Udalguri Achieves 80% Vaccination Coverage among Free-Roaming Dogs

IIT Guwahati-led initiative combines digital dog enumeration, QR-linked identification and community participation to advance rabies control

Udalguri, Assam: A field initiative led by the DBT/Wellcome Trust India Alliance project team at the Indian Institute of Technology Guwahati has achieved more than 80% vaccination coverage among the estimated free-roaming dog population of the Udalguri municipal area.

The milestone represents an important step towards reducing the risk of dog-mediated rabies and demonstrates how digital technology, systematic field planning and community participation can strengthen mass dog vaccination programmes.

Maintaining vaccination coverage of at least 70% among dogs is widely regarded as essential for interrupting rabies transmission. Reaching this threshold can be particularly challenging in areas with large free-roaming dog populations, as individual dogs may be difficult to catch, may move between locations, and may be encountered repeatedly without a reliable method of confirming their vaccination status.

To address these challenges, the IIT Guwahati project team first conducted a systematic enumeration of free-roaming dogs throughout the Udalguri municipal area. Four survey routes covering the township were surveyed over five consecutive days during the early morning hours, when dogs are generally most visible and active.

For every dog encountered, the team recorded its GPS location, sex, approximate age, reproductive status, visible health condition and distinguishing physical features. A photograph was also taken to support individual identification. The information was subsequently compiled into a digital capture-history and demographic database, enabling repeat sightings to be recognised and duplicate counting to be minimised.

The enumeration estimated the free-roaming dog population of the Udalguri municipal area to be approximately 691 ± 41 dogs, with the upper limit of the estimate reaching 732 dogs. This provided the programme with a scientifically derived denominator for planning the vaccination campaign and objectively measuring the coverage achieved.

Using the upper estimate of 732 dogs as a conservative planning denominator, the field teams vaccinated and QR-identified 592 dogs, corresponding to approximately 80.9% vaccination coverage of the estimated population.

The achievement required 32 days of field operations, undertaken despite periods of heavy rainfall and extreme heat. The teams worked primarily between 5:00 and 9:00 in the morning and between 4:00 and 6:00 in the afternoon. These periods were selected because free- roaming dogs were more active and accessible, while the teams could avoid working during the hottest part of the day.

A distinctive feature of the initiative was the use of an integrated digital system for enumerating dogs, re-identifying individual animals and recording their vaccination status. The system was developed in-house through a collaborative effort involving the JH CreIndia Foundation and information-technology experts from the HNB Group.

Each vaccinated dog was provided with a QR-based identification linked to its individual record in the digital database. The integrated system combines the dog's photograph, identifying characteristics, location and vaccination details. It enables field teams to confirm whether an animal has already been vaccinated, identify dogs missed during earlier rounds, plan targeted follow-up visits and maintain a transparent and verifiable record of vaccination coverage.

The database and QR-linked identification system will also support future revaccination campaigns and can potentially be integrated with dog-population management, sterilisation and rabies-surveillance activities.

Community participation became increasingly important as the campaign progressed. Although public awareness of the initiative was limited during the initial days, residents gradually became active partners in the vaccination effort. Community members helped the field teams locate dogs missed during previous visits, identify animals that had

moved from their usual locations and approach dogs familiar to local residents.

This support was particularly valuable during the final phase of the campaign, when locating the remaining unvaccinated dogs became progressively more challenging. The growing involvement of residents improved the reach of the programme and fostered a sense of shared responsibility for protecting both human and animal health.

The Udalguri experience demonstrates that high vaccination coverage among free-roaming dogs can be achieved when population enumeration precedes vaccination, individual animals can be reliably re-identified, field operations are adapted to local conditions, and communities participate as active partners.

The initiative forms part of a broader effort to generate practical evidence for the elimination of dog-mediated rabies through coordinated One Health interventions. Continued monitoring, annual revaccination, disease surveillance and sustained community participation will be essential to preserve the gains achieved and help establish Udalguri as a model for locally implemented rabies control.