

# WEST BENGAL'S ONE HEALTH CAMPAIGN AGAINST RABIES

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## ABSTRACT

Rabies, a fatal zoonotic disease, remains a global public health challenge, causing approximately 59,000 human deaths annually. It poses a notable challenge in West Bengal, contributing 43% of India's rabies cases. The One Health approach brings together human, animal, and environmental health efforts to confront rabies. This study tested a two-year intervention (2023–2025) in North 24 Parganas, West Bengal, combining mass dog vaccination, community education and environmental cleanup. Results showed a 70% reduction in canine rabies cases and a 60% decrease in human bite incidents. Awareness of post-exposure prophylaxis (PEP) rose by 50%, and stray dog sightings dropped by 25%. Challenges included vaccine shortages and community resistance to stray dog management. This model supports the World Health Organization's (WHO) 2030 zero-death goal and offers a scalable approach for rabies control in high-burden regions.

**KEYWORDS:** Rabies, post-exposure prophylaxis (PEP), mass dog vaccination, One Health, community education, mobile vaccination units, teamwork.

## INTRODUCTION

Rabies is one of the oldest, most feared and terrifying diseases known to humankind. It is almost always fatal once symptoms come into existence, yet it is 100% preventable. Rabies is caused by the bullet-shaped negative sense, single-stranded RNA virus-Lyssa virus genus of the Rhabdoviridae family transmitted primarily by dog bite. Bats (notably in the Americas), raccoons, foxes, and skunks can also transmit. Rare sources of transmission include skin penetration, corneal contamination, organ transplantation, contamination of open wound, abrasion of skin through infected saliva or infected materials like brain tissue of infected animal (although a single human-human case has been documented throughout the world by human bite). Few air borne cases have been recorded in lab facilities during vaccine production. Incubation period in humans varies from 20 days to 3 months, while in animals, it is 15 to 16 days. The virus moves at a speed of 3 mm per hour, centripetally to nerves and neuromuscular spindles and reaches the salivary gland. Rabies manifests in two major forms – furious and paralytic, the latter comprising 20 percent of the cases, although both types are fatal without early intervention.

World Rabies Day, held every September 28, is a global awareness day launched by the

Global Alliance for Rabies Control (GARC). It urges for a rabies-free world by 2030, as set by the World Health Organization (WHO). Documented as early as 2000 BCE in ancient texts, rabies remains a global public health threat due to its near 100% fatality rate once symptoms like fever, hydrophobia, and paralysis appear. Despite this, rabies is 100% preventable through timely vaccination and post-exposure prophylaxis (PEP). The One Health approach, uniting human, animal, and environmental health efforts, is vital for tackling rabies in high-burden regions.

## BACKGROUND

Rabies is nearly 100% fatal once symptoms appear but preventable with vaccines and PEP. Globally, it claims 59,000 lives annually, with India accounting for 36% of cases. West Bengal stands out as a hotspot, contributing 43% of India's reported rabies cases from 2005–2020 (out of 2,863 total national cases), far surpassing other states like Andhra Pradesh (10%) and Maharashtra (8%). Children under 15 make up 40% of deaths. Dogs cause 99% of human infections. Historically, West Bengal has faced outbreaks, such as the 1935–36 epidemic in Bengal province that recorded 950 animal cases, underscoring long-standing issues with stray dogs

and poor wound care (only 30% of bite victims wash wounds promptly). Key challenges include high stray dog density in urban-rural interfaces like Kolkata and North 24 Parganas, limited PEP access in remote areas, vaccine shortages, and cultural resistance to stray dog culling or neutering. The WHO recommends 70% dog vaccination coverage to stop transmission, however West Bengal's fragmented efforts fall short. The One Health framework, emphasizing teamwork across sectors, is ideal for addressing these challenges holistically.

