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World Rabies Day – 28th September 2026

Popular Article

Use of Artificial Intelligence and Digital Tools for Rabies Control in India: To achieve Goal of Zero by 2030

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Abstract:

Every year September 28th is observed as world Rabies Day, which itself tell the whole world about the importance of this deadly disease and this disease remains one of the most important zoonotic diseases in India. There is an urgent need to use AI (Artificial Intelligence) for real time monitoring for prevention and elimination of the disease in the world and particularly in India. **India has adopted the National Action Plan for Dog-Mediated Rabies Elimination (NAPRE) by 2030**, integrating human-health and animal-health interventions by one health imitative. Due to rapid increase of Digital technologies and Artificial Intelligence (AI) and available man power in this sector can strengthen this programme by real time monitoring improving surveillance, dog vaccination monitoring, bite-case management, risk mapping, public awareness, laboratory networking and programme evaluation. This will also create job avenues of young IT professionals. India already has important digital components under the National Rabies Control Programme (NRCP), including online information resources, vaccination-schedule tools, a rabies helpline, geolocation of health facilities, ticket tracking and real-time dashboards. The next step is to integrate these systems with animal-health and local-government data using a One Health framework.

Introduction:

Rabies is a fatal viral zoonotic disease and cause about more than fifty thousand human deaths annually worldwide mostly In Asia and Africa. Roughly 97% of humane Rabies case result from Dog bite that is almost invariably fatal after the development of clinical signs, but it is highly preventable through timely wound management, post-exposure prophylaxis (PEP) and effective control of rabies in dogs.

The Government of India plans to progressively achieve zero human deaths from dog-mediated rabies by 2030. The NRCP focuses on appropriate management of animal-bite victims, strengthening

surveillance and laboratory diagnosis, training healthcare personnel, and community awareness.

Rabies Free India:

However, effective rabies elimination requires intensive vaccination programme to stray dogs, population control by Animal Birth Control Programme and more than treating bite victims. To achieve this goal all stakeholder has to work in one direction like systematic vaccination and monitoring of the dog population, rapid identification of suspected cases, reliable surveillance and strong coordination among veterinary, medical, municipal officers at community level. Here the role of AI and use of modern technology comes in Picture.

This is where AI and digital technologies can become important to achieve the Zero 30 goal.

Role of AI in Rabies Surveillance:

To handle large quantity of epidemiological data now high-tech software and AI tools are available to get accurate prediction. AI can analyse large quantities of epidemiological along with geographical data and identify patterns of disease incidence and that may be very informative and useful to prevention and eradication of disease.

A dedicated AI-based rabies surveillance platform could integrate:

- Human animal-bite reports by field level
- Dog vaccination records at micro level
- Suspected animal rabies cases
- Laboratory-confirmed cases
- Dog population estimates in the particular geographical
- Geographic location
- Climate and environmental variables
- Animal movement
- Data of Availability Anti-rabies vaccine (ARV) and rabies immunoglobulin (RIG),
- Veterinary and human-health interaction
- AI algorithms could then identify high-risk geographical clusters and support targeted vaccination and surveillance.

For Example, For a particular urban area shows that:

- High dog density by population and high birth rate due to uncontrolled breeding + low vaccination coverage due to lack of awareness, fund availability and trained man power to catch the dogs so there's is + increased dog-bite reports + previous suspected rabies cases.

The AI System could automatically classify the area as a priority zone for:

- dog vaccination → surveillance → community education → availability of PEP → veterinary investigation and other support as per need from local body or government.
- This will help us to make decision what to do and how to achieve the goal.
- AI should support—not replace—veterinary and public-health decision-making

Digital Mapping of Dog Vaccination:

Digital mapping is a need of hour to monitor every step with accountability with real time data. One

of the most useful applications would be a GPS-enabled digital dog-vaccination system at micro field level.

- Each vaccinated dog could be recorded with:
- Unique ID/QR code
- Photograph
- Sex and approximate age
- Location
- Vaccination date
- Vaccine batch number
- Dog identification → GPS location → vaccination → QR/ID registration → digital certificate → central database → GIS dashboard
- Vaccinator details
- Booster/revaccination status
- A dashboard could display vaccination coverage geographically.
- Suggested digital workflow

This would help municipalities and veterinary authorities identify areas where vaccination coverage is inadequate or need more aggressive work to reach every dog.

Our country current policy framework places emphasis on mass dog vaccination and dog-population management through animal birth control programme by local government bodies like veterinary hospital and Colleges.

AI-Based Dog Population and Risk Mapping:

Traditional dog-population surveys are time-consuming and expensive and need more resources of humane. Computer vision and AI-assisted image analysis could potentially help estimate dog populations from:

- Photographs
- CCTV camera at field level
- Field-survey photographs
- Human population density
- Previous bite incidents by dogs by records
- Dog vaccination coverage
- Rabies laboratory results
- The output could be a Rabies Risk Map.
- Dog population nearby Schools, Colleges, Markets Slums and high-density settlements

Such a map could help authorities prioritize limited resources and wisely use of fund allocated for that purpose.

Digital Management of Animal-Bite Cases:

A mobile application could provide a digital record for every animal-bite patient. The system could record:

- Date and time of bite
- Location of exposure
- Animal species
- Type and site of exposure
- Wound category
- Wound-washing status
- Rabies Post-Exposure Prophylaxis (PEP) initiation

- Vaccine doses administered
- RIG administration was indicated
- Follow-up dates
- Outcome
- India's NRCP already provides digital tools for vaccination-schedule information and RIG-dose calculation, while its rabies helpline uses cloud-based ticketing, geolocation and data analytics.
- Rabies Free India
- Automated SMS/WhatsApp/app reminders could reduce missed PEP appointments.

