Letter to the Editor

'Pre-entry screening for tuberculosis' commentary: authors' response

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We read with interest the commentary on our systematic review and meta-analysis of pre-entry screening programmes for tuberculosis in migrants to low-incidence countries.[1,2] We agree with many of the authors' comments but would like to make one correction and add some additional observations.

The statement 'the meta-analysis in the paper was limited to only six studies that reported data on culture-positive TB'[2] is not entirely correct. We undertook fixed-effect meta-analyses for our three primary outcomes: the principal yield of pre-entry screening for active tuberculosis reported for each study (ten studies); the yield of cases confirmed by culture (six studies); and the yield of cases confirmed by smear for acid-fast bacilli (six studies). This resulted in a total of 11 studies being included in our various meta-analyses, with data stratified by WHO prevalence in country of origin, population type (e.g. migrant, asylum seeker), screening method used (e.g. radiographic, microbiological, clinical), and receiving country when available.

The commentary questions 'whether it is meaningful to systematically collate such disparate studies'. We feel there is little doubt as to the usefulness of systematic analyses of the published literature. Only by performing this analysis has it been possible to determine the differences in the methodologies that have been used, but as heterogeneity remained high even after stratification for all three primary outcomes ($I2 > 90\%$) we did not present summary estimates for each primary outcome. The studies examined in our paper involved 3,739,266 migrants screened pre-entry for tuberculosis between 1982 and 2010. It would be impractical to undertake prospective cohort studies (as suggested in the commentary) of similar size or duration and stratify them by potential risk factors, unless all countries conducting pre-entry screening agreed to pool individual level data. Given the complexity of information governance arrangements within each country this seems unlikely to happen in the near future. Despite the limitations of the published programmatic screening data, the review is an appropriate way to investigate screening effectiveness and informs our understanding of how screening operates in practice rather than in the context of a prospective research cohort.

We would also like to highlight several potential areas of fruitful future research on pre-entry screening.

First, our review highlights inconsistency in screening methods and reporting. We hope it will stimulate debate about how to improve collection and reporting of data and we recommend greater standardisation of methods of screening and data recording. This would allow more detailed analyses of the prevalence and risk factors for active disease detected at screening, which could inform more targeted screening in the future.

Second, the incidence of tuberculosis after arrival in the host country (in migrants screened pre-entry) and the risk factors for such incident cases should be established. Analysis conducted through data linkage or by systematic follow up of screened migrants would be extremely informative in estimating the impact of wider use of latent tuberculosis screening and treatment in migrants and could determine who is at greatest risk of developing active disease post-migration.

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Third, molecular epidemiological data (potentially available in such data linkage studies) could provide better information to target tuberculosis control. It would allow estimation of the proportions of cases due to reactivation of latent tuberculosis, recent acquisition in the host country, or infection when visiting the country of origin. Without such data, the impact of testing and treatment for latent tuberculosis in migrants pre-entry is likely to be over-estimated because of a failure to take into account disease due to transmission post migration. Latent tuberculosis screening and prophylactic treatment would not prevent this disease. Apart from the United States of America, which screens for latent tuberculosis in children pre-entry, no other countries currently conduct testing for latent tuberculosis as part of a pre-entry protocol.

Finally, before pre-entry screening for latent tuberculosis is rolled out more widely, health-economic analyses of pre-entry latent tuberculosis screening in migrants should be conducted to examine the cost-effectiveness of such an approach, building on previous studies of post-entry screening.[3–5] These cost-effective analyses should take account of the previously discussed points plus the length of stay of migrants. They should be informed by a better understanding of tuberculosis transmission dynamics in different social and ethnic groups, considering both foreign-born and UK-born individuals and consider the costs of diagnosing and treating active tuberculosis.[6]

We believe that this research agenda would enable an informed approach to tuberculosis control in migrants. We whole-heartedly support the commentary authors' suggestion that such a programme should be combined with a holistic package that aims to identify other preventable or treatable communicable and non-communicable diseases.

Disclaimer Statements

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Conflicts of interest DZ is head of the tuberculosis screening unit at Public Health England and has shared responsibilities for quality assurance within the UK pre-entry screening programme. PJW has research funding from Otsuka SA for a retrospective study of multidrug-resistant tuberculosis treatment in several eastern European countries. TAY has participated in political advocacy projects that aimed to maintain and improve access to National Health Service services for migrants in the UK and has worked on studies that received support from Sanofi, GlaxoSmithKline, and Pasante. RWA, IA, and ACH declare no competing interests.

Ethics approval Not applicable.

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