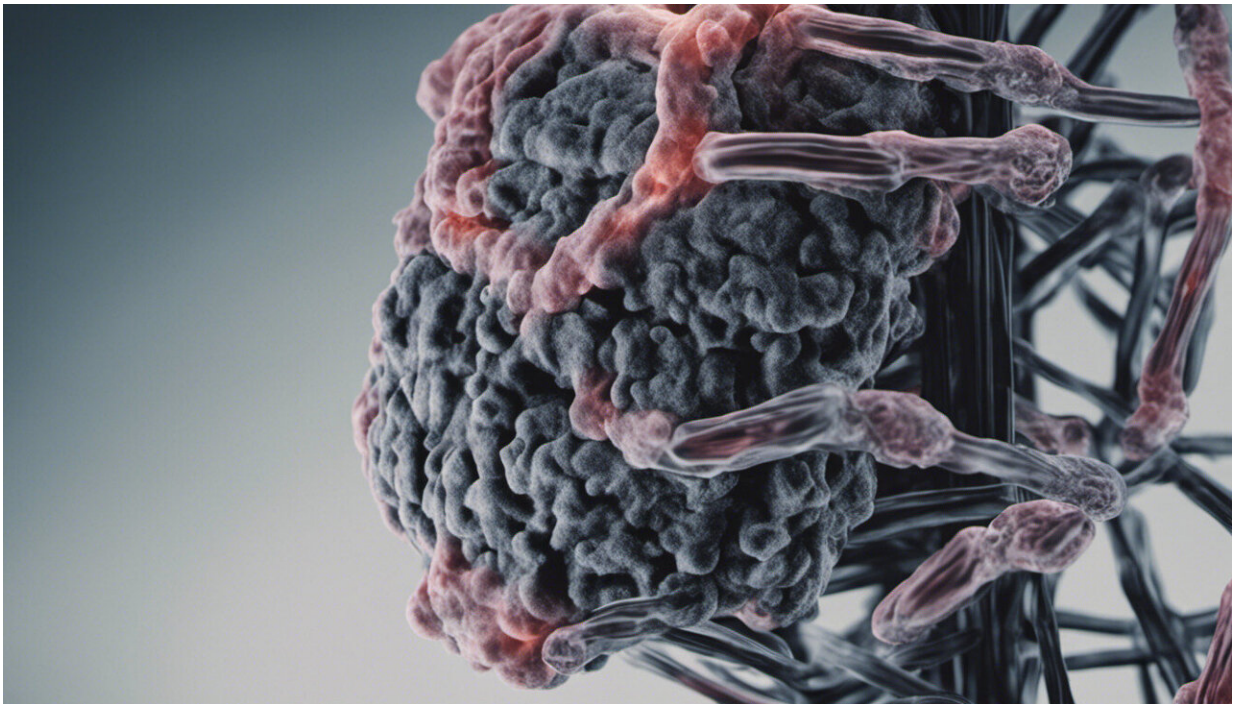


# Tuberculosis isn't just a historical disease. Here's how it spreads and who is at risk

October 16 2023, by Vasso Apostolopoulos and Maja Husaric

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Credit: AI-generated image ([disclaimer](#))

Tuberculosis is often seen as a threat of the past. But it remains a significant concern worldwide, with international travel spreading the disease.

While tuberculosis is rare in Australia, and we no longer routinely

vaccinate against it, clusters of cases in [South Australia over the past 17 months](#) have put [health authorities on alert](#).

So what exactly is tuberculosis, how is it treated and what is Australia doing to prevent its transmission?

## **It starts as a respiratory infection**

Tuberculosis, caused by the bacterium [Mycobacterium tuberculosis](#), starts as a respiratory infection when inhaled.

Once in the lungs, the [immune system](#) responds by forming granulomas, clusters of immune cells (mainly [macrophages](#) and [T cells](#)), in an attempt to contain the infection.

Over time, some granulomas may calcify, with calcium salts accumulating within these structures.

