time of TB diagnosis. Values at the two time points were compared using Student's paired t-tests.

Results Thirty-one participants were followed up between August 2012 and February 2013. Serum 25(OH)D concentrations were significantly higher post-recovery than at diagnosis (mean 29.7 vs. 12.2 nmol/L, $p < 0.0001$). Participants also had higher mean serum concentrations of PTH, corrected calcium and $24,25(OH)_2D$ post-recovery than at diagnosis (PTH, 4.97 vs. 2.78 pmol/L, $p = 0.0003$; corrected calcium, 2.50 vs. 2.45 mmol/L, $p = 0.03$; $24,25(OH)_2D$, 3.15 vs. 1.53 nmol/L, $p = 0.004$). No statistically significant differences in serum concentrations of $1,25(OH)_2D$, $4,25(OH)_2D$ or DBP were seen between the two time points. Differences in serum concentrations of 25(OH)D at follow-up vs. baseline remained statistically significant after exclusion of 14 participants who were taking supplemental vitamin D at follow-up and / or who had increased their sun exposure since time of diagnosis ($p = 0.005$), and after exclusion of 17 participants whose baseline sample was taken from March to July inclusive ($p = 0.0003$).

Conclusions Vitamin D status of TB patients improved after resolution of tuberculosis. This phenomenon was not explained by differences in vitamin D supplementation, self-reported sun exposure or season of sampling at follow-up vs. baseline. Our findings raise the possibility that vitamin D deficiency may be a consequence, as well as a cause, of active tuberculosis.

P91 INCORPORATING TUBERCULOSIS STRAIN TYPING DATA INTO ROUTINE CONTACT TRACING INVESTIGATIONS: EXPERIENCE FROM THE FIELD

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Strain typing of tuberculosis (TB) isolates by 24 loci mycobacterial interspersed repetitive unit-variable number tandem repeats (MIRU-VNTRs) is now a routine laboratory tool for TB control, but its utility in informing contact tracing and public health action has not been well reported in the United Kingdom. Since November 2011 we have routinely held typing meetings and undertaken cluster investigation. Over 18 months, 68 clusters were discussed. Fifty-five (81%) clusters were small (2–5 patients), 7 (10%) were medium (6–14 patients) and 6 (9%) were large (>15 patients, median = 42, IQR = 26–52). Enhanced epidemiological investigation was undertaken in 27/68 (40%) clusters. Typing meetings alone readily identified 20 definite epidemiological links between 46/458 (10%) cases. In 15 cases, 9 definite or probable links were not supported by genotyping, leading to expanded screening in one workplace. 112 extended interviews were done. A further 23 definite links between 77 (17%) cases, 2 probable links between 5 (1%) cases and 24 possible links between 72 (16%) cases were found. Expanded screening as a direct result of strain typing and cluster investigation occurred in 4/6 settings where non-household transmission was identified (a factory, 2 places of worship, a hospital, a hostel and a pub). An additional 124 contacts were identified. 65 attended screening, 21 latent TB cases were treated and 1 active TB case was found. Routine incorporation of strain typing data in contact tracing improves diagnosis of latent and active infection but requires investment in data management systems and human resource for enhanced epidemiological investigation.

P92 MILIARY TUBERCULOSIS: DATA FROM A MODERN CASE-SERIES IN THE UNITED KINGDOM

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Background Miliary tuberculosis (mTB), a severe manifestation of TB is classically associated with a high mortality. Modern data on the management and outcomes of mTB in developed world settings are lacking. We reviewed clinico-bacteriological features of mTB cases presenting to a teaching hospital in Leicester, UK serving an ethnically diverse population.

Methods Retrospective descriptive case-series of all notified mTB cases admitted between 2007 and 2012.

Results 41 cases were identified; median age 47 years (IQR:29–65 years), 61% were male and 80.5% patients were of Indian-Subcontinent origin. 92.5% of patients were foreign-born and median time between UK arrival and diagnosis was 4 years (IQR:1–10 years). 37(90.2%) patients had an HIV test; 4 were positive (median CD4 count 60;IQR 30–140). Weight loss (87.2%) and fevers (82.9%) were the most common presenting symptoms. 30 patients (73.2%) had abnormal examination findings; predominantly respiratory (63.3%). Initial bloods were diagnostically nonspecific apart from lymphopaenia and depressed lymphocyte:monocyte ratio. All patients had radiological evidence of pulmonary miliary nodules. 28/41(68.3%) patients had neuroimaging: 14/28(50%) had neuroradiological involvement–predominantly tuberculomas (12/28–42.9%). Lumbar punctures were undertaken in 73.2% of patients but only abnormal in 5 patients (17.2%) (and only 1 with normal imaging). Overall, 16(39%) patients had evidence of CNS involvement.

32/41(78.1%) patients were culture positive (all fully-sensitive) with sputum and BAL providing the highest yield. Antituberculous therapy was commenced within a median of 1 day following hospital admission. To date, 30 patients have successfully completed treatment, 3 are still on treatment, 5 have moved away and 3(7.3%) have died. In those subjects who successfully completed therapy, the lymphocyte:monocyte ratio increased significantly ($p = 0.0201$). Patients who died had a longer duration between admission and commencing antituberculous treatment (median 8 days; IQR 1–16 days), than those who successfully completed treatment (median 1 day; IQR 0–3 days).

Conclusions In this developed world setting, mTB is not an uncommon presentation. Although there was a high prevalence of co-existing neurological involvement, overall mortality was low. Undertaking diagnostic procedures for culture is important and has a high yield. Early treatment may have resulted in improved outcomes and the lymphocyte:monocyte ratio may help to monitor response to treatment in miliary TB.

P93 SOCIAL RISK FACTORS ASSOCIATED WITH TUBERCULOSIS IN A HIGH INCIDENCE AREA OF THE UK