



# Tuberculosis

## Why in News

Centenary celebration is being observed for the **Bacille Calmette-Guérin (BCG)** vaccine, which is presently the **sole vaccine** available for the prevention of **Tuberculosis (TB)**.

## Key Points

### ▪ About:

- TB is **caused by a bacterium called Mycobacterium tuberculosis**, belonging to the Mycobacteriaceae family consisting of about 200 members.
  - Some of Mycobacteria cause diseases like TB and Leprosy in humans and others infect a wide range of animals.
- In humans, TB **most commonly affects the lungs** (pulmonary TB), but it can also affect other organs (extra-pulmonary TB).
- TB is a **very ancient disease** and has been documented to have **existed in Egypt as early as 3000 BC**.
- TB is a **treatable and curable disease**.

### ▪ Transmission:

- TB is **spread from person to person through the air**. When people with lung TB cough, sneeze or spit, they propel the TB germs into the air.

### ▪ Symptoms:

- Common symptoms of active lung TB are cough with sputum and blood at times, chest pains, weakness, weight loss, fever and night sweats.

### ▪ Global Impact of TB:

- In 2019, 87% of new TB cases occurred in the 30 high TB burden countries.
- Eight countries accounted for **two thirds of the new TB cases**:
  - India, Indonesia, China, Philippines, Pakistan, Nigeria, Bangladesh and South Africa.
  - **India reported 1.8 million TB cases** between January and December 2020 as compared to 2.4 million the year before.
- In 2019, **MDR-TB remained a public health crisis** and a health security threat.
  - **MultiDrug Resistant Tuberculosis (MDR-TB)** is a strain of TB that cannot be treated with the two most powerful first-line treatment anti-TB drugs. **Extensively Drug Resistant Tuberculosis (XDR-TB)** is a form of TB caused by bacteria that are resistant to several of the most effective anti-TB drugs.

### ▪ BCG Vaccine:

- BCG was developed by two Frenchmen, Albert Calmette and Camille Guerin, **by modifying a strain of Mycobacterium bovis** (that causes TB in cattle). It was **first used in humans in 1921**.

- In India, BCG was **first introduced in a limited scale in 1948** and became **a part of the National TB Control Programme in 1962**.
- In addition to its primary use as a vaccine against TB, it **protects against respiratory and bacterial infections of the newborns**, and other mycobacterial diseases like **Leprosy and Buruli's ulcer**.
- It is also used as **an immunotherapy agent** in cancer of the urinary bladder and malignant melanoma.
- **One intriguing fact** about BCG is that it works well in some geographic locations and not so well in others. Generally, **the farther a country is from the equator, the higher is the efficiency**.
  - It has a high efficacy in the UK, Norway, Sweden and Denmark; and little or no efficacy in countries on or near the equator like India, Kenya and Malawi, where the burden of TB is higher.

▪ **Related Initiatives:**

◦ **Global Efforts:**

- The [\*\*WHO \(World Health Organisation\)\*\*](#) has launched a joint initiative “**Find. Treat. All. #EndTB**” with the [\*\*Global Fund\*\*](#) and [\*\*Stop TB Partnership\*\*](#).
- WHO also releases the [\*\*Global Tuberculosis Report\*\*](#).

◦ **India's Efforts:**

- [\*\*National Strategic Plan \(NSP\)\*\*](#) for Tuberculosis Elimination (2017-2025), [\*\*The Nikshay Ecosystem\*\*](#) (National TB information system), [\*\*Nikshay Poshan Yojana \(NPY\*\*](#)- financial support), [\*\*TB Harega Desh Jeetega Campaign\*\*](#).
- Currently, two vaccines [\*\*VPM \(Vaccine Projekt Management\) 1002\*\*](#) and [\*\*MIP \(Mycobacterium Indicus Pranii\)\*\*](#) have been developed and identified for TB, and are under [\*\*Phase-3 clinical trial\*\*](#).

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