Snakebites in India

Why in news?

Recently Indian Institute of Science (IISc) have developed a synthetic human antibody to neutralise lethal snakebite toxin.

Status of snakebite in India
• Snakebites are a significant public health concern in India, as the country is home to a variety of venomous snake species. • India accounts for *more than half of all snakebite deaths* in the world with an average of 58,000 deaths from snakebites annually. • According to a comprehensive study in 2020, ***eight states*** – Bihar, Jharkhand, Madhya Pradesh, Odisha, Uttar Pradesh, undivided Andhra Pradesh (which includes Telangana), Rajasthan and Gujarat – carried the most burden of snakebite deaths. • It accounts for ***more than 70% of deaths*** during the period between 2001 and 2014. • The chance of an Indian dying from snakebite is about 1 in 250. • **World Health Organisation**- It states that around 90% of snakebites in India are caused by the 'big four' among the crawlers - common krait, Indian cobra, Russell's viper and saw scaled viper. • WHO recognised snakebite as a ***neglected tropical disease*** in 2017 and in 2019, set a target to halve the global burden of snakebite by 2030. • Meeting the global target is possible only if India performs better, considering more than half of all snakebite deaths are reported from India,

What are the steps taken by India to address the snakebite?

- **National programme for prevention and control of snakebites**- It was launched by the Ministry of Health and Family Welfare in 2021, with the aim of *reducing snakebite deaths* and disabilities *by 50% by 2030*.

- **ICMR task force**- Indian Council of Medical Research (ICMR) set up a task force in 2022 to conduct a comprehensive study on the epidemiology, clinical management, and socio-economic impact of snakebites in India.
- **Nationwide survey-** The survey by ICMR covers 14 states that account for 90% of the snakebite cases in the country and is expected to provide reliable data on the burden and distribution of snakebites, the effectiveness and availability of antivenoms, and the gaps and challenges in the health system.
- **Indian polyvalent antivenom**- It is the scientifically proven antidote against the toxic effects of the ‘big four’ snakes, it is not effective against other venomous snakes, such as the hump-nosed pit viper, the king cobra, and the sea snakes, which also cause significant morbidity and mortality.

- **Synthetic antivenom**- IISc have developed a human-derived antibody that can neutralise a neurotoxin produced by elapid snakes, such as cobras and mambas, they can bind to 99 variants of the toxin from different elapid snakes around the world, suggesting a broad spectrum of protection.
- **Community health workers** - Accredited Social Health Activists (ASHAs), are trained volunteers who play a vital role in preventing and managing snakebites, by educating the people about snake identification, first aid, and referral to the nearest health facility.
- **Nodal officers**- They are designated officials in each state who are responsible for coordinating and monitoring the implementation of the national programme for snakebite prevention and control.
- **MOEFCC guidelines on human-wildlife conflict**- The Ministry of Environment, Forests and Climate Change (MOEFCC) released *10-species-specific guidelines* in 2021 to address human-wildlife conflict, where snake is featured as an animal in conflict.
- The guidelines provide standard operating procedures for the prevention, mitigation, and compensation of snakebite incidents.

What are the challenges in addressing snakebite in India?

- **Lack of standard-** The Central Drug Standards and Control Organisation (CDSCO) is the national regulatory authority for drugs and cosmetics in India, but it does not have a prescribed standard for potency for antivenom.
- **Limited insurance coverage-** Pradhan Mantri Jan Arogya Yojana (PM-JAY) scheme covers only the snakebite that requires ventilator support which are less than 10% of the total cases.

PM-JAY is a national public health insurance scheme that aims to provide free access to health insurance coverage for low-income families.

- **Venomous snakes**- India is the home to around 300-odd species of snakes, out of which 52 are venomous, but all their poisons are different which makes it a challenge to produce Antivenom.
- **Lack of single window clearance**- Anti Snake Venom manufactures requires a series of forest department permissions, which puts constraints in the manufacturers.
- **Lack of awareness**-Insufficient education and awareness about snakebite first aid and proper medical care can result in delays in seeking treatment.
- **Cultural beliefs**- The myths and misconceptions surrounding snakebites may influence people to resort to traditional remedies rather than seeking professional medical assistance.
- **Geographical barriers**- Rural areas often face challenges in terms of geographical remoteness, making it difficult for individuals to access healthcare facilities promptly.
- **Infrastructural deficit-** Insufficient healthcare infrastructure, including a lack of well-equipped medical facilities and trained healthcare professionals, can impede the timely treatment of snakebites.

What can be done?

- **Awareness measures-** Educating communities about snake behavior, safety precautions, and the importance of snake conservation can minimize conflicts.
- **Multi-stakeholder approach**- Effective collaboration among government agencies, NGOs, researchers, and local communities can lead to effective conflict mitigation.
- **Enhance research-** Systematic research and data-driven approaches are necessary to understand snake behaviour, distribution, and habitat.
- **Snake-venom collection**- Proper protocols must be addressed to ensure the well-being of both humans and snakes.
- **Capacity development**- Building competencies among professionals and practitioners is essential for effective conflict resolution.
- **Widen insurance scheme**- PM-JAY must be extended to cover all snakebite case, regardless of the severity, to reduce the financial burden on the patients and their families.

References

1. Scroll- More than half of world's snakebite death in India
2. Hindustan Times- Synthetic antivenom

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