



## Drug Resistant Typhoid

**For Prelims:** Typhoid and strains

**For Mains:** Health

### Why in News?

Bacteria that cause **typhoid fever** are becoming more and more resistant to some of the most widely used antibiotics, according to the study published in The Lancet Microbe journal.

- Typhoid fever causes 11 million infections and **more than 1,00,000 deaths per year**. South Asia accounts for **70% of the global disease burden**.

### What is Typhoid?

- **About:**
  - Typhoid fever is a life-threatening **systemic infection caused by the bacterium *Salmonella enterica* serovar Typhi** (commonly known as Salmonella Typhi) **carried only by humans** – no other animal carrier has been found.
- **Transmission:**
  - Typhoid fever is **transmitted by the faecal-oral route**, through ingestion of contaminated food or water.
  - Without treatment, about **one person in 20 who recovers from typhoid becomes a 'carrier'**. Despite having no symptoms of illness, they have bacteria in their faeces and urine, and can infect others for a period of about three months (sometimes up to one year).
  - **Travellers are at high risk of developing typhoid fever** in many typhoid endemic countries. This includes parts of **Asia (especially India, Pakistan, and Bangladesh), Africa, the Caribbean, Central and South America, and the Middle East**.
- **Symptoms:**
  - Symptoms and signs of typhoid range from mild to severe, can last for about one month without treatment, and may include: fever, fatigue or tiredness, malaise (general feeling of unwellness), sore throat, persistent cough, headache.
- **Prevention:**
  - **Vaccine:**
    - The typhoid vaccine is available as an oral medication or a one-off injection:
      - **Capsule:** For adults and children over the age of 6 years, this is a **live, attenuated vaccine**.
      - **Shot:** For adults and children over the age of 2 years, this is an inactivated vaccine a person needs to get 2 weeks before travel.
      - The **typhoid vaccine is only 50-80% effective**.
- **Treatment:**
  - Typhoid fever requires prompt treatment with **antibiotics**.
- **Drug Resistance:**
  - The effectiveness of **antibiotics** for typhoid fever is threatened by the emergence of **drug**

### resistant strains.

- The existence of **resistant strains of bacteria means antibiotics or drugs designed to kill them no longer work**, allowing them to spread rapidly, posing a risk to public health.
- Since 2000, **multi-drug-resistant (MDR)** typhoid has declined steadily in Bangladesh and India, remained low in Nepal, and increased slightly in Pakistan.
  - However, these are **being replaced by strains resistant to other antibiotics**, according to the study conducted by researchers from **Stanford University, Christian Medical College Vellore** and other institutions.
  - **Multi-drug resistance (MDR)** is defined as lack of susceptibility to at least one agent in three or more chemical classes of antibiotic.
  - Strains were classified as **MDR** if they had **genes giving resistance to antibiotics ampicillin, chloramphenicol, and trimethoprim/sulfamethoxazole.**
- A new type of drug resistance is observed in strains termed **XDR typhoid. Strains resistant to the antibiotic (azithromycin) have been seen in India, Bangladesh, Nepal and Pakistan.**
  - **Extensive Drug Resistance (XDR)** typhoid is caused by a strain that is **resistant to at least five antibiotic classes recommended for treating typhoid fever.**

### Way Forward

- An **integrative approach and a comprehensive policy framework are required** to be in place for the prevention, control and elimination of typhoid fever.
- **India's Health Ministry** is considering introducing **new typhoid conjugate vaccines** into the national immunization program. **Two WHO prequalified vaccines have been developed in India (by Bharat Biotech and Biological E).**

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