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STATE ACTION PLAN FOR
DOG MEDIATED RABIES ELIMINATION
FROM MEGHALAYA BY 2030

GOVERNMENT OF MEGHALAYA
HEALTH AND FAMILY WELFARE DEPARTMENT

STATE ACTION PLAN FOR

DOG MEDIATED RABIES ELIMINATION

FROM MEGHALAYA BY 2030

Message from
Shri Conrad K. Sangma, Chief Minister
Meghalaya

It is with a strong sense of commitment and responsibility that I present the **State Action Plan for the Elimination of Dog-Mediated Rabies by 2030.** Rabies is a preventable disease, yet it continues to claim lives, particularly in vulnerable communities. The Government of Meghalaya is determined to eliminate this deadly disease and protect both our citizens and our animals through a comprehensive and coordinated approach.

The **State Action Plan** lays out a clear and actionable roadmap for achieving rabies elimination in Meghalaya by 2030, in alignment with national and global targets. This plan is the result of a collaborative effort across multiple sectors, including health, veterinary services, urban management, and rural development. It is designed to address the specific challenges we face in both urban and rural areas, ensuring that no one is left behind in the fight against rabies.

Key strategies within this plan include **mass dog vaccination,** increased access to **post-exposure prophylaxis (PEP)** for individuals exposed to the disease, **community awareness campaigns,** and **the humane management of stray dog populations.** Each of these components is essential to breaking the chain of rabies transmission and achieving a rabies-free Meghalaya by 2030.

I urge all citizens, community leaders, and stakeholders to join us in this mission. Rabies elimination is not just the responsibility of the government, but a collective effort that requires the active involvement of every individual. Whether through ensuring your pets are vaccinated, reporting suspected cases, or educating others about the risks of rabies, each contribution brings us closer to our goal.

Together, we can protect our people and animals from the threat of rabies and build a safer, healthier Meghalaya for future generations. I call upon all departments, organizations, and citizens to support this action plan wholeheartedly.

Let us unite in our efforts and take a strong step forward towards a **rabies-free Meghalaya by 2030.**

(Conrad K. Sangma)

Message from
Shri Sniawbhalang Dhar, Deputy Chief Minister, Urban Affairs, Meghalaya, Shillong

It gives me great pride to lend my support to the **State Action Plan for the Elimination of Dog-Mediated Rabies by 2030.** As we strive to make our cities and towns safer, healthier places for all residents, the elimination of rabies, particularly dog-mediated rabies, is a crucial goal that aligns with our broader urban development efforts.

Urban areas often face unique challenges when it comes to the control of stray dog populations, vaccination campaigns, and raising public awareness about rabies prevention. As the Minister of Urban Affairs, I am deeply committed to ensuring that our cities and towns take a proactive role in this mission. Through **effective urban planning, improved waste management, and responsible pet ownership initiatives,** we can create environments that reduce the risk of rabies transmission and improve the overall health of our communities.

Our department will work closely with the Animal Husbandry, Veterinary, and Health departments to implement the key components of this action plan in urban areas, including **mass dog vaccination drives** and **public awareness campaigns.** We will also focus on the h**umane management of stray dog populations,** which is essential for reducing rabies cases in urban settings.

I call upon the residents of our towns and cities to actively participate in this effort by ensuring that their pets are vaccinated, reporting-stray dogs to the authorities, and educating themselves and their families about the importance of rabies prevention.

Together, we can create safer public spaces where both people and animals can coexist peacefully.

By embracing a collaborative approach, involving communities, local authorities, and various government departments, we are confident that the goal of eliminating dog-mediated rabies by 2030 is within our reach.

Let us join hands in this important mission and work towards a rabies-free Meghalaya for future generations.

(Shri Sniawbhalang Dhar)

Message from
Shri A. L. Hek, Minister
A. H. & Veterinary Department
Meghalaya, Shillong

The launch of the **State Action Plan for the Elimination of Dog-Mediated Rabies by 2030** marks a pivotal moment in our efforts to protect both human and animal health in Meghalaya. Rabies is a devastating disease, but it is also entirely preventable.

By focusing on dog-mediated transmission, which is responsible for the majority of human rabies cases, we can make significant strides toward a rabies-free future.

As the Minister of Animal Husbandry and Veterinary, I am proud to oversee a critical component of this action plan: the **mass vaccination of dogs.** Vaccinating our canine population is not only a scientific and effective method to control rabies, but it also demonstrates our compassion and responsibility toward animals and the wider community. Through sustained vaccination campaigns, we aim to significantly reduce the risk of transmission, protecting both our people and our pets.

