Policy and guidelines

Essential components of a tuberculosis control program within Australia

The National Tuberculosis Advisory Committee

In Australia, tuberculosis (TB) control is managed, operationally, through state and territory-based programs rather than a single national program as seen in most other countries. The jurisdictional boundaries of these programs are well defined, and communication and cooperation between the programs is effective. The TB control programs in each jurisdiction are quite different and operate as a consequence of the history of their development as well as social, political and demographic circumstances. However, each jurisdiction and the National TB Advisory Committee (NTAC) agree on key components of a TB program. While it is appropriate for the structure and operation of each program to be adapted to best suit the specific local circumstances, these components, and the outcomes that are associated with each, are essential for effective TB control.

The basis for TB programs and the importance of on-going, effective TB control in Australia is described in *The Strategic Plan for Control of Tuberculosis in Australia: 2011–2015*.[1] The purpose of this paper is to define a set of essential components of a jurisdictional TB Control Program in Australia. These components are general to account for differing jurisdictional circumstances. In particular, this paper does not define a program structure, nor specify how the components should be implemented. Ensuring these essential components in jurisdictional programs is a key part of the National TB Program.

The TB programs in each jurisdiction are interdependent, such that an inadequate program in one is likely to impact on TB control in others and also nationally. TB control is maintained nationally, through the interaction and cooperation between jurisdictional programs. This network is most evident in NTAC, but is also dependant on networks that exist between many of the essential components described in this paper, such as between specialist TB nurses, notification data custodians and mycobacterial laboratories. Thus, ensuring a minimum, nationally agreed standard for these components is critical to maintaining national TB control.

Maintenance of a dedicated specialist service

It is important that dedicated services for TB control are maintained. There has been a tendency for TB services to be downsized and divested to larger multi-functional services as the incidence of the disease falls.[2] It has been well documented that this leads to a loss of TB control, especially in the United States of America.[3]

A dedicated service is of particular importance in Australia because of the potential for loss of control amongst an increasing number of visitors and migrants from high incidence countries. Also, in a low incidence setting, such as Australia, expertise and experience in TB control become diluted and lost unless a specialist service maintains them.

It is inadequate to have the components of a TB program present within a larger multi-functional service. Loss of control of TB, both in the individual and the community, is usually insidious and easily missed. Unless maintained by a dedicated unit, a TB program will be neglected.

A dedicated TB service implies:

- a dedicated budget i.e. not shared with other functions;
- government commitment to service provision – this is principally financial, and, in Australia, means state or territory government commitment. It must also recognise that TB management is free of charge and it must not rely on Medicare, as many clients are non-resident;
- specialist personnel; and
- one or more (depending on the population size and distribution) recognised site(s).

Other features of a dedicated TB service should include:

- ease of access – both by communication (other health care providers) and physically (clients);
- sensitive to different cultural and linguistic backgrounds – TB program clients are more often migrants, non-English speaking or Aboriginal and Torres Strait Islander peoples;

- free of charge to the client – including all screening and diagnostic tests, consultation and treatment, irrespective of the residency status of the client. TB is associated with poverty and a financial barrier to service will reduce the effectiveness of control;
- well established links with multiple other relevant service providers, including private and public hospitals and clinicians, community nursing, remote health providers, Aboriginal medical services, the Department of Immigration and Border Protection (DIBP), and non-government agencies involved in migrant screening etc.

Agencies

The roles and functions of a TB program fall broadly under 4 types of activity:

- governance;
- clinical care;
- mycobacterial laboratory; and
- public health activity.

The agencies that undertake these activities may or may not be co-located and managed, but must work together in a close and clearly defined network.

The public health activity is emphasised in this paper because it is at most risk of not being met. Even in a neglected program, clinical care that will diagnose and treat TB is likely to still exist. However, there are many instances in the past of public health activities being neglected and consequent deterioration in TB control. In New York City during the 1970–80s when TB programs were devolved to primary care, specific public health activities of TB clinics were lost and TB rates tripled.[3]

Hub and spokes

Each jurisdictional TB program must have at least one central dedicated site or 'hub'. This centre maintains high level expertise and oversees clinical governance of the program. It is also the centre for co-ordination with other jurisdictions (e.g. for national data collection, transfer of patients between jurisdictions and international contact tracing), and for interdepartmental communication and cooperation. The DIBP in particular, requires a single point of contact for coordination of migrant screening activity.

In a decentralised model there may be many other sites, or 'spokes', undertaking TB program activities, and these may be done by providers that have a broader range of roles. However, the peripheral providers should be monitored by the central site and have the opportunity to refer to this site for assistance as required. In other circumstances, the expertise and resources will not exist for the treatment of TB patients and contact tracing, so the central site must have pre-planned mechanisms of out-reach to rural and remote centres. In addition, the central site needs to maintain some level of expert clinical care e.g. management of complex and multi-drug-resistant (MDR) cases. In this way there is a clear link between the 'coal face' clinical operations and the public health and higher level coordination of the program.

