Tuberculosis: the dis-ease that didn't dis-appear

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Australia, like other high-income countries with a low TB incidence, faces special challenges in controlling TB

Books with optimistic titles such as *Triumph over tuberculosis*, *The retreat of tuberculosis* and *The miracle of empty beds* were published in the 1970s and 1980s. Readers of the Journal may therefore be surprised to find six articles on tuberculosis (TB) in this one issue in 2008.[1-6] Far from having dis-appeared, TB is the dis-ease that still affects the dis-placed, the dis-advantaged, the dis-possessed, the dis-rupted and those with dis-abled immune systems.

Displaced persons and migrants accounted for 85.5% of the 1201 TB cases in Australia in 2006.[7] Overseas-born TB patients commonly come from India, Vietnam, Indonesia, China and the Philippines. Sudan and Somalia have more recently joined this list, following the shift in Australia's immigration policy to accept more African refugees. These national figures are reflected in the letter from Robinson et al (*page 190*), which describes a retrospective review of TB cases seen at The Children's Hospital at Westmead, Sydney, between 2004 and 2006.[5] Of the 23 children with active TB disease, 18 (73%) were born overseas, mainly in Africa and the Indian subcontinent. Compared with data from 1982–1991, the proportion and number of latent TB infections diagnosed in children had increased due to active screening of refugee populations. The article by Dobler et al (*page 153*) highlights the successful outcome of directly observed treatment for TB cases in Australia, while alerting Australian doctors to the fact that migrants with treated TB who visit their TB-endemic country of birth may develop a second episode of TB that represents a new infection rather than a relapse of their previous disease.[1]

TB also affects the disadvantaged and dispossessed, as illustrated by the fact that the TB incidence in Australia's Indigenous population has been 7–15 times higher than in the non-Indigenous Australian-born population over the past decade.[7]

TB affects those with disabled immune systems. People infected with HIV have nearly 10 times the lifetime risk of developing TB compared with HIV-negative people.[8] HIV/TB coinfection is not considered a major problem in Australia, with only 11 HIV/TB patients identified in 2006.[7] However, the national TB notification system recorded the HIV status of only 35.2% of TB patients in 2006.[7] Emerson and Post (*page 162*) rightly exhort Australian clinicians to offer HIV testing to all TB patients.[2] In fact, establishing the HIV status of TB patients could be regarded as an expected standard of care.

Other immunocompromising conditions — such as chronic renal failure, transplantation, or treatment with glucocorticoids or tumour necrosis factor α inhibitors — also increase the risk of TB reactivation twofold or more.[8] For patients about to receive tumour necrosis factor α inhibitor therapy, Gupta et al (*page 168*) propose a screening strategy for latent TB infection using an interferon γ release assay, such as QuantiFERON-TB Gold (Cellestis, Melbourne, Vic) or T-SPOT.*TB* (Oxford Immunotec, Oxford, UK).[6] The optimal application and interpretation of these assays is controversial. For example, although various versions of the QuantiFERON assay have been approved by the United States Food and Drug Administration and endorsed by the US Centers for Disease Control and Prevention, Australian and Canadian TB authorities are continuing to recommend the tuberculin skin test for diagnosing latent TB infections in most patient groups until the sensitivity, specificity and cost-effectiveness of interferon γ release assays have been better defined.[9,10]

Finally, like many other infectious diseases, TB affects populations that are disrupted or disorganised due to socioeconomic upheavals, rapid urbanisation, persistent poverty, conflict or war, and where public health systems are therefore either weak or non-existent.[11] In a speech to the Lowy Institute in July 2007, Kevin Rudd (then Federal Opposition Leader) highlighted the "arc of instability" to Australia's near north, noting the recent political unrest in East Timor and several Pacific Island countries and the continuing impoverishment in parts of Indonesia.[12] The link between TB and this arc of instability is amply demonstrated by the articles in this issue about illegal foreign fishermen with TB (*page 144*)[4] and people with multidrug-resistant TB from Papua New Guinea seeking medical care in the "Torres Strait Protected Zone" (*page 148*).[3] For example, Gray et al[4] estimated the prevalence of all TB diagnoses among illegal fishermen screened in Darwin over a 15-month period to be 1360 cases per 100 000 population!

