P58 INDICES OF TB RISK CAN HELP STRATIFY RECENT IMMIGRANTS REGISTERING WITH A GP FOR TARGETED SCREENING

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Introduction The burden of tuberculosis (TB) in the UK may only be lowered significantly by identification and treatment of latent infection with *M tuberculosis* (LTBI) in recent immigrants from moderate (150–499/100 000) and high prevalence (500+/100 000) regions of disease. An approach that focuses immigrant capture to a limited number of GP practices is feasible in our region as the distribution of registrations and TB cases by GP practice is heavily skewed. However, strategies for identifying the most appropriate practices and immigrant subgroups for targeted screening are not known.

Aims To evaluate indices of TB risk that may inform targeted screening strategies for newly registering immigrants to Leicestershire (Exeter/Flag-4).

Methods A retrospective analysis was performed of all Flag 4 immigrant registrations between 2000 and 2010 and collated with data for all TB notifications over the same period. The top 10 practices defined by number of registrations (10R), number of TB cases (10TB) and a weighted index [WI=(TB cases/immigrant registrations) × TB cases] were identified and compared. Logistic regression was performed to model independent predictors of TB events. TB risk for specified immigrant subgroups was estimated using Kaplan–Meier analysis and pair-wise comparisons of risk computed as the rate ratio (95% CI).

Results 564 TB cases were recorded in 34 764 registered immigrants at 148 practices. Independent predictors of TB risk were immigrant age at registration and gender and deprivation index of the GP practice locality. Compared with registration at a non-top 10 practice, the corresponding rate ratios for TB after 5 years at a top 10 practice were 1.32 (95% CI 1.1 to 1.57) for 10R; 1.72 (95% CI 1.44 to 2.1) for 10TB and 1.79 (95% CI 1.5 to 2.14) for 10WI. Compared with the unselected registering immigrant population, the 5 and 10 year TB rates in 10WI practices were significantly higher for immigrants aged 16–35 years but not older adults >35 years (Abstract P58 table 1).

Abstract P58 Table 1

	Age groups			
	16–35		Over 35	
TB rate/100 000 person years	Top 10 weighted index (N=6579)	All (N=21 136)	Top 10 weighted index (N=4278)	All (N=7312)
5 year	2479 (218)	1695 (104)	1586 (209)	1347 (151)
Rate ratio (95% CI)	1.46 (1.22 to 1.76); p=0.002		1.18 (0.87 to 1.6); p=0.3	
10 year	3875 (326)	2728 (156)	2365 (275)	2138 (224)
Rate ratio (95% CI)	1.42 (1.23 to 1.64); p<0.001		1.11 (0.86 to 1.42); p=0.42	

Conclusion TB risk among immigrants newly registering with a GP is heterogeneous. Indices for risk stratification are identifiable that may improve cost-effectiveness of targeted screening.

P59 DIFFERING PATTERNS OF NEW IMMIGRANT GP REGISTRATION AMONG ETHNIC SUBGROUPS DETERMINE THE IMPORTANCE OF ADDITIONAL STRATEGIES FOR MODELS OF NEW IMMIGRANT SCREENING

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Introduction New immigrant GP registration databases maybe an important tool for identifying recent immigrants to the UK at high risk of latent infection with *M tuberculosis* (LTBI), who may benefit from screening and treatment to prevent tuberculosis (TB). However, effectiveness of this strategy is determined by the proportion of immigrants that register and the time after UK entry that registration occurs.

Aims To evaluate whether differences exist in the pattern of GP registration onto the new immigrant registration database for Leicestershire (Flag-4), between immigrants stratified by age group (<16, 16–35 or =36 years) and ethnicity (Indian sub-continent [ISC] or Black African).