Activity of a tuberculosis control program

The dedicated TB control program must fulfil several key activities, which are also summarised in the National Strategic Plan.[1] While diagnosis and treatment of TB may occur in multiple undedicated sites, ensuring the maintenance of TB program specific activity is usually the role of the central dedicated site ('hub'). These activities are mainly public health activities. They include:

a. **TB case management**: Active TB is diagnosed and treated in a wide variety of health care settings that are not necessarily dedicated to TB. However, the TB program is responsible for the outcome of **all** TB notifications. While the dedicated TB program may or may not provide direct clinical care to a TB case, it must ensure, as far as possible, that the treatment regimen is appropriate, and the treatment is uninterrupted and satisfactorily completed. This includes direct supervision of treatment (DOT) in cases where it is deemed necessary.

b. **Multi-drug-resistant tuberculosis**: Case management is of pre-eminent importance in the management of MDR TB, which is both difficult to treat and of high level public health importance. Each jurisdiction should have a committee specifically for the purpose of overseeing the clinical care and public health management of MDR TB cases. The committee should consist of the TB director and program manager and other personnel with TB expertise, and should be an integral component of the central program site ('hub'). All MDR TB cases should be managed by a physician experienced in the treatment of drug resistant TB and, while the treatment decisions are ultimately between this physician and the TB patient, the physician should report regularly to the MDR TB committee.

c. **Active surveillance**: involves screening high-risk groups for both active TB and latent TB infection (LTBI). Groups of particular importance include:
   - contacts of active TB cases;

- migrants – both pre– and post migration screening according to DIBP stipulation, as well as specifically targeted screening e.g. refugees, DIBP detainees;
- health care worker;
- Aboriginal and Torres Strait Islander peoples

Part of this surveillance is the management of TB risk, including treatment of LTBI and Bacille Calmette-Guérin vaccination, and surveillance of emerging high-risk groups.

d. Notification database: Notification and enhanced surveillance data needs to be collected, with the timely provision of these data for national and World Health Organization analysis. These data should also inform decision making in local program development, to ensure maintenance of control.

e. Policy: development, implementation and evaluation specific to TB control.

f. Education: of both health care providers to maintain expertise and the community in general, particularly with regard to TB risk management. A program must be conscious of maintaining the professional development of its specialist personnel in the context of a low incidence disease, particularly specialist nurses. The program should provide dedicated training in TB skills and accredit personnel that complete the training and are deemed competent.

g. Research and regional activities: The program should conduct and promote research into public health, basic science and clinical aspects of TB. Support for Australian TB experts working in high prevalence settings in Australia's region is also an important role of a TB program. This work may be research, capacity building or aid, and can benefit the individual doing the work, the Australian TB program and the recipient TB program.

Components of a tuberculosis control program

Specific personnel and infrastructure are required to fulfil the roles of a TB program:

a. Director: a senior doctor or nurse with a high level of training and expertise should be appointed, in a part or full-time capacity, specifically for the leadership of the program. The expertise required is broad-based including clinical, public health, research and teaching. While this individual may, and probably should, be involved in operational activity of the program, this role is strategic rather than managerial (refer to c. Manager). This person should report to a senior level of the relevant department or ministry of health that is responsible for population health.

b. Governance committee: should exist for the development of a strategic plan and policies for the program, and to oversee their implementation. This committee may allow for external appraisal of the performance of the program through its membership, and should report on this.

c. Manager: An individual should oversee the operation of the program. The individual in charge can be a nurse or doctor, but should have specialist training in both the public health and clinical aspects of TB.

d. Specialist nurses: with skills in community and public health nursing, but dedicated to TB case management. They are primarily responsible for the public health roles of the program, specifically drug supply, treatment monitoring, DOT, contact tracing, screening etc.

e. Trained doctors: While many specialist physicians will have clinical expertise relevant to TB, a program needs to have doctors with specific training and an on-going interest in TB medicine, both clinical and public health aspects.

f. Mycobacterial reference laboratory: TB microbiological tests may be undertaken in multiple different sites, but all should refer back to a single reference laboratory. This facility undertakes higher level diagnostic activities (e.g. positive culture species identification and susceptibility testing), confirms results, maintains a nationally-agreed minimum standard through quality control activities, and collects laboratory data for jurisdictional and national analysis. A strong link must exist between this laboratory and the clinical and public health arms of the TB program. Minimum standards for TB reference laboratories, including the expertise required of the director and scientists that do the work, are given in more detail elsewhere.[4]

g. Data manager/ epidemiologist: for the review and analysis of TB notification data and other epidemiological data requirements of the program.

h. Central site: a dedicated space for the 'hub' activities described above.

i. **Drug supply**: A reliable supply of first and second line TB drugs must be maintained, irrespective of the license status of the drugs in Australia.

Program monitoring and evaluation

A TB Control Program should regularly review the effectiveness of the program activity against a set of pre-determined, TB specific, outcomes. This is primarily the work of the Medical Director and senior staff of the central hub, with the assistance of the data manager / epidemiologist. It is, however, done under the review of the Governance Committee. These outcomes should be nationally consistent, and the audit activity should be shared between jurisdictions and other relevant agencies.

Conclusion

Australia has one of the best histories of TB control of any country in the world, and continues to maintain a very low rate of tuberculosis. However, there is potential for the programs that maintain this control to be neglected because the incidence is so low. The components described in this paper are the essential elements of a TB program. If these components are not present, it is likely that TB control in Australia will deteriorate.

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