



# State Action Plan for Dog mediated Rabies Elimination in Karnataka



Dept of Health and Family Welfare  
Govt of Karnataka

First edition February 2026



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**Message from Sri Dinesh Gundu Rao,  
Hon'ble Minister, Department of Health and Family Welfare**

The journey of rabies control in Karnataka reflects coordinated action and commitment towards strengthening Public Health system. The State of Karnataka was strengthened under the National Rabies Control Programme (NRCP) with the approval of dedicated budgetary support for implementation during the financial year 2020–21. A landmark step was achieved in 2022, when **Rabies was made a notifiable disease in Karnataka**, ensuring systematic reporting.

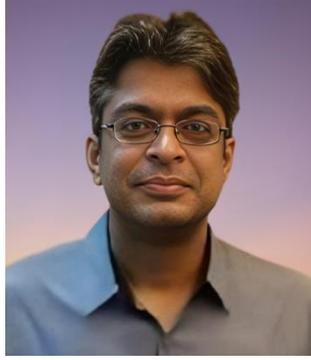
The Anti rabies Vaccine and Rabies Immunoglobulin is made available in all PHC, CHC, Taluk and District Hospitals free of cost to all. Further strengthening patient emergency care, in exercise of the powers conferred under Section 11B of the Karnataka Private Medical Establishments Act, 2007 (Karnataka Act 21 of 2007), the Government of Karnataka has amended the Schedule to the said Act under the heading “Patients Charter – Patients’ Rights.” The amendment mandates that every Private Medical Establishment shall administer necessary first aid and undertake life-saving or stabilizing emergency measures in all cases of dog or animal bite victims presenting to the facility, without insisting on advance payment. Such establishments shall be eligible to claim reimbursement from the State Government through the District Registration and Grievance Authority at the rates admissible under the SAST scheme.

Rabies is a disease that can and must be eliminated. Our state is firmly committed to achieving this goal, but we recognize that it cannot be accomplished by the health sector alone. Success requires a unified approach, bringing together the strengths of Medical Education, Animal husbandry, local governance, Education, and public health systems, with active and meaningful participation from our communities.

Every life lost to rabies is preventable, and every step we take towards its elimination saves lives and strengthens the well-being of our people. By working hand in hand, government departments, professionals and communities can create an environment where rabies is no longer a threat.

I call upon all stakeholders to strengthen their collaboration in this important journey. Together, we can work towards making Karnataka a healthier and rabies-free state.

**Sri Dinesh Gundu Rao**



**Message from Sri. Harsh Gupta**

**Principal Secretary to Government, Department of Health & Family Welfare**

Rabies remains one of the most fatal yet entirely preventable zoonotic diseases. Every human death due to dog-mediated rabies is a tragic and avoidable loss. With the national and global commitment to achieve “Zero Human Deaths due to Dog-Mediated Rabies by 2030,” the State is working towards elimination of rabies from all sectors through a coordinated approach.

In alignment with the directions of the Honourable Supreme Court of India, Suo Moto Writ Petition (CIVIL) NO(S). 5 OF 2025, Karnataka state has mandated that all Government and Private Hospitals maintain a mandatory stock of Anti-Rabies Vaccines and Rabies Immunoglobulin at all times, the State has strengthened its legal and administrative framework to ensure uninterrupted access to life-saving treatment.

Rabies has been declared a notifiable disease in the State, ensuring systematic surveillance. Further, statutory provisions under the *Karnataka Private Medical Establishments Act, 2007*, and the *Karnataka Good Samaritan and Medical Professional (Protection and Regulation During Emergency Situations) Act, 2016*, mandate that all hospitals provide immediate first aid, emergency stabilization, and necessary treatment for dog/animal bite victims without insisting on advance payment, with reimbursement provisions under the SAST Scheme where applicable.

The State Action Plan for Rabies Elimination provides a comprehensive roadmap built on the pillars of prevention, timely case management, assured logistics of Anti-Rabies Vaccine (ARV) and Rabies Immunoglobulin (RIG), strengthened surveillance, inter-sectoral coordination, and sustained community awareness.

Further Rabies-Free Cities initiative, is being implemented covering 11 major cities—Bellary, Belgaum, Bangalore (GBA), Davanagere, Hubli-Dharwad, Kalaburagi, Mangalore, Mysore, Shivamogga, Tumkur, and Vijayapura—where city task force and city action plans are being developed to eliminate rabies.

This Action Plan reflects our collective commitment, ensuring that no individual is denied life-saving post-exposure prophylaxis. The success of this initiative will depend upon strong governance, community participation, and unwavering collaboration across sectors.

With sustained dedication and coordinated action, I am confident that we will achieve the goal of eliminating dog-mediated human rabies and create a safer, healthier future for all.

**Sri. Harsh Gupta**

## Foreword

The Centre for One Health, National Centre for Disease Control under the Ministry of Health & Family Welfare, Government of India, appreciates the concerted efforts of the Government of Karnataka in developing the **State Action Plan for Dog-Mediated Rabies Elimination (SAPRE) by 2030**.

Rabies remains a critical public health challenge in India, accounting for a substantial proportion of global rabies deaths. In alignment with the National Action Plan for Dog Mediated Rabies Elimination (NAPRE) and the global target of “Zero Human Dog-Mediated Rabies Deaths by 2030,” Karnataka state has demonstrated strong commitment by adopting a comprehensive and collaborative roadmap grounded in the One Health approach.

This State Action Plan reflects a well-structured, evidence-based intersectoral strategy integrating departments of human health, animal health, urban local bodies, municipal administration, wildlife, education and community at large. The plan appropriately emphasizes:

- Strengthening of rabies surveillance in humans and animals
- Expansion of Anti-Rabies Clinics and laboratory networks
- Ensuring uninterrupted availability of Anti-Rabies Vaccines (ARV) and Rabies Immunoglobulins (RIG)
- Scaling up Mass Dog Vaccination (MDV) and Animal Birth Control (ABC) initiatives
- Joint capacity building of medical and veterinary professionals
- Community awareness and risk communication activities
- Robust monitoring and reporting mechanisms

The inclusion of technical inputs from veterinary public health institutions, referral laboratories, district surveillance units, and municipal bodies demonstrates Karnataka’s integrated approach towards rabies elimination. The State’s collaboration with academic institutions, WOA reference laboratories and implementation partners further strengthens its operational framework. The Centre for One Health, NCDC, reiterates its technical support to the State of Karnataka for effective implementation, monitoring and evaluation of SAPRE. Continued interdepartmental coordination, sustained political commitment, adequate resource allocation and community engagement will be critical to achieving the 2030 elimination target.

We commend the Government of Karnataka, Department of Health & Family Welfare, Department of Animal Husbandry & Veterinary Services, urban local bodies, and all stakeholders involved in the preparation of this comprehensive plan. We are confident that Karnataka’s proactive leadership and systematic implementation will significantly contribute to India’s national goal of eliminating dog-mediated human rabies by 2030.

We extend our best wishes for the successful rollout and implementation of **State Action Plan for Dog Mediated Rabies Elimination (SAPRE) by 2030**.



**Dr Simmi Tiwari**

Joint Director & OIC, Centre for One Health  
National Centre for Disease Control  
Ministry of Health & Family Welfare  
Government of India

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# ABBREVIATIONS

ABC	Animal Birth Control
AHVS	Animal Husbandry and Veterinary Services
APCRI	Association for Prevention and control of Rabies in India
ARC	Anti-Rabies Clinic
AWBI	Animal Welfare Board of India
AWO	Animal Welfare Organization
CABC	Community based Animal Birth Control
CMD	Communicable Diseases
CNS	Central Nervous System
CRI	Central Research Institute
CSF	Cerebrospinal Fluid
DAHD	Department of Animal Husbandry and Dairying
DALYs	Disability Adjusted Life Years
DCGI	Drugs Controller General of India
DFA	Direct Fluorescent Antibody Assay
DH	District Hospital
DPM	Dog Population Management
DPMU	District Programme Management Unit
DRIT	Direct Rapid Immunohistochemical Test
ELISA	Enzyme Linked Immunosorbent Assay
ERIG	Equine Rabies Immunoglobulin
FAO	Food and Agriculture Organization
FAT	Direct Fluorescent Antibody Test
FAVN	Fluorescent Antibody Virus Neutralization
GARC	Global Alliance for Rabies Control
GIA	Grant in Aid
HRIG	Human Rabies Immunoglobulins
IAP	Indian Academy of Paediatrics
IAPSM	Indian Association of Preventive and Social Medicine
ICAR	Indian Council of Agriculture Research
ICMR	Indian Council of Medical Research
ID	Intradermal
IDRV	Intradermal Rabies Vaccination
IDSP	Integrated Disease Surveillance Programme
IEC	Information, Education and Communication
IHIP	Integrated Health Information Platform
IM	Intramuscular

IMA	Indian Medical Association
IU	International Units
IVRI	Indian Veterinary Research Institute'
IVA	Indian Veterinary Association
IVPH	Indian Veterinary Public Health Association
LFA	Lateral Flow Assay
MoAFW	Ministry of Agriculture and Farmers Welfare
MoFAH&D	Ministry of Fishery, Animal Husbandry & Dairying
MoHFW	Ministry of Health & Family Welfare
MoHRD	Ministry of Human Resources Development
MoHUA	Ministry of Housing & Urban Affairs
MoPR	Ministry of Panchayati Raj
MoST	Ministry of Science and Technology
NADRES	National Animal Disease Referral Expert System
NCDC	National Centre for Disease Control
NFDI	National Free Drug Initiative
NGO	Non-Governmental Organization
NHRC	National Human Rights Commission
NIMHANS	National Institute of Mental Health & Neurosciences
NIVEDI	National Institute of Veterinary Epidemiology and Disease Informatics
NOHPPCZ	National One Health Programme for Prevention and Control of Zoonoses
NRCP	National Rabies Control Programme
OIE	Office International des Epizootic (World Organization for Animal Health)
PEP	Post exposure Prophylaxis
RFFIT	Rapid Fluorescent Focus Inhibition Test
RIG	Rabies Immunoglobulin
RRL	Regional Referral Laboratories
RT- PCR	Reverse Transcription Polymerase Chain Reaction
SBM	Swachh Bharat Mission
SDG	Sustainable Development Goal
SOP	Standard Operating Procedure
SPMU	State Project Management Unit
SSU	State Surveillance Unit
VRDL	Virus Research Diagnostic Laboratory



# Chapter 1-Historical Perspective of Rabies in Karnataka State

## Introduction

Rabies is a fatal viral infection that targets the brain and nervous system. The disease is Zoonotic i.e., it gets transmitted from animals to humans, such as from dogs to humans, commonly following a bite from an infected animal. Rabies is always fatal if post exposure prophylaxis (PEP) is not administered immediately following exposure. The rabies virus infects the central nervous system, ultimately affecting the brain and resulting in death. The rabies virus travels to the brain through the peripheral nerves and hence doesn't show signs of viremia or fever.

The **incubation period** (Time lag between exposure to rabid animal and onset of rabid symptoms) of the disease varies from few days to few months in humans and it depends on

1. Site of exposure- This affects the distance that virus has to travel to reach the central nervous system
2. Severity of exposure, etc.

## History of Rabies

Rabies is one of the oldest diseases known to man and has been widely documented by the earliest human civilizations. As per historians, the origin of the word Rabies is either from the Sanskrit "rabhas" (to do violence) or the Latin "rabere" (to rage). The ancient Greeks called Rabies "lyssa" (violence).

A disease akin to Rabies was recognized in ancient Indian treatises on health and medicine. The Susruta Samhita written in 6<sup>th</sup> Century BCE (Susruta's Compendium) details various medical conditions and surgical procedures and discusses in detail the symptoms of Rabies in humans bitten by rabid dogs or wild animals, recognizing that once symptoms develop in human victims, the disease is inevitably fatal.

Rabies is a vaccine-preventable disease in both humans and animals. **Rabies is reported in all continents, except Antarctica.** Human rabies is endemic in India, and is reported from throughout country except Andaman & Nicobar and Lakshadweep

Islands. High density of rabies cases is reported from municipal limits. About 80% of human cases occur in rural areas and children are the main victims. In up to 99% of cases, dogs are transmitting the infection to humans.

Considering the seriousness of the disease, National Rabies Control Programme (NRCP) was implemented in India during the 12th Five-year plan (2012-2017) for rabies control. To achieve the global goal of the Zero Human Dog-mediated Rabies Deaths by 2030, India **launched National Action Plan for dog mediated human Rabies elimination (NAPRE)** based on “One Health” approach in 2021. Following this, Karnataka has developed a comprehensive State Level Action Plan for Dog Mediated Human Rabies Elimination (SAPRE) by 2030 based on the guidelines of NAPRE.

## **National Rabies Control Program – Pilot Project, an initiative under the 11th Five Year Plan:**

In the 11th five-year plan (2007–2012) Rabies control efforts in India gained momentum and the Ministry of Health and Family Welfare, Government. of India approved a “Pilot Project for the Control of Human Rabies”, for which 8.65 crores were allocated. For the first time, Rabies control in animals, animal birth control and vaccination of stray dogs were mentioned in this plan, as components of animal welfare to be handled by the Animal Welfare Board of India.

The project was implemented by NCDC in 5 cities of India namely, Delhi, Ahmadabad, Pune, Bangalore and Madurai and the project began in January 2008 and continued till 2012 where Karnataka was one of the states selected for pilot study. The objectives of the project were prevention of human deaths due to Rabies, enhancing awareness in the general community, developing trained health manpower, strengthening diagnostic facilities, strengthening surveillance and maintenance of continuous surveillance and sensitization of other sectors. Experience gained in the pilot project indicated that strategy is feasible, reproducible, and implementable. With the lessons learned in the pilot project, the Ministry of Health and Family Welfare approved National Rabies Control Programme (NRCP) in the 12th Five Year Plan for rollout in the entire country.

2008

- Pilot Project of National Rabies Control Program by Government of India

2015

- Joint Action Plan for Rabies Elimination by WHO,WOAH and FAO

2017

- Strengthening of NRCP activities at National Level

2019

- Revised Guidelines by NCDC-GoI

2022

- Launch of NAPRE
- Workshop to form State Action Plan for Karnataka
- Rabies is made notifiable in Humans
- Formation of Joint Steering Committee for Rabies elimination

2023

- Joint Steering Committee first meeting

2024

- Draft of SAPRE
- Coordination with all stakeholders for completion of SAPRE
- Rabies is made notifiable in Animals

2025

- Rabies Free Cities Initiative started

#### CHRONOLOGY OF EVENTS IN KARNATAKA

In the year 2015 for the first time, four organizations – the WHO, OIE (now WOAH), FAO and GARC – have joined forces, as the “**United Against Rabies Forum**” and are determined to reach this goal. In 2015, the world called for action by setting a goal of **zero human dog-mediated Rabies deaths by 2030, worldwide**. After this, India also stepped-up efforts for Rabies Elimination by strengthening the National Rabies control program which was highlighted in National Health Policy 2017

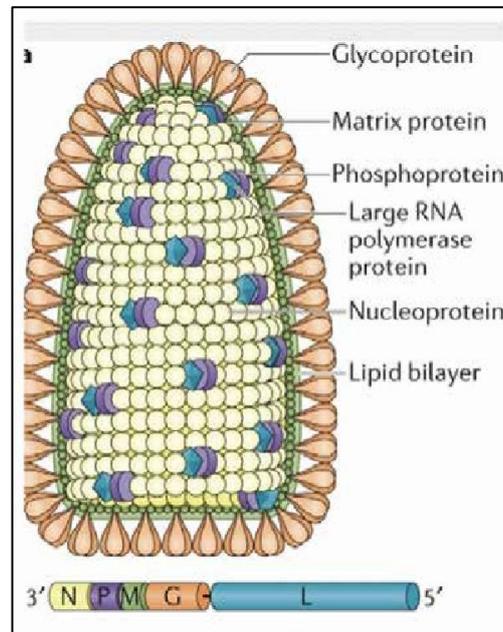
## About Rabies Virus

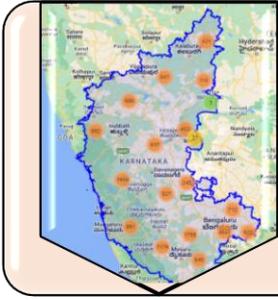
Rabies is an acute encephalitis caused by lyssavirus infection. The etiological agents of Rabies encephalitis belong to the Mononegavirales order, the Rhabdoviridae family and the Lyssa virus genus.

Lyssaviruses have a non-segmented RNA genome of negative polarity that encodes five viral proteins (3' to 5'): a nucleoprotein (N), a phosphoprotein (P), a matrix protein (M), a glycoprotein (G) and an RNA-dependent RNA polymerase (or large protein, L).

The lyssavirus particle is shaped like a bullet, 100–300 nm long and 75 nm in diameter and can be seen only through an electron microscope.

Rabies virus (RABV) is present in the saliva of rabid animals. Upon biting, scratching, or and intact mucus membrane, the virus enters the body licking on broken skin (cuts/ abrasions)





# Chapter 2 - Epidemiology Of Rabies in Karnataka State

## Epidemiology of Human Rabies-

Epidemiology is the study of the distribution and determinants of health-related states or events in specified populations, and the application of the study to control health problems. Rabies epidemiology describes the magnitude of the Rabies, etiological agent of Rabies, modes and patterns of transmission, disease manifestations in hosts and reservoirs species.

## Magnitude of the Rabies Disease

### Global

The number of human deaths globally due to dog-mediated Rabies is estimated to be 59,000 annually, with an associated loss of 3.7 million Disability Adjusted Life Years (DALYs). Most of the deaths are estimated to have occurred in Asia (59.6%) and Africa (36.4%). The overall economic cost of dog-mediated Rabies was estimated to be US\$ 8.6 billion.

### Rabies in India

- In India rabies is transmitted by dogs (97%), cats (2%) and other biting animals mostly in the wild like mongoose, jackals, foxes and others (1%) (WHO-APCRI survey, 2003. [www.apcri.in](http://www.apcri.in)).
- Occasionally, the disease is reported in horses, donkeys, monkeys, cows, goats, sheep, and pigs. Rodents, bandicoots, squirrels, rabbits, birds, and bats are generally not known to transmit Rabies.
- The presence of unvaccinated free-roaming dogs (FRD) or street dogs, amidst human settlements is a major contributor to the high incidence of Rabies in India, which is endemic.
- Apart from humans, Rabies also causes significant mortality among livestock animals such as bovine, cattle and small animals.