Methods A retrospective analysis was performed of all immigrants entering the UK after 1999 that were Flag-4 registered between 2000 and 2010 (N=29186) and collated with data for all TB notifications over the same period (N=884). Comparisons were made between immigrants developing TB and staying healthy; and between TB cases occurring in foreign born persons captured or missed by the new immigrant database. Among captured cases, the proportion with a notification date at least 12 months after UK entry and 4 months after GP registration were considered preventable.

Results There was a significant and inverse relationship for the proportions of cases captured and missed by the Flag-4 system in black Africans and ISC immigrants (Abstract P59 table 1, p<0.001). The higher proportion of missed cases in black Africans was evident for both adult age groups but not children. Among registered immigrants, those developing TB had a significantly longer delay to registration (mean difference [95% CI] 420 [259 to 580] days, p<0.001). Compared with age stratified ISC immigrants, time to registration was significantly longer for black Africans aged 16–35 years (mean difference 832 days, p<0.001). However, the proportion of preventable cases in registered immigrants was similar between ISC and black Africans (83.3% and 90.2%).

Abstract P59 Table 1

	TB cases / N (% of total)		
Ethnicity	All cases	Captured	Missed
Indian subcontinent	490 (55.4)	294 (62.6)	196 (47.3)
Black African	**222 (25.1)**	**92 (19.6)**	**130 (31.4)**

Conclusions Strategies to encourage early registration by new immigrants with a GP may improve utility of this resource for screening. However, greater emphasis on complementary strategies, including engagement of third sector organisations is needed, particularly for identifying black African immigrants at risk of TB.

P60 SIMPLE MEASURES TO IMPROVE TB CONTROL: APPLYING THE COHORT REVIEW PROCESS IN LONDON

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Despite much recent effort, there has been little change in national rates of tuberculosis (TB). Outside of the UK, the brief, structured review of the management, contact investigation and outcome of each TB case during their treatment (cohort review, CR) has improved TB control. North Central London (NCL) TB Service has piloted this approach. To date, 525 subjects with active TB have been discussed at four cohort reviews. Each "cohort" of patients were reviewed 6–9 months from start of treatment. A single case is usually reviewed within 3 min. Here we compare key outcomes relating to case management and contact tracing between an NCL TB population notified and treated prior to CR (Quarter 3 2009, n=158) and following CR implementation (Quarter 3, 2010, 1 year from start, n=125).

Treatment completion rates rose (82%—90%). The proportion of cases lost to follow-up reduced (2.5%—0%). The proportion of smear positive pulmonary cases with at least one risk factor on Directly Observed Therapy increased from 42% to 67%. Uptake of HIV testing rose (71%—89%). The proportion of pulmonary TB cases with at least 1 and >5 contacts identified both increased (64%—84% and 50%—67%, respectively).

In conclusion, within a short space of time cohort review has led to an improved index case management and contact tracing process in our service. It improves accountability, enhances patient management and facilitates staff education. Accurate, comprehensive and prompt data underpin this success. If this is sustained, we believe that cohort review will result in improved patient outcomes. It provides, also, an excellent structure within which advances such as the National Strain Typing project may be introduced to achieve maximal clinical impact.

P61 KAREL STYBLO COMES TO TOWN: STAFF PERSPECTIVES ON TB COHORT REVIEW

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Since its creation by Dr Karel Styblo, the cohort review (CR) principle of systematically analysing treatment outcome of every notified TB case and contact investigation in a brief, timely, structured manner, has been implemented widely outside of the UK—with impressive results. In 2010, North Central London (NCL) TB service adopted the concept, trained staff members and put in practice CR. Given the resource implications that our service faced already, plus the potential for its introduction to result in an increased staff workload, we undertook a survey of how CR was perceived and the impact it had on those involved in its use.

After four rounds of CR (12 months from introduction), an anonymous on-line survey was sent to NCL staff members plus external participants and observers who had attended at least one review. The survey explored participant's personal and institutional response to the organisation, impact and outcome of CR's introduction. It was sent to 88 individuals. 72 (82%) completed the 10 min online questionnaire.

