Policy recommendation: latent tuberculosis infection screening and treatment in children in immigration detention

Vicki Krause and the National Tuberculosis Advisory Committee

Background

Latent tuberculosis infection (LTBI) is a subclinical infection with *Mycobacteria tuberculosis* complex without any clinical, bacteriological or radiological evidence of manifest TB disease.[1] LTBI results from contact with an infectious case of TB. It is characterised by the presence of mycobacterial T-cell responses, assessed by either the tuberculin skin test (TST) or more recently, interferon gamma release assays (IGRAs).[2]

The World Health Organization estimates that one-third of the world's population is latently infected.[3] The diagnosis and treatment of LTBI is an important strategy for TB control and elimination, especially in low incidence countries where most adult cases result from reactivation of latent infection.[4]

Children with LTBI have an increased risk of developing active TB disease without treatment.[5] Children under 4 years of age are at highest risk.[2] In this age group the incubation or latency period is briefer and the disease more lethal, with invasive forms of the disease such as meningeal or miliary disease being more common.[6] Progression to active TB has been reported in up to 40% of infected infants.[7] Other children at particular risk for TB include those who are immunocompromised, malnourished or living in high TB burden areas.[2] A recent population-based study of TB in children across 20 United States of America (USA) jurisdictions during 2005–2006 found that, compared with TB rates among USA-born children with US-born parents, rates were 32 times higher in foreign-born children and 6 times higher in US-born children with foreign-born parents.[8A]

In Australia, screening for TB infection is targeted at those at high risk of recent infection (e.g. contacts of persons with TB disease or recently arrived foreign-born migrants), those at high risk of progression because of underlying conditions (e.g. HIV or disorders requiring immune-modulating drugs) or those with signs of possible past untreated TB disease.[9] The two currently available tests for LTBI in Australia are the TST and the QuantiFERON-TB Gold test, the only commercially available IGRA in Australia.

While the use of IGRAs for the detection of infection with *M. tuberculosis* among adults has shown promising results, the evidence base is still lacking in children. A recently published review on diagnostic approaches for LTBI in children found that studies assessing IGRA performance in children are limited.[2] Several studies have shown a higher percentage of indeterminate results in young and or immunocompromised children.[2] A position statement endorsed by the National Tuberculosis Advisory Committee in 2012 stated that IGRA should not replace TST for detection of LTBI in children.[10] However, IGRA may have additional value over TST in children that received bacille Calmette-Guérin vaccination after the first year of life.[10]

Whatever the diagnostic test, according to the US Pediatric Tuberculosis Collaborative Group, any child with LTBI should receive treatment.[11] This is because young age is a major risk factor for progression to active disease and infection in children is likely to have been more recent (another risk factor for reactivation of infection). Moreover, children have more years ahead of them to develop active TB. Preventive therapy should also be given to an child under 5 years of age (even if TST or IGRA negative) who is in close contact with an infectious adult until re-evaluation sometime after first contact, as this age group are most at risk of progression to active disease.[2]

Recommendations for the treatment of LTBI in children vary among countries; Australian guidelines for first line treatment of LTBI suggest 6–12 months of isoniazid monotherapy.[12,13]

Latent tuberculosis infection treatment in children in immigration detention

Children in immigration detention are at increased risk of both active TB disease and latent TB infection as they mostly come from high incidence countries and prior experiences may have included poverty, overcrowding and poor access to clinical and public health services.[14] By virtue of being in detention in a congregate setting, they are also at increased risk of exposure from adults with active TB. Between 2010 and 2012 the Northern Territory and Western Australia TB Units notified 57 cases

of tuberculosis among Irregular Maritime Arrivals in Australian immigration detention facilities (unpublished data).

In this context, ideally all children would be screened and treated for LTBI. Prioritisation, however, should be given to those at greatest risk of disease progression (e.g. contacts of active TB cases) and to those children attending school, as a public health initiative.

Recommendations

1. The following children (aged 6 months–18 years) in immigration detention should be screened for TB infection:
   a. All contacts of TB cases (priority should be given to contacts of cases who have smear positive pulmonary TB cases and/or extensive lung involvement);
   b. All children attending school (this should be undertaken optimally prior to attending school but at the latest, within one month of starting school);
2. The screening test for LTBI is the TST.
3. All children who have a positive TST and/or have symptoms or signs of TB should have a detailed history, clinical examination and chest X-ray performed to rule out active TB. This should preferably be carried out at a specialised TB Unit.
4. Children diagnosed with LTBI or children under 5 years of age who have had close contact with TB should be offered preventive treatment as per jurisdictional guidelines. Children under 5 years of age who have had contact with TB and who are TST negative should have another TST performed 3 months after their first contact. If this second test is negative, then preventive treatment can generally be ceased.
5. Children who are released from immigration detention and have not been screened for LTBI (i.e. they were not contacts or attending school) should be referred to a local TB Unit to be screened and managed according to local guidelines.

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