### Rabies in Humans in India

Rabies is endemic throughout the country and human cases of Rabies are reported from all over throughout the year except for Andaman & Nicobar and Lakshadweep



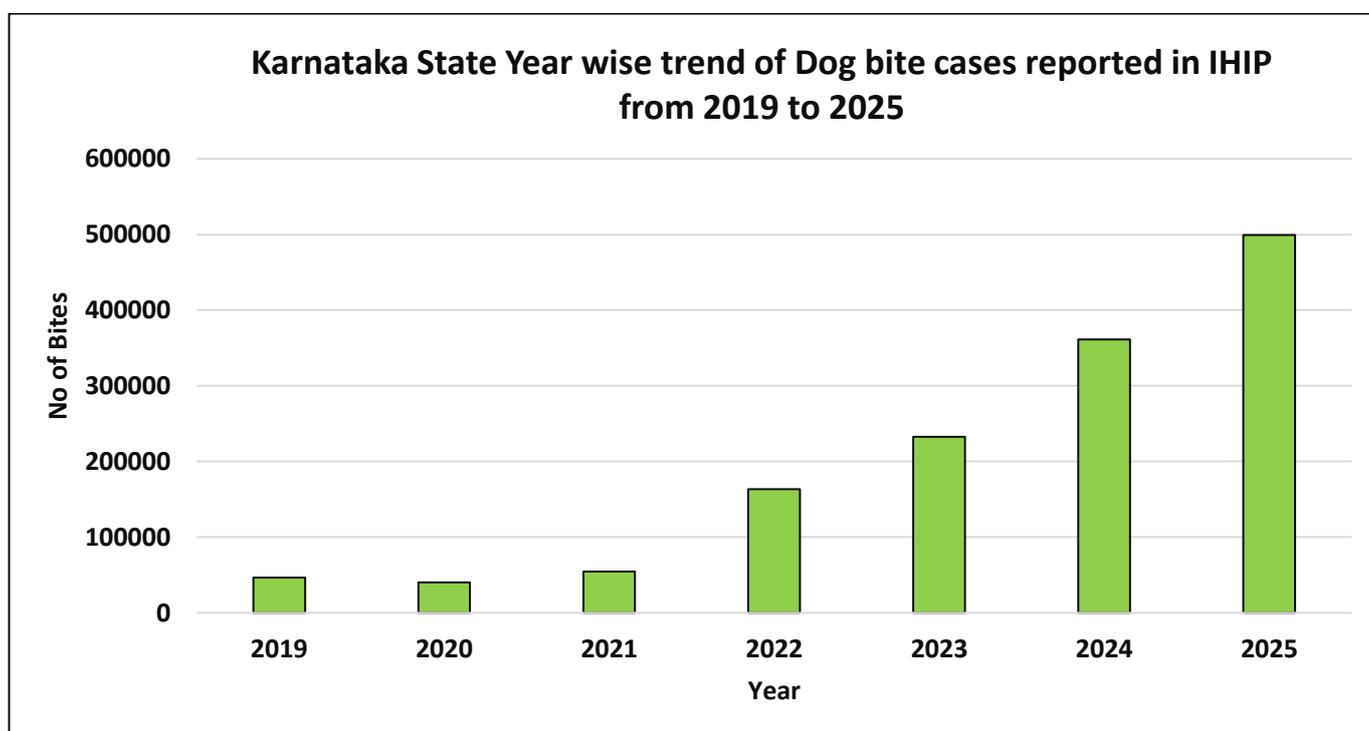
being referred to these Epidemic Disease hospitals from neighboring States mainly Andhra Pradesh, Tamil Nadu, Telangana, and these figures are getting added to the statistics of Karnataka State.

Year	Rabies deaths- IHIP
2020	0
2021	0
2022	1
2023	18
2024	42
2025	53

Year wise Rabies death details in Karnataka

## Magnitude of the Dog Bites in Karnataka State

### Animal / Dog Bites Cases in Karnataka State

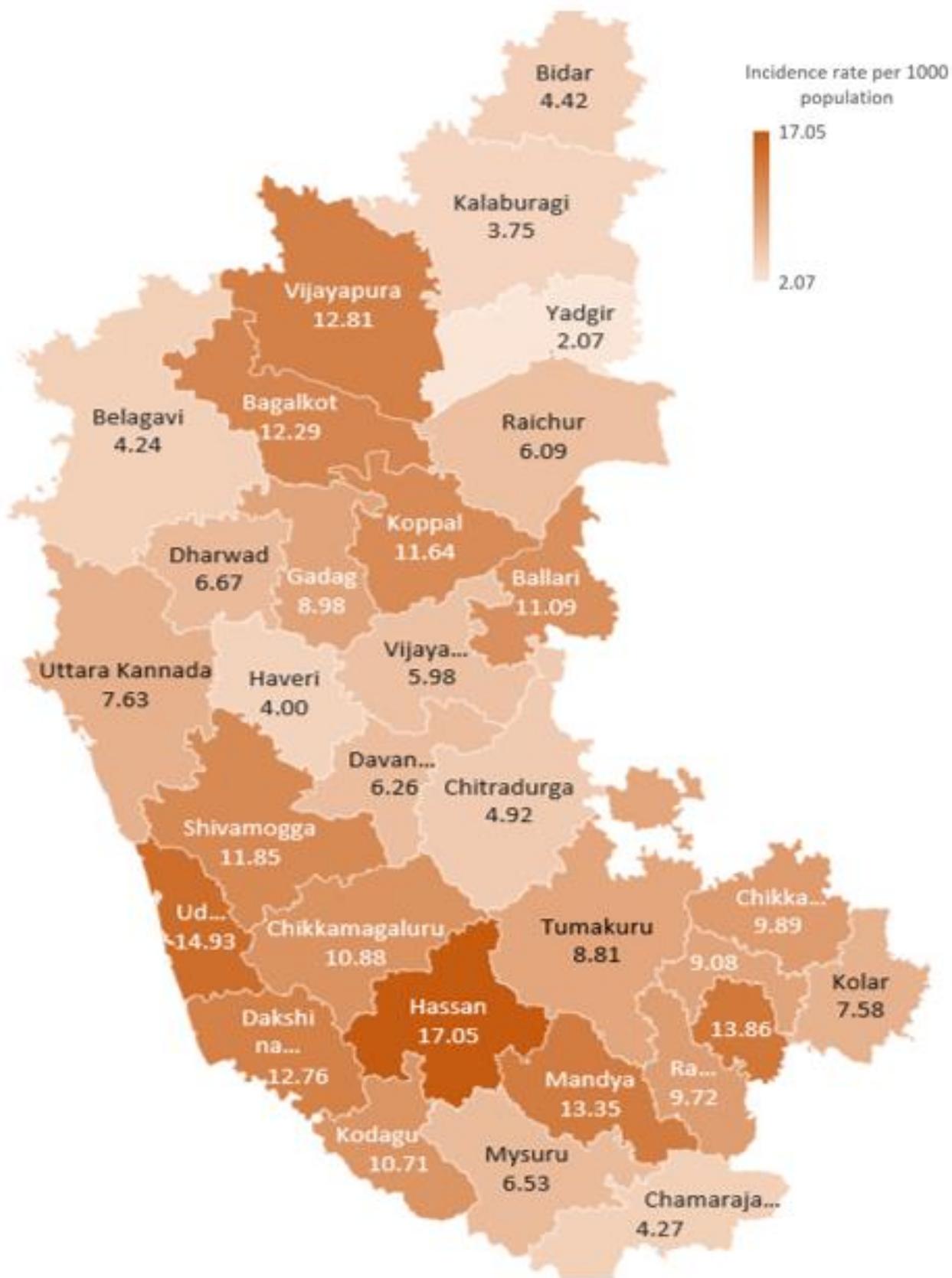


The animal bite cases are being reported in the following portals/ formats namely

1. Integrated Health Information Portal, under Integrated Disease Surveillance Project
2. NRCP reporting format provided by NCDC

In the last three years on an average 2.5 lakhs animal bites have been reported. These bites include bites from animals such as dog, cat, monkeys which requires Rabies Post

Exposure Prophylaxis. The animal bite prevalence per lakh population across Karnataka State for the year 2025 from January to December is mapped out in the **Figure 5**.



## Host Range

All warm-blooded animals are vulnerable to infection by the Rabies virus. However, the degree of species susceptibility varies considerably. In India, the dogs are the major reservoir of Rabies.

### ➤ Rabies in Humans

The virus enters the body through wounds or by direct contact with mucosal surfaces, it cannot cross intact skin. RABV may replicate in muscle or other local tissues after exposure and gains access to motor endplates and motor axons to reach the central nervous system. The incubation period ranges from 3 weeks to 3 months (rarely 4 days to 2 years). Once the virus reaches the CNS, its replication occurs primarily in the neurons or brain cells through viral budding and the virus spreads and infects the nearby brain cells. Further, dissemination through the cerebrospinal fluid (CSF) occurs in the late stages of infection.

Rabies affects brain stem function, causing hydrophobia (fear of water), aerophobia (fear of breeze), and or photophobia (fear of light), and finally resulting in respiratory paralysis and death. About 80% of human Rabies manifests as furious types and the remaining 20% manifests as paralytic or dumb type.

The furious form of Rabies disease manifests as hyperactivity (anxiety, agitation, running, biting, bizarre behavior alternating with periods of calm) which may occur spontaneously or may be precipitated by tactile or auditory, visual or other stimuli. The most characteristic symptom is the spasm of the pharyngeal muscles often triggered by an attempt to drink water (hydrophobia) or by blowing air on the patient's face (aerophobia). Spasmodic contractions of the muscles may spread to the respiratory and other muscles leading to attacks of apnea.

The paralytic or dumb Rabies manifests as acute progressive ascending myelitis, symmetrical or asymmetrical with flaccid paralysis, pain and fasciculation in the affected muscles with mild sensory disturbance. Complete paraplegia develops eventually with fatal paralysis of the respiratory and pharyngeal muscles.

### ➤ Rabies in Animals

In general, rabid animals of all species commonly exhibit typical signs of Central Nervous System (CNS) disturbances with behavioral changes.

### ➤ Rabies in Dogs

The incubation period of Rabies in dogs is 3–8 weeks on average but may vary from 10 days to 6 months but is rarely more than 4 months. There may be hyper excitability or lethargy, pharyngeal paralysis and thus frothing of saliva, posterior paresis or paralysis, sudden coma

and death. Behavioral changes are common during the early phases of the disease when the dog behaves abnormally, hides in dark corners, shows unusual agitations, becomes restless. Fever, dilatation of the pupils and photophobia are sometimes present. The furious form follows the prodromal phase, and the affected dogs may bite without any provocation. It may bite itself and inflict serious injuries. Some dogs exhibit only a paralytic stage with the characteristic dropped jaw and incoordination. Progressive paralysis begins with the muscles of the head and neck region. The tone of bark changes due to partial paralysis of vocal cords. Convulsions are seen in the terminal phase followed by incoordination and posterior paresis. Once the clinical signs set in, the disease progresses rapidly to the death of the animal due to respiratory failure generally within 3-8 days.

### ➤ Rabies in Cats

The clinical signs in cats are of furious type and are like that in dogs but the affected cats have a greater tendency to hide in secluded places and are more vicious than dogs. The cat might strike in the air with its forepaws as if it is catching imaginary mice. After 2-4 days of the excitation phase, the paralysis of the posterior third of the body follows.

### ➤ Rabies in Cattle

Livestock is vulnerable victims of rabid carnivores and mongoose. The average incubation period of Rabies in cattle is 15 days (depends on the site of bite) and the average morbidity period is 4 days. The major clinical signs in cattle include excessive salivation, behavioral changes, muzzle tremors, vocalization (bellowing), low-pitched voice due to paralysis of vocal cord (may mistake for heat sign), aggression, hyperesthesia and/or hyper excitability, and pharyngeal paresis/ paralysis, coma and death.

### ➤ Rabies in Sheep and Goats

The clinical signs in sheep include head butting, muzzle and/or head tremors, aggressiveness, hyper excitability, and/or hyperesthesia, trismus, salivation, drooping ears, vocalization, and recumbency and death.

### ➤ Rabies in Horse and Mules

The signs are like tetanus. The average incubation period is 12 days (depends on the site of bite) and the average morbidity period is 6 days with most of the horses developing furious Rabies. Muzzle tremors, pharyngeal spasm or pharyngeal paresis, ataxia or paresis, lethargy

or somnolence, stamping of the foot, biting and rearing of ears are the common signs manifested by rabid horse.

### ➤ Rabies in Pigs

The symptoms are characterized by excitement, irritation, rooting up the ground or rubbing at the surface, aggressiveness, biting of hard objects, other animals and man, paralysis and death in 2-4 days.

### ➤ Rabies in Wild Animals

Rabies is also reported in wide range of wild species, such as wilds dogs, jackals, wolves, foxes and mongooses and bats which are the primary hosts of RABV. Across the world, Wild life Rabies have been documented from all continents except Antarctica. In India, wildlife Rabies has been reported in Tiger, Elephant, Bear, Hyena, Jackal, Leopard, Mongoose, Sambar Deer, Wolf and Fox. **Rabies in Monkeys**

Clinical signs exhibited are like those in humans with hydrophobia, paralysis, anxiety. Non-human primates play a negligible role in the spread of the virus. In India, Langur (*Somnipathies entellus*) and Himalayan Palm Civet (*Pagumalarvata*) were found positive for Rabies.

### ➤ Rabies in Bat

Lyssaviruses have been detected in bats throughout the world. No cases of Rabies have been reported in India from Bats till date.

### ➤ Rabies in Rodents and Rabbits

Rodents are not the primary hosts and do not play a role in the transmission or maintenance of rabies



# Chapter 3 - State Action Plan of Karnataka State

## Vision and mission of the SAPRE-

- **Vision:** To achieve zero human deaths due to dog-mediated Rabies by 2030.
- **Mission:** To progressively reduce and ultimately eliminate human Rabies in Karnataka State through sustained, mass dog vaccination and appropriate post-exposure treatment of dog bite victims.

## Key Principles of SAPRE –

The State Action Plan for Rabies Elimination (dog mediated) in Karnataka State is based on the following three key principles as per the NAPRE guidebook:

1. **Prevention:** Introduce cost-effective public health intervention techniques to improve accessibility, affordability, and availability of post-exposure prophylaxis to all people in need.
2. **Promotion:** Improve understanding of Rabies through advocacy, awareness, education and operational research.
3. **Partnership:** Provide coordinated support for the Anti-Rabies drive with the involvement of community, urban and rural civil society, government, private sectors and development partners.

## Core Components of SAPRE-

The State Action Plan Rabies Elimination (SAPRE) has two core components to achieve the Elimination of Dog Mediated Human Rabies:

- **Human health:** To prevent human deaths due to Rabies by ensuring timely access for post-exposure prophylaxis for all animal bite victims and creating well responsive Public Health system.
- **Animal health:** To achieve at least 70 % Anti Rabies vaccination coverage among dogs in a defined geographical area annually for 3 consecutive years.

## **Key Strategies for the SAPRE-**

To achieve the goal of Rabies Free State, proper strategies are required in Human Health components and they are

### **To ensure availability of Anti Rabies Vaccine (ARV) and Anti Rabies Serum (ARS) to all Animal Bite victims at all levels of health facilities**

- Advocate for cost-effective intradermal Rabies Post Exposure Prophylaxis through sensitization workshops to all Health professionals
- Financial assistance to Districts from State through earmarking funds for ARV/ARS procurement and inclusion of ARV/ARS in Essential Drug List at all levels.
- Strengthening infrastructures for treating the victims of animal bites.
- Ensuring availability of trained manpower concerning appropriate animal bite management/ID inoculation/ ARS infiltration.
- Ensure uninterrupted supply of ARV/ARS and close monitoring ARV/ARS demand and supply positions to avoid stock out positions.
- Ensuring and upgrading adequate cold chain facilities to store ARV/ARS stocks at appropriate health facilities.
- Establishing monitoring mechanism for recording and reporting of Adverse Event Following Immunization (AEFI) for Rabies.

### **Capacity building of professionals in appropriate animal bite management**

- Training of Medical and paramedical staff on Rabies prophylaxis.
- Training of District and below District level health care professionals on program management aspects.
- Joint training of Health and Veterinary professionals on the operational aspect of the Rabies Elimination plan.
- Training and capacity building of laboratory professionals on Rabies diagnostics.
- Training on Surveillance of Animal Bites and Rabies Case investigations and Notification.

### **To encourage pre-exposure prophylaxis for High-Risk Groups**

- Sensitization of professionals and formulation of protocols for the safety of health workers/other professionals exposed to an environment conducive for Rabies virus transmission.
- Promoting pre-exposure prophylaxis among children through involvement of the Indian Academy of Paediatrics (Rabies is an optional vaccine in IAP Schedule)

### **Strengthening Surveillance of Dog bite and Human Rabies cases**

- Ensuring implementation of Dog bite and Rabies notification through the IHIP/ other designated portal
- Strengthening periodic reporting between stakeholders about Dog bite and Rabies incidences through designated and dedicated channels.

- Resource mapping – mapping the facilities (State/ District wise) for management of treatment facilities for suspected Rabies cases and mapping of laboratories for Rabies diagnostics.
- Establishing Sentinel surveillance system for animal bite cases through Model Anti Rabies Clinics.

### **Strengthen diagnostics capacity on Rabies**

- To establish Rabies referral laboratories at the State level in designated government laboratories or National Research Institutes as referral diagnostic centres.
- To identify and establish at least one laboratory at the district level for diagnostic and sampling purposes.
- Training and capacity building of lab professionals (State/ District level Training workshop) by periodic and hands-on training on Rabies diagnostics.

### **Promote Operational research in the Rabies**

- Estimate Dog Bite and Rabies burden of the state.
- Estimations of coverage of ARV and ARS among animal bite victims, compliance and dropout rate of the vaccination.
- To study the health-seeking behaviours of the community and reasons for the dropout.
- Mapping of Rabies biological supply chain and market landscape.

### **Strengthen Inter-Sectoral Coordination:**

- Joint Training/Sensitization workshop at State/District level to Medical/ Veterinary Professionals on Dog bite and Rabies.
- Joint gap analysis for formulation of action plan for rabies elimination.
- Framing of standard guidelines and SOPs w.r.t roles and responsibilities of veterinary/medical sectors in the event of rabies outbreaks (reported clustering of cases among dogs and humans).

### **Information Education and communication (IEC)**

- Development of IEC material for undertaking IEC activities (print/ electronic material - audio visual spots for a mass media campaign).
- Framing of definitive IEC Strategy/ guidelines for the identified target audience
- Including IEC in schools to promote awareness among school children and teachers.

### **Public-private partnership through involvement of NGO and community organizations.**

- Advocacy for the participation of private institutes/ NGOs/ Community organizations in the efforts towards Rabies.
- Coordination of private/ community organizations/ NGOs.

## Plan of Implementation of SAPRE

The National Action Plan for dog mediated rabies elimination from India by 2030 (NAPRE) was jointly launched by Hon'ble Union Minister of Health & Family Welfare (MoHFW) and Hon'ble Union Minister of Ministry of Fishery, Animal Husbandry and Dairying (MoFAH&D), Government of India on 28th September 2021.

A 'Joint Support Statement' for the NAPRE was also obtained from Hon'ble Union Ministers of MoHFW, MoFAH&D, Panchayati Raj, Housing & Urban Affairs, and Environment, Forest, and Climate Change.

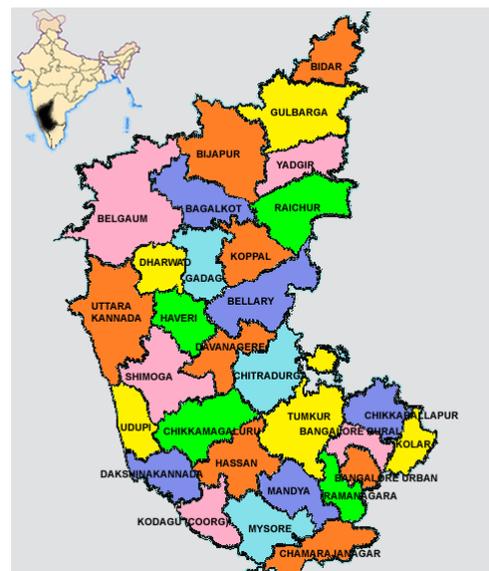
The NAPRE was developed under the National Rabies Control program in coordination with MoFAH&D, MoA&FW, MoPR, MoH&UA, NITI AAYOG and other key stakeholders and it is based on a **'One Health' approach** which provides a strategic framework for combating rabies with well-defined roles and responsibilities of all stakeholders.

This document is intended to provide technical guidance and support to districts for developing their own district specific action plan for dog mediated rabies elimination.

Further to this, as a next step, it is pertinent that all state level stakeholders should plan and formulate State Action Plan for Dog Mediated Rabies Elimination (SAPRE) to ensure the achievement of rabies prevention and control and ultimate elimination from the country.

### Short term plan- (Year 2023, 2024, 2025)- Preparatory phase:

- Advocacy for prioritizing rabies in the State.
- Estimate burden of human and animal rabies in the state.
- Identify or establish funding (e.g., schemes, program), components underfunding (such as vaccines, training, IEC etc.).
- Establish technical guidelines on the canine rabies control programme.
- Develop training modules for medical officers, veterinarians, and support staff
- Develop a short terms-plan, medium term and long-term plans.
- Development of SOP for animal bite management, dog enumeration plan, MDV, DPM as per the national guidelines and the ABC act.
- Identify villages/talukas/districts/ based on animal bite cases and evidence as high-risk areas, medium risk area, and low-risk areas.
- Achieve inter-sectoral collaboration by sharing information among stakeholders.
- Initiate inter-departmental collaboration (AHVS, Local self-governing bodies, NGOs) through MoU.



