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The National Tuberculosis Advisory Committee for the Communicable Diseases Network Australia

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The Strategic Plan for Control of Tuberculosis in Australia, 2021–2025

The National Tuberculosis Advisory Committee for the Communicable Diseases Network Australia

Executive summary

Rates of tuberculosis (TB) in Australia remain low by global standards. However, following a small decline from 2011 to 2015, there was an increase of 21 per cent in absolute case numbers from 2015 to 2020. Ninety-one per cent of all notifications reported in 2020 with country of birth recorded occurred in people born overseas. While TB incidence remains higher than in Australian-born residents overall, there has been a 38% reduction in the rate of TB in Aboriginal and Torres Strait Islander Australians in 2020 compared to 2015.

The previous strategic plan (2016–2020) sought to lay the groundwork towards TB elimination in Australia. Many elements of the plan were achieved, and the framework provided was influential in shaping policy and practice and was accompanied by incidence reduction in Aboriginal and Torres Strait Islander Australians. However, overall TB incidence reduction over this period was not realised, with increased notifications in people born overseas, in part relating to the impact of coronavirus disease 2019 (COVID-19).

This strategic plan continues to emphasise progress towards TB elimination and towards zero TB transmission within Australia. The plan maintains existing TB control efforts alongside ten priority areas of expanded activity. The highest-priority elements of this plan are i) improving latent TB diagnosis and treatment; ii) strengthening TB surveillance; iii) strengthening contact tracing, particularly through the routine incorporation of whole genome sequencing; iv) developing and evaluating national drug-resistant TB management approaches; and v) revising national consensus approaches to TB case management.

In addition to being strategic with regards to Australian capabilities and progress toward TB elimination, the priority areas outlined here also reflect a desire for increased harmonisation of practice and monitoring within and between jurisdictions, and for greater capacity for inter-jurisdictional cooperation in TB programmatic interventions. Key outputs from this strategic plan will be enhanced national guidelines and practice networks for exchange of data, training, and resources, to support Australia's preparedness for optimal clinical and public health management of TB and strengthened capacity for regional engagement.

Introduction

Australia has a well-established, programmatic approach to TB control. All patients suspected of TB have access to a fully funded health system to ensure diagnosis, treatment, and post treatment monitoring without individual cost to the patient. Public health measures, such as infection control and contact tracing of household and other close contacts, are embedded into routine practice. Laboratory services include diagnostic and reference functions, including smear microscopy; rapid molecular tests for diagnosis and resistance detection; liquid and solid culture; drug susceptibility

testing; molecular typing; and genomic sequencing. All new isolates of *Mycobacterium tuberculosis* have drug susceptibility testing and genotyping performed through the Australian Mycobacterium Reference Laboratories Network. Many non-government stakeholders also contribute to TB control and elimination activities in Australia.

