

Nontuberculous Mycobacterial Lung Disease (NTM) – Clinician Factsheet

What are nontuberculous mycobacteria (NTM)?

NTMs are a group of bacteria that live everywhere in the world, particularly in the soil, water and dust. NTMs are related to the bacteria that causes tuberculosis (TB) but NTMs do NOT cause TB. There are more than 140 types of NTMs, but only 20-30 types can make people sick and are able to cause infection in any part of the body. People are regularly exposed to NTMs in their daily life – on their skin, when breathing, or when swallowing. Most people do not get sick because their immune defences keep them healthy. Some people, however, do not clear NTMs and they can get sick.

What is NTM lung disease?

NTM lung disease is a general term that describes a group of lung conditions that are caused by a range of NTMs. The symptoms, severity, treatment, and outcomes of NTM lung disease vary. Although NTM lung disease is uncommon, it is increasingly diagnosed as our understanding of it evolves. When a person gets NTMs in their lungs and cannot clear it then they can have 2 possible outcomes:

1. **Colonisation:** NTMs survive in a person's airway, either temporarily or permanently, but do not cause symptoms and the person is not sick. They are said to be 'colonised' with NTMs and do not have lung disease caused by NTMs and therefore do not need NTM antibiotics. Of those people who have NTMs found in their sputum, 'colonisation' is the most common cause.
2. **Infection:** NTMs can infect some people's lungs and make them sick with NTM lung disease. These people repeatedly, over time, grow the same NTM from their sputum and have progressive symptoms and signs of lung disease on X-ray or scan. These people need a specialist to guide long term treatment with NTM antibiotics.

Who gets NTM lung disease?

NTM lung disease is generally rare, however people in following categories are at higher risk:

- Chronic lung conditions, such as emphysema, bronchiectasis, severe asthma, and cystic fibrosis
- Immunosuppression, including transplant recipients (solid organ and bone marrow), chemotherapy, cancer, HIV infection, and long term steroids. These people are also at increased risk of NTM disease elsewhere in their bodies
- Older people are more commonly affected
- Rarely, people without any of these risk factors can develop NTM lung disease.

What are the symptoms of NTM lung disease?

Symptoms of NTM lung disease usually develop slowly over weeks to months, can vary greatly, and the symptoms may be subtle – particularly if a patient normally experiences chronic symptoms from an underlying lung condition. Eventually, people with NTM lung disease usually report at least some of the following:

- shortness of breath, either new or worsening
- productive cough for more than 3 weeks
- weight loss
- fevers
- night sweats
- coughing up blood
- lethargy/fatigue

How is NTM lung disease diagnosed?

Diagnosing NTM lung disease can be challenging and often takes several months. This is because many patients found to have NTMs in their sputum already have chronic lung disease of other causes such as asthma, chronic obstructive pulmonary disease (COPD), cystic fibrosis and bronchiectasis, making it difficult to differentiate whether new or worsening symptoms are due to progression of the pre-existing lung disease, or due to something new such as NTM lung disease. Additionally, NTMs often colonise damaged lungs so finding NTM in the sputum of people with damaged lungs or chronic lung disease is often seen. Antibiotic treatment is reserved only for NTM *disease*, whereas for NTM *colonisation*, antibiotics have no benefit and risk causing harm.

3 criteria must be satisfied to diagnose NTM lung disease:

1. A patient should report new or worsening symptoms over time, and
2. Multiple sputum samples, taken several weeks apart, or a sample from a bronchoscopy test, should consistently grow the same species of NTM bacteria, and
3. Imaging of the lung, either on e.g. X-ray or CT scan, should demonstrate progressive abnormalities known to be associated with NTM lung disease.

What is the treatment for NTM lung disease?

NTM lung disease requires prolonged treatment that often lasts over 1 year. It is usually treated with a combination of 3 to 4 different NTM antibiotics. The specific choice of antibiotics will depend on the type of NTM and individual patient factors. Most antibiotics are prescribed as tablets, taken daily. While on NTM treatment, if symptoms allow, patients may return to their regular activities, including work.

Throughout NTM lung disease treatment, patients are reviewed regularly at a specialist clinic. Regular blood tests and chest imaging are done to check treatment efficacy and safety. Sputum samples are regularly collected to look for evidence of persistent or clearing of the NTM infection. Treatment is usually continued until a patient's symptoms have improved and sputum samples have stopped growing NTM bacteria for at least 12 months. The goal of treatment is to cure the infection to reduce progression of lung disease and

potentially heal lung damage, although scarring often remains. After successful treatment, relapse or reinfection is seen in up to half of people treated, but it may not require treatment a second time, depending on severity.

Can NTM spread person to person?

No. NTM lung disease is not transmitted from person to person. NTM infection is usually acquired from the environment.

Is there any way to prevent NTM lung disease?

NTMs are found in almost all natural environments, so there are limited viable ways to prevent exposure to NTMs. It is impossible to sterilise the environment. Quitting smoking is important. Limiting exposure to steroid-containing inhaled medication can reduce risk. People at higher risk of NTM lung disease could consider wearing gloves and masks while gardening, including to prevent other types of infection. There are no vaccines against NTM disease.

For more information

Clinicians can access the [NTM Guidelines for Health Professionals in the Northern Territory](#), and additionally can contact the TB Clinics via the [Centre for Disease Control](#) in your region.

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Darwin (Top End Region)	(08) 8922 8044 1800 008 002
Katherine (Big Rivers Region)	(08) 8973 9049
Tennant Creek (Central Australia Region)	(08) 8962 4259
Alice Springs (Central Australia Region)	(08) 8951 7540
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