- Form a joint steering committee at each level.
- Identify the regional, district laboratories, state reference laboratories and national referral laboratories.
- Strengthen these laboratories for rabies diagnostics.
- Initiate capacity building, professional education and training of staff needed for activities planned.
- Develop a joint state specific action plan for rabies elimination with the micro plan for districts as per the risk areas or start a pilot project in the selected city, district or block for implementation of the program.
- Estimate dog population in the selected areas.
- Estimate requirement of human and animal ARV and ARS.
- Start aggressive campaigns for vaccination of dogs and responsible dog ownership campaign.
- Initiate strategic MDV in selected areas.
- Evaluate vaccination coverage in canines with an aim to vaccinate a minimum of 70% population.
- Develop joint outbreak response teams.

### **Medium-term plans- Phase 2 Activities (Year 2025, 2026, 2027)- Scale-up dog vaccination:**

Continue the advocacy and creating awareness on animal and human rabies.

- Scale-up implementation of the programme throughout the country. The results of the pilot project in a selected city /block/district with improvements should now be implemented in another area.
- Strengthening the laboratory capacity and testing at each level as per the needs of the state.
- Establish surveillance systems, including feedback mechanisms, and coordination between administrative levels (national, state, district, municipal, etc.).
- Evaluate vaccination coverage in canines.
- Registration of pet and community-owned dogs.
- Continue mass vaccination of dogs.
- Continue surveillance activity for human and dog rabies, and the number of animal bite cases.
- Continue canine population count.
- Early reporting of dog bite and complete PEP (by ID methods) and immunoglobulin.
- Strengthening laboratory capacity and testing.
- Declare dog-mediated rabies free zones (villages/blocks/districts) and state.

## Long term plans- Phase 3 and Phase 4 activities (2027, 2029, 2030)- Maintain dog vaccination status and intensified rabies surveillance:

The vaccination of dogs and DPM would be continued activity. Areas /affected districts where elimination targets have not been yet achieved would require the adoption of corrective measures. The long phase will be followed by the certification of elimination status by the competent authority. A national review commission will certify elimination status and will review the progress.

- Continue the advocacy and creating awareness on animal and human rabies.
- All Districts should implement ID route for rabies PEP in major health facilities.
- Declare dog-mediated rabies free zones (villages/blocks/districts) and regions.
- Continue surveillance activity for human and dog rabies.
- Upgrade surveillance of rabies from canine to other animals.
- Continue implementation of dog population management.
- Conduct joint field investigations in case of human rabies cases.
- Characterization and analysis of circulating rabies virus variants by a national or international laboratory.

**Gantt Chart: Rabies Elimination Roadmap (2023-2030)**





# Chapter 4- Stakeholders

## Ministry and departments to be involved in elimination of rabies from Karnataka state-

<b>Human health sector</b>	Department of Health and Family Welfare Services Department of Medical Education Rajiv Gandhi University of Health Sciences (RGUHS) Private Health Sector
<b>Animal health sector</b>	Department of Animal Husbandry and Veterinary Services State Animal Welfare Board Karnataka Veterinary, Animal and Fisheries Sciences University- Bidar Private veterinary practitioners
<b>Other Medical/ Veterinary establishments</b>	NIMHANS - National Institute of Mental Health & Neuro Sciences ICAR NIVEDI–National Institute of Veterinary Epidemiology and Disease Informatics ESI Hospital Commando Hospitals IISc – Indian Institute of Sciences
<b>Forest and wildlife sector</b>	Department of Forest
<b>Education Sector</b>	Department of Primary and Secondary Education. Department of Higher Education
<b>Urban development sector</b>	Department of Urban Development Zilla Panchayats, Taluk Panchayats and other local bodies Bruhat Bengaluru Mahanagara Palike (BBMP) and other Municipal Corporations
<b>Rural development sector</b>	Department of Rural Development and Panchayat Raj Gram Panchayats
<b>Agriculture sector</b>	Ministry of Agriculture and Farmers Welfare ICAR Institutions KVK – Krishi Vigyan Kendra
<b>Science and technology sector</b>	Department of electronics, information technology and biotechnology

<b>Drugs and pharmaceuticals sector</b>	CDSCO- Central Drugs Standard Control Organization Drugs Control Department
<b>NGOs and other professional organizations</b>	Worldwide Veterinary Services (WVS)- Mission Rabies Corporate Sectors APCRI- Association for Prevention and Control of Rabies in India IMA- Indian Medical Association PHANA-Private Hospitals and Nursing Home Association IAP – Indian Academy of Pediatrics KMC – Karnataka Medical Council KVC- Karnataka Veterinary Council
<b>Others</b>	Department of Finance. Department of Personnel and Administrative Reforms- to manage the Human resource Department of Information and Broadcasting- to promote the IEC about dog bite and Rabies State Human Rights Commission. Other relevant stakeholders as and when needed.

## **Roles and Responsibilities of Stakeholders**

### **❖ Role Specific to Human Health Sector:**

At the State, the Ministry of Health and Family Welfare Services, GoK will be a major stakeholder and nodal agency for the overall planning, coordination and implementation of the human health component in the State.

The state, district and below district level activities will be implemented through the existing health systems such as district health and family welfare units, district surveillance units, municipalities, KSMSC (Karnataka State Medical Supplies Corporation Limited) etc.

The key role of human health sector under this SAPRE is as under: -

- Advocacy with different stakeholders for prioritizing Rabies to achieve commitment at all levels so that resources could be mobilized for prevention and control of Rabies.
- Ensure accessibility and 24X7 availability of treatment of all animal bite victims (PEP) and rabies patients in isolation hospitals/isolation wards in designated HFW hospitals.
- Capacity building and training of health professionals in appropriate animal bite management and rabies prophylaxis at all levels.
- Production of standard IEC materials for wider circulation.
- Strengthening maintenance of a database, collection of data collectively on rabies control program (e.g., vaccination coverage), analysis and sharing of information with other stakeholders.
- Strengthening Public-Private Partnership (PPP) through engagement with professional organizations such as directorate of medical education, private medical establishments, medical colleges, IMA, IAP, and communities /organizations involved in the field of rabies for undertaking research and other activities.
- Strengthening of rabies diagnostic laboratories including the standardization of protocol for diagnosis to ensure uniformity across identified diagnostic laboratories in the country.
- Inter sectoral coordination and sharing of information between the animal health, and wildlife health sector to facilitate better implementation.
- Cross notification of suspected rabies cases.
- Regularly updating technical guidelines on Rabies.
- To coordinate for regulation of rabies sera and sera producing pharmaceuticals as per the Drugs and Cosmetics Act,1940 and rules in vogue.
- Monitor and evaluate the rabies control programs implemented by the field units.
- Ensure active surveillance of human rabies and animals bites as per national guidelines

- Coordinate and conduct operational research on Rabies in collaboration with national, international, diagnostic and research institutions.
- Collection of surveillance samples from suspected rabid human cases and sending it for further diagnosis to designated laboratories and sharing of the reports with all concerned stakeholders immediately for surveillance and mitigation measures.

### ❖ **Role of Veterinary Sector:**

At the State, Ministry of Animal Husbandry and Veterinary Services, GoK will be the key stakeholder and nodal agency for technical guidance to the states for the activities planned under the animal health component. The program in the State will be implemented through the state veterinary department and veterinary colleges in Karnataka.

The role envisaged for the animal sector is as follows:

- Advocacy with different stakeholders for prioritizing animal Rabies to achieve commitment at all levels so that resources could be mobilized for the elimination of Rabies.
- Mapping of high risk, medium risk and low risk areas of Rabies in association with health department, and other stakeholders to prioritizing areas for Mass dog Vaccination (MDV) and Dog population management (DPM).
- Ensure uninterrupted supply of logistics (money, manpower and material) for undertaking strategic mass vaccination and ring vaccinations activities for the areas targeted for Rabies elimination.
- Capacity building for veterinary professional, para vets, dog catchers, post-vaccination survey staff and other allied personnel.
- Strengthening of Rabies diagnostic laboratories from the veterinary sector.
- To develop standard (IEC) materials for wider circulation.
- Inter sectoral coordination and sharing of real time information on Rabies between other stakeholders to facilitate better implementation.
- To be part of joint investigations whenever there are human Rabies cases or increasing dog bite cases.
- Liaise with different stakeholders/agencies/international organizations (e.g., FAO, WOA- previously OIE, WHO, SAARC) for technical support on Rabies prevention and control.
- Regularly publishing and updating technical guidelines on animal Rabies.
- Regulation of Rabies serum and serum producing pharmaceuticals as per the Drugs and Cosmetics act, 1940 and rules in vogue.
- Monitor and evaluate the control programs implemented by the field units.
- Coordinate and conduct operational research on Rabies in collaboration with national, international, diagnostic and research institutions.

- Establishment/strengthening of check-post/quarantine centres since unvaccinated as well as diseased animals can easily enter and introduce Rabies in areas where Rabies cases have reduced.
- To coordinate with the stakeholders involved in strategic Dog Population Management.
- Since, Veterinary council of India (VCI) and Karnataka Veterinary Councils are responsible for making provisions for the regulation of veterinary practice and standards of veterinary education, Animal Rabies should be included as a priority disease in the curriculum of veterinary students in colleges.
- Veterinary Colleges & Veterinary Universities can incorporate training of veterinary students on mass dog vaccination and dog population management as per AWBI norms.
- Increase the involvement of veterinary students in activities of mass dog vaccination and dog population management during their routine internships.
- Collection of surveillance samples from suspected rabid animals and sending it for further diagnosis to designated laboratories and sharing of the reports with all concerned stakeholders immediately for surveillance and mitigation measures.

### ❖ Role of Wild Life Sectors

Most of the forests are surrounded by villages and rural dwellings. This increases the risks of transmission at the Domestic-wild life interface hence collaboration between livestock and wildlife sectors (forestry) is equally important.

The role envisaged are as follows: -

- Frame technical guidelines and monitoring framework for wild life Rabies.
- Identify animal Rabies endemic areas near National parks/conservation areas and forests.
- Submitting brain samples of carcasses of wild animals / carnivores to laboratories for rabies diagnosis
- Undertake surveys in wild life reservoirs in captured and free-roaming wild animals.
- Capacity building of zoo personnel to handle wild life Rabies cases.
- Ensure pre-exposure prophylaxis for Rabies zoo's personnel, wildlife workers and animal handlers.
- Ensure pre-exposure prophylaxis Rabies vaccinations for zoo animals.
- Disseminate IEC for zoo and animal handlers/ zoo workers/ visitors.
- Sharing of rabies disease outbreak information among wild animals to DAHD and health sector.

- To undertake research on wildlife sentinels, transmission patterns, and spill overs of rabies virus from wild animals to domestic animals and vice versa.
- To undertake active surveillance to identify the wildlife reservoirs for the *Lyssa* virus.
- To undertake a risk assessment in areas adjoining the forests, sanctuaries, and national parks.
- Predator-proof sheds for livestock should be made compulsory for those families who live near swamp/forest/sanctuary to ensure no spill overs.
- Pre-exposure Rabies vaccination protocols should be done routinely for dogs and livestock living around Wildlife Protected Area (WPA)/forest/sanctuary.
- To undertake proper disposal of animal carcasses near the WPA/forest/sanctuary.
- Collection of surveillance samples from wild animals in cases of suspected Rabies deaths.
- Implementation of three-four layered agro-forestry plantations should be adopted for the prevention of wildlife-domesticated animal conflict in the fringe area of villages and the fallow area near the WPA/forest/sanctuary.
- The wildlife sanctuaries / national parks marked for the conservation of wild cats by NTCA, to consider the control of stray dog population and anti-rabies vaccination clubbed with other mass vaccination campaigns for distemper & parvo virus.

### ❖ **Role of Urban Development Department Urban and Rural Local Governing Bodies (LGB)- (Municipal Corporation, Panchayats, Etc.)**

#### **Role of Local Governing Bodies and Urban Development Department**

As per the Panchayat raj Act and Municipality act, the local self-government, councils, and corporations oversee implementing the ABC programs. These acts are to be implemented as per the guidelines (e.g., guidelines for stray dog vaccinations, and dog population management).

The activities envisaged for LGB/UDD are:

- Advocacy, Training, and capacity building of panchayat raj institution members on prevention and control of Rabies in their ward.
- Establishment of quarantine facility at municipality level to start with eventually establishing at each taluka level.
- All health facilities of a local governing body area should be made anti rabies clinics.
- Share the dog bite and rabies case data with all other stakeholders.
- Arranging for dog catching squads / teams.
- Members can immediately report to animal husbandry and health Department. when an unusual incidence of dog bite or potentially rabies case in their respective jurisdiction is noted.

- Members can ensure that human bite victim (exposed) gets proper medical treatment consisting of wound washing, ARV, RIG and Post Exposure Prophylaxis
- Provide a list of patients exposed to animal bites and the same be maintained in the respective jurisdiction and follow up measures to be done strictly.
- Surveillance of the surrounding area of a bite for similar cases in the vicinity.
- Monitor and strictly implement mass vaccinations campaign of dogs in their respective ward/Villages.
- Encourage pet dog registration in their jurisdiction.
- Monitor pet owners and encourage them to register and vaccinate their pets.
- Monitor mass dog vaccination and dog population management plans undertaken by the concerned agency.
- Coordination with health and veterinary sectors for strategic mass vaccination of stray dogs.
- Monitor solid waste management and garbage disposal areas in their jurisdiction and identify problem areas of waste collection points and ensure proper waste management to prevent conglomeration of stray dogs in such areas.
- To provide required logistics for undertaking dog population management and mass stray dog vaccinations such as dog pounds (ABC Centre with operation theatre/mobile clinic & dog kennels), dog vans & logistic support to run the program as per the ABC (dogs) rules as and when published by relevant authority.
- Monitoring of slaughterhouses and meat stalls with existing laws by relevant authorities such as FSSAI, AWBI, Department. of Animal Husbandry, etc and regular monitoring of waste generated from these units.
- To collect waste from vegetable, fruit, flower, meat, poultry, and fish market on a day-to-day basis and promote setting up of decentralized compost plant or bio-methanation plant at suitable locations in the markets or near markets ensuring hygienic conditions to accumulate waste which would attract dogs (free-roaming dogs & community owned dogs).
- Special focus on preventing the disposal of animal carcasses in and around peripheral areas of villages, towns, cities and around forest areas to avoid easy availability of food for free roaming dogs and scavenging wild animals and further prevent the interactions between wildlife & domestic animals.
- Steps should be taken to exclude dogs from sources of food (e.g., garbage dumps and abattoirs, and installing animal-proof garbage containers.
- Municipal, panchayat bodies should issue strict circular on indiscriminate feeding of stray dogs.
- Swachh city plans under SBM could consider including steps to install animal proof garbage containers.

- Community awareness and IECs on maintaining clean neighbourhoods and how it corresponds to the dog population.
- To undertake training and capacity building of local bodies and other stakeholders
- To verify and provide compensation to the animal bite victims or deaths as per the Government orders as and when received (Annexure of Government Order attached).
- Collection of surveillance samples from suspected rabid human or animal cases and sending it for further diagnosis to designated laboratories and sharing of the reports with all concerned stakeholders immediately for surveillance and mitigation measures.
- To take measures for disposal of human corpse\ animal carcass as per guidelines as and when provided by government\ technical advisory committee\ other expert committees.

### **Role of BBMP**

- Mapping of high risk, moderate risk and low risk areas.
- Advocacy, training, and capacity building of BBMP members on prevention and control of rabies in their jurisdiction.
- Establishment of quarantine facility at municipality level
- Arranging for dog catching squads / teams.
- Members can immediately Report to Animal Husbandry, Health Department. when an unusual incidence of dog bite or potentially Rabies case in their respective jurisdiction is noted.
- Share the dog bite and rabies case data with all other stakeholders.
- Members can ensure that human bite victim (exposed) gets proper medical treatment consisting of wound washing, ARV, RIG and Post Exposure Prophylaxis surveillance of the surrounding area of a bite for similar cases in the vicinity.
- All health facilities in the BBMP area should be made anti rabies clinics.
- Provide a list of patients exposed to animal bites and the same be maintained in the respective jurisdiction and follow up measures to be done strictly.
- Monitor and strictly implement mass vaccinations campaign of dogs in their respective ward/villages.
- Encourage pet dog registration in their wards/constituencies.
- Monitor pet owners and encourage them to register and vaccinate their pets.
- Monitor mass dog vaccination and dog population management plans undertaken by the concerned agency.
- Coordination with stakeholders for strategic mass vaccination of stray dogs.

- Monitor solid waste management and garbage disposal areas in their wards and identify problem areas of waste collection points and ensure proper waste management to prevent conglomeration of stray dogs in such areas.
- To provide required logistics for undertaking dog population management and mass stray dog vaccinations such as dog pounds (ABC Centre with operation theatre/mobile clinic & dog kennels), dog vans & logistic support to run the program as per the ABC (dogs) rules as and when published by relevant authority.
- Monitoring of slaughterhouses and meat stalls with existing laws by relevant authorities such as FSSAI, AWBI, Department. of Animal Husbandry, etc and regular monitoring of waste generated from these units.
- To collect waste from vegetable, fruit, flower, meat, poultry, and fish market on a day-to-day basis and promote setting up of decentralized compost plant or bio-methanation plant at suitable locations in the markets or near markets ensuring hygienic conditions to accumulation of waste which would attract dogs (free-roaming dogs & community owned dogs).
- Special focus on preventing the disposal of animal carcasses in and around peripheral areas of villages, towns, cities and around forest areas to avoid easy availability of food for free roaming dogs and scavenging wild animals and further prevent the interactions between wildlife & domestic animals.
- To verify and provide compensation to the animal bite victims or deaths as per the Government orders as and when received (Annexure of Government Order attached).
- Collection of surveillance samples from suspected rabid human or animal cases and sending it for further diagnosis to designated laboratories and sharing of the reports with all concerned stakeholders immediately for surveillance and mitigation measures.
- Roles and responsibilities of various stakeholders across different BBMP departments as listed in this action plan.
- To take measures for disposal of human corpse\ animal carcass as per guidelines as and when provided by government\ technical advisory committee\ other expert committees.

#### ❖ **Role of Directorate of Medical Education, Government of Karnataka**

- Rope in both the Government. and Private Medical Colleges to implement Rabies control activities envisaged under National Rabies Control Programme.
- Capacity building or training of the health professionals pertaining to Rabies and NRCP program

- Ensure all medical colleges have anti-rabies clinic and are equipped with facilities for wound washing, administration of ARV and RIG, isolation facilities and other basic amenities for treating dog bite victim.
- Reporting of all dog bite cases and suspect rabies cases in IHIP portal and other prescribed formats to all the relevant stakeholders.
- All suspected/ confirmed rabies cases should be managed at the centre of reporting and referral of these cases to other facilities should be avoided.
- Counselling of all animal/ dog bite victim and their family members
- Maintain a database of cases of dog bite and suspect rabies cases.
- Collection of surveillance samples from suspected rabid human cases and sending it for further diagnosis to designated laboratories and sharing of the reports with all concerned stakeholders immediately for surveillance and mitigation measures.

### ❖ **Role of Department of Education, Government of Karnataka**

Children are most vulnerable to dog bites. It is therefore important to include rabies in the formal education system at all levels in Karnataka state government.

- Incorporation of prevention of rabies and animal bite management in the school health program.
- Inclusion of a chapter on rabies in the Karnataka state curriculum.
- Inclusion of the basic prevention and control measure for rabies in the school curriculum to sensitize children and youth about the disease and measure to be undertaken in case of animal bites.
- Capacity building of teachers on first aid measures in the event of animal bites.
- To coordinate with relevant stakeholders for vaccination of dogs in and around school premises.
- Conduct frequent education camps for creating awareness against Rabies.
- Include the observation of World Rabies Day every 28th of September in the school & college premises.
- Ensure proper waste management in school compounds to prevent access to garbage to free- roaming or pet dogs.

### ❖ **Role of Ministry of Agriculture and Farmers Welfare:**

At the Centre, ICAR, in the Ministry of Agriculture and Farmers Welfare, GoI will be the nodal agency for coordinating, guiding and managing research and education in animal sciences with states for the research activities planned under the animal health component.

