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EDITORIAL

Chest radiography for tuberculosis screening is back on the agenda

TO SOME, the title may seem overstated and to others perhaps ironic, from a total lung health perspective. In 1974, following similar policy changes in many countries, the World Health Organization (WHO) Committee on Tuberculosis concluded that case finding by mass screening using chest radiography should be abandoned.[1] The WHO Committee placed a strong emphasis on pursuing a diagnosis among symptomatic patients by sputum smear microscopy because chest radiography could not be used independently for diagnosis and was too expensive. Even after such recommendations, and although it was often criticized over the decades for its insufficient specificity and sensitivity, the use of chest radiography was maintained in clinical practice, including in many low-resource country settings, as part of the diagnostic algorithm.

Chest radiography screening has been used for prevalence surveys, and more recently it has been revived using targeted approaches among high-risk populations. Its importance is being recognized again, including in persons infected with the human immunodeficiency virus and in children with tuberculosis. As early as 1992, the WHO's Essential Technologies group made recommendations that stressed the role of and access to chest radiographs (and ultrasound) at the primary referral level.[2] With the advent of digital technology, the operational and expense barriers are declining for radiography as they are with mycobacterial culture, including in low-resource countries. In 2006, the International Standards for Tuberculosis Care carefully defined the role of chest radiography in a clinical context,[3] and the International Union Against Tuberculosis and Lung Disease has also been active in this area.* The use of mobile digital technology, dedicated expertise, and emerging techniques for computer-aided reading may help address the challenges with observer error and experience.[4]

In this issue of the *Journal*, Story and colleagues measured the accuracy of digital chest radiography (using state-of-the-art, low-dose equipment) on a mobile unit for screening high-risk urban populations in a low-incidence, high-resource setting.[5] The excellent performance of the mobile unit radiography in this study is probably derived from the targeted screening of a high-risk population, a discriminatory categorization of radiographic interpretations, and readings done by one of two well-trained radiographers (what in other contexts might be termed 'radiologic technicians' or, in prevalence surveys, 'field readers'). It should be noted that the categorization data in Table 1 comes from the radiographers' immediate, on-the-spot readings. Not part of the study, radiologists provided a second reading later, for the purposes of quality assurance. A live teleradiology system was not used. Limitations of the study include the fact that patients with radiographic results negative for active tuberculosis in this hard-to-reach group were not examined by culture and are less likely to seek further medical attention; the sensitivity may therefore be overestimated. It should be noted that the very high specificity achieved is influenced by using a discrete radiographic category for active tuberculosis. More inclusive criteria for positive screening, such as further testing people with any type of abnormality, would typically lead to a higher sensitivity and lower specificity.[6]

Regardless, this article provides important data from a large cohort merging two sizable programmatic databases that are very valuable from a practical public health survey perspective. It is important to note the substantive benefits of using this targeted screening approach among a diverse population that faces many barriers to accessing medical services. This service in London is helping to control the spread of tuberculosis, the prevalence of which continues to rise annually in the city. A recent meta-analysis that demonstrated very high tuberculosis prevalence in homeless people, but with large heterogeneity across settings, argued for the need for local surveys.[7] The Find and Treat mobile unit service provides the quantitative evidence base to justify making this public health intervention a priority in London.

This analysis also provides important information as interest in chest radiography re-emerges in various international settings for active case-finding interventions, the emphasis on the practical approach to lung health framework (termed 'PAL'), and the possible critical role radiography may play in tuberculosis screening and diagnostic algorithms that use rapid molecular or point-of-care testing.[8] Accordingly, the WHO has commissioned a systematic review on the accuracy of screening chest radiography, to inform our understanding about the optimal use of radiography in combination with our expanding diagnostic options. It will contribute data to a planned WHO guideline on screening for active tuberculosis. Furthermore, the *Journal* plans on publishing a state-of-the-art series on tuberculosis screening next year where the importance of chest radiography will be highlighted.

* http://www.theunion.org/index.php/en/what-we-do/tuberculosis/cxr-chest-radiographs, accessed September 2012

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