standardised and visualised using the Python Pandas data analysis library and matplotlib.

Results There is evidence of a cohort effect with age-specific IPF death rates increasing in successive cohorts, most clearly seen from age 60. Overall rates were higher for men but there were not marked sex differences in cohort mortality trends (data not shown).

Conclusions The birth cohort effect we observed is consistent with a proportion of IPF cases being due to an occupational or environmental exposure with latency and further research is needed.

Early detection and screening in TB

P161 TUBERCULOSIS CONTACT SCREENING: WILL THE 2016 GUIDELINES LEAD TO MISSED DIAGNOSES?

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Background UK TB contact screening guidelines changed in 2016,¹ requiring screening only of contacts of patients with potentially transmissible disease, specifically pulmonary or laryngeal TB. TB contacts and the index case are likely to have had similar TB exposure, and it is possible that contacts who have not been directly infected by the index case will be missed using the new screening guidelines.

Aims and Objectives This study aimed to evaluate whether all cases of TB diagnosed through contact tracing in 2012 at a University Hospital would have been identified using the new screening guidelines.

Methods Case notes of all patients contact screened for TB aged 16 and over in 2012 were examined. Data were collected on the diagnosis of the patient screened (negative, latent, or active TB) and the site of TB of the index case.

Results Of the 445 screened, 394 (88.5%) were negative for TB, 44 (9.9%) had latent TB, and 7 (1.6%) had active TB. For 19.6% of those with latent or active TB diagnoses, the TB site in the index case was neither pulmonary nor laryngeal.

Conclusion By restricting contact screening of this 2012 cohort to those with pulmonary or laryngeal TB contact, 10 (19.6%) cases of TB would potentially have been missed. As these missed contacts and the TB index case may have had exposure to TB from the same, albeit unknown, person with a transmissible form of TB, the only way to identify these cases is with a broad screening approach. While the current guidelines are in place, this study highlights the importance of assessing the need for contact screening based on the individual clinical picture in each identified case of TB.

REFERENCE

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P162 ANALYSIS OF AND LESSONS FROM THE MULTIPLE SCREENING EPISODES IN UK'S TUBERCULOSIS PRE-ENTRY SCREENING PROGRAMME: OCTOBER 2005 TO DECEMBER 2016

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Background The UK has been carrying out pre-entry tuberculosis (TB) screening for all long term migration visa applicants in 15 pilot countries since October 2005. Screening was subsequently rolled out to visa applicants in 101 high TB incidence ($\geq 40/100\ 000$ population) countries. Individuals screened free of pulmonary TB are issued with medical clearance certificates valid for 3 and 6 months for those with or without close contact with a TB case, respectively. Consequently, individuals who travelled to the UK on multiple occasions need rescreening once their certificates have expired. Screening identifies prevalent TB cases among migrants thereby reducing incidence and onward transmission in the UK.

Methods Our study used a cohort of migrants from 40 high incidence countries screened for TB pre-entry by the International Organisation for Migration between October 2005 and December 2016. All applicants screening prior to certificate expiry were excluded. Odds ratios (ORs) and relative risk ratios (RRRs) were estimated using logistic and multinomial logistic regression, respectively, to identify factors associated with multiple screening.

Results The cohort consisted of 8 55 591 migrants screened for pulmonary TB. 7 29 232 (85.0%) were screened once but 1 26 358 (15.0%) were screened ≥ 2 times. After adjusting for age and sex, the factors associated with being screened ≥ 2 times included being diagnosed with TB (OR 3.40; 95% CI 2.99–3.85), close contact with TB (OR 1.29 95% CI 1.18–1.40) and certain visa types (Settlement: 1.95; 95% CI 1.93–1.97, baseline Student visa). Applicants from the Indian sub-continent were more likely to screen multiple times than other regions. RRRs for individual categories using multinomial logistic regression were similar to overall ORs. Multiple screenings were also associated with increased TB detection.

Conclusions Being diagnosed with TB, being a close contact of a TB case and those applying for settlements visa were more likely to be screened multiple times. This information could be used for targeted follow up of individuals likely to screen multiple times and determine their risk of TB.

P163 AN AUDIT INTO THE COMPLETENESS OF LATENT TUBERCULOSIS SCREENING IN THE GASTROINTESTINAL DEPARTMENT, PRIOR TO PATIENTS STARTING ANTI-TNF- α THERAPY

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Background Patients with severe Inflammatory Bowel Disease (IBD), are prescribed anti-TNF- α agents, if clinical need necessitates, whose immunosuppressive action can potentially reactivate latent tuberculosis infections (LTBI). Meticulous pre anti-TNF- α LTBI screening and management in accordance with the British Thoracic Society's (BTS) guidelines is imperative for patient safety and public health.

Objective A retrospective clinical audit was performed to evaluate the performance of University Hospital Southampton's gastrointestinal department in screening for LTBI in patients with IBD. The performance of LTBI screening was compared to the BTS standards.