How should Australia respond internally to this persisting TB problem? Limiting migration and ostracising migrants is not indicated, acceptable or practicable in the "global village" of the 21st century. We require migrants and temporary visitors for our economy, for plugging skill gaps in our workforce, and for nation building. Moreover, molecular epidemiological studies in Australia and overseas have demonstrated that there is negligible transmission of TB from migrant communities to the general population.[13,14] The appropriate interventions are to optimise pre- and post-migration detection of active TB disease, to familiarise migrants with the TB clinical services that are freely available if they develop disease, and to detect and treat latent TB infections among subgroups of migrants who would benefit from this intervention (eg, children under 15 years old).

The 2006 annual report of the National Tuberculosis Advisory Committee does highlight one migrant subgroup requiring particular attention by documenting that the number of TB cases among health care workers (HCWs) has risen from 34 in 2001 to 65 in 2006.[7] This rise is attributable to the increasing recruitment of HCWs from high-incidence TB countries. There were no reports of TB transmission from HCWs to patients in 2006.[7] Nonetheless, public and private health institutions, particularly those recruiting HCWs from high-incidence TB countries, must ensure that adequate TB screening is undertaken before and during employment.

In common with other high-income countries with a low TB incidence, Australia faces special challenges in controlling TB.[15] Continuing undergraduate and postgraduate education of medical and nursing personnel is required to ensure that health professionals remember to "think TB" in at-risk patients. Despite the low

incidence of TB, federal and state governments must be encouraged to continue funding TB control efforts and must be dissuaded from devolving TB care from specialised TB services to general clinics in city hospitals. The closure of specialised TB services contributed to the TB epidemic in New York City in the 1980s and 1990s, which may ultimately have cost several billion dollars to control.[16] The low incidence of TB may also discourage pharmaceutical companies from selling small volumes of anti-TB drugs at narrow profit margins in Australia, which is a geographically isolated market with stringent regulatory requirements. Federal administrators may need to develop novel solutions to ensure reliable anti-TB drug supplies into the future.

How should Australia respond externally to the persisting problem of TB? As long ago as 1993, the TB problem was declared a global emergency requiring a global response. Rudd's 2007 speech to the Lowy Institute proposed a new strategic partnership with our northern neighbours that emphasised proactive socioeconomic development and promised an increase in Australia's official development assistance (as a percentage of gross national income).[12] TB is one issue for which this rhetoric should become action. In responding to TB as a global emergency, Australia needs to provide direct continuing TB care in specific circumstances to foreign nationals, such as people with multidrug-resistant TB entering the "Torres Strait Protected Zone" and illegal fishermen entering Australian waters.[3,4] Addressing only "acute life-threatening conditions" in these groups, as quoted in the article by Gilpin and colleagues,[3] is short-sighted in view of the fact that TB is both communicable and potentially deadly. A collaborative approach is necessary in Australia's border areas.

More generally, Australia's clinical and laboratory expertise in TB control could be harnessed to assist with national TB programs in neighbouring countries through properly funded bilateral partnerships. Such collaboration would be to our mutual benefit. Investment in TB programs in neighbouring high-incidence countries is one control strategy that has been largely ignored by high-income countries with low TB incidence. One analysis suggested that US-funded expansion of TB care into Mexico, Haiti and the Dominican Republic could reduce TB disease among migrants from these countries and would produce net savings for the US.[17] The authors suggested that their findings could be generalised to other developed countries with large migrant intakes and should encourage those countries to fund TB control efforts abroad. TB really is where philanthropy and self-interest meet!

Competing interests

Ivan Bastian attended a tuberculosis meeting in Palm Cove, Queensland, in July 2000, which was partly sponsored by CSL, the then manufacturer of the QuantiFERON assay mentioned here. Cellestis is now the manufacturer of this assay.

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