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A comparison of a central London latent TB screening algorithm with national UK and US algorithms and the effect on LTBI diagnosis

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Introduction

There is continuing debate over the most effective strategy for the use of interferon gamma release assays (IGRAs) in clinical practice and this is reflected in the diversity of published recommendations. Practice in UK TB contact screening clinics reflects these widely divergent views.

The aims of our study were to:

1. Enumerate the prevalence of latent TB infection (LTBI) according to US, UK and local screening protocols
2. Explore which algorithm is the most effective in a central London TB clinic

Methods

This was a cross sectional retrospective study comprising 558 consecutive adult contacts of TB cases that attended for screening tests for LTBI 2008-2010. The screening results were applied to patient management algorithms derived from US guidance (IGRA or tuberculin skin test but not both), UK NICE guidance (two step approach), and our local service (concurrent IGRA and TST). For the purpose of this analysis, LTBI was defined as the outcome predetermined by each algorithm.

Results

In our cohort, NICE guidance had the highest completion rate (97%) with the most complex algorithm (local practice) at 87%. The diagnosis of LTBI had a variability of 5-26% dependent on which algorithm was used. NICE screens contacts aged >35 years with a chest x-ray and misses the immunodiagnosis of LTBI in 12-16% of this group. The NICE approach is also less sensitive in contacts aged <35 years because of the two step approach (IGRA is only performed following a positive TST) and the failure to rescreen contacts of pulmonary cases who are TST or IGRA negative at the initial screen. 11 (4.6%) of pulmonary TB contacts aged <35 years that would be discharged by NICE had a TST or IGRA conversion. The US IGRA alone algorithm misses a proportion (6.9%) of individuals; 11 (2%) had a strongly positive TST ($\geq$ 20mm), and of these, 5 had a TST conversion varying 6-16mm. This approach

also potentially over diagnosed 8 (2%) of contacts who reverted on rescreen when initially discordant (TST negative / IGRA positive).

Conclusion

The sensitivity of the screening depends not only on the performance of the tests but also what algorithm is used. As demonstrated in our local data, the overall effectiveness of any approach is also affected by how these impact on the patient journey and their ability to complete the screening process. These findings also highlight the impact of conversion and reversion phenomena in a clinical service.

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