**Tuberculosis (TB)**

*Research provided by the Kansas Association of Local Health Departments*

*What is It?*

TB is caused by a bacterium that is spread through the air and on surfaces such as toilets and toothbrushes. Like Mono, you can acquire the bacteria through sharing toothbrushes or sharing food. When an infected person breathes in the TB bacteria, it usually settles in the lungs and begins to grow and move to other organs including the kidneys, spine, or brain. TB is only infectious when it is in the lungs or throat. Once it moves into other parts of the body, it is no longer infectious. Most who get TB have latent infections, but it can become infectious if the bacteria grow into TB disease.

*Latent Infection*

TB bacteria can live in an infected person’s body without making someone sick. Typically, in latent infections, when someone breathes in the bacteria, the body can fight it off. Like Chickenpox, the bacteria will continue to remain in the body and the individual can develop symptoms later. However, all infected individuals (latent or otherwise) will test positive for TB using a skin or blood tests.

<https://www.cdc.gov/tb/video/TB-course-video-CDC.mp4>

*History*

TB was first recorded in the Middle Ages as scrofula, which is a disease that affects cervical lymph nodes. TB was also known as “the King’s Evil” in France and England, and it was believed that a royal touch could heal the disease. The disease continued to spread throughout the world as Robert Koch isolated the bacteria and called it “Koch Bacillus”. Further treatments, including testing and vaccination, were developed through Koch’s research.

*Diagnosis and Symptoms*

TB has general flu like symptoms. However, it also includes pain in chest and coughing up blood with severe weight loss. You can only spread TB to others when you have an active infection. For diagnosis purposes, there are two tests to determine TB in people. TB skin tests work by injecting fluid into the skin that detects the bacteria in the body. The fluid will produce a reaction on the arm with those with the bacteria. TB blood tests work in a similar way but indicate TB bacteria in the blood.

*Treatment*

Because latent infections of TB are common, it is up to individual and their doctor to determine a treatment plan. For most latent infections, treatment is not necessary. For TB disease, there are two courses of treatment that include antibiotics and anti-tuberculosis drugs. [You can view the full list here](https://www.cdc.gov/tb/topic/treatment/tbdisease.htm).

*Vaccination*

In 1921, the first TB vaccine was given to a human subject by French scientists Albert Calmette and Camille Guerin. The vaccine was an oral vaccine, often called the BCG after Calmette and Guerin’s names. The BCG was developed out of a bacterium that causes disease in cows.

*Impact and Vaccination Rates*

The TB vaccine was endorsed by the League of Nations in 1928. The vaccine began to be used as an effective prevention tool for TB in 1927 and is still the most common delivery of the vaccine. The BCG is routinely given to children worldwide, however, the TB vaccine is not routinely used in the United States. It is important to note that the BCG does not prevent from primary TB infection but prevents severe symptoms.

*Effectiveness and the United States*

As you know, the ACIP determines the vaccine schedule for children in the United States. The BCG is not considered an effective measure against TB prevention, as it typically works for children with active infections. Due to this, and the lack of major outbreaks in the United States, the ACIP has chosen to forgo recommendations for the TB vaccine. However, researchers are continuing to work to develop a more effective TB vaccine here in the United States and throughout the world.

*Personal Connection from Your Neighborhood Millennial*

If I’m being honest, this is probably my favorite vaccination story to date. [After I graduated high school, a foreign exchange student came to school with an active TB infection.](https://fox4kc.com/news/olathe-northwest-high-school-student-in-isolation-during-treatment-for-active-tb/) Over 315 students and teachers had to be tested for a disease that many had never even heard of. Thankfully, only 28 students and teachers tested positive for TB and the majority had latent infections. I was thankful to have graduated but knew many students who now carry TB.

*What We Can Learn*

There is a lot we can learn about vaccine effectiveness from TB. For instance, the vaccine is not currently endorsed by the ACIP so most children in the United States are still at risk for developing TB. However, the ACIP does work hard to only promote vaccines that are effective and promote a healthy life. We can see this trend in both TB and with the Pfizer BioNTech under 5 COVID-19 vaccine.

Sources and Further Reading:

<https://fox4kc.com/news/olathe-northwest-high-school-student-in-isolation-during-treatment-for-active-tb/>

<https://medicine.wustl.edu/news/study-helps-explain-tuberculosis-vaccines-ineffective/>

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5432783/>

<https://www.historyofvaccines.org/content/blog/july-18-90-years-tuberculosis-vaccination>

<https://www.cdc.gov/tb/publications/factsheets/prevention/bcg.htm>

<https://www.cdc.gov/tb/topic/treatment/tbdisease.htm>

<https://www.cdc.gov/tb/topic/basics/tbinfectiondisease.htm>

<https://www.cdc.gov/tb/topic/basics/howtbspreads.htm>