These calcifications are visible on X-rays and indicate latent tuberculosis infection. This means the *Mycobacterium tuberculosis* are in a dormant state, causing no immediate symptoms but posing a potential risk of reactivation if the host's immune defenses weaken.

Reactivation can lead to [active tuberculosis](#), characterized by symptoms such as a persistent cough, fever, [weight loss](#) and fatigue.

Active tuberculosis is contagious, especially when it affects the lungs, as it primarily spreads through respiratory droplets released during coughing or sneezing.

## **Early treatment is key**

Early diagnosis and treatment reduces the infectious period and helps prevent spreading the disease to others. It can also halt the progression of a latent infection to active disease.

Delayed treatment can lead to complications such as lung damage and scarring; damage to the bones, kidneys, lymph nodes and central nervous system; and infection in the brain and spinal cord. Delayed treatment can also be fatal.

Antibiotic [treatment](#), often involving multiple drugs, is [highly effective](#) at [eliminating the bacteria](#).

However, it can be [lengthy](#), lasting several months or more. This can be physically and emotionally challenging for patients, especially as it includes periods of isolation.

Treating tuberculosis can also be a [notable burden](#) on the health system, due to the need for isolation, contact tracing, and specialized care.

## **Tackling drug-resistant bacteria**

The Mycobacterium tuberculosis bacteria can quickly become resistant to antibiotics, so routine treatment includes multiple antibiotics which increases adverse effects.

The emergence of [drug-resistant tuberculosis](#) strains is a major concern because it makes treatment significantly more challenging and costly. Managing drug-resistant tuberculosis often requires extended treatment courses with second-line drugs, which can lead to more severe side effects and demand close monitoring.

Drug-resistant tuberculosis strains are also associated with [higher rates of death](#).

The prolonged and complex treatment regimens increase the risk of treatment non-compliance and failure, posing not only a threat to affected people but also raising concerns about potential community transmission of these drug-resistant strains.

## Who is susceptible to tuberculosis?

[The risk](#) of acquiring tuberculosis is higher among people who live in densely populated housing, those with compromised immune systems and people with poor access to health care.

This includes Indigenous Australians, recent migrants and refugees, people with underlying [health conditions](#) (such as HIV or diabetes), people in corrections facilities, remote and rural communities, the elderly, and people who are homeless, as well as health-care workers.

Children are also at greater risk of tuberculosis, as their immune systems are still developing.

Tuberculosis often presents differently in children, making it challenging to estimate the true global burden. However, the [World Health Organization estimates](#) 11% of the 10.6 million tuberculosis cases worldwide are in children. Some 14% of all tuberculosis-related deaths occur in children under 15 years old.

Common symptoms of pediatric tuberculosis include prolonged cough, wheezing, weight loss, loss of appetite, respiratory symptoms, failure to thrive, swelling of the lymph nodes, fever and night sweats.

Infants are also at [increased risk](#) of:

- disseminated tuberculosis. This spreads throughout the body via the bloodstream and lymphatic system to the liver, spleen, [bone](#)

- [marrow](#), kidneys and brain
- tuberculous meningitis. This is a life-threatening condition where the infection from the lungs has gone to the brain and spinal cord
  - congenital tuberculosis. This is a rare condition where a newborn baby is born with active tuberculosis, transmitted from infected mother to baby.

## What can we do about TB?

Despite Australia's relatively low incidence of tuberculosis, we have a robust control program, targeting efforts to vulnerable populations through culturally sensitive health-care services, public health campaigns, and community engagement.

The Bacille Calmette-Guérin [vaccine](#) provides partial protection, primarily against severe forms of tuberculosis. It's not routinely given in Australia because we're not considered a high-risk country, but it's given in local regions with tuberculosis outbreaks.

Active tuberculosis [must be reported to health authorities](#) in Australia. This is important to prevent spread of tuberculosis in the community.

Testing for active tuberculosis is also a part of the immigration process. Visa applicants aged 11 years and over [must have](#) a chest X-ray for evidence of [active tuberculosis](#).

Timely and effective [tuberculosis](#) control measures help not only in treating individuals but also in preventing further transmission. This reduces the overall impact of the disease on public health and the health-care system.

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