In this State Action Plan, the role envisaged for ICAR are as follows: -

- Coordinate and conduct operational research on rabies in collaboration with national, international, diagnostic and research institutions.
- Framing technical guidelines, SOPs and monitoring framework on Rabies elimination.
- Undertake community awareness programme in ICAR network of institute and KVKs.

#### ❖ **Role of Animal Welfare Board:**

- To ensure implementation of Prevention of Cruelty to Animal Act, 1960 in coordination with the state government and local bodies.
- To work with the state veterinary department, and coordinate with the local governing bodies for developing a strategic Dog Population Management (DPM) plan as per the ABC Rule.
- Services and assistance of animal welfare organizations can be utilized with respect to certain aspects of Dog Population Management and Mass dog vaccination drives; & isolation and observation of aggressive dogs suspected with rabies etc.
- The services of AWOs will be utilized constructively for prevention and control of rabies.
- Wherever possible local governments can take assistance from AWOs in social mobilization, community awareness and rescue operations for undertaking the MDV & DPM.

#### ❖ **Role of Department of Information Technology and Biotechnology**

Provide technical and any other support in operational research activities planned by the animal health, human health and all the other stakeholders identified under the SAPRE on Rabies and *Lyssa* virus in the Indian context.

#### ❖ **Role of Ministry of Finance**

The Department of Finance (MOF) should provide adequate fund for the implementation of NAPRE in the country. The adequate budget provision for Rabies prevention and dog population control should be made available at different levels to all stakeholders. MOF should provide contingency funds for Rabies outbreak containment in addition to routine prevention and control activities.

#### ❖ **Role of private partners, non-government sectors, professional medical and veterinary organizations.**

The elimination of dog-mediated rabies envisages active participation of the private and NGO sector.

The key roles identified are as under-

- Develop a strong volunteer network for community engagement & mobilization.
- Involvement of community, animal lovers, animal feeders in catching dogs for vaccination / ABC.
- Promotion of anti-rabies vaccination campaigns.
- Promote responsible pet ownership.
- Promote responsible feeding
- Intensify Rabies awareness education and interpersonal communication campaign.
- Surveillance/reporting of suspected animal & human Rabies cases.
- Ensure animal bite management in humans and animals.
- List of NGOs working towards Rabies control in Karnataka:
  - Worldwide Veterinary Service-Mission Rabies
  - Charlie's Animal Rescue Centre
  - Sarvodaya Sevabhavi Samstha
  - Vet's Society for Animal Welfare and Rural Development
  - Spandana Animal Welfare and Prakruti Seva Society
  - Care of Voiceless Animals
  - People for Animals
  - ASRA

### ❖ **Role of International organizations**

International organizations such as the World Organization for Animal Health (WOAH-PREVIOUSLY OIE), World Health Organization (WHO), Food and Agriculture Organization (FAO,) and other organizations can provide technical support for implementing the strategic components of the SAPRE.

The prevention, control, and elimination of Rabies require an effective and concerted effort from all stakeholders. The stakeholders involved in the operationalization of SAPRE have been categorized as key stakeholders, supporting stakeholders, and private partners.

# **HUMAN HEALTH**

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## Chapter 5- Statistics of Dog Bite and Human Rabies in Karnataka

According to projected population by GoI, the human population of Karnataka State was 6,83,62,000. District wise Projected Population of 2024 in Karnataka along with the data of dog bites and Human Rabies are as follows:

District	Total Projected Population	Dog Bite Cases 2025	Human Rabies deaths 2025	Incidence rate of Dog bite/1000 population	Mortality Rate of Human Rabies /1000 population
Bagalkot	2046383	25152	5	12.29	0.002443
Ballari	1663602	18454	3	11.09	0.000180
Belagavi	5117699	21704	9	4.24	0.000176
BBMP	12738347	31013	0	2.43	0.000000
Bengaluru Urban	1719144	23823	18	13.86	0.001047
Bengaluru Rural	1098087	9968	1	9.08	0.000091
Bidar	1823016	8056	1	4.42	0.000055
Chamarajanagar	997771	4261	0	4.27	0.000000
Chikkaballapura	1279899	12663	1	9.89	0.000078
Chikkamagaluru	1031100	11215	1	10.88	0.000097
Chitradurga	1694098	8339	0	4.92	0.000000
Dakshina Kannada	2153257	27485	2	12.76	0.000093
Davanagere	1650800	10326	0	6.26	0.000000
Dharwad	2016803	13443	1	6.67	0.000050
Gadag	1090898	9791	0	8.98	0.000000
Hassan	1682105	28680	0	17.05	0.000000
Haveri	1663897	6656	0	4.00	0.000000
Kalaburagi	2893471	10851	0	3.75	0.000000
Kodagu	511267	5477	0	10.71	0.000000
Kolar	1595394	12097	1	7.58	0.000063
Koppal	1536088	17879	0	11.64	0.000000
Mandya	1692783	22602	0	13.35	0.000000
Mysuru	3221672	21052	4	6.53	0.000124
Raichur	2115182	12889	0	6.09	0.000000
Ramanagara	1049431	10198	0	9.72	0.000000
Shivamogga	1733873	20548	2	11.85	0.000115
Tumakuru	2551680	22487	0	8.81	0.000000
Udupi	1152563	17213	0	14.93	0.000000
Uttara Kannada	1412356	10771	0	7.63	0.000000
Vijayanagara	1512361	9043	0	5.98	0.000000
Vijayapura	2522541	32317	4	12.81	0.000159
Yadgir	1394433	2891	0	2.07	0.000000
<b>Total</b>	<b>68362000</b>	<b>499344</b>	<b>53</b>	<b>7.30</b>	<b>0.000078</b>



## Chapter 6- Legislation and Public Health Laws

### **CENTRAL LAWS -**

Laws and by-laws provide the sound foundation for effective implementation of any disease control and elimination programme. The legislation allows the competent authority/stakeholders to bring about necessary actions that are required for early detection, reporting and effective management of rabies. The actions required for active dog population management include capacity to: (I) seize animals, vaccinate, quarantine; (ii) control animal infiltration at borders; (iii) effective elimination and safe disposal of potential rabies transmitting risk animal.

#### **The Public Liability Insurance Act, 1991**

Purpose: - Act to provide for public liability insurance to provide immediate relief to the persons affected by accident occurring while handling any hazardous substance and for matters connected therewith or incidental there. (Attached as annexure)

#### **The Clinical Establishments (Registration and Regulation) Act, 2010**

Purpose: - This act has been enacted by the central government to provide for registration and regulation of all clinical establishments in the country with a view to prescribe the minimum standards of facilities and services provided by them.

As per this law, the hospital shall maintain health information and statistics in respect of national programmes, notifiable diseases and emergencies/ disasters/epidemics and furnish the same to the district authorities in the prescribed formats and frequency.

### **STATE LEGISLATION AND PUBLIC HEALTH LAWS-**

#### **1. Karnataka Private Medical Establishment Act**

To monitor the disease surveillance, notification and treatment in the Private Health Sector of Karnataka

*Link to KPME Act Document:Attached as Annexures*

[https://www.indiacode.nic.in/bitstream/123456789/7097/1/21\\_of\\_2007%28e%29.pdf](https://www.indiacode.nic.in/bitstream/123456789/7097/1/21_of_2007%28e%29.pdf)

*Reference is drawn to the Karnataka Private Medical Establishment (KPME) Act – 2007, Section 11(ii): Obligations of Private Medical Establishments which reads as follows:*

*Every private medical establishment shall:*

*(ii) actively participate in the implementation of all national and state health programmes in such manner as the State Government may specify from time to time; and furnish periodical reports thereon to the concerned authorities*

## **2. Epidemic Disease Act:**

Purpose: Notification of Rabies Disease in Karnataka in all Health Institutions.

*Link to Epidemic Disease Act:*

[https://prsindia.org/files/bills\\_acts/acts\\_states/karnataka/2020/Act%2026%20of%202020%20Karnataka.pdf](https://prsindia.org/files/bills_acts/acts_states/karnataka/2020/Act%2026%20of%202020%20Karnataka.pdf)

*Under Section 3 of Epidemic Diseases Act, 2020 Human Rabies is made a notifiable Disease (Annexure )*

## **3. Good Samaritan Act:**

In exercise of the powers conferred by section 11B of the Karnataka Private Medical Establishments Act, 2007 (Karnataka Act 21 of 2007) the Government of Karnataka hereby amends the Schedule to the Said Act as follows, namely: -

In the schedule to the said Act, under the heading, I. PATIENTS CHARTER, A. PATIENTS RIGHTS , Under clause (1), after sub clause (ii), the following shall be inserted, namely:-

"(iia) Every Private Medical Establishment shall administer necessary first aid and take other life saving or stabilizing emergency measures in all emergency cases of dog or animal bite victims who present themselves or are brought before it at the establishment; in the event of such emergencies, without insisting on advance payment, and shall be eligible to claim such claim from the State Government, through District Registration and Grievance Authority at the rates admissible to eligible patients under SAST scheme."

*Link to Good Samaritan Act:*

<https://hfwcom.karnataka.gov.in/storage/pdf-files/Government%20Orders%20and%20Circulars/Karnataka%20State%20Good%20Samaritan%20Act%20Eng.pdf>

*(Annexure)*



## Chapter 7- Infrastructure

### Vaccination Infrastructure in Human

#### ➤ Infrastructure needed for storage of vaccines

All government Primary Health Care Centre (PHC), Community Health Centres (CHCs), Taluk Hospitals, and District Hospitals are equipped with cold chain management systems

#### ➤ Medical facilities available for providing human post-exposure prophylaxis

- All general hospitals are identified as isolation facility for suspected rabies case.
- ED hospitals and all government Primary Health Care Centre (PHC), Community Health Centres (CHCs), Taluk Hospitals, and District Hospitals are designated as anti-rabies clinics
- Anti-rabies vaccines and Rabies immunoglobulin are supplied to all government Primary Health Care Centre (PHC), Community Health Centres (CHCs), Taluk Hospitals, and District Hospitals
- Designated beds or isolation facilities are available at ED Hospital Bangalore, ED Hospital Mysore and ED Hospital Kolar and all district hospitals.
- All ARCs have well maintained cold chains and well-trained personnel for maintaining and administering vaccine.

## District wise details Health Facilities:

Sl.No	District Name	PHC	UPHC	CHC	Sub district Hospital	District Hospital	IDSP - SRL	IDSP - DPHL	Medical College Hospital	Other Health Facility	Other Laboratory	Total
1	BAGALKOTE	48	31	8	5	1	0	1	0	0	0	94
2	BALLARI	29	35	6	2	1	1	1	1	0	0	76
3	BELAGAVI	139	45	16	9	0	1	0	1	1	0	212
4	BENGALURU RURAL	48	12	2	3	1	0	0	0	0	1	67
5	BENGALURU URBAN	36	0	3	4	0	1	0	2	6	5	57
6	BIDAR	53	20	8	4	0	1	0	1	0	1	88
7	CHAMARAJANAGARA	60	5	3	3	0	0	1	1	0	0	73
8	CHIKKABALLAPURA	57	9	2	5	0	0	1	1	1	0	76
9	CHIKKAMAGALURU	89	14	5	6	1	0	1	0	0	0	116
10	CHITRADURGA	81	14	11	5	1	0	1	0	0	0	113
11	DAKSHINA KANNADA	65	31	8	4	1	0	1	0	3	0	113
12	DAVANGERE	80	19	4	4	1	0	1	0	2	0	111
13	DHARWAD	32	38	0	3	1	1	1	1	2	0	79
14	GADAG	39	3	2	4	0	0	1	1	0	0	50
15	HASSAN	135	8	15	7	0	1	0	1	0	1	168
16	HAVERI	69	12	5	6	0	0	1	1	0	0	94

Sl.No	District Name	PHC	UPHC	CHC	Sub district Hospital	district Hospital	IDSP - SRL	IDSP - DPHL	Medical College Hospital	Other Health Facility	Other Laboratory	Total
17	KALABURAGI	93	22	16	6	1	0	1	2	1	0	142
18	KODAGU	29	3	7	2	0	0	0	1	0	1	43
19	KOLAR	65	11	4	5	1	0	1	0	3	0	90
20	KOPPAL	44	10	9	3	1	0	1	1	0	0	69
21	MANDYA	113	10	10	6	0	0	0	1	0	1	141
22	MYSURU	124	44	9	6	1	1	1	1	4	0	191
23	RAICHUR	50	23	6	4	0	0	0	1	2	1	87
24	RAMANAGARA	62	12	3	4	1	0	1	0	0	0	83
25	SHIVAMOGGA	94	13	7	6	1	1	0	1	2	1	126
26	TUMAKURU	148	26	4	9	1	0	1	0	0	1	190
27	UDUPI	63	13	6	3	1	0	1	0	0	0	87
28	UTTARA KANNADA	83	12	3	10	1	0	0	1	1	1	112
29	VIJAYANAGARA	53	12	7	1	4	0	0	0	0	0	77
30	VIJAYAPURA	62	36	9	4	1	0	1	0	0	0	113
31	YADGIR	42	10	6	2	0	0	1	1	0	0	62
32	BBMP	55	231	10	0	0	0	1	3	21	3	324
	<b>Total</b>	<b>2240</b>	<b>784</b>	<b>214</b>	<b>145</b>	<b>22</b>	<b>8</b>	<b>21</b>	<b>24</b>	<b>49</b>	<b>17</b>	<b>3524</b>

\* Data source- IHIP Portal

## ➤ Laboratories Network

### Existing:

- NIMHANS Bangalore is the national reference lab for rabies and WHO referral lab for rabies diagnosis.

### Planned:

- District hospital lab, Haveri has been nominated by state to be strengthened as regional rabies laboratory under National Rabies Control Program (NRCP). Following MoU signing between NCDC, Delhi and district surgeon, DPHL Haveri in August 2023, GIA funds have been approved for the lab establishment. Presently lab has initiated procurement of lab equipment and consumables.

## **Minimum requirements envisaged for laboratories identified for human rabies diagnosis include:**

### ➤ Basic infrastructure and equipment

1. Cold storage facility (refrigerator(-80C) and freezer (-20 and -80C) for storage of samples, nucleic acid, kits and reagents
2. Autoclaves for sterilization and decontamination
3. Class II bio safety cabinet
4. Micro centrifuge
5. Micropipettes
6. Real time PCR equipment
7. PCR labs (4 separate rooms for sample processing/extraction, master-mix preparation (clean room), template addition and PCR equipment)
8. Bio-medical waste management facility

### ➤ Human Resources for Lab

- Medical microbiologists trained in rabies diagnostic techniques, interpretation and reporting of results.

## **Minimum infrastructure for providing human pre- and post-exposure prophylaxis**

1. OPDs available at PHC equipped with cold-chain and provided with basic amenities of vaccine administration like OPD table, sterile 1ml insulin Syringes, etc. along with adequate supply of vaccines. Adequate measures are taken for sterile procedure of vaccine administration
2. Basic infrastructure like cold chain management, wound washing facilities are available at all the ARCs established.
3. IEC materials and wall paintings have been disseminated to districts.

## **Administration of pre- and post-exposure prophylaxis**

- Training provided for medical officer and para-medical staff towards administration of ARV & RIG and wound management

## **Guidance and checklists for health facilities**

- NAPRE is used as guidance document along with prophylaxis and NRCP operational guidelines
- Checklist for pre and post exposure prophylaxis attached as annexure

## **Minimum facilities envisaged at ARC are: -**

1. Wound washing facility
2. Anti-rabies vaccine and RIG
3. Functional referral services for hydrophobia cases
4. Recording and reporting systems

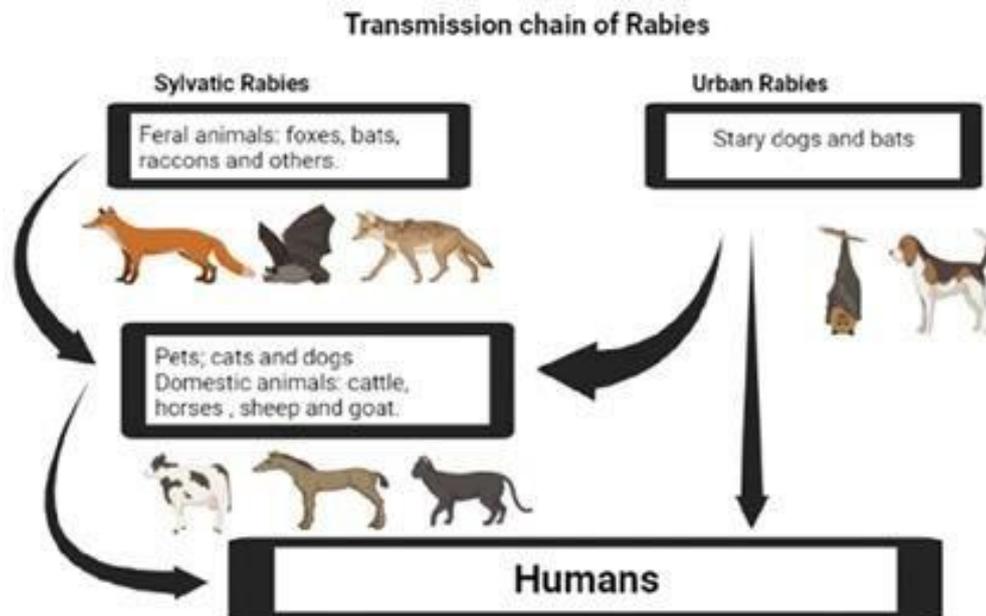


# Chapter 8 - Rabies Prophylaxis

## RABIES TRANSMISSION CYCLE

Rabies the neglected Zoonotic disease is posing a major public health threat to India. It has its roots from the ancient times in India since the Vedic period (1500–500 BC) which is well quoted in Indian scripture Atharvaveda. Also, in Yama, the mythical God of Death- the emissaries of death, has been depicted with two dogs as his constant companions (Deshmukh, 2004).

Rabies is associated with two epidemiological cycles i.e., Urban (dogs are the main reservoir host) and sylvatic (or wildlife).



The epidemiology of this cycle is complex; factors affecting it include the virus strain, the behavior of the host species, ecology and environmental factors.

In any ecosystem, often one and occasionally up to 3 wildlife species are responsible for perpetuating a strain of rabies. The disease pattern in sylvatic cycle may either be relatively stable or occur as a slow-moving epidemic (WOAH-Previously OIE).

But, the Urban cycle is highly unstable and transmission occurs in a fast pace manner. Hence, management of stray dog population in urban settings as well as vaccination is the major concern for effective implementation of SAPRE.

It has been estimated that there are around 17.13 crore stray dogs in India as per 19th livestock Census (2012) with the decreasing trend of 6.67% as compared to previous livestock census of 2007. The dogs are mainly classified under 4 broad categories such as

1. Pets (restricted and supervised)
2. Family dogs (partially restricted, wholly dependent)
3. Community dogs (unrestricted, partially dependent)
4. Feral dogs (unrestricted, independent).

It has been observed that in India most of the dog population comes under last three categories. Most dogs in India, perhaps 80%, would fall into the last three categories (Chaudhuri. S, 2005). In Karnataka, the population of dogs was estimated to be 8.76 lakh as per the 19th Livestock census of 2012.

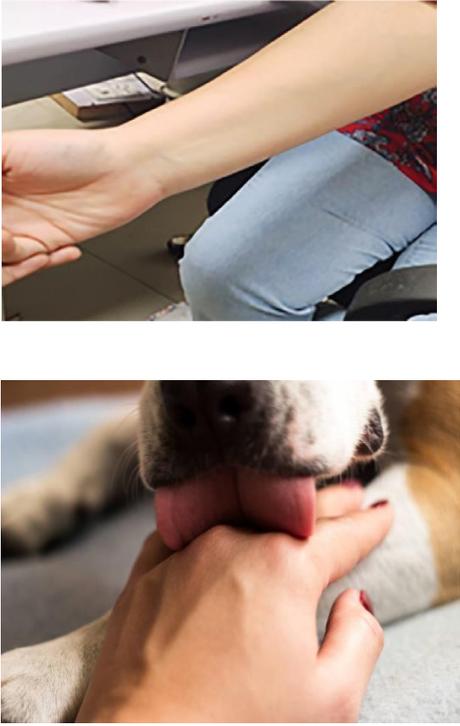
Animal Birth Control policy was introduced (ABC) by Animal Welfare Board of India, where stray dogs are impounded, surgically sterilized and released back to the same area from where they were picked. Dogs should be vaccinated to prevent rabies transmission as they act as reservoirs for a canine variant of the rabies virus. It is advised that the wild animals should not be handled or fed; wildlife behaving abnormally should particularly be avoided. Handling of rabid animals should be done with extreme caution by the experts in supervision of veterinarians and wildlife officers. During necropsy/ autopsy or in circumstances when exposure to rabies virus is there, the protective clothing such as thick rubber gloves, eye goggles and a plastic or rubber apron should be worn.

