Experience of screening for Latent TB Infection (LTBI) in high risk populations using extended testing eligibility criteria

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Abstract

In 2015, the Collaborative Strategy for England (2015-2020) (PHE, 2015) recommended new entrant screening for latent TB infection (LTBI) for recent migrants from high incidence countries, defined as a TB incidence of ≥150/100,000 population. We share our experiences of increasing the possibilities for testing in new entrants in a high incidence area.

Introduction

Sandwell & West Birmingham (SWB) Clinical Commissioning Group (CCG) serves an ethnically diverse population with high rates of Tuberculosis (TB) infection (34.9 per 100,000 population) (PHE, 2018). In 2011, migrants accounted for 7% and 22% of the population in Sandwell and Birmingham respectively (NOMIS 2011 Census data).In 2016, the CCG implemented Interferon Gamma Release Assay (IGRA) screening of new entrants in accordance with NHS England screening recommendations:

- ***Aged 16 to 35 years***
- ***From high incidence countries (TB incidence of ≥ 150/100,000 population)***

However, retrospectively identifying and inviting patients for testing in General Practice was found to be resource intensive. Only 776 samples were received from General Practices for IGRA testing between 2nd June 2016 and 24th August 2017, with a positivity rate of 21.88%.

Other ways of screening new entrants for LTBI were sought.

Method

In order to increase eligibility, NHS England (NHSE) agreed to pilot extended testing criteria to age 16 and 40 years and date of arrival in the United Kingdom (UK) to 10 years at a Bangladeshi Islamic centre health and well being event.

Screening was also undertaken at ESOL (English for speakers of other languages) classes in Sandwell College. Testing criteria was further extended by Sandwell Local Authority and SWB CCG to screen students from countries with a TB incidence of ≥40/100,000 population, to include Eastern Europe.

The Microbiology team hard at work

Results

Bangladeshi centre:

17 were tested using extended criteria.

Table 1: LTBI positivity rates of those tested versus positivity rates that would have been obtained using original NHSE criteria:

	Positive	Negative	Positive %
Eligible under original NHSE criteria	1	3	33.33
Actually Tested using extended criteria	9	8	52.94

ESOL screening:

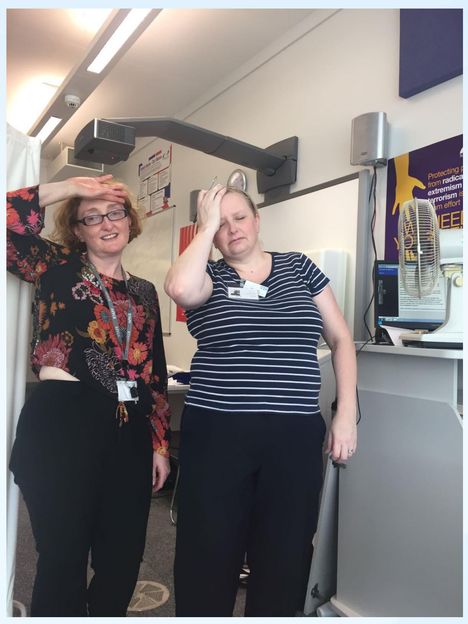
194 students were tested over a 12 hour period.

Table 2: LTBI positivity rates of those tested versus positivity rates that would have been obtained using original NHSE criteria:

	Positive	Negative & Equivocal	Positive %
Eligible under original NHSE criteria	12*	43#	21.82
Actually Tested using further extended criteria	23	171 (inc. 2 equivocal results)	11.86

*8 would have been excluded on the basis of country of origin (4 from Eastern Europe) and 10 excluded on age. 7/23 would have been excluded on both criteria

#57/171 would have been excluded on age and 100/171 excluded on country of origin. Twenty-nine would have been excluded on both criteria.



12 hours of testing is exhausting!

Discussion

These conflicting results show that using the original extended testing criteria increases LTBI positivity rates. However, screening students from countries with TB incidences of ≥40/100,000 population gave lower positivity rates than with the original criteria. In SWB, patients from Eastern Europe with active TB tend to have more complications and burden of disease. In 2016, 7 patients born in an Eastern European country were treated for active TB in Sandwell and West Birmingham Hospitals NHS Trust:

Characteristics of Eastern European patients with TB	
Smear +ve at presentation	7
Cavitary disease	5
Disseminated infection	2
Death	2
MDRTB	1

Eastern European populations are considered to be high risk for drug resistant TB, making treatment for LTBI problematic. However, Armenia, Bulgaria, Estonia, Georgia, Latvia and Lithuania are no longer on the World Health Organisation's (WHO) MDR-TB (Multidrug resistant TB) list of high burden countries (WHO, 2016). Hence, where there is a high burden of TB disease and complications, screening in such populations may be appropriate.

Conclusions

Larger, long term studies are required to see if extend testing criteria to allow for demographic variations in high incidence areas help manage the burden of TB disease at a local level. Our data suggests that in high TB incidence areas with high complication rates, tailoring the screening programme to fit the needs of the local population may be beneficial.

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References

NOMIS 2011 census data. https://www.nomisweb.co.uk/census/2011
PHE (2015) Tuberculosis (TB): collaborative strategy for England https://www.gov.uk/government/publications/collaborative-tuberculosis-strategy-for-england
PHE (2018) Tuberculosis in England: 2018. Presenting data to end of 2017 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/742782/TB_Annual_Report_2018.pdf
WHO (2016). Use of high burden country lists for TB by WHO in the post-2015 era: Summary http://www.who.int/tb/publications/global_report/high_tb_burdencountrylists2016-2020summary.pdf?ua=1`

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