Method The audit population was obtained using the gastrointestinal department's biologics database. Inclusion criteria included patients who started their first anti-TNF- α agent between 01/01/2006 to 04/11/2016. Exclusion criteria included deceased patients and patients screened by alternative departments/trusts. Extent of LTBI screening was assessed using hospital record systems: EDocs, EQuest, ECamis and Spectra PACS. If evidence of screening was not located, then this was considered as a failure to meet standard. Following statistical analysis, comparisons were made with BTS standards.

Results Of the 471 patients audited, 51.2% were females and 48.8% males. 75.2% CD patients and 24.8% UC patients. 231 patients' (49%) LTBI screening was insufficient. 157 patients (33.3%) lacked an adequate TB history and 94 patients (20%) failed to have a chest radiograph (CXR) within 3 months of therapy commencement. Additionally, 85 patients (18.3%) failed to have an IGRA performed. 15 patients (3.2%) were diagnosed with LTBI, whilst 1 case of TB reactivation, occurred once immunosuppressive therapy had commenced.

Conclusion The completeness of LTBI screening in the audited group was suboptimal with deficits in TB history performance, CXR, TST and IGRAs. One case of active miliary TB occurred as a result of inadequate screening. In light of this, recommendations to address deficits and ultimately improve screening were proposed.

P164 QFT-PLUS: DO THE PEPTIDES IN THE TB2 TUBE INDUCE A T SUPPRESSOR RESPONSE IN SOME SUBJECTS?

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Introduction The revised QuantiFERON-TB Gold assay (QFT-Plus) has an extra tube (TB2), containing peptides thought to stimulate CD8 +T cells; TB7 antigen is no longer included. The test is designed to detect latent tuberculosis infection.

Hypothesis Levels of interferon- γ in TB2 should always be greater than TB1

Methods QFT-Plus was used routinely in a TB contact clinic June 2016 – January 2017. Interferon- γ values were recorded minus the negative control; a significant difference was defined as a two-fold variation. Clinical details were recorded after consent on a standard form, which included age, sex, reason for test, tuberculin response (mm) and HIV status.

Results Data was available from 259 subjects; 2 were HIV-positive. Four gave an indeterminate result. The majority (194; 75%) gave a negative test for both tubes. For 65 positive tests with a ≥ 2 fold difference (all ≥ 0.7 IU/mL difference),

TB1 $\geq$ TB2 occurred in 4 (6%) and TB2 $\geq$ TB1 occurred in 3 (5%). All 4 TB1 $\geq$ TB2 had no TB2 response: there were 2 contacts (10 and 0.68 IU/ml); one was PPD positive with neck lymphadenopathy (4.23 IU/ml); one was PPD negative with haemoptysis after nasal surgery (1.75 IU/ml). Where TB2 was positive in the 'grey zone' and TB1 negative, one had Crohn's disease (0.24, 0.01 IU/ml) and the other (0.23, 0.01 IU/ml) was a contact of non-pulmonary TB, but in none was there HIV co-infection. Three had TB2 $\geq$ TB1: one with smear-positive lung TB had a TB2=0.6 with a TB1=0.25, but the latter was in an accepted 'grey zone'; two had positive tests for both tubes, of which one was a contact 30 years previously and one had testicular TB.

Conclusion These data may indicate a technical failure of the TB2 tube. Alternatively, the absent immune response, associated with active disease, might prove useful in determining who could benefit from preventive treatment.

Abstract P164 Table 1

Difference (IU/ml)	Highest TB1 or TB2 value (IU/ml)		
	<0.2 (n=186)	≥ 0.2 and <0.35 (n=4)	>0.35 (n=65)
0-0.1	182	2	31
>0.1 to <0.35	4	2	12
≥ 0.35	0	0	22
>2-fold	na	2	7

P165 LATENT TUBERCULOSIS INFECTIONS (LTBI) NATIONAL SCREENING PROGRAMME

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Background The new entrant TB screening programme identified very few persons for Latent TB screening locally. However, following national funding for community LTBI screening, 12 GP practices were identified to undertake IGRA testing in "high risk" registered persons.

Aims To evaluate the feasibility and clinical outcomes of the LTBI National Screening Programme

Methods From May 2016 until April 2017, persons from countries with high TB incidence ($\geq 150/100,000$ population) and sub-Saharan Africa were identified by the GP practices and offered LTBI screening with IGRA if they had arrived in the UK in the last 5 years and were aged 16-35 years. IGRA Results were forwarded to the TB team at the local hospital. Persons with positive, borderline positive and indeterminate Results were offered appointments for assessment and treatment in the TB Clinic.

Results 360 persons were community-screened for LTBI. Of the 360 persons, 305 (84.7%) had non-reactive IGRA Results and therefore did not require follow up. The remaining 55 (15.3%) had either positive, borderline positive or 2 indeterminate Results and were referred to the local TB team. Of 55 persons referred 2 did not attend any appointments offered and 53 attended 2 of whom were subsequently found to have active TB. The treatment completion rate was 89.2% (see Table 1). Despite the inclusion criteria, of the 55 persons offered consultation, 16 had been residing in the UK for more than 5 years and 7 were over the age of 35.