A new algorithm for the diagnosis of all forms of tuberculosis is required for South Africa

To the Editor: I write in response to 'Diagnosing Xpert MTB/RIF-negative TB: Impact and cost of alternative algorithms for South Africa' published in the *SAMJ* in February 2013.[1]

Modelling the impact and cost of alternative algorithms is essential to guide policy decisions; however, the entire National GeneXpert MTB/RIF (GXP) diagnostic algorithm requires major changes, rather than variations based on cost alone.[1] This algorithm is suggested for all TB suspects and ignores the epidemiology of the South African (SA) tuberculosis (TB) epidemic, where 39% of cases notified have extrapulmonary TB (EPTB) or are unable to expectorate (15% and 24%, respectively).[2,3]

Given the high burden of TB disease in SA, an initial GXP on all patients with a positive symptom screen for TB is appropriate, despite the cost of the test. However, if the initial GXP is negative, particularly in HIV-positive individuals, a history and examination should direct further management to diagnose and treat the cause of the patient's symptoms. To continue blindly with the algorithm – especially the suggested X/X alternative where any other possible form of TB or other opportunistic infection is ignored – is poor clinical medicine.[1] Testing large numbers of patients with a second GXP for a <3% positive rate is not economically prudent.

If the first GXP 'screen' in all symptomatic patients comes back negative, the algorithm should cover the non-TB pathology that may be causing the patient symptoms as well as the more common forms of EPTB. Examples of diagnostic pathways could be: (*i*) if the cough is prominent, presumptive antibiotics and second sputum for GXP; (*ii*) if dyspnoea or chest pain is predominant, a chest X-ray for pericardial and pleural effusion would be appropriate; (*iii*) significant lymphadenopathy on examination could proceed to a fine-needle aspirate (FNA) of a lymph node or empirical TB treatment with clinical follow-up where FNA is not available.

The diagnosis of TB in SA with our dual TB/HIV epidemic cannot rely on an algorithm that only considers pulmonary TB; nor can the diagnostic search for TB exclude the individual patient, their

symptoms and the very high possibility of diseases other than TB. An algorithm that uses sputum GXP as a screen in all TB suspects is appropriate in the SA context. However, if the first GXP is negative, a comprehensive healthcare system demands that further algorithms, that address the patient's major symptoms or signs, are developed.

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