# The national action plan for prevention and control of snakebite envenoming in India (NAPSE): Its role, opportunities and challenges

The National Action Plan for Prevention and Control of Snakebite Envenoming in India (NAPSE), launched in March 2024, is a crucial and timely initiative aimed at addressing one of the country's most persistent public health challenges. Snakebites in India are responsible for nearly 50% of global snakebite deaths, with an estimated 50,000 fatalities annually out of 3–4 million snakebite cases.[1] The goal of NAPSE is to halve snakebite-related deaths and disabilities by 2030 through a comprehensive and multifaceted approach. This editorial delves into the key features, strategies, and implications of NAPSE, highlighting its potential to transform snakebite management in India.

## Background

India's burden of snakebite envenoming is staggering. The country is home to numerous venomous snakes, including the 'big four'—common krait, Indian cobra, Russell's viper, and saw-scaled viper—that cause the majority of bites.[2] Despite the high incidence, many cases remain unreported, and the actual burden is likely much higher. The lack of timely medical intervention, inadequate healthcare infrastructure, and limited access to anti-snake venom (ASV) are significant factors contributing to the high mortality rate.[3] The need for a coordinated national strategy to address this issue has been recognized for decades, and NAPSE is a response to this urgent public health need.

## Objectives of NAPSE

NAPSE aims to reduce snakebite-related deaths and disabilities by 50% by 2030.[4] The plan provides a broad framework for the management, prevention, and control of snakebite envenoming across the country. Key objectives include:

1. **Reducing Morbidity and Mortality:** Ensuring timely treatment and reducing complications from snakebites.
2. **Increasing Awareness:** Educating communities about snakebite prevention and first aid measures.
3. **Improving Access to Treatment:** Enhancing the availability and distribution of ASV.
4. **Strengthening Healthcare Infrastructure:** Building capacity among healthcare providers and improving emergency response mechanisms.
5. **Enhancing Surveillance:** Accurate data collection and monitoring to inform policy and interventions.

## Strategic actions

**Human Health Component:**

1. **Availability of ASV:** Ensuring that all healthcare facilities are equipped with sufficient stocks of ASV. This involves regular audits and restocking processes to avoid shortages, particularly in rural and remote areas.
2. **Emergency Services:** Strengthening emergency care services at district hospitals and community health centres, including the provision of ambulances equipped to handle snakebite cases.
3. **Training Healthcare Providers:** Upskilling medical officers and healthcare staff on the management of snakebite cases, including the administration of ASV and monitoring of patients.

**Wildlife Health Component:**

1. **Education and Awareness:** Conducting campaigns to raise awareness about snake ecology, the importance of conserving snake habitats, and safe practices to avoid snakebites.
2. **Research and Monitoring:** Supporting research initiatives to understand snake behaviour, venom properties, and the development of more effective antivenoms.
3. **Venom Collection and Relocation:** Establishing protocols for the safe collection of snake venom and the relocation of snakes from human habitats to reduce encounters.

**Animal and Agriculture Component:**

1. **Preventing Snakebites in Livestock:** Educating farmers and livestock owners on measures to protect animals from snakebites, which can have a significant economic impact.
2. **Community Engagement:** Mobilizing communities to participate in snakebite prevention initiatives, including habitat management and prompt reporting of snakebites.

## Implementation mechanisms

NAPSE is implemented through a multi-tiered approach involving central, state, and district-level coordination. States and Union Territories (UTs) are required to develop localized action plans tailored to their specific needs and snakebite epidemiology. Key implementation strategies include:

1. **Designation of Nodal Officers:** States will identify and appoint State and District Nodal Officers responsible for coordinating snakebite prevention and control activities.
2. **Intersectoral Coordination:** Collaborating with various stakeholders, including health, wildlife, agriculture, and

community organizations, to ensure a holistic approach to snakebite management.

3. **Public Awareness Campaigns:** Utilizing mass media, local outreach, and community workshops to disseminate information on snakebite prevention and first aid measure.

## Monitoring and Evaluation

A robust surveillance and monitoring system is integral to the success of NAPSE. Accurate data collection on snakebite incidents, treatment outcomes, and ASV distribution will enable timely interventions and policy adjustments. The plan includes the development of a centralized database to track snakebite cases and monitor the effectiveness of interventions.

## Community involvement and education

Education and community involvement are critical to the success of NAPSE. The plan emphasizes the need for public education campaigns to raise awareness about the dangers of snakebites and the importance of seeking immediate medical attention. Educational materials, including booklets, posters, and videos, have been developed to disseminate information on snakebite prevention and management.

## Innovations and technology

The introduction of a snakebite helpline (15400), piloted in five states, is a notable innovation under NAPSE. This helpline provides immediate assistance, guidance, and support to snakebite victims, ensuring prompt access to medical. Additionally, integrating snakebite management into the National One Health Programme for Prevention and Control of Zoonoses will enhance surveillance and response to zoonotic diseases.

## Challenges and future directions

While NAPSE is a significant step forward, several challenges remain. Ensuring the consistent availability of ASV, particularly in remote areas, remains a logistical hurdle. Training sufficient healthcare providers and maintaining high standards of care are ongoing challenges. Additionally, the accurate reporting of snakebite incidents and outcomes is critical to understanding and addressing the full scope of the problem.

To sustain the momentum of NAPSE, continuous monitoring, adaptive management, and stakeholder engagement are essential. Future directions include expanding the helpline services nationwide, enhancing research on snakebite treatment, and integrating snakebite management into broader public health strategies.

## Conclusion

The National Action Plan for Prevention and Control of Snakebite Envenoming in India marks a pivotal moment in the country's public health strategy. By adopting a One Health approach, strengthening healthcare infrastructure, and fostering community engagement, NAPSE aims to significantly reduce the burden of snakebites. The plan's success will depend on robust implementation, intersectoral coordination, and sustained efforts to educate and empower communities across India. If effectively executed, NAPSE has the potential to save thousands of lives and transform snakebite management in India, setting a global precedent for addressing this neglected tropical disease.

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## Conflicts of interest

There are no conflicts of interest.

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