SHORT ARTICLE

Zoo-WIN" – Winning over Zoonosis: A Digital Leap Towards Zoonosis prevention in India

Krishna Jasani, Krupal Joshi
Community and Family Medicine, All India Institute of Medical Sciences (AIIMS), Rajkot, Gujarat

CORRESPONDING AUTHOR
Dr Krupal Joshi, Associate Professor, Community and Family Medicine, All India Institute of Medical Sciences (AIIMS), Rajkot, Gujarat 360110
Email: dr.krupaljoshi@gmail.com

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Abstract
Zoo-WIN is a pioneering digital platform launched by the Government of India to address the critical public health threats of rabies and snakebite envenomation. Developed by NCDC with UNDP support, It facilitates real-time monitoring of anti-rabies vaccine (ARV) and anti-snake venom (ASV) inventory, promoting fair and timely distribution, particularly in areas with limited healthcare access. Aligned with NAPRE and NAPSE, Zoo-WIN strengthens surveillance, supports data-driven planning, empowers primary care facilities, and fosters One Health collaboration. Its transformative potential lies in bridging urban-rural disparities, enhancing public awareness, and optimizing response to zoonotic threats. Zoo-WIN marks a significant leap in digital health innovation for zoonosis prevention in India.

Keywords
Rabies Vaccines; Rabies; Antivenins; Public Health; Digital Health; Snake Bites; One Health; Zoonoses; Government; Health Services Accessibility

Introduction
India carries a disproportionate burden of zoonotic diseases, particularly rabies and snakebite envenomation, which remain significant public health challenges. Rabies is responsible for around 59,000 human deaths each year worldwide, accounting for nearly 36% of all global deaths from this disease, with dog bites being the primary cause of transmission. (1,2) Concurrently, the country witnesses an estimated 3 to 4 million snakebite incidents each year, leading to nearly 50,000 deaths, representing half of the global snakebite mortality burden. (3)

In response to pressing public health challenges, the Government of India has launched ZooWIN—a cutting-edge digital platform designed to streamline and improve the availability and distribution of anti-rabies vaccines (ARV) and anti-snake venom (ASV) nationwide. It is Developed by the National Centre for Disease Control (NCDC) with technical support from the United Nations Development Programme (UNDP), ZooWIN is designed as a real-time vaccine stock monitoring system. Inspired by successful digital health interventions such as CoWIN and U-WIN, this platform streamlines vaccine supply chains to ensure equitable distribution,

particularly in remote and underserved regions. Its integration with the Electronic Vaccine Intelligence Network (eVIN) enhances its ability to track stock levels and prevent supply shortages. (4)

The pilot rollout of ZooWIN commenced in five regions—Delhi, Madhya Pradesh, Assam, Puducherry, and Andhra Pradesh—with training programs initiated for state and district health professionals. Additionally, a dedicated helpline (15400) has been established to provide immediate information and guidance on rabies and snakebite management (5)

ZooWIN aligns with two pivotal national strategic frameworks:

1. National Action Plan for Dog-Mediated Rabies Elimination (NAPRE) – Launched in 2021, NAPRE represents India's strategic commitment to the global target of "Zero by 30," aiming to end human fatalities caused by dog-mediated rabies by the year 2030. The plan adopts a comprehensive One Health framework, integrating efforts across human health, animal health, urban governance, and local administrative systems. Its key goals include achieving 75% vaccination coverage among the dog population by 2025 and reducing human rabies-related deaths by 75% by 2030. (6)
2. National Action Plan for Prevention and Control of Snakebite Envenoming (NAPSE) – Endorsed during a national conclave hosted by NCDC in October 2023, NAPSE aims to reduce snakebite-related mortality and morbidity by 50% by 2030 through enhanced intersectoral collaboration and improved accessibility to ASV (7)

The Transformational Potential of ZooWIN

The ZooWIN platform is a ground breaking initiative that holds the potential to revolutionize rabies and snakebite management in India. Key areas of impact include:

- Bridging Urban-Rural Disparities in Vaccine Access Access to ARV and ASV remains inconsistent, particularly in rural and tribal areas with limited healthcare infrastructure. ZooWIN enables real-time tracking of vaccine inventories, ensuring timely replenishment and equitable distribution. By optimizing post-exposure prophylaxis (PEP) delivery and ASV administration, the platform can significantly reduce mortality rates in affected regions.
- Strengthening Surveillance and Data-Driven Public Health Planning Beyond being a stock-monitoring tool, ZooWIN has the potential to function as a comprehensive surveillance platform. By collecting real-time data on animal bite incidents, envenomation cases, treatment timelines, and vaccine usage, the platform can generate predictive analytics and disease burden heatmaps. These insights can guide policymakers in targeting high-risk regions, optimizing vaccine supply chains, and directing public health interventions such as mass dog vaccination campaigns and snakebite prevention initiatives.
- Empowering Primary and Community Health Centers By integrating peripheral health facilities into a dynamic supply chain, ZooWIN ensures that primary health centers (PHCs) and community health centers (CHCs) can access critical vaccines without delays. The platform enables health workers to place vaccine orders, track nearby availability, and report stock shortages, fostering a responsive and accountable healthcare system.
- Enhancing Public Awareness and Timely Healthcare-Seeking Behavior A crucial feature of ZooWIN is its potential to serve as a public-facing resource. Future phases of the platform could include functionalities that allow individuals to locate the nearest health facility stocked with ARV and ASV, thereby reducing time-to-treatment—a critical factor in rabies and snakebite survival. Integration with SMS alerts or app-based notifications could further guide at-risk populations toward immediate and appropriate medical care.
- Enhancing Intersectoral Coordination through the One Health Approach: ZooWIN's integrated data system serves as a valuable resource for unifying animal and human health surveillance, thereby advancing One Health initiatives. For example, animal bite incident reports and

stray dog density data can be synchronized with municipal records, veterinary services, and animal husbandry departments. This cross-sectoral approach is aligned with global best practices in zoonotic disease prevention and control.

Conclusion

The launch of ZooWIN represents a transformative step in India's battle against rabies and snakebite fatalities. Given the persistent challenges of limited awareness, low dog vaccination rates, and inadequate access to PEP, this digital innovation provides a renewed opportunity to improve equitable access to life-saving interventions. Expanding ZooWIN's nationwide coverage and integrating it with grassroots health systems will be pivotal to its success. Furthermore, linking it with One Health surveillance platforms will bolster India's capacity to manage zoonotic threats holistically.

As India progresses toward its 2030 public health targets, the implementation of ZooWIN exemplifies the convergence of policy, technology, and public health innovation. It is an adaptive model with global applicability, reinforcing the crucial role of digital health solutions in tackling emerging infectious and zoonotic diseases.

Authors Contribution

Both authors have contributed equally.

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Conflict of Interest

There are no conflicts of interest.

Declaration Of Generative Ai And Ai Assisted Technologies In The Writing Process

The authors haven't used any generative AI/AI assisted technologies in the writing process.

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