Results In the child cohort passive smoking was found to be an independent risk factor for Mtb infection (OR: 1.52, 95% CI: 1.09–2.12). Higher household monthly income was an independent protective factor against Mtb infection (OR: 0.55, 95% CI: 0.38–0.79). Increasing age was associated with a decreased risk of progressing from infection to disease (OR: 0.67, 95% CI: 0.51–0.87). Children exposed to more than 1 TB patient were 8 times more likely to progress to disease (OR: 8.66, 95% CI: 1.54–48.55).

Conclusion Identification of an association between passive exposure to cigarette smoke and acquisition of Mtb infection in children adds new evidence for smoking cessation strategies to be incorporated into TB prevention programmes. To aid TB elimination we therefore advocate an enforcement of stricter tobacco control policies, particularly in regions with a high burden of TB.

Abstract S59 Figure 1. Concentration of small RNA in blood plasma before (Day 0) and after (week 24) treatment for individuals with active pulmonary tuberculosis and who were culture-negative at week 24 (n = 31): A–C Small RNA concentration (6–150 nucleotides), D–F miRNA concentration (10–40 nucleotides). A and D all individuals, B and E are HIV-1 negative (n = 17) and C and F are co-infected with HIV-1 (n = 14).

plasma small RNA (0–150 nucleotides) concentration was significantly higher (p < 0.0001) in 31 individuals before therapy (median 332pg µL⁻¹ plasma, range 93–1603pg µL⁻¹) than at the end of therapy at week 24 (median 86pg µL⁻¹ plasma, range 16–1098pg µL⁻¹). Expression analysis of small RNA genes revealed that, in 5 tuberculosis-infected HIV-1 negative individuals, 36 of 90 genes (> 2-fold, p < 0.05) were upregulated before compared to post-therapy completion. Hsa-miR-19b, 29a, 17–3p, 133a, small RNA concentration and SNORD61 were further tested and this analysis revealed that in 84% of individuals (n = 31) at least one of these biomarkers was upregulated > 2 fold in active tuberculosis. Co-infection with HIV-1 was not found to change the expression of these six tested biomarkers.

RISK FACTORS ASSOCIATED WITH MYCOBACTERIUM TUBERCULOSIS (MTB) INFECTION AND PROGRESSION TO ACTIVE TB DISEASE IN CHILD CONTACTS

N Karnani, S Shirdar, D Connell, A Lalvani; Imperial College London, London, United Kingdom

Background Mathematical modelling has shown the most effective strategy to eliminate tuberculosis (TB) worldwide is to address the large burden of latent TB infection (LTBI). Identification of the risk factors which predispose individuals to acquire Mtb infection and those determining risk of progressing from infection to active disease will enable risk stratification for targeted TB interventions.

Objective To identify host, socioeconomic and environmental risk factors for acquiring Mtb infection following exposure to TB and risk factors for progression from infection to active TB disease.

Methods Risk factors associated with infection and progression were investigated in a primary analysis of a well-defined cohort of 965 Turkish household child contacts exposed to smear positive pulmonary TB patients. Risk factors for infection were assessed in study subjects with and without Mtb infection. Mtb infection was defined by interferon gamma-release assay (IGRA) results at two time points–baseline and 6 months–thus creating robust criteria to avoid misclassification of IGRA converters and IGRA reverters. Adjusted odd ratios were estimated using stepwise logistic regression including variables with p < 0.2 on univariate regression.