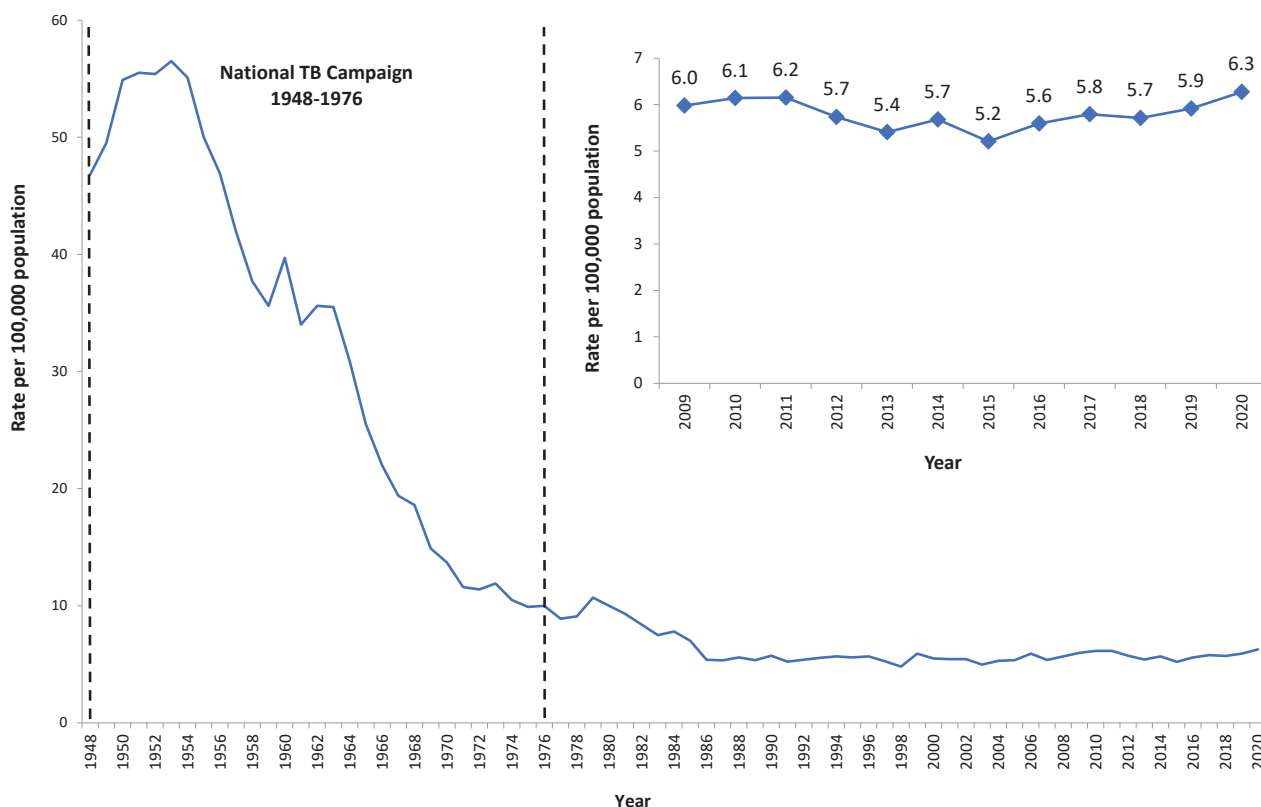
In Australia's federal system of government, clinical and public health management of TB is managed through state and territory government-based programs. The highly successful National TB Campaign (1949–1975) was an effective partnership between the Commonwealth and the jurisdictions to significantly reduce the incidence of TB in Australia, and to provide adequate facilities for diagnosis, treatment, and control. Since 1999, jurisdictions have maintained TB programmatic operations at a state and territory level, with national coordination and communication through the National Tuberculosis Advisory Committee (NTAC).¹

The TB situation in Australia

Rates of TB in Australia remain low by global standards; however, following a small decline from 2011 to 2015, there has been an increase of 21 percent from 2015 to 2020 (Figure 1).

In 2020, there were 1,611 notifications of TB in Australia, representing an incidence of 6.3 cases per 100,000 population per year. The rate amongst non-Indigenous Australian-born people was 0.7 cases per 100,000 population per year, below that which the World Health Organization (WHO) defines as a state of pre-elimination (< 1 case per 100,000 population per year), and a benchmark which was

Figure 1: Notification rates for tuberculosis, Australia, 1948 to 2020,^a by year



a Data extracted from the National Notifiable Diseases Surveillance System (NNDSS) on 17 September 2021. Due to the dynamic nature of the NNDSS, data in this extract are subject to retrospective revision and may vary from data reported in published NNDSS reports and reports of notification data by states and territories.

