

Tuberculosis

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Tuberculosis (TB) is an infection caused by bacteria that usually affects the lungs. With careful treatment it can be cured.

TB is the single biggest cause of illness and death in people with HIV around the world. In the UK it is one of the two most common AIDS-defining illnesses.

TB is caused by a bacterium (very small bacteria) called *Mycobacterium tuberculosis* (*M.Tb*). It can be transmitted when someone with TB in their lungs coughs, expelling the bacteria.

The TB germ sometimes causes illness soon after the initial exposure, but usually a healthy immune system can prevent the TB germ from causing disease. If someone is ill because of TB, this is often called active TB.

When TB remains in the lungs but is kept under control by the immune system, this is called latent TB. However, the organisms in the lungs may cause disease years later – this is called reactivation TB.

People with HIV are at greater risk of becoming ill with TB when first exposed to the bacteria, and the weakening of the immune system makes them much more likely to develop reactivation TB.

TB most often affects the lungs, causing symptoms such as a cough lasting for more than three weeks, loss of appetite, weight loss, tiredness, night sweats and fever. The bacteria may spread to other parts of the body, causing other symptoms. TB is a potentially life-threatening condition.

Active TB can cause a large increase in HIV viral load, which usually decreases again once the TB is properly treated.

Preventing TB

For HIV-negative people there is a live vaccine against TB known as the BCG vaccine, although its effectiveness appears to vary in different populations. It should not be given to people with HIV, because there is a small chance that it might cause a TB-like illness.

It is important to avoid close contact with people who have active TB until they are non-infectious. If you think you have been exposed to TB, you should see your doctor as soon as possible.

If you are HIV-positive and have latent TB infection, the British HIV Association (BHIVA) guidelines recommend a course of the anti-TB drug isoniazid for six months or a combination of the anti-TB drugs rifampicin and isoniazid for three months. This preventive treatment has been shown to reduce the risk that you will develop active tuberculosis.

Tests for TB

There are several ways to test for TB. If you have symptoms, your doctor may arrange for you to have a chest X-ray and for a sample of phlegm to be examined in a laboratory.

If you don't have symptoms, there are several different types of test that can check for latent TB. One of these is a skin test called a PPD test (or Mantoux test) and a positive test result means that you have been exposed to TB. However, some people with HIV do not respond to skin tests such as the PPD test, because of immune damage. If you have had the BCG immunisation against TB you may get a positive result with the PPD test even though you have not been exposed to TB.

A new, more reliable and quick blood test has been developed called an interferon gamma release assay (IGRA). This is the test that the current British HIV Association (BHIVA) guidelines recommend for people with HIV who need to be tested for latent TB.

Treating TB

Active TB is treated with a combination of antibiotics. Successful treatment usually requires at least six months of therapy, without missing doses. Like

HIV treatment, it is very important that TB treatment is taken as prescribed. The recommended treatment in the UK will usually include the anti-TB drugs rifampicin and isoniazid.

Like HIV, the TB organisms can develop resistance to drugs, and some strains are resistant to several different drugs. These strains can cause very serious disease called multidrug-resistant tuberculosis (MDR-TB), and can be transmitted to others. MDR-TB can usually be treated successfully after identifying which drugs the organisms are still susceptible to. More worryingly, cases are now being seen of TB that is resistant not only to first-line drugs, but also to many of the second-line drugs as well. This is called extensively drug-resistant TB (XDR-TB) and many of the cases seen so far have been in people with HIV. Simple infection control measures, like opening windows, can reduce the risks of TB transmission, even XDR-TB.

A lot of care is needed if using TB and HIV treatment at the same time.

Firstly, some anti-HIV drugs can interact with anti-TB drugs.

Secondly, receiving HIV treatment when you have active TB can cause what's called an immune reconstitution inflammatory syndrome (IRIS). This can make you ill and involve unpleasant symptoms.

To avoid this happening, your doctor may recommend that you complete your TB treatment before starting your HIV treatment, if your CD4 cell count is above 350.

If your CD4 cell count is between 350 and 100, you are recommended to take two months of TB treatment before starting HIV treatment.

If your CD4 cell count is below 100 you should start HIV treatment as soon as possible after starting anti-TB drugs.

Doctors sometimes recommend treatment using something called DOTS – Directly Observed Therapy, Short-course. This means a healthcare worker would be present every time a dose is due, to ensure none are missed and to maximise its effects.