Reporting should be done on immediate basis with post-exposure prophylaxis; consists of immediate wound cleaning and disinfection, rabies vaccination and the administration of rabies immunoglobulins.

People who have been vaccinated previously must still receive post-exposure prophylaxis, but vaccination eliminates the requirement for rabies immunoglobulin and decreases the number of post-exposure vaccinations. It may also provide some protection for persons with unapparent exposure or enhance immunity if post exposure prophylaxis is delayed.

Rabies vaccines seem to provide some degree of cross-protection against rabies-related *Lyssa* viruses in phylogroup I. But there is little or no cross protection with the viruses in phylogroup II (*Moola* virus and *Lagos* bat virus). The amount of protection against phylogroup I viruses may vary with the specific virus (WOAH- Previously OIE).

# Rabies Prophylaxis in Humans

Category of Exposure	Type of exposure	Recommended (Prophylaxis)	Images
I	<ul style="list-style-type: none"> <li>• Touching or feeding of animal</li> <li>• Licks on intact skin</li> <li>• Contact of secretion/excretion of Rabid animal/human case</li> </ul>	<ol style="list-style-type: none"> <li>1. None (if reliable case history is available)</li> <li>2. Wash exposed areas with soap and running water for 15 minutes and then apply antiseptic.</li> </ol>	
II	<p>Minor scratches or abrasions without bleeding</p> <p>Nibbling of uncovered skin</p>	<ol style="list-style-type: none"> <li>1. Wound management – Wash exposed areas with soap and running water for 15 minutes and then apply antiseptic</li> <li>2. Rabies vaccine</li> </ol>	
III	<p>Single or multiple transdermal bites or scratches</p> <p>Licks on broken skin</p> <p>Contamination of mucous membrane with saliva (eg from licks)</p>	<ol style="list-style-type: none"> <li>1. Wound management</li> <li>2. Rabies Immunoglobulin</li> <li>3. Rabies Vaccine</li> </ol>	

<b>Pre-exposure prophylaxis</b>	Not exposed to bites previously, but given to risk individuals	1. Pre-exposure prophylaxis as per Gol guidelines	
<b>Re-Exposure Prophylaxis</b>	Re exposure is indicated only in such cases where 3 months has elapsed after complete prophylaxis	1. Wound Washing 2. Rabies Vaccine	

***NOTE: Bites by wild animals and all bites in forest areas should be considered as Category III exposure and treated accordingly.***

**Remarks:**

- All immunocompromised (HIV/AIDS, patients on chemotherapy, long term steroid therapy, cancer patients, etc.) persons should be given Rabies immunoglobulins in Cat-2 and Cat-3 bites and Re-exposure prophylaxis.
- Rabies immunoglobulin is not required if vaccine is already taken previously
- Dosage regimen as per Government of India guidelines (Attached as annexure)

## Rabies biologicals in India for humans:

### Details of Anti-Rabies Vaccine (Human)

Name of the firm	Doses & Route of Administration	Presentation (Vial/PFS/other)*
M/s Human Biological Limited, Hyderabad	0.5 ml/1 ml – 1 dose Intramuscular 0.1ml- 1 dose Intradermal	Vial
M/s Cadila Healthcare Limited, Ahmedabad	1 ml: 1 dose Intramuscular 0.1 ml: 1 dose Intradermal.	Vial
M/s Chiron Behring Vaccines Ltd., Gujarat	1 ml: 1 dose Intramuscular 0.1 ml: 1 dose Intradermal	Vial
M/s Serum Institute of India Pvt. Ltd., Pune	1 ml : 1 dose Intramuscular 0.1ml : 1 dose Intradermal	Vial
M/s Bharat Biotech International Ltd. Hyderabad	0.5 ml/1 ml: 1 dose Intramuscular 0.1 ml: 1 dose Intradermal	Vial

\*Wherever the label mentions as multidose that may be considered as multidose, otherwise it may be treated as single dose. As there may be changes in the presentations from time to time, please refer to the current package insert provided by manufacture before use of Rabies Vaccine.

### Details of Human Rabies Immunoglobulin

Importer Name	Product
M/s Bharat Serum and Vaccine Limited, 17th Floor, Hoechst House, Nariman Point, Mumbai-400021	Human Rabies Immunoglobulin solution IP for IM 150IU/ml
M/s Plasmagen Biosciences Pvt. Ltd, KCI Chambers, 2nd Floor, 5th Main Road, Chamarajpet, Bangalore-560018, Karnataka, India	Anti Rabies Immunoglobulin IM E.P. 150IU/ml
M/s Prosper Channel Life science India Private Limited, B-244 (Ramphal Chowk), Sector-7, Dwarka, New Delhi-110077	Human Rabies Immunoglobulin 150IU/ml

Source : DCGI, 2020

## Details of Equine Rabies Immunoglobulin

S. no	Name of firm	Strength	Route of Administration	Presentation of vaccine (Vial/PFS/other)	Shelf life and storage condition
1	M/s Haffkine Biopharmaceuticals Corporation Ltd Pimpri, Pune-411018	Each ml contains 300IU/ml	Intramuscular	5 ml/vials Pack of 10 Vials each box	24 Months Store between 2° C and 8° C
2	M/s Serum institute Pvt Ltd., 212/2 Hadapsar, Pune-411028	1500 IU/ 5mL 1000 IU/ 5mL	Intramuscular	5 ml Vial	24 Months
3	M/s Bharat Serum and Vaccine Ltd Plot No: K-27/ Anand Nagar, Mumbai-400008	1000 IU/ 5mL	intramuscular	5ml Vial	24 months Store between 2° C and 8° C
		300 IU/ mL	intramuscular	5 ml Vial	24 months Store between 2° C and 8° C
4	M/s Central Research institute Distt- Solan (H.P.) 173205	1500 IU/ 5mL	intramuscular	5 ml vial	24 months
5	M/s Virchow Biotech Pvt ltd, Sy.No. 172 part, Gaglapur Village- Quthbullahpur mandal reddy district Telangana	1500 IU/ 5mL Liquid	intramuscular	5 ml vial	24 months
6	M/s Vins Bioroducts Ltd Sy.No.117 Thimapur Village Kothur Mandal mahbubnagar Dist- Telangana	1500 IU/ 5ML Liquid viel 1000 IU/ 5mL (For Export)	intramuscular	5ml vial	24 months
7	M/s Premium Serums and Vaccines pvt Ltd., S.No. 354-1 & 2A/1 Narayangaon, Tal. Junnar, dist. Pune-410504 Pune	1500 IU/ 5mL Vial 1000 IU/ 5mL Liquid	intramuscular	5 ml vial	24 months



## Chapter 9 - Rabies Surveillance- Human Health

Surveillance is the process of systematic collection, collation, and analysis of data with prompt dissemination to those who need to know, for relevant action to be taken. A well-functioning disease surveillance system provides information for planning, implementation, monitoring and evaluation of public health intervention programmes.

Surveillance is a key element in SAPRE so that problems can be identified, and actions could be undertaken taken in a timely manner. A dedicated surveillance system each for human and animal health components (veterinary and wildlife) with linkages at the appropriate level and systematic data sharing on the defined parameter is a prerequisite before targeting a geographical area for control and progressive elimination of rabies.

### Reporting and notification

As per WHO definition, any disease that is required by law to be notified to the government or health authority is classified as notifiable disease. Any suspected or confirmed case of a notifiable disease is required to be reported by clinicians/veterinarian to allow the competent authorities to take necessary actions to monitor and prevent outbreak of disease. A disease is declared notifiable based on several important factors such as – severity, incidence, communicability, socio-economic costs, and preventability; and the list of notifiable diseases may vary from country to country, within country, between the states and between rural and urban areas.

Diseases like rabies are highly infectious and fatal and affect multiple sectors (domestic animals, wildlife conservation, public health, modern services and livestock economies); therefore, it is important to make sure rabies does not spread. Notification will aid in rabies surveillance providing better estimates of rabies burden also it will facilitate contact tracing and incorporation of prompt prophylactic measures to prevent infection in other people exposed to the same source. It will also aid in prompt identification of the emerging rabies foci in animals and interventions to curtail the spread of disease to other animals and humans.

## Components of the surveillance systems-

The surveillance system under IDSP (IHIP) for human rabies and domestic / wildlife animal Rabies has the following component: -

SI No.	Components of Surveillance System	Human Rabies
1	Priority events / data parameters	Surveillance of Animal bites in human Surveillance of deaths due to rabies (suspected and confirmed), Surveillance to estimate coverage of ARV and ARS
2	Disease notification	Disease notification under "Epidemic Diseases Act"/ Clinical establishment act To provide immediate relief by accident/ animal bites The protection of Human Rights Act
3	Data nodes/ Data generation points	For animal bites and ARV /ARS coverage- Anti-Rabies clinic (ARC)/ Model ARCs/ Animal bite management facilities at PHC/ CHC/Taluk hospital/ district hospitals/ medical colleges/ private health facilities.
4	Responsible officers	PHC, CHC, TH, DH - Designated MO Taluk - Taluk Health officer District- designated district nodal officers, nodal officer of ED hospital / tertiary care institutes State – SNO, NRCP
5	Recording and reporting mechanism	All districts are advocated to use the standard recording and reporting formats at all health facilities providing animal bite management facility as under Animal bite exposure register rabies PEP card in duplicate (One for the animal bite victim and another for health facility record) Monthly reporting format for health facility Human rabies case report form for Epidemic Disease hospital (ED hospital)/ other health facility Outbreak investigation form
6	Monitoring and evaluation	The surveillance system will be monitored in terms of timeliness, completeness and usefulness of the data
7	Support functions	Standard guidelines and SOPs preparation Organization of trainings will be done by state NRCP nodal office and district Nodal Officers

8	<b>Data sharing &amp; intersectoral coordination</b>	Human health sector will periodically share the analyzed report of animal bite (time, place & person) incidences Analyzed reports of rabies deaths with respective veterinary and wildlife departments to take appropriate action
9	<b>Infrastructure and logistics</b>	Web-based GIS-enabled IT systems, mobile applications with appropriate infrastructure and manpower support is required for the establishment of surveillance mechanism for both human and animal health component by the respective state government targeting rabies elimination Constitution of Rapid Response Teams (RRT) in the event of rabies deaths/ clustering of animal bites in both human and animal health sectors Establishment of function helpline number/toll-free numbers to assist the general public
10	<b>Information education and communication</b>	Strategic display of appropriate IEC material with the display of contact numbers forte target audience to notify any rabies-related observed events.

## Surveillance of human health component on SAPRE-

The surveillance programme includes clinical/physical, laboratory and serological surveillance as per the standard guidelines by MoHFW. Recording & reporting of every case of animal bite victim and rabies cases occurring in the community is an essential step for the surveillance.

## Mechanism for Human Rabies notification- Karnataka

A suspected/probable/ confirmed case should be notified in IHIP in S, P and L forms mandatorily. And also, in the NRCP formats as listed below:

1. **NRCP-M02:** Compiled monthly report of animal bite victims receiving treatment at anti rabies clinic (to be submitted by district focal point to state nodal officer) district monthly report
2. **District Level Report:** Compiled monthly report of animal bite victims receiving treatment at all district anti rabies clinic (to be compiled by state nodal officer) state monthly report.
3. **NRCP Line List:** Rabies/hydrophobia cases monthly report from ID / any others hospital for suspected/ probable/ confirmed rabies cases/ deaths
4. **P Form:** Line list of Clinically Suspected Human Rabies Case

5. **L Form:** Line list of samples collected at laboratories along with the details of diagnostic tests performed and the result particulars to be sent to the state nodal officer and NRCP division monthly
6. **Case Investigation Form for Rabies Death:** All rabies cases/death reported should be jointly investigated as per the CIF provided and submitted to concerned district and state nodal officers.
7. **Animal Bite register:** All health facilities should maintain animal bite register along with the all the relevant details mentioned.

### Reporting of Dog bite and Human Rabies cases under IDSP

Integrated Disease Surveillance Programme (IDSP) was implemented to strengthen the disease surveillance in the country by establishing a decentralized state-based surveillance system for epidemic prone diseases to detect the early warning signals, so that timely and effective public health actions can be initiated in response to health challenges in the country at the districts, state and national level.

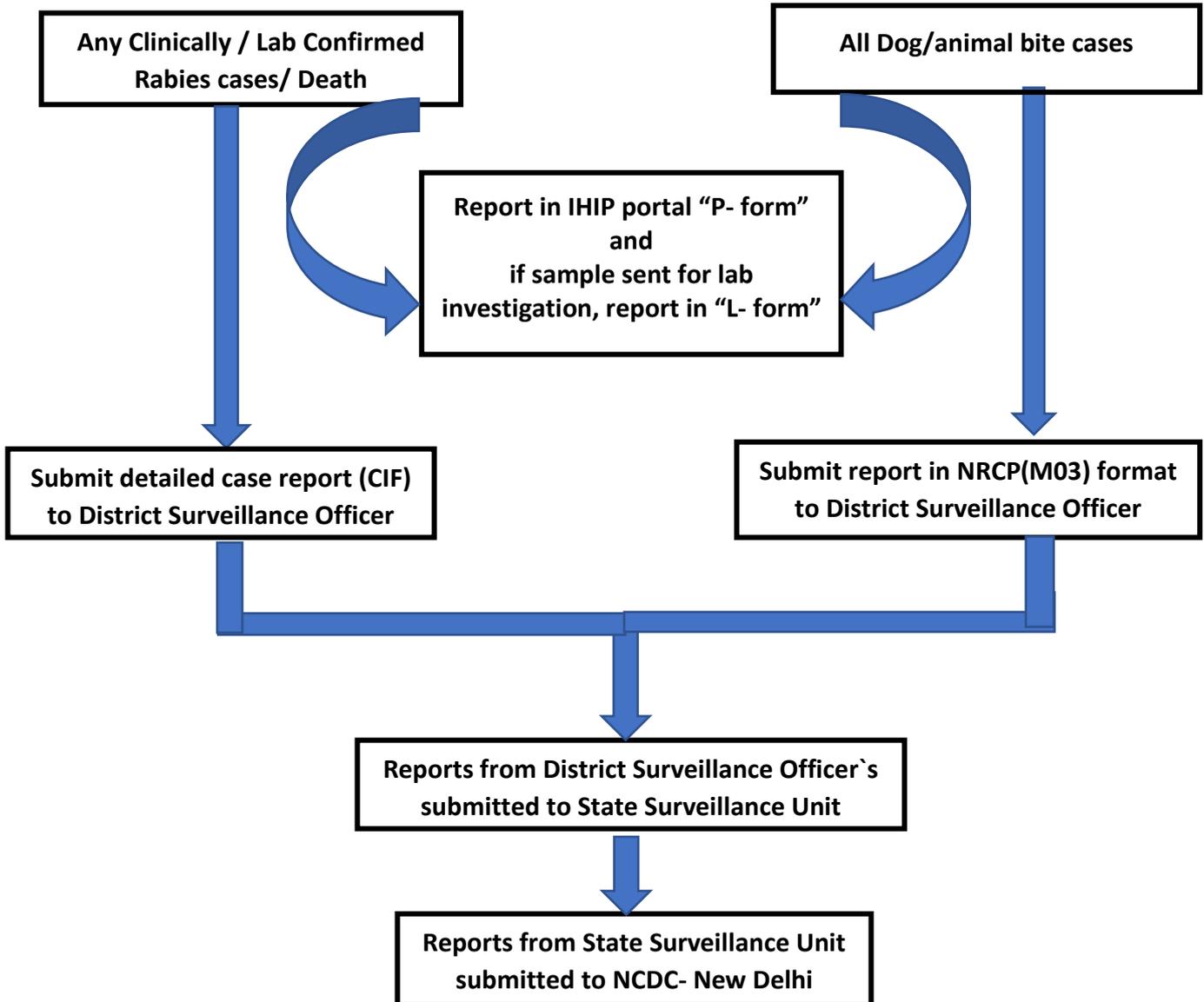
As Rabies is made notifiable disease in Karnataka on 05.12.2022 (Notification attached as Annexure), it is now mandated that all government and private health facilities have to report all suspected and confirmed rabies case to Government of India's IDSP programme web portal Integrated Health Information Platform (IHIP) and NRCP formats

### Mechanism of reporting of dog bite and human rabies cases in IHIP:

Form of IHIP	Who reports	What to report
<b>S- form</b>	Sub centre	Dog bite cases symptoms of Rabies
<b>P- form</b>	Government health facilities Private health facilities	Dog bite or any other animal bite cases (except snakebite) Clinical/lab confirmed rabies cases and Deaths due to rabies
<b>L- form</b>	Rabies diagnostic laboratories	Details of sample test for diagnosing rabies

- The data entered in IHIP can be viewed at the district, state and central level. The data collected through IHIP is used for surveillance, outbreak investigation, and the development of prevention and control measures for rabies.
- **No separate portal for reporting NRCP data and currently IDSP- IHIP is used to report rabies related data.**

## Flow chart to report Human Rabies:



## Standard case definition to be used for human rabies surveillance system:

### Standard case definitions for human rabies (as per NRCP guidelines):

Rabies surveillance under National Rabies Control Program and the Integrated Disease Surveillance Programme (IDSP) is of three types. Suspect case has to be reported by a health care worker in S form, probable case has to be reported by medical officer in P form and lab confirmed case has to be reported by all laboratories having confirmatory test facilities for rabies in L form. The definitions are as under: -

Case	Definition
<b>Suspect case</b>	Death of a human with a history of dog bite few weeks/months preceding death.

	<i>Wherever available, the details of such cases should be shared in a line list– name, age, gender, address – To be reported in S form</i>
<b>Probable case</b>	A Suspected human case plus history of exposure <sup>(1)</sup> to a (suspect <sup>(2)</sup> / probable <sup>(3)</sup> ) rabid animal <i>To be reported in P form</i>
<b>Laboratory confirmed case</b>	A suspect or a probable human case that is laboratory-confirmed by one or more of the following: Detection of rabies viral antigens by <b>direct fluorescent antibody test (FAT)</b> or by <b>ELISA</b> in clinical specimens, preferably brain tissue (collected post-mortem). Detection by FAT on skin biopsy (ante mortem) FAT positive after inoculation of brain tissue, saliva or CSF in cell culture, or after intracerebral inoculation in mice or in suckling mice Detectable <b>Rabies-neutralizing antibody titre</b> in the serum or the CSF of an unvaccinated person Detection of <b>viral nucleic acids by PCR</b> on tissue collected post-mortem or intra vitam a clinical specimen (brain tissue or skin, cornea, urine or saliva). <i>To be reported in L- form</i>

**Note:**

1. **Exposure** is usually defined as a bite or scratch from a rabies-susceptible animal (usually dogs). It could also be lick exposure to open wounds, abrasion, mucous membranes of the patient.
2. **A Suspect rabid animal** is a rabies-susceptible animal (usually dogs) which presents with any of the following signs at the time of exposure or within 10 days following exposure: unprovoked aggression (biting people or animals or inanimate objects), hypersalivation, paralysis, lethargy, abnormal vocalization, or diurnal activity of nocturnal species. Whenever the history of mentioned signs cannot be elicited, the history of exposure to a rabies susceptible animal would be considered adequate.
3. **A probable rabid animal** is a suspect rabid animal (as defined above) with additional history of a bite by another suspect / probable rabid animal and/or is a suspect rabid animal that is killed, died or disappeared within 4-5 days of observing illness signs.