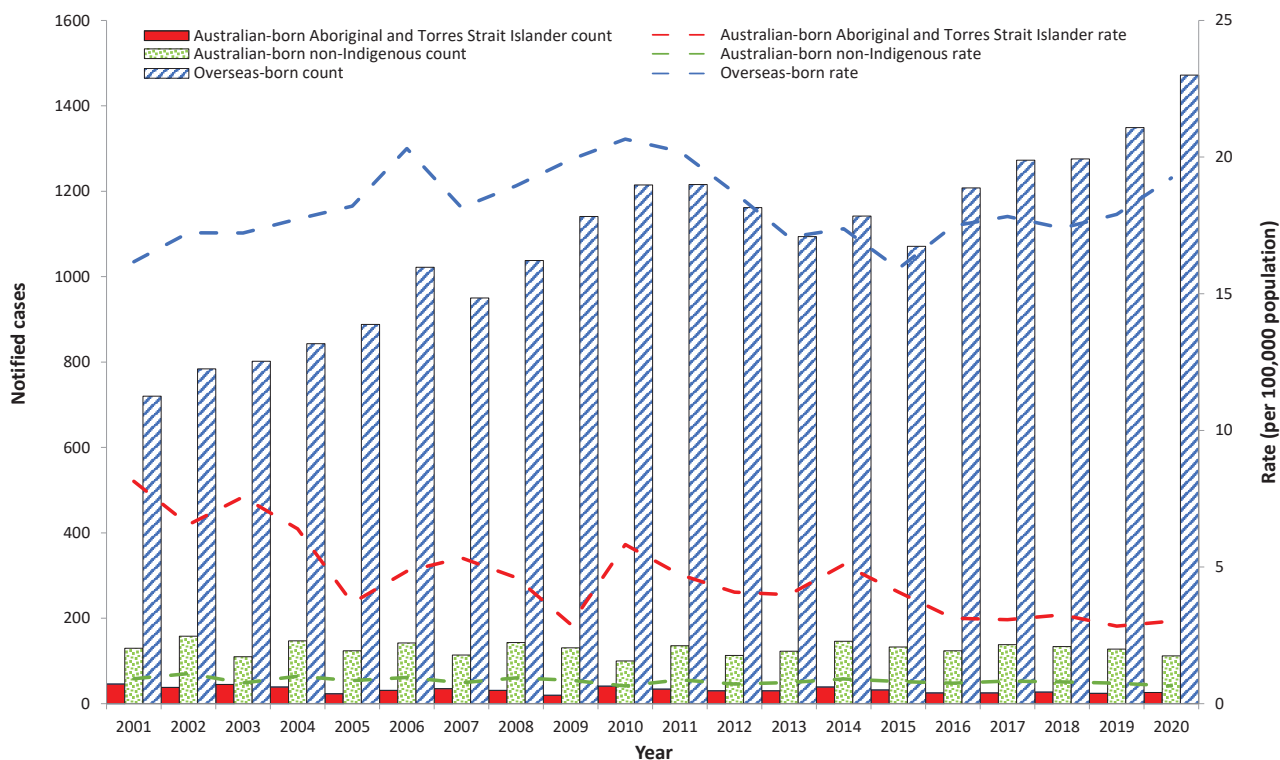
first achieved in 2003.² Aboriginal and Torres Strait Islander Australians make up approximately 3% of the Australian population. The TB rate in Aboriginal and Torres Strait Islander Australians (3.0 cases per 100,000 population) is low by global population standards; however, it is four times that seen in the non-Indigenous Australian-born population (Figure 2). There has been a 38% reduction in the rate of TB in Aboriginal and Torres Strait Islander Australians in 2020 compared to 2015.

Ninety-one percent of all notifications reported in 2020, with country of birth recorded, occurred in people born overseas. Comparatively, approximately 30% of Australia’s estimated resident population were born overseas.³ With migration and international visitors increasing, the rate of TB in overseas-born cases has also increased (by 6% since 2015) and this may increase further with changes in migration patterns from high-TB-incidence countries.

In 2020, twelve percent of Australia’s annual bacteriologically-confirmed TB notifications (144/1,200 cases) were identified as being resistant to at least one of the standard, first-line anti-tuberculosis agents (range: 11–14% for 2015–2020). Eighteen cases (2%) were identified as multidrug-resistant TB (MDR-TB) (range: 2–3% for 2015–2020). Eighty-nine percent of the MDR-TB cases in 2020 were born overseas.

Treatment outcomes of an annual patient cohort are reported in the following year’s annual report. The latest data on treatment outcome is for the 2017 cohort. The overall treatment success for cases reported in 2017 was 86%.⁴

Figure 2: Notified cases and rate of tuberculosis, Australia, 2001 to 2020,^a by population subgroup



a Data extracted from NNDSS on 17 September 2021. Due to the dynamic nature of the NNDSS, data in this extract are subject to retrospective revision and may vary from data reported in published NNDSS reports and reports of notification data by states and territories.

Impact of the 2016–2020 strategic plan for TB control in Australia

Informed by the WHO action framework for elimination of tuberculosis in low-incidence countries, NTAC formulated a strategic plan to outline priority areas for Australian tuberculosis control in 2016–2020.^{1,5} Formal feedback was sought from jurisdictional TB programs and key research stakeholders ('NHMRCⁱ Centre for Research Excellence for Tuberculosis Control on both sides of the border' and Australasian Clinical Tuberculosis Network [ACTNet]) as well as through analysis of website visits.

NTAC also developed and published a number of key documents, including position statements on the management of latent TB infection,⁶ and on interferon- γ release assays for the detection of latent TB infection;⁷ guidelines on the management of TB risk in healthcare workers in Australia;⁸ infection control guidelines for the management of patients with suspected or confirmed pulmonary tuberculosis in healthcare settings;⁹ and providing a definition of a TB cluster or outbreak.¹⁰

Many actions were identified in the 2016–2020 strategic plan, some of which were completed, some of which are still in progress or have informed key actions for this updated strategic plan. The plan had Australian milestones to achieve TB elimination which were set to achieve WHO elimination targets for low-incidence countries (Table 1).¹ Whilst the overall incidence rate of TB in Australia has increased against a background of increasing migration, progress has been made towards reducing the rate of TB in Aboriginal and Torres Strait Islander Australians, and the rate of TB in non-Indigenous Australian-born people has maintained pre-elimination levels.