Over 95% felt that CR identified gaps in service, most frequently: collaboration with other TB services (69%), patient care (63%), collaboration with allied services (51%) and service organisation (45%). Just over a third felt that CR highlighted training needs, especially for contact tracing. 70% reported changes to their way of working—in particular altering practice in response to apparent weaknesses in their approach to contact tracing. 86% felt that CR led to improvement in the speed of interventions, better data quality and enhanced professional relations. A small number of staff noted negative consequences which largely reflected increase in initial work load.

Cohort review has enhanced our service provision. It is well received by local staff as well as external participants & observers. Our data are encouraging; and we hope will assist in promoting roll out to other parts of the country.

P62 DRUG INDUCED HYPOTHYROIDISM IN PATIENTS RECEIVING TREATMENT FOR MULTI-DRUG RESISTANT TUBERCULOSIS

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Introduction and Objectives Drug-induced hypothyroidism is an uncommon adverse effect of treatment for multi-drug resistant tuberculosis (MDR-TB), with a limited number of case reports from the 1950s reporting the issue. The most likely agents to cause hypothyroidism are *p*-aminosalicylic acid (PAS), and to a lesser extent Prothionamide, both commonly used in regimens to treat MDR-TB. We report five cases of MDR-TB, four of whom developed hypothyroidism while on treatment. This is the largest reported cohort to have developed drug-induced hypothyroidism as a result of MDR-TB treatment to date. We analysed if there were any predisposing or causative factors which may have contributed to patients developing hypothyroidism.

Method Patients were seen in clinic on a regular basis and possible adverse events evaluated by symptom review and clinical evaluation. Thyroid function tests (TFTs) were ordered based upon clinical suspicion. Following identification of hypothyroidism patients were started on thyroxine replacement therapy with monitoring of TFT levels to normalise them. Patient demographics were collected for analysis.

Results Four out of five patients (3 females and 1 male, aged 29—40 years) developed hypothyroidism following MDR-TB treatment with regimens containing PAS and Prothionamide. The dominant presenting symptom was lethargy, with one developing goitre and hair loss. All patients were from ethnic minorities born overseas in: India (1); Bangladesh (1) and Somalia (2). The 5th female Nepalese patient remained euthyroid. Patients had been in the UK from 3 to 6 years with no travel history of note since. Hypothyroidism developed at varying stages of treatment from 101—442 days. On analysis of predisposing or causative factors for hypothyroidism development, those patients who originated from areas of iodine deficiency (eg, Bangladesh) developed hypothyroidism sooner after commencing treatment and took longer for euthyroid resolution despite receiving increased dosages of thyroxine replacement therapy.

Conclusion Individuals originating from areas of iodine deficiency have an increased likelihood of developing drug induced hypothyroidism when receiving a regimen containing PAS and/or Prothionamide for MDR-TB treatment. As symptoms of hypothyroidism were generally non-specific and could easily be ascribed to TB, we suggest monitoring TFTs in all patients on prolonged treatment regimens containing PAS and/or Prothionamide.

P63 THE PREVALENCE OF VIRAL HEPATITIS IN PATIENTS UNDERGOING ANTI-TUBERCULOUS THERAPY

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Background One-third of the world's population is thought to be infected with Mycobacterium tuberculosis (Mtb); the highest incidence rates for active disease are found in the WHO's South-East Asian and African regions. Hepatitis B virus (HBV) and Hepatitis C virus (HCV) each infect about 0.3% of the UK population. HBV/HCV are treatable but largely asymptomatic until advanced liver disease and/or cancer. Screening for HBV/HCV is recommended in high-risk individuals but is not routinely performed in TB patients. HBV/HCV share similar epidemiological "hotspots" to TB, and several studies, primarily in South America and East Asia, have shown an increased prevalence of HBV/HCV in TB patients and an association between HBV/HCV and Drug Induced Liver Injury