**Case study: TB**

*Tuberculosis (TB) is a bacterial disease caused by Mycobacterium tuberculosis*

Centuries ago, TB was known as ‘consumption’ and was thought to be incurable. Today, TB is treatable with antibiotics, but over a million people with the disease still die every year, mostly in poorer countries.

Not everyone who gets infected with *M. tuberculosis* develops symptoms, which include coughing and weight loss. Worldwide, as many as 1 in 3 people may carry the bacterium. The bacteria are phagocytosed in the lungs by immune cells called macrophages. In most people, tuberculosis infection remains latent, kept in check by T cells. But in people with weakened immune systems, such as caused by HIV, it can reactivate to cause post-primary TB, usually affecting the lungs.

If the bacterium that causes TB gets into the brain through the bloodstream it can cause an infection called tuberculous meningitis. The live Bacille Calmette–Guérin (BCG) vaccine can prevent this in children, but it does not protect against lung disease in adolescents or adults. The BCG vaccination is no longer routinely given to teenagers in the UK because cases there are so rare, but it is used in the UK for at-risk babies.

Blood tests for TB measure the levels of an immune molecule called interferon-gamma, which is produced by an infected person’s white blood cells when they are mixed with antigens from *M. tuberculosis*. Treatment for TB involves taking a combination of different drugs for several months, but this regimen must be strictly adhered to or the bacterium can become drug-resistant and harder to treat. Drug-resistant forms of TB are a serious health concern. (See more on MDR-TB.)

**REFERENCES**

- NHS Choices on BCG
- World Health Organization on TB

**ABOUT THIS RESOURCE**

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