In general, the strategic plan was assessed as being very helpful in encapsulating key research priorities for improved TB control. In the view of the groups from which feedback was sought, priority areas for ongoing escalation included better data linkage at a national level, especially to integrate the cascade of care for new migrants commencing from point of offshore pre-visa health assessments, and with an emphasis on the need for a national genomics linkage strategy. It was suggested that TB elimination in the Australian context will not be possible with an ongoing migration programme from high-burden TB countries, but that future aims may be better suited to elimination of local transmission, especially amongst high-risk groups including Aboriginal and Torres Strait Islander people in some jurisdictions. Ongoing support of regional TB control activities and operational research in these settings is seen as of high importance to Australian TB control.

An analysis of internet webpage analytics over the assessment period of April 2019 to October 2021 indicated 14,870 unique views, with 2,073 visitors returning or performing detailed interaction with the webpage hosting the *Strategic Plan 2016–2020*. This is perceived to indicate that stakeholders view the strategic plan as an important document for consultation.

COVID-19 impact

All aspects of the health sector have been impacted by the ongoing COVID-19 pandemic; Australian jurisdictional TB programs have been affected in a variety of ways. Staff from TB programs, particularly from infectious diseases, respiratory and public health, have been redeployed to COVID-19-specific work, including ward service and vaccination programs. Tuberculosis programs have also had to reorganise work practices to avoid direct contact with other staff members, as part of risk minimisation for COVID-19 infection, with video-based team meetings and remote support used

i National Health and Medical Research Council.

Table 1: Australia's progress against 2020 milestones to achieve TB elimination^a

Goal	2020 milestone	2015	2020	Change
To reduce the overall TB incidence rate in Australia	10% reduction per annum (3.1 per 100,000)	5.3 per 100,000	6.3 per 100,000	Increase 1.0 per 100,000 (Increase 3.8% per annum)
To reduce the rate of TB in Aboriginal and Torres Strait Islander Australians	20% reduction per annum (1.6 per 100,000)	4.8 per 100,000	3.0 per 100,000	Decrease 1.8 per 100,000 (Decrease 7.5% per annum)
To reduce the rate of TB in Australian born non-Indigenous Australians	Maintain pre-elimination rates (<1 per 100,000)	0.8 per 100,000	0.7 per 100,000	Decrease 0.1 per 100,000 (Pre-elimination levels maintained)

a The proposed annual reductions were set in the 2016–2020 strategic plan¹ to achieve the WHO elimination targets for low-incidence countries.

to limit the risk of COVID-19 infection and transmission. Unfortunately, some healthcare workers have also been exposed to or have contracted COVID-19 in workplace settings, resulting in illness and periods of furlough.

Access to TB diagnosis and management during the COVID-19 pandemic has been complicated, particularly in areas with high local COVID-19 transmission, by restrictions to availability of bronchoscopy, elective surgery and inpatient isolation facilities normally used for TB, as well as laboratory services redirected to COVID-19 diagnostics. Outpatient clinics normally used for follow-up of active TB and support for TB contact tracing have been periodically inaccessible for infection control reasons, necessitating an increasing use of telehealth, direct mail-out of TB medications, and Interferon gamma release assay (IGRA) testing through community pathology services.¹¹

In several jurisdictions, particularly in New South Wales and Victoria, there has been a consistent increase in notifications during 2020–2021, with higher numbers of TB diagnoses than in previous periods.¹² The reasons for this will be multifactorial, including changed migration and residency patterns, malnutrition and reduced LTBI treatment access in the community. TB programs have also recognised some potential benefits in the context from COVID-19 conditions, including greater community awareness of public health measures such as contact tracing, use of masks and improved ventilation in some settings. It remains, however, that the most marked change has been seen in increased case complexity rather than in numbers per se, with additional program challenges in case management relating to physical and social isolation, financial and housing insecurity and forced changes to TB program operations.

Strategic plan overview

The goal for TB programs in Australia for 2021 to 2025 is, as in the last strategic plan, to make significant progress towards TB *elimination* and particularly *zero TB transmission* within Australia.¹ The strategy to achieve this can be considered in two parts: primarily, jurisdictional TB programs must maintain current activity and, secondarily, NTAC recommends ten priority areas for specific increased action in the next five years.