Source:

<https://rabiesfreeindia.mohfw.gov.in/resources/uploads/PageContentPdf/169391122312.pdf>



## Chapter 10 - Laboratory Diagnosis- Human Rabies

Rabies, an acute progressive, fatal encephalomyelitis, transmitted most commonly through the bite of a rabid animal, is responsible for an estimated 50 thousand human deaths worldwide. The true disease burden and public health impact due to rabies remain underestimated due to lack of sensitive laboratory diagnostic methods. Therefore, timely diagnosis of rabies can help initiate prompt infection control and public health measures, obviate the need for unnecessary treatment/medical tests, and assist in timely administration of pre- or post-exposure prophylactic vaccination to family members and medical staff. Ante-mortem diagnosis of human rabies provides an impetus for clinicians to attempt experimental therapeutic approaches in some patients, especially after the reported survival of a few cases of human rabies. Recent advances in technology have led to the improvement or development of several diagnostic assays which include methods for rabies viral antigen, antibody detection, assays for viral nucleic acid detection, and identification of specific biomarkers.

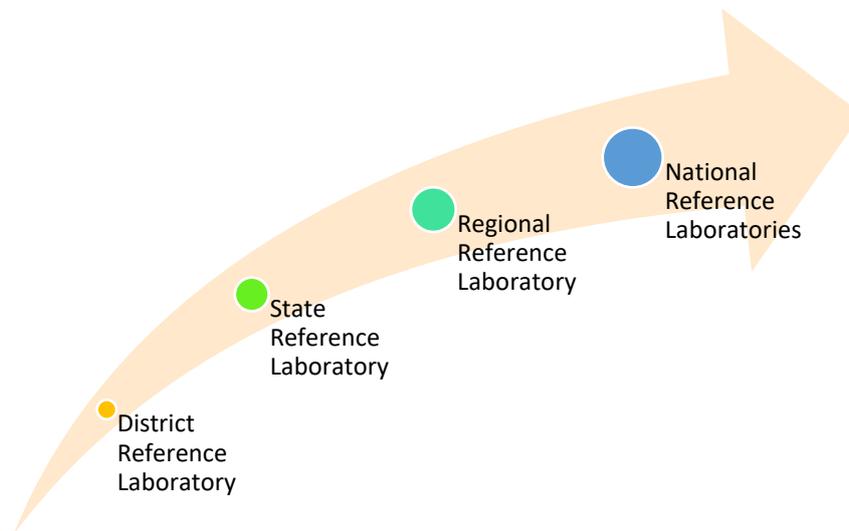
Laboratories are essential to disease diagnosis and surveillance. Most epidemiological surveillance systems require a laboratory component for confirmation. These serve both for the routine confirmation of clinical syndromes and rapid confirmation of the causative agent in outbreaks. The diagnosis of rabies is essentially clinical however role of rabies laboratory is undisputed and warranted in many situations.

### **Importance of laboratory confirmation of human rabies**

- Confirmation of clinical diagnosis-especially in paralytic/atypical cases
- Patient management/barrier nursing/disinfection of ICU facilities
- Prophylactic vaccination to relatives, clinical & nursing staff
- Surveillance and estimation of disease burden
- Confirmation/monitoring of disease-free status
- Characterization of causative agent/molecular epidemiology with regards to future scope for inclusion of surveillance of non-rabies *lyssa* virus in National Rabies Control Programme/National Action Plan for rabies elimination

# Organization of laboratory network for rabies diagnosis in NAPRE

Under the SAPRE, a tiered structure of the laboratory facilities for rabies diagnosis needs to be established at various levels in a phased manner. The State Referral Laboratories (SRL) will be technically supported, trained and monitored by the National Referral Laboratories (NRL) and Regional Referral Lab (RRL).



## National Referral Laboratories

The identified National Laboratories in the selected part of the country will serve as National Referral Laboratories (NRL) for handling both human and animal samples. NRL will play a key role in technical support, capacity building and supervision of all the sub-national laboratory activities i.e. RRL, SRL and district level laboratories.

### Activities envisaged at NRLs are as under: -

1. NRL will play a key role in technical support, capacity building and supervision of all the sub-national laboratory activities. The NRL will facilitate capacity building of the states on following technical aspects:
  - Surveillance for rabies virus.
  - Sero-monitoring for vaccine efficacy
  - Evaluation of new diagnostic tests for rabies
  - Standard Laboratory diagnostics and protocols.
  - Quality assurance systems.
  - Bio safety and Bio security awareness and practice.
2. A subset of samples will be sequenced to determine the genotype and maintain a national database on the virus genotypes circulating in the population.
3. NRL will frame Standard guidelines and technical documents on lab aspects for Rabies.
4. Participation in WHO/OIE (now WOA) proficiency testing and overall quality control.
5. Participate in Research and survey activity.
6. Certification for international transportation of pet animals such as dogs and cats.

7. NRL will facilitate and coordinate sharing of data and line list of rabies cases to all the stakeholders and sub national labs.

### **Regional Referral Laboratories (RRL):**

The identified regional laboratories in certain regions of the country will serve as an RRL for 5 to 6 states in its jurisdiction to support the rabies diagnostics in human as well as animal samples. The RRLs have been established at the identified medical and/or veterinary institute.

Department of Neurovirology, NIMHANS, Bangalore serves as Regional Reference lab for rabies and WHO Referral Lab for rabies diagnosis, research, and training. It supports rabies diagnosis for 5 to 6 states.

### **State Regional Laboratory (SRL):**

At least 2 to 3 State Referral Laboratories (SRL) will be identified in each state for rabies diagnosis in selected medical colleges laboratory/veterinary institutes/colleges, infectious disease hospitals and tertiary care institutes. They will undertake capacity building on various epidemiological and microbiological aspects of rabies.

#### **➤ Role of State Level Laboratories**

The SRLs will perform the serological and Nucleic Acid Amplification (NAAT) tests in a phased manner.

- ◆ Undertake capacity building on the epidemiological and microbiological aspects of rabies diagnosis by using qualified ELISA, PCR, and FAT etc.
  - ◆ Share the reports of testing with the district labs.
  - ◆ Send a subset of samples to NRL for sequencing
  - ◆ Upload the outcome of testing in IHIP portal.
- District hospital lab, Haveri has been nominated by state to be strengthened as regional rabies laboratory under National Rabies Control Program (NRCP). Experts from NCDC inspected the lab and the action plan was approved by the Laboratory Expert Group (LEG) Committee. An MoU was signed between NCDC, Delhi and district surgeon, DPHL Haveri in August 2023. Following this GIA funds were approved for the lab establishment and functioning. Lab has been approved for initiating Rabies IgG ELISA testing. Presently lab has initiated procurement of lab equipment, consumables and reagents.

#### **➤ The labs with the following equipment need to be selected for the SRL to perform the tests;**

##### **➤ Minimum Equipment required in SRL to perform the tests:**

- ELISA reader and washer
- Centrifuge

- Deep freezer(-20°C)
- Autoclave
- Incubator
- Deep freezer(-80°C)
- Micropipettes
- Water bath
- Real Time-PCR machine
- Fluorescent microscope
- Class II biosafety cabinet
- Refrigerated centrifuge
- Vortex

As the DPHL Haveri had some of the required equipment being used for communicable disease diagnosis, a comprehensive gap analysis has been done before proposing for new equipment for the identified SRL.

### ➤ Interpretation of the results and reporting to the national portal

The results of the diagnostic tests should be interpreted appropriately i.e., positive, negative, false positive and false negative. The necessary positive and negative controls should be used along with the test samples. The test results reported by the technical staffs should be verified by the microbiologist for the further confirmation. Followed by this, the obtained results should be entered in the IHIP portal by the trained staffs for the rabies surveillance.

### **District level laboratory**

The capacities of district labs will be strengthened in a phased manner. These laboratories will perform the testing and would also be linked to SRLs, RRLs and NRLs and other ARCs in the district, sub-district levels in the region. The manpower will be trained on using LFA, Anti-Rabies titre estimation by ELISA and PCR.

Below the district i.e., at the block level, no standalone rabies diagnostic facilities are envisaged, however, the Rapid Diagnostic Tests (RDTs) like LFA by the Block level veterinary department will be performed for confirmation of a clinical diagnosis of the animal.

### **Role of district level laboratories**

1. Provide training on collection of samples, packing, transportation to block / taluk level / wildlife veterinarians and medical officers and staff.
2. Submit post-mortem animal samples (brain/) to the regional/ state level laboratories for DFA/ dRIT along with the result of LFA.
3. Conduct Lateral Flow Assay (LFA) and share results with SRL
4. In case of human ante mortem and post-mortem diagnosis, the samples will be referred to the higher level as per the standard guidelines.

# Sampling techniques in human rabies cases

Sampling and various laboratory tests available for diagnosis of human rabies (ante-mortem & post-mortem) and animals (post-mortem) are as under:

## 11.3.A Post mortem diagnosis

Brain tissue is the preferred specimen for post-mortem diagnosis in both humans and other animals.

### ➤ Invasive methods:

➤ **Opening of Skull:** In many situations, it may not be possible to remove the brain for post-mortem sampling because of factors such as lack of family consent and bio safety issues.

➤ **Non-Invasive Methods:** Challenges faced in invasive techniques can be overcome by collecting samples with effective, well-established less invasive techniques such as foramen magnum technique and intranasal technique.

#### **A. Foramen magnum/occipital foramen technique :**

- 1 Sample can be collected without opening the skull by introducing a 5-mm drinking-straw or a 2-mL disposable plastic pipette into the occipital foramen in the direction of an eye or using a trocar to make a hole in the posterior wall of the eye socket and introducing a plastic pipette or straw.
- 2 Samples can be collected from the rachial bulb, the base of the cerebellum, the hippocampus, the cortex and the medulla oblongata. When a straw is used, it should be pinched between the fingers to prevent material from escaping on withdrawal.

#### **B. Intranasal Technique:**

1. Sample can be collected by inserting trocar through nasal cavity and doesn't affect integrity of face shape.

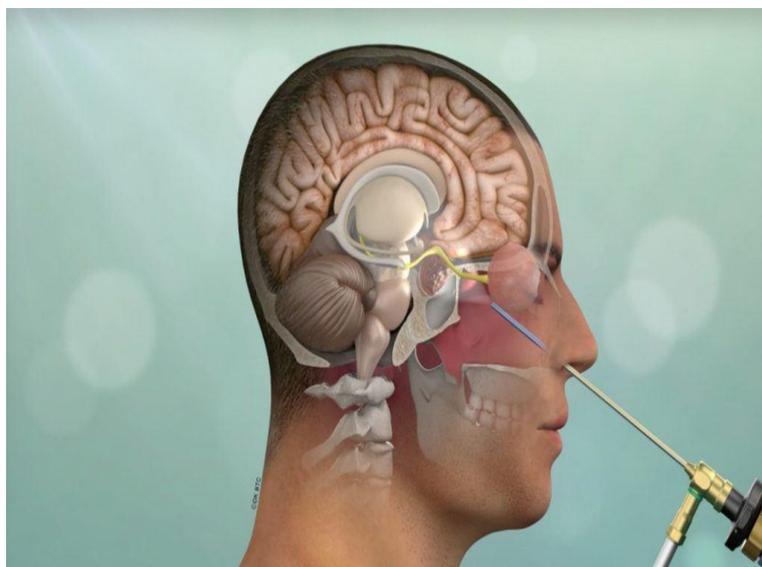


FIGURE 1 INTRANASAL TECHNIQUE

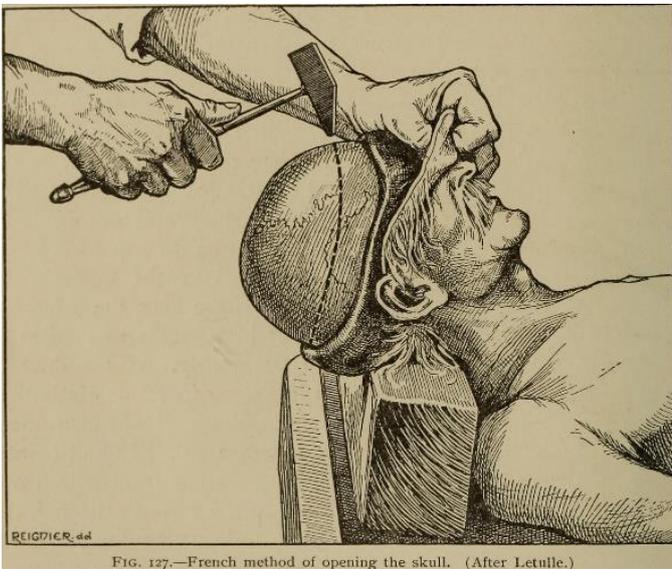
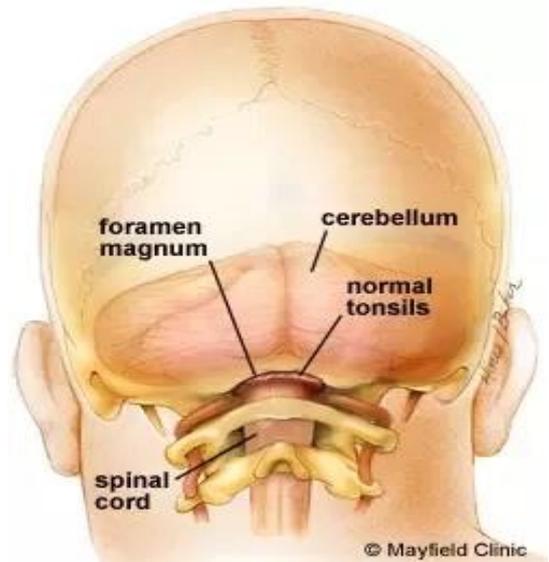


FIG. 127.—French method of opening the skull. (After Letulle.)

**FIGURE 2 OPEN SKULL METHOD**

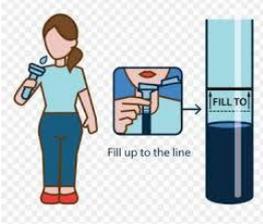
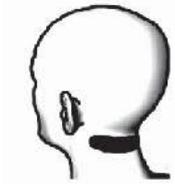
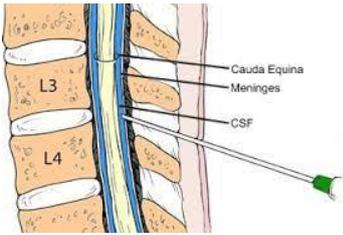
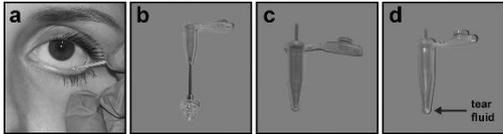
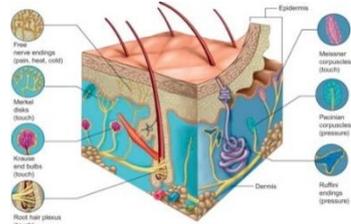
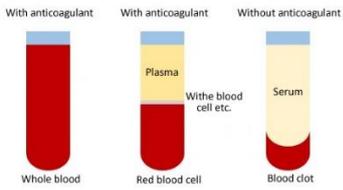


**FIGURE 3 FORAMEN MAGNUM**

### 11.3.B Ante-mortem (before death) diagnosis

This method can be used to diagnose rabies ante-mortem

Samples that can be collected for ante-mortem diagnosis are as follows:

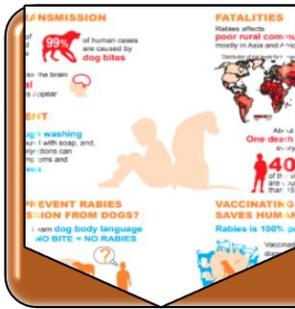
Secretions	Biological Fluids	Tissues
<p>Urine</p> 	<p>Saliva</p> 	<p>Nuchal skin biopsy</p> 
	<p>CSF</p> 	
	<p>Tears</p> 	<p>hair follicles</p> 
	<p>Serum</p> 	

**Note:**

- a. Although antibody detection in serum and CSF may not be very sensitive for ante-mortem diagnosis, particularly in the early course of illness, a positive result provides valuable diagnostic information.
- b. The samples that provide the highest diagnostic sensitivity are pooled saliva samples taken 3-4 times a day at intervals of 3–6 h and nuchal skin biopsies including hair follicles.
- c. Ideally, brain tissue should be kept refrigerated or frozen until testing. If this is not possible, samples can be preserved at ambient temperature in a 50% glycerine–saline solution. Freezing of samples in glycerine is not recommended. The glycerine must be removed by washing prior to testing,

Sample collection and transportation guidelines and test request forms are attached as annexure

For more information regarding Laboratory Aspects of Rabies diagnosis, follow the link-  
<https://rabiesfreeindia.mohfw.gov.in/resources/uploads/PageContentPdf/169391055743.pdf>



# Chapter 11 - Program Status in Karnataka- Human Health

## Journey from neglected tropical disease to a priority zoonosis-

The state has been actively implementing the National Rabies Control Programme (NRCP) in alignment with the objectives set by the Ministry of Health & Family Welfare. The program is being implemented through a multi-sectoral "One Health" approach, focusing on prevention, timely management, surveillance, and awareness.

### 1. Prompt management of animal bite cases with Free Post Exposure Prophylaxis (PEP)

- Anti-Rabies Vaccine (ARV) is provided free of cost at all government Primary Health Care Centre (PHC), Community Health Centres (CHCs), Taluk Hospitals, and District Hospitals. (Circular annexed)
- Every head of the Medical Establishment (Government and Private Hospitals) shall maintain a mandatory stock of Anti-Rabies Vaccines and Immunoglobulin at all times.
- Under Section 11(1) of the Karnataka Private Medical Establishment Act, 2007, Every Private Medical Establishment shall administer necessary first aid and take other lifesaving or stabilizing emergency measures in all emergency cases of dog or animal bite victims who present themselves or are brought before it at the establishment; in the event of such emergencies, without insisting on advance payment, and shall be eligible to claim such claim from the State Government, through District Registration and Grievance Authority at the rates admissible to eligible patients under SAST scheme. (GO annexure no.34)
- Rabies Immunoglobulin (RIG) is administered to all Category II and III bite cases:
  - Available free of cost at Primary Health Care Centre (PHC), Community Health Centres (CHCs), Taluk Hospitals, and District Hospitals.
  - Stocks of both ARV and RIG are regularly monitored and replenished through Karnataka State Medical Supplies Corporation Limited (KSMSCCL), ensuring availability at all levels.
  - Currently Human rabies immunoglobulins (HRIG) and Equine RIG (ERIG) is used in Karnataka.

Comparison Indicators	Equine RIG (E RIG)	Human RIG (H RIG)
Recommended dose	40IU/Kg body weight	20IU/Kg body weight
Dose required for 60 Kg adult in IU	2400 IU	1200 IU
Quantity in ml/vial	5 ml	2 ml
No of Vials required	1.6 vials (1500 IU per vial)	4 vials (300 IU per vial)
Average Cost per vial (INR)	₹317.10	₹3,558.24
Average cost for 60 kg adult (INR)	₹507.36	₹14,232.96

## 2. Capacity Building:

**2025-26:**

### Achievements:

- State-level training: 2 batches for 80 Medical Officers including Casualty Medical Officers, Pediatricians , Physicians
- District-level training: 31 batches covering 646 Medical Officers as on Feb 2026

## 3. Surveillance and Reporting of Animal Bites and Rabies Cases

- Regular surveillance and data entry are carried out through the Integrated Health Information Platform (IHIP).
- Monthly reporting is compiled using Google spreadsheets and reports are submitted to the Government of India (GoI).
- All Human Rabies deaths are reviewed and audited at the district's u/c Deputy Commissioners, and joint inter-departmental actions are initiated for prevention and control at the district level.

## 4. Strengthening of Laboratory Diagnosis

- NIMHANS, Bengaluru, serves as National Reference lab for Rabies and WHO Referral Lab for rabies diagnosis, research, and training. It supports Rabies diagnosis for many States.
- Samples from suspected cases are referred and tested free of cost
- In consonance with NAPRE, district hospital lab, Haveri has been nominated by state to be strengthened as regional rabies laboratory under National Rabies Control Program (NRCP). Experts from NCDC inspected the lab and the action plan was approved by the Laboratory Expert Group (LEG) Committee. An MoU was signed

between NCDC Delhi and district surgeon, DPHL Haveri in August 2023. Following this GIA funds were approved for the lab establishment and functioning. Lab has been approved for initiating Rabies IgG ELISA testing. Presently lab has initiated procurement of lab equipment and consumables.