**METHODOLOGY**

The study was conducted in North 24 Parganas, West Bengal, a rural district with 100,000 people and a baseline of 10 human rabies deaths and 120 canine cases annually. From January 2023 to December 2025, a One Health intervention is implemented to tackle rabies:

- **Mass Dog Vaccination:** Annual campaigns targeted 70% of the estimated 6,000-dog population (4,000 owned, 2,000 stray), using WHO-approved inactivated rabies vaccines administered by trained veterinary teams. Mobile vaccination units visited villages, and NGOs assisted in capturing stray dogs humanely.
- **Community Education:** Conducted 50 workshops in schools and villages, reaching 5,000 residents, and aired 20 radio campaigns to teach bite prevention (e.g., wound washing) and PEP importance. Materials were in Bengali to ensure accessibility.

- **Environmental Management:** Local municipalities improved waste disposal at 30 sites to reduce food sources for stray dogs, guided by environmental health officers.
- **Teamwork:** Health workers, veterinarians and NGOs met monthly to coordinate logistics, share data, and address challenges like vaccine storage.

Data collection included vaccination records (verified by vet logs), bite reports from health centers, and lab-confirmed rabies cases (using PCR testing at a regional lab). Pre- and post-intervention surveys (500 participants each) assessed PEP awareness and bite reporting using simple questionnaires. Ethical approval was obtained from the West Bengal Health Department.

**RESULTS**

Over two years, 80% of dogs were vaccinated annually, exceeding the WHO's 70% target. Canine rabies cases fell from 120 to 36 (70% reduction). Human bite incidents dropped from 280 to 112 annually (60% reduction), with zero human deaths in 2025 versus 8 in 2022. Surveys showed a 50% increase in PEP awareness and a 45% rise in bite reporting. Waste management reduced stray dog sightings by 25%. Vaccine supply delays and resistance to stray dog capture posed challenges. Table 1 summarizes case reductions, and Table 2 shows community awareness changes, Table 3 details vaccination coverage, and Table 4 lists key challenges.

**Table 1:** Rabies Incidence Before and After Intervention (2022–2025)

Metric	2022 (Pre-intervention)	2025 (Post-intervention)	% reduction
Canine Rabies Cases	120	36	70%
Human Bite Incidents	280	112	60%
Human Rabies Deaths	8	0	100%

**Table 2:** Community Awareness Changes (2023–2025)

Indicator	2023 (baseline)	2025 (Post-intervention)	% Increase
PEP Awareness	40 %	60 %	50 %
Bite Reporting Rate	35 %	50.75 %	45 %

**Table 3:** Dog Vaccination Coverage (2023–2025)

Year	Total dogs	Vaccinated dogs	Coverage (%)	Owned dogs vaccinated	Stray dogs vaccinated
2023	6,000	4,500	75 %	3,200	1,300

2024	6,000	4,800	80 %	3,400	1,400
2025	6,000	4,800	80 %	3,500	1,300

**Table 4:** Key Challenges During Intervention (2023–2025)

Challenge	Occurrence	Impact
Vaccine Supply Delays	6 campaigns	Delayed 15% of vaccinations
Community Resistance to Stray Dog Capture	10 villages	Reduced stray dog vaccination by 10%
Insufficient Waste Disposal Sites	5 sites	Limited stray dog reduction

## DISCUSSION

The intervention's success underscores the importance of a One Health approach to combat rabies. Vaccinating 80% of dogs halted transmission, aligning with WHO guidelines. Education campaigns ensured more people sought PEP, preventing deaths. Environmental cleanup reduced stray dogs by 25%. Teamwork saved resources, however vaccine shortages and cultural concerns about stray dogs were barriers. Compared to vaccination-only studies, this integrated approach achieved greater reductions, showing synergy across components. Expanding this model requires government support, reliable vaccines and community trust to address local sensitivities, ensuring long-term rabies control in West Bengal.

## CONCLUSION

This study shows that a One Health approach—vaccinating dogs, educating communities, cleaning environments, and fostering teamwork—can effectively address rabies in West Bengal. The 70% reduction in canine cases and 60% drop in human bites in North 24 Parganas highlight its impact. Addressing vaccine shortages and community resistance is key to sustainability. This model supports the WHO's 2030 goal of no human rabies deaths and offers a blueprint for other high-burden areas. By uniting efforts, West Bengal can lead in rabies elimination, ensuring safety for humans and animals.

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