Maintaining TB control activities with at least current resources is the primary and minimal strategy for Australia because the low incidence of TB in Australia has been, and will continue to be, dependent on this activity. Other low-incidence countries that have reduced TB control activities in the past

have seen a rise in incidence, and the potential for a loss of control in Australia will continue due to ongoing migration from high-TB-incidence countries. Further, as described earlier, the necessity of well-resourced TB programs is heightened by an increase in case load and complexity in recent years, and by the impact of COVID-19 on TB incidence locally and globally.¹³

The necessary components of a TB program in Australia are well established and described.¹⁴ They include clinical care of patients with TB disease and infection; a world-leading and interconnected mycobacterial laboratory network that is enabled to perform jurisdictional and national transmission surveillance; and public health activity, especially case management, contact tracing and active disease surveillance in higher risk populations. It is also important that Australia continues to support and promote TB research and education. Further, Australia must maintain activity beyond its borders, particularly evidence-informed, high-quality pre-migration TB screening and assistance for improved TB control in our region. It is acknowledged that the current and projected impact of climate change on global TB will also form an important background to local programmatic activity for a variety of reasons, including interruption to global TB diagnosis and treatment in migrant cohorts; Australia's substantial contribution to fossil fuel production and emissions; changes to international patterns of migration and displacement; and increased risk of transmission and reactivation in global cohorts most affected by climate change.¹⁵

While maintaining current TB programs is of primary importance, progress toward TB elimination in Australia requires new and specific activity. The two strategic parts in progressing towards TB elimination are reducing re-activation of TB in migrants and working towards zero TB transmission in Australia.¹⁶ Newer laboratory technology will allow local transmission to be monitored with increased specificity as implementation of routine whole genome sequencing (WGS) becomes more widespread across Australia. Ten areas are proposed by NTAC for focus in the next five years. The first five areas, detailed below, are the highest priority and are written with the intent that they are attainable within the five years of this plan. The latter five areas are longer-term aspirations that are likely to be ongoing beyond the life of this plan, but also have objectives that are attainable within five years. NTAC remains committed to the 'End TB Strategy' established by the World Health Assembly in 2014.^{17,18} The strategy of NTAC for TB control in Australia also continues to align with the WHO's *Framework towards tuberculosis elimination in low-incidence countries*⁵ to which the Australian Government has committed, and upon which the last strategic plan was based.^{1,19} However, the new strategic plan focuses specifically on Australian circumstances and key domestic challenges, while still mapping to the WHO's *Western Pacific regional framework to end TB (2021–2030)*.²⁰

Priority actions

1. Latent TB infection

Diagnosis and treatment of latent TB infection (LTBI) is well-established in the prevention of TB. While there has been debate regarding the public health impact of LTBI treatment, programmatic interventions in migration cohorts have been shown to be feasible and effective in a variety of contexts.^{21,22} To progress to TB elimination in Australia, more emphasis needs to be placed on the treatment of LTBI, especially in high-risk groups. Until a new, more effective vaccine is developed, pre-migration screening and treatment of LTBI are the only ways to prevent reactivation post-migration, and thereby reduce the number of new cases of TB.

The challenge for Australian TB control is how best to increase LTBI diagnosis and treatment in a cost-effective way and ensuring a positive benefit:risk ratio from LTBI treatment. Contacts of active

TB cases are the most important people to protect and comprise the highest-priority group; this plan recommends attention to the recording and reporting of contact tracing to improve prevention in this group – see priority action area 3 below. Beyond this, a better understanding of other priority at-risk groups is required.

Objective 1: To improve TB prevention through increased LTBI diagnosis and treatment

Item	Action	Time frame
1.1	Re-propose at a national level that LTBI be considered as a notifiable disease	2022
1.2	Analyse early LTBI notification data when data available	2023–2024
1.3	Develop a national guideline for jurisdictional public health response to LTBI notifications	2023
1.4	Develop resources for primary care management of LTBI	2023–2025

2. TB epidemiological surveillance

Australia undertakes, at both a jurisdictional and a national level, in-depth analysis and reporting of TB notification data. In recent years there have been delays in the national reporting, and on two occasions multi-year catch-up reports.^{4,23} The timely analysis and reporting of these data are critical to the understanding of TB incidence and to identifying the priorities for action to reduce it. NTAC recognises that resource limitations require a more efficient process in delivering notification reports.

All Australian jurisdictions now have the technology to undertake WGS of TB isolates, and national collection and analysis of these data is in the pipeline. Understanding local transmission of TB through WGS cluster analysis should allow further targeting of TB prevention.