## **5. One Health surveillance and joint actions**

- Joint steering committee for dog mediated rabies elimination is formed at both state, district and BBMP Levels (GO annexed)
- Under the One Health approach, surveillance is extended to areas with animal rabies positive cases are reported from Karnataka Veterinary, Animal and Fisheries Sciences University KVAFSU monitored laboratories.
- District Surveillance Officers (DSOs) coordinate with the Department of Animal Husbandry and Veterinary Services (AHVS) for joint monitoring, and risk area vigilance.
- District-level Zoonosis Committees (Added as Annexures) are constituted under the chairmanship of the Deputy Commissioner (DC), and regular meetings are held to review progress and plan joint actions.

## **6. Advocacy, communication, and social mobilization (IEC)**

- Districts have been provided with:
  - IEC videos,
  - Post exposure prophylaxis treatment protocol posters,
  - FAQs pamphlets.
- As part of World Rabies Day, IEC activities are conducted at all levels of Health institutions every year on Sept 28<sup>th</sup>.

## **7. Rabies Free Cities Initiatives:**

As per Gol directives 11 municipal corporation of Bellary, Belgaum, Bangalore (BBMP), Davanagere, Hubli-Dharwad, Kalaburagi, Mangalore, Mysore, Shivamogga, Tumkur, Vijayapura are under rabies free cities initiatives, where city task force has to be formed and city action plan to eliminate dog mediated human rabies by 2030 has to be done and implemented. Communication from commissioner HFWS to all municipal commissioners and meeting through VC was conducted.

## **8. Existing rapid response team for outbreak**

Rapid response team is multi-speciality team that assists in the management of the outbreak at state and district level.

Main role of RRT are:

- ◆ Investigation and confirmation of outbreak
- ◆ Assist Local health staff in controlling the outbreak
- ◆ Follow-up on control measures undertaken
- ◆ Working in co-ordination with concerned stakeholders

The Government. Order of State RRT is attached as Annexure.

# **ANIMAL HEALTH**



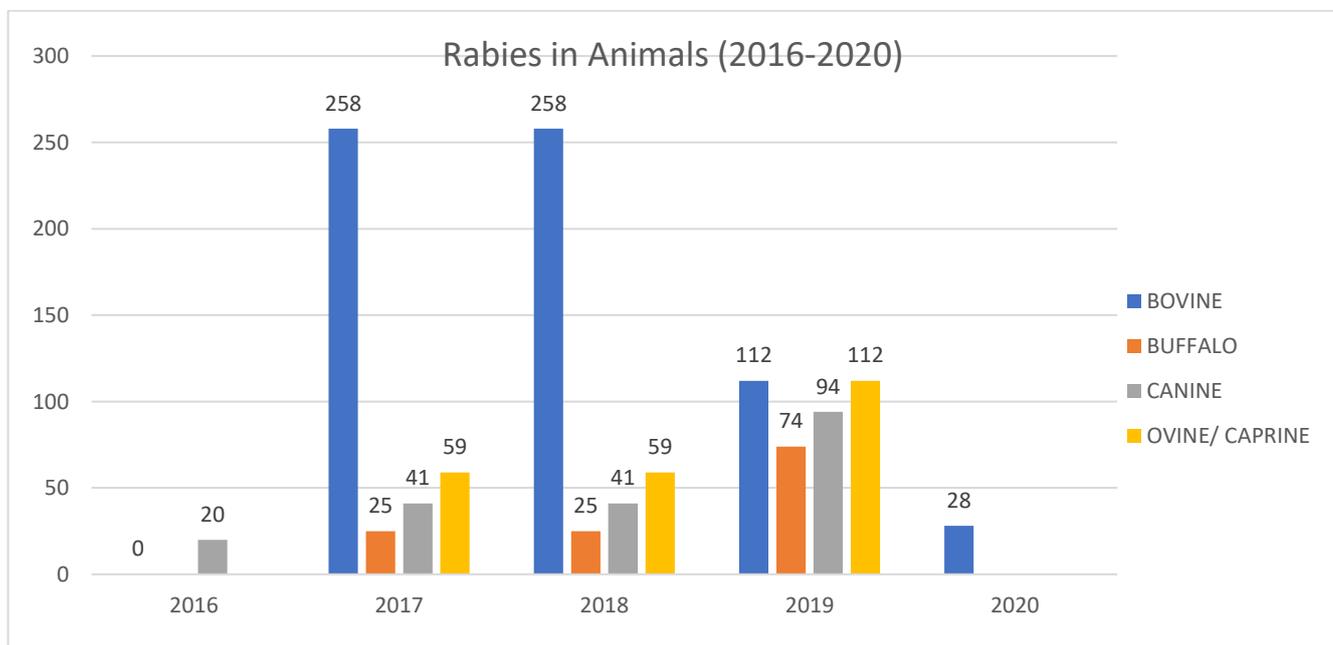
# Chapter 12- Animal- Health Statistics in Karnataka

## Dog population

According to 2019, livestock census, the dog population of Karnataka state was 12,85, 825

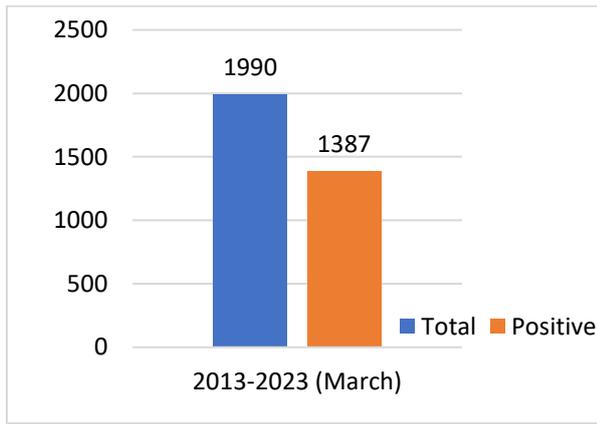
SI No	Districts	Dogs	SI No	Districts	Dogs
1	Bangalore (Urb)	109727	16	Mandya	23894
2	Bangalore Rural	25604	17	Udupi	118467
3	Chikkaballapura	15443	18	Belgaum	77801
4	Chitradurga	28582	19	Bagalkot	40378
5	Davanagere	18959	20	Bijapur	45578
6	Kolar	26386	21	Dharwad	21198
7	Ramanagara	15057	22	Gadag	23594
8	Shimoga	88359	23	Haveri	21591
9	Tumkur	37334	24	Uttara Kannada	74292
10	Mysore	26406	25	Gulbarga	26337
11	Chamarajanagar	7609	26	Bellary	22807
12	Chikmagalur	60808	27	Bidar	7064
13	Dakshina Kannada	172891	28	Koppal	22743
14	Hassan	32304	29	Raichur	24256
15	Kodagu	53939	30	Yadgir	16417
				<b>Total</b>	<b>12,85,825</b>

## Rabies in animals in Karnataka state

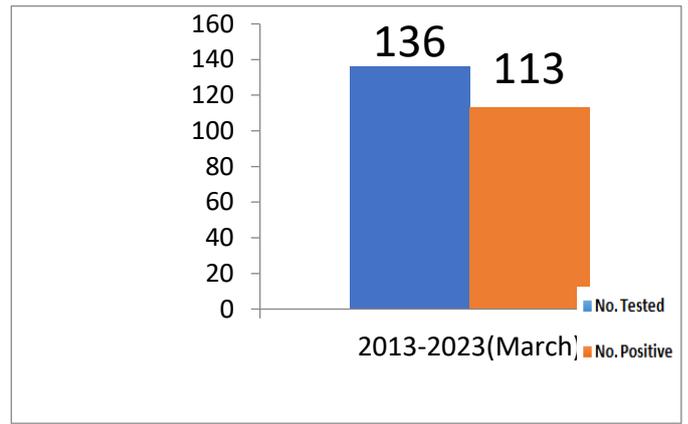


As per the annual reports of Ministry of Fishery, Animal Husbandry and Dairying, Government of India, rabies has been reported from cattle, buffaloes, canine, ovine and equines. The year-wise reported deaths among cattle, buffaloes, canine and ovine species in India are 68 (2016); 383 (2017); 383(2018); 196 (2019) and 14(2020).

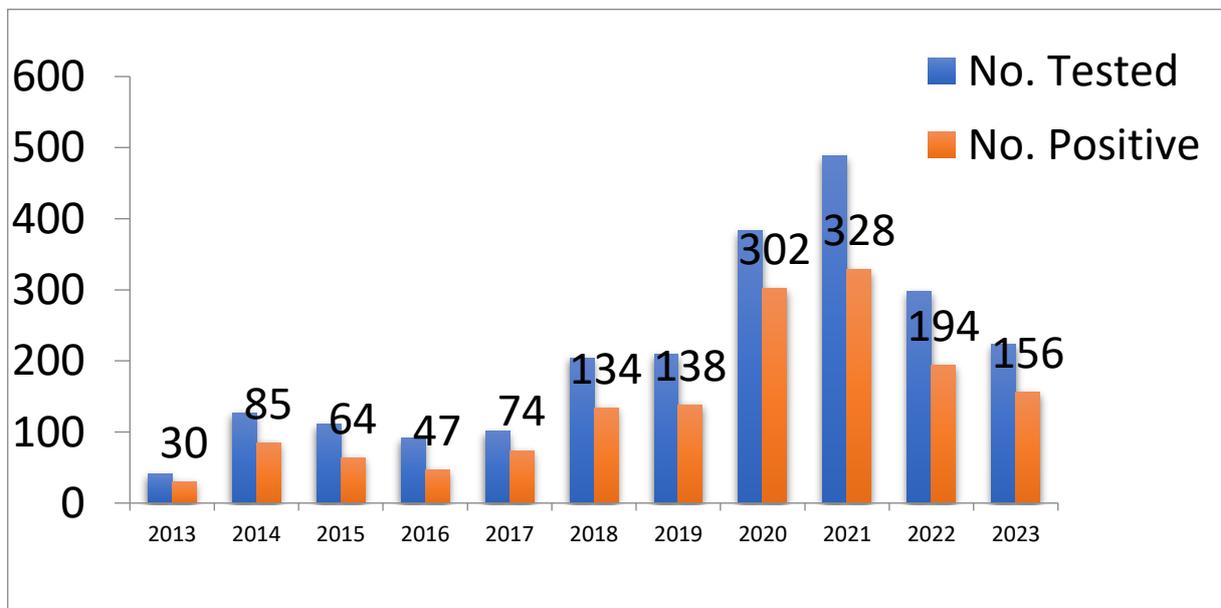
The details of brain samples of various species of animals including dogs, cattle & buffalo and other species of animals in India tested at the KVAFSU – CVA rabies diagnostic laboratory during 2013-2023 are provided below.



Total number of dogs tested in KVAFSU-CVA Rabies Diagnostic Laboratory 2013-2023



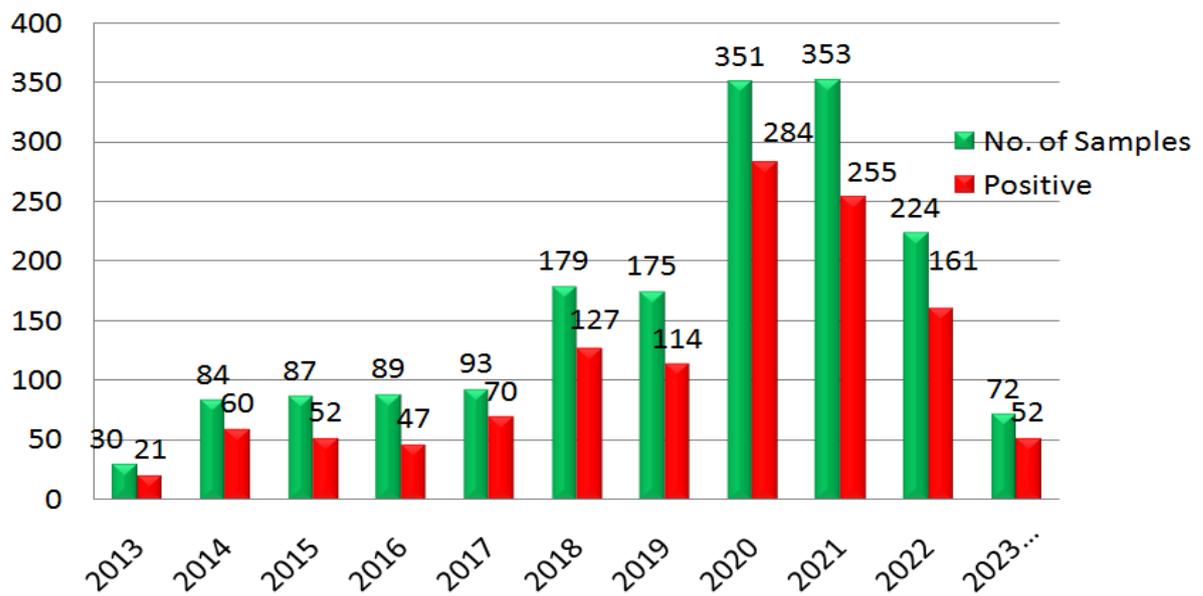
Rabies in Cattle & Buffalo reported by KVAFSU-CVA- Rabies during 2013 - 2023



Rabies in animals during 2013-2023 reported at KVAFSU-CVA-rabies diagnostic laboratory.

As for the state of Karnataka, since 2013 as of 31<sup>st</sup> March 2023, the laboratory has received and tested 1737 brain samples from various animals’ species including Dog, cattle, cat, jackal, bullock, horse, pig, sheep, buffalo, goat, bat, zebra, squirrel, leopard and monkey

of which dog brain samples were predominant (n=1566, accounting for 90% of dog brain samples among all species of animals). Out of 1737 samples tested, 1243 samples were tested to be positive for rabies by DFA, accounting for 72 % positivity for rabies.



**Total samples Tested – 1737    No. Positive – 1243    Percentage- 72% positivity**  
**Samples Received(Dog, Cattle, Cat, Jackal, Bullock, Horse, Pig, Sheep, Buffalo, Goat, Sheep, Bat, Zebra, Squirrel, leopard, Monkey)**

Rabies in animals in Karnataka during 2013-2023 as reported to KVAFSU-CVA-rabies diagnostic laboratory.

Further, out of 1566 dog brain samples tested during 2013-2023 from Karnataka by DFA, 1148 samples were found positive for rabies viral inclusions by DFA. This accounts for 73 % positivity of rabies in dog brains tested.



## Chapter 13 - Legislation and Animal Health Laws

### **The Prevention & Control of Infectious and Contagious Diseases in Animals Act, 2009:**

An act to provide for the prevention, control and eradication of infectious and contagious diseases affecting animals, for prevention of outbreak or spreading of such diseases from one state to another, and to meet the international obligations of India for facilitating import and export of animals and animal products and for matters connected therewith or incidental thereto.

Rabies is a schedule\* disease, under [See sections 2 (o) and 38], under (a), at no 15.

(As per chapter I, definitions at no 2, “scheduled disease” means any disease included in the Schedule)

Under chapter 1, Control of scheduled diseases, at no 4 of reporting scheduled diseases obligatory. — (1) (\*Every owner, or any other person, non-governmental organization, public bodies, or the village panchayat, in charge of any animal which he or it has reason to believe to be infective of a scheduled disease shall report the fact to the Village Officer or village panchayat in-charge, who may report the same in writing to the nearest available Veterinarian).

### **Prevention of Animal Cruelty Act- 1960’ and the ‘Animal Birth Control (Dogs) Rules’, 2023**

Purpose: - ‘Animal Birth Control (Dogs) Rules’, 2023, is created under the ‘Prevention of Animal Cruelty Act 1960’ prescribing humane methodology for street dog population management, ensuring rabies eradication, and reduction in man–dog conflicts.



## Chapter 14 - Infrastructure

### Vaccination Infrastructure:

#### **Veterinary institutions available in Karnataka**

Veterinary institutions of department of AH and VS, Government. of Karnataka envisaged for rabies control activities such as vaccination of dogs, conducting post mortem examinations, etc are as follows:

S. No.	Level	No. of units
1	Super speciality hospitals	1
2	Speciality veterinary hospitals	4
3	District poly clinic hospitals	27
4	Veterinary hospitals (taluk & hoblis)	665
5	Mobile veterinary clinics (taluka level)	176
6	<b>Veterinary dispensaries</b> (hoblis & villages)	2135
7	Primary veterinary centres	1206
8	Mobile veterinary units	290
<b>Total</b>		<b>4504</b>

#### **Personnel and infrastructure:**

- Personnel and infrastructure needed for rabies surveillance, dog catching and vaccination
- Anti-rabies vaccine in sufficient quantity for pre and post exposure surveillance.
- Trained personnel for catching the dogs with required equipment's.
- Sufficient quantity of needles and syringes, hand sanitizers, gloves to conduct vaccinations.
- Vehicles should be provided for transportation of vaccinators and materials.

#### **Infrastructure needed for surgical sterilisation:**

ABC operation:

1. Operation theatres
2. Necessary surgical equipment

3. Suturing materials
4. Medicines for anaesthesia
5. Antibiotics
6. Ointments
7. Bandage materials
8. Cotton
9. IV infusions
10. Other essential materials

Rabies Surveillance forms an important component of Rabies control in Animals. All Veterinary Institutions/Hospitals up to Hobli (Panchayat/ Block) levels should have infrastructure to handle and quarantine dogs suspected for rabies. These infrastructures have to be provided by the local municipal bodies, namely the permanent Infrastructure for Anti-Rabies Vaccination programmes and the human resources. The local bodies which are mandated and made responsible under ABC rules 2023 to undertake ABC/ARV programme have to make regular annual budgetary provision for to meet the capital expenditure for establishing the permanent infrastructure as well as the recurring cost of human resources. This infrastructure can be utilized to carry out integrated ABC/ARV in the jurisdiction of the concerned local municipal bodies or gram panchayats. Though the panchayats are the primary funding institution for the programme other avenues such as CSR funds may also be explored.