AI Chatbots for Community Awareness:

Chatbots are becoming very popular among any industry for support and information. A multilingual AI chatbot could answer basic rabies-prevention questions in Hindi and regional languages.

For example:

"Dog bite hua hai—kya karna chahiye?"

The system could immediately provide the correct first-aid message, advise urgent medical assessment and identify nearby appropriate health facilities.

The NRCP already provides multilingual IEC material, including resources in Hindi and several Indian languages.

- Rabies Free India
- AI could extend this approach through:
- WhatsApp chatbot
- Voice-based helpline
- SMS alerts
- Interactive voice response
- School education modules
- Farmer/village awareness platforms

However, AI-generated medical advice should remain protocol-based and supervised by qualified veterinarian and health expert rather than allowing unrestricted diagnosis.

Digital Monitoring of Rabies Vaccine Supply:

Digital inventory management can help prevent shortages of:

- Human rabies vaccine
- Rabies immunoglobulin
- Animal rabies vaccines
- A central dashboard could show:
Stock available → consumption rate → expiry → geographical requirement → projected shortage.
- The NRCP currently publishes guidance concerning prevention of shortages of rabies vaccine and human/anti-rabies serum.
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- AI-based forecasting could further estimate future demand from historical bite patterns, seasonal trends and local outbreaks.

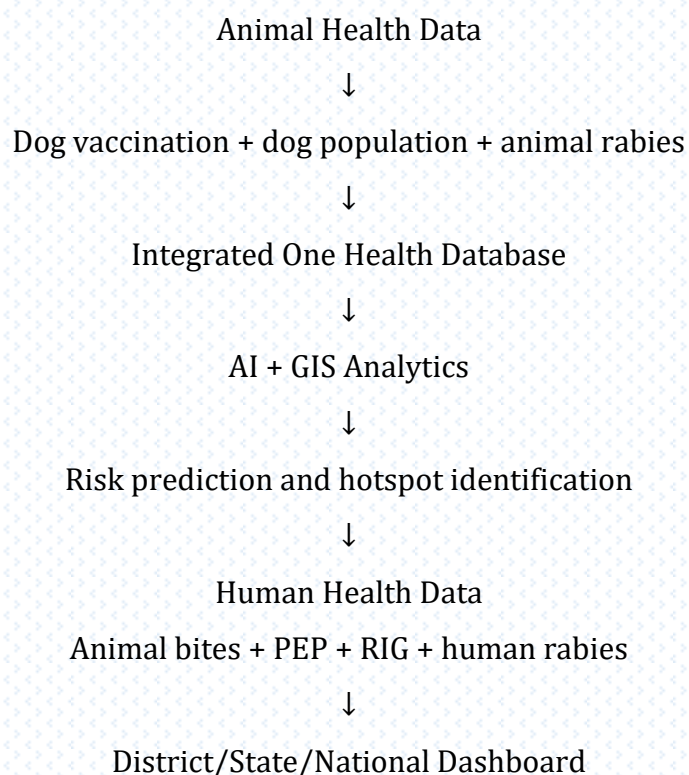
Digital Laboratory Surveillance:

- Veterinary diagnostic laboratories can contribute substantially to rabies elimination.
- A digital laboratory information system could connect:
Veterinary hospital → sample collection → laboratory → test result → district surveillance → state dashboard → national surveillance.
- Important fields could include:
 - Species
 - Age
 - Sex
 - Location
 - Clinical history
 - Bite history
 - Sample type
 - Laboratory test
 - Result

The NRCP currently provides lists of laboratories for human and animal rabies diagnosis and standardized surveillance/reporting resources. Rabies Free India

One Health Digital Platform:

The most important future development would be an integrated One Health Rabies Digital Platform.

Proposed Architecture:**This would improve coordination between:**

- Veterinary departments
- Health departments
- Municipal corporations
- Panchayats
- Veterinary colleges
- Medical colleges

- Diagnostic laboratories
- NGOs
- Animal welfare organisations
- NAPRE itself is structured around collaboration between the human-health and animal-health sectors, making a One Health digital approach particularly relevant.
- Community volunteers
- Animal Husbandry & Dairying

Proposed Village-Level Digital Rabies Control Model:

For rural India, technology must remain simple and affordable. A "Digital Rabies Control Village" could use ASHA/health worker + veterinary worker + trained community volunteer with a mobile application for:

- Dog-bite reporting
- GPS location
- Dog vaccination
- Suspected rabies reporting
- Referral to health facilities
- Follow-up of PEP
- Community awareness

Even where internet connectivity is poor, the application should permit offline data entry and later synchronization.

Conclusion:

Artificial Intelligence and digital technologies have the potential to monitor the whole programme and to transform rabies control in India from a predominantly reactive approach to a proactive, data-driven and predictive One Health system.

The combination of GPS, mobile applications, GIS, cloud databases, digital vaccination records, AI analytics, telehealth, laboratory information systems and multilingual communication can strengthen every stage of rabies control—from preventing infection in dogs to ensuring timely PEP for bite victims. Mandatory vaccination of Animals is the effective in preventing and control of rabies. Mass vaccination campaign may be expensive but in the health aspect of the people it is very essential for Indian management condition to achieve Zero 30.