Objective 2: To improve the efficiency, timeliness, and breadth of TB notification reporting

Item	Action	Time frame
2.1	Establish and maintain report publication within 18 months of the end of a reporting year	2022
2.2	Develop and implement a TB notification report template	2022
2.3	Publish a national position statement on the use of WGS for TB in Australia	2022
2.4	Work with the Communicable Diseases Genomics Network (CDGN) and state laboratories to incorporate WGS data in local and potentially national analyses of transmission and reports where appropriate	2022
2.5	Undertake a national review of mortality occurring in TB notifications	2022–2023

3. Contact tracing

Contact tracing for TB is an important core activity of all jurisdictional TB programs in Australia. The WHO has increasingly emphasised the importance of contact tracing as part of a global elimination strategy.^{17,18} However, the process is variable between jurisdictions, and outcomes are not recorded or reported at a national level. National analysis of contact tracing will allow a better understanding of TB transmission and of potential opportunities to prevent TB. Nationally-agreed standards for contact tracing will promote optimisation of this important public health activity at a jurisdictional level. The routine availability of WGS of TB isolates, and the future possibility of national analysis, has the further potential to enhance the efficiency and efficacy of contact tracing.

Objective 3: To enhance TB contact tracing through national cooperation

Item	Action	Time frame
3.1	Establish NTAC level reporting of TB household contacts < 5 years old with outcomes (as a minimum)	2022
3.2	Consider broadening of NTAC level reporting of contact tracing beyond household contacts < 5 years old	2023–2024
3.3	Consider a national guideline on minimum standards of contact tracing and jurisdictional reporting	2023
3.4	Establish a regular national review of cluster analysis from TB WGS data	2023–2024

4. MDR-TB guideline

MDR-TB poses substantial challenges to TB care and prevention globally. MDR-TB remains uncommon in Australia (< 3% of laboratory-confirmed cases). However, Australia is not immune to this issue given the global context and our trend in migration.

Since 2018, significant changes have occurred in international guidance on the management of MDR-TB. These particularly include new drug options that have resulted in a key shift in focus to the use of all-oral regimens, in association with an enhanced approach to patient-centred care and support. Injectable agents have largely been replaced by oral agents in both the longer and shorter regimens.

The small number of cases of MDR-TB that occur in Australia, and the complexities involved, mean that management in terms of best practice should be undertaken using a multi-disciplinary approach by, or in close consultation with, those with TB expertise.

Objective 4: To ensure the highest standards of clinical care and programmatic management of both drug-susceptible and drug-resistant (DR) TB

Item	Action	Time frame
4.1	Update national guidelines on prevention and care of DR-TB	2022
4.2	Investigate a mechanism for the review of outcomes of MDR-TB cases managed in Australia	2023

5. TB Series of National Guidelines

The Series of National Guidelines (SoNG) are developed for many notifiable diseases in consultation with the Communicable Diseases Network Australia (CDNA) and endorsed by the Australian Health Protection Principal Committee (AHPPC). Their purpose is to provide nationally-consistent advice and guidance to public health units in responding to a notifiable disease event. The first TB SoNG was written by NTAC and published in 2013.²⁴ Public health actions are foremost in importance in the maintenance of TB control; up-to-date, nationally-agreed guidelines remain critical to ensuring these actions are done well.

Objective 5: To ensure national public health guidance is consistent with current evidence

Item	Action	Time frame
5.1	Publish a revised TB SoNG	2022

6. TB workforce

Developing and maintaining a specialist and multidisciplinary TB workforce, through effective human resource management policy and practice, is required to staff a TB program, as effective public health action requires an adequately staffed, highly skilled, diverse, and interdisciplinary workforce.²⁵ NTAC, state and territory jurisdictions, other training organisations and individuals have a role to play in attracting, recruiting, and retaining a diverse and sustainable workforce, and providing staff with opportunities for education, training, and development to ensure innovative and effective delivery of TB programs.

Objective 6: To strengthen and further develop the TB workforce in Australia

Item	Action	Time frame
6.1	Produce a TB workforce policy and development framework paper that describes the roles and key skills in the Australian TB workforce, and strategies and responsibilities for workforce training and development	2023
6.2	Identify and promote educational opportunities for current and potential future health care workers	Ongoing activity

7. TB in Aboriginal and Torres Strait Islander Australians

Aboriginal and Torres Strait Islander Australians consistently suffer more TB than non-indigenous Australian-born people. Torres Strait Islander peoples are also at higher risk of MDR-TB through a shared treaty zone with the Western Province of Papua New Guinea. Each jurisdictional TB program has specific measures for managing TB in Aboriginal and Torres Strait Islander Australians and this has been associated with improvements in TB incidence in the last 10 years (Figure 2).

