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Kala-Azar Control in West Bengal: Where Do We Stand Today?

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Abstract

Visceral leishmaniasis (VL), commonly referred to as kala-azar, is a vector-borne parasitic disease caused by *Leishmania donovani* and transmitted by the bite of infected *Phlebotomus argentipes* sandflies. India, particularly the eastern states of Bihar, Jharkhand, Uttar Pradesh, and West Bengal, factually contributed the majority of the global burden of this neglected tropical disease. Considerable progress has been achieved towards elimination, and India attained the national elimination target—defined as fewer than one case per 10,000 population at the block level—in 2023. Nevertheless, sporadic outbreaks and newly reported cases from several districts of West Bengal indicate that, although transmission has been substantially reduced, the disease has not been completely eradicated. This short review highlights the current epidemiological status of kala-azar in West Bengal, factors contributing to its re-emergence, and the remaining public health challenges in sustaining elimination.

Keywords: Visceral leishmaniasis, kala-azar, West Bengal, *Leishmania donovani*, elimination, resurgence

Introduction

Kala-azar, or visceral leishmaniasis (VL), is a potentially fatal vector-borne parasitic disease endemic to the Indian subcontinent. It is caused by *Leishmania donovani* and transmitted to humans through the bite of the female *Phlebotomus argentipes* sandfly. Clinically, VL is characterized by prolonged fever, weight loss, hepatosplenomegaly, and anaemia, and it is almost invariably fatal if left untreated (1, 2). Post-kala-azar dermal leishmaniasis (PKDL) is a well-recognized sequela of VL that develops months to years after apparent clinical cure and manifests as macular, papular, or nodular skin lesions. PKDL patients act as an important reservoir of parasites and play a critical role in sustaining transmission (3). Kala-azar-HIV coinfected people have high chance of developing the full-blown clinical disease, and high relapse and mortality rates (4).

During the 1990s and early 2000s, India accounted for more than half of the global VL burden. In 2005, an estimated 165.4 million people were at risk of leishmaniasis in India, with 34,803 reported VL cases across 633 public health centre blocks (5). The disease predominantly affected impoverished rural populations in Bihar, Jharkhand, Uttar Pradesh, and West Bengal, where poverty, malnutrition, population mobility, and inadequate vector-control measures facilitated persistent transmission (6).

In response to this public health challenge, the Government of India, through the National Vector Borne Disease Control Programme (NVBDCP), later restructured as the National Center for Vector Borne Diseases Control (NCVBDC), initiated kala-azar elimination efforts in collaboration with the World Health Organization (WHO) (6, 7). The Kala-azar Elimination Programme was formally launched in 2005

and subsequently intensified during the 2010s and early 2020s. The primary objective was to reduce VL incidence to less than one case per 10,000 population at the block level (6).

National Strategy for VL Elimination in India

The National Kala-azar Elimination Programme (NKEP), implemented under NVBDCP/NCVBDC, outlined comprehensive strategies encompassing diagnosis, treatment, vector control, surveillance, and capacity building to achieve elimination (5, 6).

- Diagnosis and early case detection: Rapid immunochromatographic rK39 tests were introduced to enable early diagnosis at peripheral health facilities. Active case detection in endemic villages supplemented passive surveillance, significantly reducing diagnostic delays (8, 9).
- Treatment policies: Treatment protocols evolved from prolonged and toxic antimonial therapies to safer and more effective regimens, including single-dose liposomal amphotericin B. Oral miltefosine and combination therapies were recommended in specific clinical settings. Free diagnosis and treatment through government facilities improved access and treatment adherence (10).
- Vector control: Indoor residual spraying (IRS) remained the primary vector-control strategy. Improvements in spray quality, insecticide choice, and operational supervision substantially reduced sandfly densities in endemic areas (8).

Epidemiological Trends in India and West Bengal

West Bengal, one of India's four traditionally endemic states, historically contributed a significant proportion of the national VL burden, with focal high-incidence blocks reported from multiple districts. Approximately 11 districts—namely Malda, Murshidabad, Nadia, Birbhum, Uttar Dinajpur, Dakshin Dinajpur, Darjeeling, Kalimpong, and parts of North 24 Parganas—were recognized as major hotspots (11, 12).

