly correlated with time to positivity (Spearman's correlation -0.20, $p < 0.0001$). Time to positivity was higher in those without cavitation (difference 23.7 h, $p < 0.0001$) and those with a low area affected (difference 12.1 h, $p < 0.0001$).

Conclusions The radiological severity of pulmonary tuberculosis at diagnosis is weakly correlated with bacterial load as measured by TTP. This suggests that, in addition to bacterial burden, other factors such as immune response influence radiological appearances.

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S78 DO TUBERCULOSIS CASES MANAGED BY CLINICIANS WITH AVERAGE ANNUAL CASELOADS BELOW 10 HAVE POORER TREATMENT OUTCOMES?

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Introduction and objectives The 2007 Department of Health Tuberculosis Toolkit advises that clinicians should not be solely managing tuberculosis (TB) cases if their average caseload is less than 10 per year. A systematic evaluation of whether these guidelines are being followed, and how effective such a threshold is, has not been undertaken in the UK.

Methods All UK TB cases notified 2003–2011 were extracted from Public Health England's Enhanced Tuberculosis Surveillance system. Mean caseload for each clinician was calculated over the preceding year and three years by using case notification date. 12 month TB treatment outcomes were categorised as unfavourable or good/neutral.^{1,2} Cases without clinician information and resistant to rifampicin were excluded, the latter due to UK recommendations on the length of treatment. The proportion of cases managed by clinicians with a caseload under 10 was analysed, then random effects logistic regression utilised to determine the relationship between caseload and treatment outcomes, adjusting for clustering by clinician and confounding.

Results 74,550 TB cases were notified 2003–11. The proportion of TB cases seen by a clinician who had a low caseload (less than 10) in the preceding year declined gradually 2004–11 (42 to 28%), with no apparent acceleration post-Toolkit. Univariate modelling demonstrated very strong evidence of increased odds of an unfavourable treatment outcome among cases seen by a clinician who had a low caseload over the preceding three years (cluster-specific odds ratio 1.23 (95% confidence interval 1.14–1.33), p -value < 0.001); this relationship was upheld in a model adjusted for demographic, temporal and clinical confounders (1.14 (1.05–1.23), < 0.001 ; 44,184 cases), and additionally when a sensitivity analysis was performed looking at second assigned clinician, if present.

Conclusions Our analysis indicates that TB cases managed by clinicians with a mean caseload of under 10 over the preceding three years have increased odds of an unfavourable treatment outcome. However other factors, such as the number of clinicians managing TB cases in the hospital overall, should potentially be taken into account for policy recommendations.

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S79 COUGH PREVALENCE AND FREQUENCY IN PULMONARY TUBERCULOSIS

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Abstract S79 Figure 1 24-hour cough frequency in sputum smear-positive and smear-negative pulmonary TB and latent TB infection. Error bars: median and IQR

Introduction Patterns of cough in tuberculosis influence transmission of disease yet have been little studied. We report the prevalence, duration, severity and frequency of coughing in tuberculosis.

Method The first part was a retrospective review of the medical records of all individuals diagnosed with pulmonary tuberculosis (PTB) at our hospital during 2012–3. The reported presence and duration of coughing was noted. In the second part of the study, successive patients with an ultimate diagnosis of PTB wore the Leicester Cough Monitor for 24 h prior to commencing treatment. Controls had latent TB infection (LTBI). Participants rated their cough severity from 0–100 with a visual analogue scale (VAS). Cough characteristics were compared with other clinical variables.

Results 108 cases of PTB from 2012–3 were included. 82 reported cough of median (IQR) duration 4 (1–8) weeks. There was a significant association of the presence of cough with TB sputum culture positivity (odds ratio, 11.0; 95% confidence interval, 2.5–50.0) but not gender, smoking, smear positivity, cavitory disease or extent of radiographic change. No clear predictor of the duration of cough was identified and there were too few patients to estimate the effect of TB strain.

Cough frequency was measured in subjects with sputum smear positive PTB (S+; n = 20), smear negative PTB (S-; n = 10) and LTBI (n = 11). Variability was high: median (IQR) cough rates were 238 (121–701), 126 (15–395) and 11 (7–56) coughs/24 h, respectively, and not significantly different for S+ vs. S- (figure). For active TB, cough rates were reduced overnight (2.8 [0.2–12.4] vs. 12.7 [3.3–23.4] coughs/h for night vs. day, respectively; p = 0.01). No effect of smoking was detected, nor was there a correlation between cough frequency and radiographic extent of disease, cavities or time to sputum culture positivity. Cough severity was higher for S+ than S- but also variable and the difference not statistically significant (VAS: 60 [13–94] vs. 22 [1.5–70] respectively; p = 0.41). Severity correlated with cough frequency in active tuberculosis (Spearman's r = 0.60, p = 0.001).

Conclusion Cough in TB reduces overnight and is related to culture positivity. Bacterial burden and extent of disease may not be important. Other determinants of cough await characterisation.

S80

IMPACT OF PEER EDUCATORS ON UPTAKE OF MOBILE X-RAY TUBERCULOSIS SCREENING AT HOMELESS HOSTELS: A CLUSTER RANDOMISED CONTROLLED TRIAL

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Background The pan London “Find and Treat” tuberculosis (TB) service includes a mobile digital X-ray unit (MXU) screening service which has been shown to be cost effective among hard-to-reach groups (homeless people, substance users and prisoners).

This study compared the impact of current practice of hostel staff encouraging MXU screening for TB among homeless people with the addition of peer educators with direct experience of TB and/or homelessness on screening uptake.

Design/methods Between February 2012 and October 2013 London homeless hostels accessing MXU TB screening were randomised to intervention or control arms by minimisation, balancing on hostel size (≤43 beds), and previous screening uptake level (≤50%). Sites with a previous MXU uptake of >80% were excluded.

At intervention sites, peers worked with hostel staff to encourage screening (through contacting and speaking with residents). The primary outcome was the proportion of eligible residents screened for TB. Blinding of participants and observers was not possible due to the nature of the intervention. Analysis was performed by intention to treat (ITT).

Results Of 59 hostels considered for eligibility, 46 were randomised (24 allocated to the control and 22 to the intervention arm – Figure 1). Across all sites, median uptake was 44% (IQR: 26,59). Control hostels had a total of 1192 residents [median uptake 45%, (IQR: 33,55)]. Intervention sites had 1150 residents [median uptake 40%, (IQR: 25,61)]. Using Poisson regression to account for the clustered study design, size of hostel, and previous screening uptake, there was no evidence for peer educators increasing uptake of screening – adjusted risk ratio 0.98% (95% CIs: 0.80,1.20).

Conclusion This study found no evidence for peer educators increasing the uptake of MXU TB screening. The wide

Abstract S80 Figure 1

*All residents apart from those currently on active TB treatment, or those who have had a CXR within the last 6 months