NTAC's aim is for Aboriginal and Torres Strait Islander Australians to achieve an equivalent 'pre-elimination' rate (< 1 case per 100 000 population per year) as has been achieved among non-Indigenous Australian-born people.

NTAC recognises a more in-depth epidemiological analysis of TB in Aboriginal and Torres Strait Islander Australians is required. This study would aim to identify modifiable variables that determine higher TB rates. With these data, NTAC aims to consult with Aboriginal and Torres Strait Islander health leaders to design effective and culturally sensitive programs specifically to further reduce TB in Aboriginal and Torres Strait Islander Australians.

Objective 7: To identify mechanisms to reduce TB incidence in Aboriginal and Torres Strait Islander Australians to that of non-Indigenous Australian-born people

Item	Action	Time frame
7.1	In-depth analysis of the epidemiology of TB in Aboriginal and Torres Strait Islander Australians	2022
7.2	Work with Aboriginal and Torres Strait Islander health leaders to co-design specific activity aimed at reducing TB incidence in this population, with a broad, qualitative focus	2023–2024

8. Asia Pacific

TB control in Australia needs to be considered in a broader context beyond our borders. Migration from countries in the Indo-Pacific region for employment, education and humanitarian reasons is the major contributor to the TB case load detected in Australia. Overall case rates in migrants generally mirror those in their country of origin. The Indo-Pacific region accounts for nearly 60% of the global TB burden. TB elimination in Australia, despite having excellent TB control programs in all jurisdictions, cannot be achieved without substantial improvements in regional and global TB epidemiology. The main challenges to TB control in the region are socioeconomic inequality that increase TB vulnerability and health system weaknesses, limited resources, and funding to national TB programmes, resulting in severe limitations on patient access to quality TB diagnosis and care. Regional TB control is critical to the epidemiology of TB in Australia, and therefore NTAC considers its role is to continue to advocate for efforts to improve these control programs and political commitment to TB control from Australia.

Australia contributes to the regional and global TB control efforts through various avenues. At a government level, there are aid programs in support of the Global Fund to Fight AIDS, Tuberculosis, and Malaria,ⁱⁱ product development partnerships like the TB Alliance,ⁱⁱⁱ and multiple bilateral and multilateral partnerships in the Indo-Pacific region. There is also support for research that provides regional solutions through the NHMRC and the Medical Research Futures Fund. At a non-government level, leadership and technical assistance is provided to many high-TB-incidence countries, including to the vastly spread Pacific Island countries, through partnerships with the WHO. The NHMRC Centre of Research Excellence in Tuberculosis Control^{iv} also has a strong focus on TB control 'beyond our borders'. It is important to ensure effective collaboration of the various stakeholders and co-ordination of regional activities.

Objective 8: To advocate and develop a strategic framework for global and regional support of TB control efforts to ensure optimal engagement of stakeholders and co-ordination of the regional activities

Item	Action	Time frame
8.1	NTAC position paper that summarises current activities and provides a suggested framework for technical assistance (in the context of the WHO WPR framework) ²⁰	2023
8.2	Establish representation from the Department of Foreign Affairs and Trade on NTAC	2022
8.3	Advocate for opportunities for workforce training and development for overseas TB workers	Ongoing activity

9. Pre-migration screening

Active TB is the only medical condition that prevents the grant of a visa as prescribed in the *Migration Regulations 1994*.²⁶ Visa applicants located onshore undergo an Immigration Medical Examination (IME) through the Department of Home Affairs' contracted visa migration medical service providers; and for visa applicants located offshore, through the Department of Home Affairs' offshore

ii <https://www.theglobalfund.org/en/>.

iii <https://www.tballiance.org/>.

iv <https://www.tbcre.org.au/>.

network of Australian Government approved panel physicians. Outcomes of pre-migration screening have been published in annual TB notification reports in recent years, demonstrating increased detection of TB before migration.⁴

Nonetheless, migration from high-incidence countries is the most important determinant of TB incidence in Australia. Through effective pre-migration screening, most immigrants arrive without TB but contribute about 90% of TB cases through subsequent reactivation of latent TB infection. This group is therefore the principal target for prevention of TB and reduction in Australian TB incidence.

The Department of Home Affairs has implemented several initiatives to ensure TB screening remains contemporary and effective. These include:

- a risk-based quality assurance program in relation to approved offshore panel physician network;
- collaboration with the Department of Health and Aged Care to develop communication materials targeted at new Student visa holders from higher TB risk countries, to educate them on TB risk and care post-arrival to Australia;
- a trial of GeneXpert testing capability to replace sputum smear and culture for TB testing in the Pacific region;
- implementing a policy expansion of pre-migration screening for LTBI to all visa applicants who intend to work in or study health care in Australia; and
- compiling an annual report and analysis of TB identified through offshore pre-migration health screening, the latest of which is for 2019.