Following implementation of elimination strategies, national programme data and WHO reports documented a dramatic decline in VL cases over the past two decades, although focal persistence remains a concern. Nationally, reported cases declined from over 44,000 in 2007 to fewer than 1,000 in 2022, representing a reduction of approximately 98.7% (1,13). Despite these achievements, sporadic cases continue to be detected. In 2022, around 65 VL cases were reported from 11 districts of West Bengal (12). Similarly, national media reports confirmed a steep decline in VL cases from tens of thousands in the early 1990s to fewer than 600 cases in 2023, accompanied by a marked reduction in mortality (13).

Sustained vector-control and case-management activities have been instrumental in reducing transmission. According to NVBDCP data, India reported fewer than one kala-azar case per 10,000 population across all endemic blocks for the first time in 2023, marking a key milestone toward elimination as a public health problem (14, 15).

According to recent reports from the national dashboard up to November 2025 indicate a total of 395 VL cases nationwide, of which 25 were reported from West Bengal. During the same period, 333 PKDL cases were reported nationally, including 61 from West Bengal (15). Several districts in the state remain within historically endemic zones and continue to report occasional cases during active surveillance, reflecting persistent low-level transmission. VL-related mortality has remained minimal in recent years due to improved access to diagnostics and effective treatment.

Factors Contributing to Re-emergence

Multiple interrelated factors contribute to the occasional reappearance of kala-azar in West Bengal:

- PKDL as a reservoir: PKDL patients constitute an important source of infection. Detection and treatment are challenging because lesions are often painless, leading to delayed care-seeking. Inadequate management of PKDL facilitates parasite persistence (3, 16).
- Asymptomatic infections: Asymptomatic VL cases may act as hidden reservoirs. Conventional serological tests detect exposure but cannot reliably differentiate recent from past infection, complicating surveillance efforts (17, 18).
- Incomplete vector control: Although IRS has substantially reduced sandfly populations, irregular or discontinued spraying in low-risk areas may permit vector resurgence.
- Human migration and cross-border movement: West Bengal shares borders with Bihar, Jharkhand, and Bangladesh, where VL transmission persists. Migration of asymptomatic carriers can reintroduce the parasite into controlled areas.
- Insecticide resistance: Prolonged use of DDT and pyrethroids has resulted in emerging resistance in *Phlebotomus argentipes*, reducing IRS effectiveness (19).
- Surveillance gaps: Limited awareness and weak health infrastructure in remote villages may lead to underreporting or misdiagnosis of early cases.

Public Health Measures and Progress

The Kala-azar Elimination Programme emphasizes five core strategies (6):

- Early case detection and complete treatment
- Integrated vector management
- Effective surveillance and reporting
- Capacity building of healthcare personnel
- Intersectoral coordination and community participation

In West Bengal, free diagnosis and treatment using liposomal amphotericin B and miltefosine are available through government facilities. Accredited Social Health Activists (ASHAs), field workers, and block health teams play a pivotal role in early detection and follow-up. Entomological surveillance and the use of insecticide-treated nets have been promoted to sustain low transmission levels (18).

Current Scenario: Eradicated or Revisited?

Although the elimination target has been achieved across all endemic blocks, kala-azar cannot yet be considered eradicated. Elimination as a public health problem reflects successful control rather than complete interruption of transmission.

The detection of isolated cases between 2022 and 2024 suggests that low-level transmission persists in certain foci. The continued presence of PKDL cases (15), incomplete treatment adherence, and possible unidentified reservoirs may sustain the parasite cycle. Consequently, West Bengal appears to be in a "post-elimination vigilance phase," where sustained monitoring is essential to prevent resurgence.

Challenges Ahead

Key challenges include (21):

- Maintaining community awareness in low-incidence settings

- Ensuring uninterrupted vector control and entomological surveillance
- Strengthening PKDL detection and treatment follow-up
- Enhancing molecular diagnostic capacity for early case identification
- Sustaining inter-state and cross-border coordination

Conclusion

Kala-azar control in West Bengal stands at a critical juncture between sustained elimination and potential resurgence. The state has achieved remarkable success in reducing VL incidence to negligible levels through effective public health interventions and intersectoral collaboration. However, sporadic cases reported in recent years underscore that elimination does not equate to eradication.

Continued vigilance through robust surveillance, prompt treatment of VL and PKDL cases, sustained vector control, and strong cross-border cooperation is essential to prevent kala-azar from re-emerging in West Bengal. Long-term political commitment, community participation, and health-system strengthening remain vital to securing a kala-azar–free future for both the state and the country.

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