#### **Permanent Infrastructure.**

1. Building with kennel facilities to house at least 20 dogs
2. Post-mortem room to collect brain sample
3. Dormitory for 3-4 dog handlers.
4. Catching nets
5. One dedicated LMV vehicle with provision to keep cages

#### **Human resources:**

To establish a Rapid response team (RRT) to attend and capture the suspected dog rabies case on call in its jurisdiction. The RRT should consist of:

1. One veterinarian to oversee and perform the activities of rabies surveillance, quarantine, brain sampling and mass dog vaccination.
2. 3-4 trained dog handlers.
3. One trained para-veterinarian to carry out mass dog vaccination

#### **Infrastructure needed for surgical sterilisation:**

The infrastructure and protocols needed to carry out ABC operation is outlined in the SOP and Animal Birth Control rules-2023 formed under the SPCA Act 1960 issued by the Animal welfare Board of India

#### **ARV:**

The veterinary anti-rabies vaccines available in Karnataka is dynamic and the vaccination should be followed as per the rules, regulations and SOPs as and when provided



# Chapter 15 - Rabies

## Surveillance- Animal Health

The surveillance system under IDSP (IHIP) for human rabies and domestic / wildlife animal rabies has the following component: -

SI No.	Components of Surveillance System	Domestic /Wildlife Rabies
1	Priority events / Data parameters	<p>Surveillance of rabies in animals – clinical surveillance- all animals (livestock, pet, stray and wild animals) having clinical signs of rabies or sudden deaths in animals due to unknown causes but not confirmed by lab laboratory – based surveillance – death of animal confirmed by lab by – virological surveillance- The brain tissue samples from carcasses (especially dogs and cats) collected and subjected to rapid antigen detection test and FAT to find a rabies case.</p> <p>Samples tested positive to FAT could be archived for molecular analysis and research purpose to identify the circulating virus in the region.</p>
2	Disease notification	<p>Diseases notification under: The Prevention and Control of Infectious and Contagious Disease in Animals Act, 2009. (Karnataka Animal Rabies Notification GO attached)</p>
3	Data Nodes/ Data Generation points	<ul style="list-style-type: none"> <li>• Rural level: Primary veterinary centres</li> <li>• Hobli Levels: Veterinary dispensaries and veterinary hospitals</li> <li>• Taluk Level: Veterinary hospitals</li> <li>• District Level: Veterinary hospitals and veterinary polyclinics, Veterinary multispeciality hospitals and super speciality hospital</li> <li>• State Level: Livestock health wing, Department. of AHVS</li> <li>• RDDDL, SDDLs/Regional Co-ordinator under NOHPPCZ,</li> <li>• Laboratories undertaking rabies diagnosis in state veterinary colleges under ICAR, VRDL, NCDC and DBT.</li> <li>• Animal welfare organisations</li> </ul>

Sl No.	Components of Surveillance System	Domestic /Wildlife Rabies
4	Responsible officers	<ul style="list-style-type: none"> <li>• Village level- Pashusakhi/ Pashu Mitra/AI Officer / forest guards / local volunteer net work</li> <li>• Block -level- Veterinary Officers</li> <li>• District – Deputy Director (Admin) AHVS Designated District Nodal Officer / District Veterinary Officer / District wild life warden / director of National Park (Wild life sanctuary)</li> <li>• State- Joint Director Livestock Health, Department. of AHVS Designated State Nodal Officer / State AHC/ Chief wild life warden</li> <li>• Designated Nodal officer Karnataka Animal Welfare Board</li> </ul>
5	Recording and reporting mechanism	All AHVS staff are advocated to use the standard recording and reporting formats at all animal health facilities as and when shared by the state nodal officers
6	Monitoring and evaluation	The surveillance system will be monitored in terms of timeliness completeness and usefulness of the data.
7	Support functions	Standard guidelines and SOPs preparation, organization of trainings will be done by designated state nodal department and national nodal department, department of Animal Husbandry and Dairying
8	Data sharing & Intersectoral coordination	<ul style="list-style-type: none"> <li>• Veterinary Staff should periodically share the mass vaccination drives and dog population management activities undertaken in their concerned area to respective stakeholders of rabies.</li> <li>• The incidences of animal death due to rabies and confirmed Rabies case should be shared with concerned health department and other stakeholders for necessary control measures.</li> </ul>
9	Infrastructure and logistics	<ul style="list-style-type: none"> <li>• Web-based GIS-enabled IT systems and mobile applications such as AHVS MIS Portal and WVS data collection app can be utilised to report the rabies control activities conducted in the concerned districts through Deputy Director Admin, Department. of AHVS.</li> <li>• Constitution of Rapid Response Teams (RRT) with all concerned stakeholders in the event of animal rabies deaths/ clustering of animal bites in human and animal health sectors.</li> <li>• Establishment of function helpline number/toll-free numbers to assist the general public in events of rabies</li> </ul>
10	Information, education and communication	Strategic display of appropriate IEC material with the display of contact numbers for the target audience to notify any rabies-related observed events in all veterinary facilities.

## Surveillance of animal health component on SAPRE-

- The surveillance programme for the animal includes laboratory and serological surveillance as per the standard guidelines by Department of Animal Husbandry and Dairying (DAHD). Recordings and reporting formats for surveillance of animal rabies needs to be available at all animal health facilities at block, district and state levels.
- Portals used for data transmission are MIS and NADRS
- With the help of WVS mobile data collection app, ecosystem for robust data collection will be created in consultation with all the key stakeholders of animal husbandry to strengthen Karnataka rabies control activities.
- The surveillance programme for the animal includes and laboratory and serological surveillance as per the standard guidelines by Department of Animal Husbandry and Dairying (DAHD). Recordings and reporting formats for surveillance of animal rabies needs to be available at all animal health facilities at block, district and state levels.

### Standard case definitions for animal rabies:

As per the WHO guidelines proposed case definitions and surveillance activities to be undertaken by the veterinary officer in case of suspected probable and lab confirmed animal rabies are mentioned in the table below

### Standard case definitions for animal rabies

Case	Definition
<b>Clinical case definition</b>	A case that is compatible with a clinical case definition of animal rabies An animal that presents with any of the following signs- Hyper-salivation, paralysis, lethargy, unprovoked abnormal aggression (e.g. unprovoked biting two or more people and/or animals and/or inanimate objects), abnormal behaviour (e.g. diurnal activity of nocturnal species).
<b>Suspected animal rabies</b>	A case that is compatible with a clinical case definition of animal rabies.
<b>Probable animal rabies</b>	A suspected case with a reliable history of contact with a suspected, probable or confirmed rabid animal and/or an animal with suspected rabies that is killed, died or disappeared within 5 days of illness being observed.
<b>Confirmed animal rabies</b>	A suspected or probable case that is confirmed in a laboratory.
<b>Not a case</b>	A suspected or probable case that is ruled out by laboratory tests or epidemiological investigation (i.e. after subjected to appropriate quarantine period of eligible animals).



# Chapter 16 - Laboratory Diagnosis- Animal Rabies

Rabies, an acute progressive, fatal encephalomyelitis, transmitted most commonly through the bite of a rabid animal, is responsible for an estimated 50 thousand human deaths worldwide. The true disease burden and public health impact due to rabies remain underestimated due to lack of sensitive laboratory diagnostic methods. Therefore, timely diagnosis of rabies can help initiate prompt infection control and public health measures, obviate the need for unnecessary treatment/medical tests, and assist in timely administration of pre- or post-exposure prophylactic vaccination to family members and medical staff. Recent advances in technology have led to the improvement or development of several diagnostic assays which include methods for rabies viral antigen and antibody detection and assays for viral nucleic acid detection and identification of specific biomarkers.

Laboratories are essential to disease diagnosis and surveillance. Most epidemiological surveillance systems require a laboratory component for confirmation. These serve both for the routine confirmation of clinical syndromes and rapid confirmation of the causative agent in outbreaks. The diagnosis of Rabies is essentially clinical however role of rabies laboratory is undisputed and warranted in many situations.

## Importance of laboratory confirmation of animal rabies

- Confirmation of clinical diagnosis-especially in paralytic/atypical cases
- Management of rabid animal
- Prophylactic vaccination to unvaccinated animals
- Surveillance and estimation of disease burden
- Confirmation/Monitoring of disease-free status
- Characterization of causative agent/molecular epidemiology with regards to future scope for inclusion of surveillance of non-rabies lyssavirus in National Rabies Control Programme/National Action Plan for Rabies Elimination / State Action Plan for Rabies Elimination.

### State Referral Laboratory (SRL):

- Many tests will be reported from time to time for detecting rabies antigen/virus, assessing rabies antibodies in the SRL depends on the availability of appropriate facilities. The tests may be for detecting rabies antigen in ante-mortem specimens like skin, hair, CSF or saliva, etc., or post-mortem specimens, including brain and

salivary glands. The following tests may be conducted at the SRL or district level laboratories.

- DFAT – Direct Fluorescence Antibody Test;
- DRIT – Direct Rapid Immuno-histochemistry Test;
- RADT – Rapid Antigen Detection Test;
- NAAT – Nucleic Acid Amplification Test;
- ELISA – Enzyme-Linked Immuno-Sorbent Assay;

**The labs with the following equipment's need to be selected for the SRL to perform the tests:**

- RT-PCR machine
- Fluorescent microscope (DFA)
- ELISA reader and washer (ELISA)
- Compound microscope (RADT)
- BOD incubator (37 °C)
- In addition to these, other equipment such as refrigerator, deep freezer, micropipettes, spinner, weighing balance, PH meter, water bath, vortexes etc.

**The consumables and reagents required are:**

- Anti-Rabies Nucleocapsid may be conjugated with Fluorescein-iso-thiocyanate
- Rabies rapid antigen test kit
- One-step RT PCR Kit for rabies diagnosis
- RNA extraction kit
- Triazol™ reagent
- Acetone
- Ethanol
- Chloroform
- Phosphate buffered saline
- Mounting medium.
- Formalin
- Hydrogen peroxide
- Distilled water

At least 2 to 3 SRLs should be identified for each state for laboratory diagnosis of rabies in human as well as in animals. The laboratory with the following facilities may be chosen for the SRL.

- A separate sample collection area
- A proper storage facility for temperature sensitive chemical/samples
- A designated area for the preparation of reactions for the diagnosis

- A separate air-conditioned area for the running of equipment
- A proper washing and cleaning area
- A separate area for the laboratory staffs
- A designated area for storing and disposing bio-medical waste
- Laboratory should have a microbiologist to participate in the training programme on the diagnosis of rabies.
- Laboratory should abide by the bio-risk management guidelines.
- Laboratory should have the internal quality assurance system
- Laboratory should have the external quality assurance

Provide training on brain sample collection, packing, transportation, processing of samples by Lateral Flow Assay (LFA) to district level laboratories (at least 2 /District). Test the samples by employing DFA/Direct Rapid Immunohistochemistry Test (dRIT).

Transport of samples (brain/serum) in the cold chain to the regional laboratory along with the details. Currently, the KVAFSU-CVA rabies diagnostic laboratory, WOAHP Reference laboratory for rabies, veterinary college, KVAFSU, Bengaluru is the referral laboratory. This laboratory is involved in organizing trainings on sample collection, packaging and transportation, diagnosis of rabies by employing LFA, DFA, DRIT, PCR, LN34 Realtime PCR, Serodiagnosis by RFFIT and ELISA.

The other laboratories involved in diagnosis of rabies by DFA in Karnataka are Institute of Animal Health and Veterinary Biologicals (IAHVB), Bengaluru.

1. ICAR-NIVEDI, Bengaluru
2. Veterinary College, KVAFSU, Hassan
3. Veterinary College, KVAFSU, Bidar

## **District level laboratory**

The capacities of district labs will be strengthened in a phased manner. These laboratories will perform testing and would also be linked to State Reference Laboratories (SRLs), Regional Reference Laboratories (RRLs), National Reference Laboratories (NRLs), and other Animal Research Centres (ARCs) in the district and sub-district levels in the region.

The manpower will be trained on using Lateral Flow Assay (LFA), anti-rabies titre estimation by ELISA, and PCR. Below the district level, i.e., at the block level, no standalone rabies diagnostic facilities are envisaged; however, the block level veterinary department will be prompted to use Rapid Diagnostic Tests (RDTs) like LFA for confirmation of a clinical diagnosis of the animal.

## Role of district level laboratories

- Provide training on collection of samples, packing, transportation to block / taluk level /wildlife veterinarians and medical officers and staff.
- Submit post-mortem animal samples (brain/serum) to the state level laboratories for DFA/dRIT along with the result of LFA.
- Conduct Lateral Flow Assay (LFA).

The establishment of KVAFSU-CVA-Crucell rabies diagnostic laboratory at Department of Veterinary Microbiology, Veterinary College, Bengaluru in 2013 strengthened the animal rabies diagnostic facilities at the national level by employing WHO and WOA (World Organization for Animal Health)- standard detection methods in addition to ongoing animal rabies related research activities. This laboratory is an ISO 17025 /2017 accredited, WOA reference laboratory for rabies. This laboratory on being elevated to the status of the 12<sup>th</sup> WOA- reference lab for rabies in 2020 at the global level, plays a pivotal role in harmonizing the animal rabies diagnosis, surveillance and evolving strategies for dog mediated rabies control in South Asia.

### **Note:**

**Sampling for post-mortem diagnosis of rabies in animals and Sero survey is attached as Annexure**



# Chapter 17 - One Health Approach for Rabies Elimination

One Health is a collaborative, multisectoral, and transdisciplinary approach — working at the local, regional, national, and global levels — with the goal of achieving optimal health outcomes recognizing the interconnection between people, animals, plants, and their shared environment.

Rabies is a classic ‘One Health’ challenge and its prevention and control largely depend on multi-sectoral collaboration in the health, wildlife, and veterinary sector. More than 96% of human rabies deaths arise from exposure to a rabid dog. Standard animal vaccines for providing pre-exposure prophylaxis to dogs and human vaccines for providing optimum post-exposure prophylaxis to dog bite victims are available. However, imperfect awareness compounded by variable accessibility of PEP has resulted in the persistence of human



rabies fatalities. Until now rabies elimination efforts have been fragmented and uncoordinated across various sectors. In 2015, the WHO/FAO/WOAH- previously OIE declared a vision for the elimination of dog-mediated rabies in 2030 and called for action by setting a global goal of zero human dog-mediated rabies death by 2030, worldwide and thereby contributing as part to SDG Target 3.3: End the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases and combat hepatitis, water-borne diseases and other communicable diseases

The Karnataka has a huge population of stray dogs numbering to more than 10 lakhs. This shows that the situation is alarming, and it needs to be taken care of well. One Health approach is the best-suited plan for the state where the multi-sectoral approach is there. To effectively detect, respond to, and prevent outbreaks of zoonoses, epidemiological data and laboratory information should be shared across sectors. Government stakeholders, researchers and other stakeholders at the local, national, regional and global levels should implement joint responses to health threats along with the political will and commitment.

One Health approach has been adopted by many countries for rabies elimination. The target of rabies elimination can only be achieved by sustained and synergistic political commitment. The challenges for realizing 'One Health' in the context of rabies are as under:

- Lack of understanding about One Health concept in the concerned stakeholders.
  - The priorities are different for different sectors and accordingly poor and inadequate resource allocation for undertaking activities and to achieve the target.
  - Fragmented activities of animal health components such as dog population management and mass dog vaccination across the sectors.
  - Poor surveillance, reporting of human and animal rabies cases and lack of structured mechanism of data sharing across human and veterinary sectors.
  - Large stray dog population both in urban, peri-urban and rural areas. One Health approach for rabies elimination
  - Biodiversity and challenging wild life sector at urban, peri-urban and rural interface resulting in spill over.
  - Lack of administrative and political will.
  - Limited logistics and poor supply chain management for undertaking the activities of human and animal health components.
- Lack of awareness among professionals as well general communities about the legal framework.

The State Action Plan for Dog Mediated Rabies Elimination (SAPRE) is based on the One Health vision and spells out the role and responsibilities of all the stakeholders at all levels to address the above list of challenges.

### **Role of Non-Government Organisations: Story of WVS-Mission Rabies**

WVS-Mission Rabies is a non-profit organisation working in several rabies endemic locations to control canine rabies in tandem with the global and national target to end canine mediated human rabies by 2030. The work has been well known and recognised by several public health and Government. bodies namely; Government. of Goa, NCDC, WHO, OIE and CDC. Mission Rabies is developing effective approaches to mass dog vaccination and

supporting other organisations through training and capacity building - protecting both the human and canine populations.

**Project Site: Bengaluru, in association with BBMP (Bruhat Bengaluru Mahanagara Palike):**

- BBMP is an administrative body responsible for civic amenities and infrastructural facilities of the Greater Bengaluru Metropolitan area (>800 sq. km), actively involved in providing healthcare, stray dog population management, and maintaining public health.
- In 2019, WVS- Mission Rabies collaborated with Animal Husbandry wing of BBMP and WOA (Founded as OIE) Rabies Reference diagnostic laboratory, KVAFSU to conduct a scientific estimation of the dog population using the WVS data collection mobile App. The survey estimated 309,975 free-roaming dogs and in the year 2023 collaborated with ICAR-National Institute of Veterinary Epidemiology and Disease Informatics (NIVEDI) and the survey estimated 279,335 free-roaming dogs within the limits of BBMP.
- Mission Rabies, in partnership with Charlie's Animal Rescue Center (CARE), BBMP's Animal Husbandry wing, and the WOA Rabies reference Diagnostic Laboratory, has launched a centralized Rabies Helpline. This helpline serves as the hub of a comprehensive rabies surveillance system, enabling coordinated responses to suspected rabid dogs, establishing protocols for capture and quarantine, and streamlining post-mortem and laboratory diagnosis
- Mission Rabies has a dedicated Rabies awareness vehicle and education officers who create awareness to various communities targeting School children and low-income population covering topics such as behavior of animals, prevention of dog bites, symptoms of Rabies in dogs and its identification, awareness about BBMP Rabies helpline and AHVS helpline, Rabies prophylaxis along with the compassion towards animals.

**Other One Health related activities of Mission Rabies in Karnataka:**

- Mission Rabies is supporting the Department of Health and Family Welfare Services in drafting Karnataka's State Action Plan for Rabies Elimination. Additionally, in partnership with district health officials, Mission Rabies conducts awareness programs on rabies prevention among school children and adults in and around Bengaluru.
- Mission Rabies has also made significant contributions to rabies control in Karnataka, including:
  - Helping the Department of AHVS make rabies a notifiable disease in animals
  - Providing technical support, IEC materials, free anti-rabies vaccines, and training for district-level implementation

- Offering free technological support through the WVS Data Collection App for mass dog vaccination data gathering
- Furthermore, Mission Rabies is working with the Department of Education to:
  - Include rabies as a chapter in Karnataka school textbooks
  - Implement rabies awareness programs in schools and colleges
- As members of the State Level Joint Steering Committee for Dog Mediated Rabies Elimination, Mission Rabies collaborate with various stakeholders, exemplifying the One Health approach in Karnataka. Their ultimate goal is to eliminate dog-mediated rabies by 2030, contributing to India's progress toward SDG 3.3.



**List of Annexures**

1	UDD Order
2	Panchayat Raj Compensation Order
3	BBMP Compensation Order
4	State Rapid Response Team (RRT) HFW
5	District Rapid Response Team (RRT) HFW
6	Central Public Liability Act
7	Clinical Establishment Act
8	KPME Act
9	Epidemic Disease Act
10	Model Anti Rabies Clinic Checklist
11	Decision Treatment Chart
11A	Route of administration Chart
12	Zoonosis notification Chart
13	NRCP M02 reporting format
14	District Level Report NRCP format
15	NRCP Line List format
16	Laboratory Confirmed Human Rabies Case – L form
17	Case Investigation Form CIF
18	Animal Bite Exposure Register for Health Facility
19	Human Rabies Notifiable Government Order
20	Sample Collection Guidelines
21	Test Request Form
22	Joint Steering Committee for Dog-mediated Rabies Elimination - District
23	Joint Steering Committee for Dog-mediated Rabies Elimination - BBMP
24	Joint Steering Committee for Dog-mediated Rabies Elimination -State
25	State and District Level Zoonosis Committee
26	PCICDT Act
27	PCA Act 1960
28	Animal Rabies Notifiable Government Order
29	ABC Rules-2023
30	Department of Medical Education Circular
31	Sampling for post-mortem diagnosis of rabies in animals
32	Human Rabies – Post exposure treatment card
33	Guidelines for Sero- monitoring of Anti rabies vaccinal antibodies in pet and free roaming dogs
34	Notification of Dog bite treatment- Private
35	Good Samaritan and Medical Professional (Protection And Regulation During Emergency Situations) Act, 2016

Scan the QR Code for Annexures



**Link:**

[https://drive.google.com/drive/folders/1Co3\\_FMSKV8gYBaEgo6L3GEjPiCo\\_hRc9?usp](https://drive.google.com/drive/folders/1Co3_FMSKV8gYBaEgo6L3GEjPiCo_hRc9?usp)

**SAPRE Workshop was held at Bengaluru on 14th and 15th of October 2022.**



**Stakeholders meeting in finalizing draft Action plan – SAPRE on 12.09.2025 at Arogya Soudha, Bengaluru**



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The preparation of the State Action Plan for dog- mediated Rabies Elimination (SAPRE) – Karnataka, 2025 has been a collaborative effort, reflecting the commitment of multiple sectors and partners working together towards the common goal of eliminating dog-mediated human rabies by 2030.

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- Department of Medical Education
- National Institute of Mental Health and Neurosciences (NIMHANS)
- ICAR – National Institute of Veterinary Epidemiology and Disease Informatics (NIVEDI)
- Department of Rural Development and Panchayat Raj (RDPR)
- Department of Urban Development
- Department of Education
- Department of Agriculture
- Non-Governmental Organizations (NGOs) and partners, including WVS-Mission Rabies
- All other stakeholder departments

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A handwritten signature in blue ink on a light blue background.

**Dr Padma M R**  
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### *Note*

*State Action Plan for Dog mediated Rabies Elimination from Karnataka by 2030 is a guidance document for the State, Districts & stakeholders to develop their action plan as per need assessment. The Standard Operating Procedures for the activities envisaged are based on existing evidence & best practices. With evolving evidence, the SOPs and technical guidelines will be revised from time to time.*



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**Department of Health and Family Welfare**