Objective 9: To further enhance the efficacy of pre-migration TB screening through epidemiological analysis and program development

Item	Action	Time frame
9.1	Analysis of pre-migration TB data with continued reporting in annual TB notification reports	Ongoing activity
9.2	Examine the feasibility of a permanent recurring data linkage analysis between migrant and TB notification sets	2023–2024
9.3	Extension of pre-migration LTBI screening for health care workers	2022
9.4	Consider broadened pre-migration screening for latent TB infection	Ongoing activity

10. Therapeutics

Supply and prescription of therapeutics for TB in Australia are hampered by a number of policy, licensing and market factors. Bacillus Calmette–Guérin (BCG) vaccine production, and thereby supply, was significantly disrupted during the last strategic plan period, but is now restored. Several TB drugs are not registered in Australia, due principally to the fact that Australia is a small market with stringent regulations and with high fees applied by the Therapeutic Goods Administration. Australia is one of the few countries in the world that does not have routine access to fixed dose combination (FDC) formulations of first line TB treatments. Further, the significant changes to international guidance on management of MDR-TB referred to above (Priority Action 4) means that several new drugs which are now routine second line TB treatments are not registered in Australia.

Objective 10: To minimise obstacles to supply and prescription of TB therapeutics

Item	Action	Time frame
10.1	Finalise, with the Australian Technical Advisory Group on Immunisation (ATAGI), revised national BCG vaccination guidelines	2022
10.2	Examine areas of impeded drug supply, e.g. FDC and child friendly formulations, unlicensed, unregistered, and new TB medications	Ongoing activity

Conclusion

The previous NTAC strategic plan (2016–2020)¹ sought to lay the groundwork for progress towards TB elimination in Australia, and for commensurate incidence reduction to occur over this period. Many elements of the plan were achieved; the framework provided was influential in shaping policy and practice, and was accompanied by both sustained low TB incidence in all Australian-born residents and significant incidence reduction in Aboriginal and Torres Strait Islander Australians. These aspects are to be celebrated. However, overall TB incidence reduction over this period was not realised, with increased notifications seen in overseas-born people. While this in part relates to the impact of COVID-19 in the latter period of this plan, it is essential to recognise that the Australian TB epidemic remains overwhelmingly amongst people born outside Australia, and that efforts to improve TB prevention and outcomes must focus on this group if progress is to be realised.

This new strategic plan continues to emphasise progress towards TB elimination and introduces the priority of achieving zero TB transmission within Australia. Maintaining existing TB control efforts is critical, given existing low rates of community transmission and good TB outcomes. With regards to the highest priority new elements of this plan, several thematic elements are worth discussion. First, the growing use and value of WGS as a routine laboratory practice is reflected across several priority domains. WGS on culture-positive isolates has been routine in several Australian jurisdictions since 2016 and is actively being introduced in all others. This expansion is accompanied by ongoing work to facilitate cross-jurisdictional transfer of genomic data, providing new opportunities to understand Australian transmission and to support more robust and evidence-based public health responses on a national level. NTAC is highly supportive of this work and engaged in parallel development of best-practice guidance for clinical and public health use of genomic data to optimise outcomes. Such approaches have novel elements, and both qualitative and quantitative evaluation of use of genomic data to optimise public health outcomes will be critical over this period.

The ambition to see zero TB transmission in Australia is a challenging and necessary one. In local contexts, transmission is overall low, and typically concentrated in household and identified high-risk contact settings, with limited chains of transmission occurring. However, routine WGS also offers opportunities to identify previously unrecognised community transmission, and close evaluation of this data will allow additional opportunities for intervening to further reduce community transmission.

In addition to being strategic with regard to Australian capabilities and progress toward TB elimination, the priority areas outlined here also reflect a desire for increased harmonisation of practice and monitoring within and between jurisdictions and a greater capacity for inter-jurisdictional cooperation in TB programmatic interventions. A key output from this strategic plan will be enhanced national guidelines and practice networks for exchange of data, training and resources, to support Australia's preparedness for optimal clinical and public health management of TB and to strengthen capacity for regional engagement. It is also essential that the concept of the 'TB workforce' continues to be expanded, with a greater recognition of, and support for, the work which occurs in general practice, community care and allied health services, across TB prevention, care, and long-term

health promotion efforts. It is intended that continued and enhanced coordination and cooperation between Australian jurisdictions will allow for a *de facto* national program to become a stronger presence, as we work towards better TB care and outcomes for all.

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