Our department will work tirelessly to ensure that every dog, particularly in high-risk areas, receives the necessary vaccines. Alongside vaccination, this plan emphasizes **community involvement,** responsible pet ownership, and enhanced veterinary services to ensure that every corner of our state is covered.

We recognize that the elimination of dog-mediated rabies cannot be achieved by one departnient alone. It requires a coordinated, multi-sectoral approach that includes the active participation of communities, health professionals, veterinarians, and local authorities. We will also strengthen collaboration with our health department to ensure that both animal and human health are addressed simultaneously through the **One Health** approach.

I encourage all citizens to be vigilant and proactive in supporting this mission.

By working together, we can ensure that no life-human or animal—is lost to rabies, and that our state achieves the goal of eliminating dog-mediated rabies by 2030.

Let us unite in this cause and pave the way for a healthier and safer Meghalaya.

(Alexander L. Hek)

Message from
Dr. M. Ampareen Lyngdoh, Hon'ble Minister
Health & Family Welfare Department

It is with great commitment and optimism that we unveil the State Action Plan for the Elimination of Dog-Mediated Rabies by 2030. Rabies, particularly dog-mediated rabies, remains a serious public health challenge in many parts of the world, including our state. However, rabies is entirely preventable, and through concerted efforts, we can eliminate it by 2030.

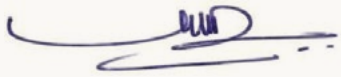
The Government of Meghalaya has made the elimination of rabies a top priority, recognizing that a multifaceted, community-driven approach is essential to achieving this goal. This action plan is designed not only to prevent rabies transmission but also to ensure that every citizen, especially those in vulnerable communities, has access to timely treatment and preventive measures.

Our strategy focuses on three critical areas:

1. Mass vaccination of dogs, which are the primary carriers of rabies in our communities.
2. Access to life-saving post-exposure prophylaxis (PEP) for individuals who are bitten or exposed to rabies, ensuring that no life is lost due to delayed or inadequate treatment.
3. Public awareness and education, promoting responsible pet ownership, early reporting of rabies cases, and the importance of seeking immediate medical attention after exposure.

I would like to acknowledge the hard work and collaboration of our health and veterinary departments, local governments, non-governmental organizations, and community leaders in developing this plan. The success of this initiative will depend on maintaining a strong, coordinated effort across all sectors, embracing the One Health approach that recognizes the interconnectedness of human and animal health.

As we move forward, I call upon every citizen to play a role in making our state rabies-free. Together, we can protect our communities and meet the goal of eliminating rabies by 2030.



(Dr. M Ampareen Lyngdoh)

Foreward from
Shri D. P. Wahlang, IAS, Chief Secretary
Government of Meghalaya

The Government of Meghalaya is committed to improving public health and ensuring the safety and well-being of all citizens. It is with this goal in mind that we present the **State Action Plan for the Elimination of Rabies by 2030 (SAPRE),** a comprehensive and targeted strategy aimed at eradicating rabies from our state.

Rabies, a fatal yet preventable disease, continues to pose a significant public health risk, especially in rural and remote areas. While we have made strides in addressing this issue, much more remains to be done to eliminate rabies completely. The SAPRE provides a detailed roadmap, outlining the collaborative efforts required to control and ultimately eliminate rabies by 2030, in alignment with the global framework and India's National Rabies Control Programme.

This action plan focuses on four key areas: awareness and education, mass vaccination of dogs, post-exposure prophylaxis (PEP) for humans, and strengthening intersectoral coordination between the health and veterinary sectors. The importance of a One Health approach, which recognizes the interconnectedness of human, animal, and environmental health, is central to this plan.

I am confident that through the combined efforts of all stakeholders-health professionals, veterinarians, community leaders, and civil society-we can achieve the goal of a rabies-free Meghalaya by 2030. The plan not only emphasizes the technical aspects of rabies control but also encourages widespread community engagement and awareness to ensure that every citizen understands the risks of rabies and the measures needed to prevent it.

As we work towards eliminating rabies, I urge all departments and stakeholders to work in close coordination to implement the strategies outlined in this action plan. Rabies elimination is within our reach, but it will require sustained commitment, robust implementation, and active participation from everyone.

I extend my heartfelt appreciation to the various agencies, organizations, and individuals who have contributed to the preparation of this plan. Let us unite in our efforts to protect our communities and create a safer, healthier future for all.

Together, we can achieve a rabies-free Meghalaya by 2030.

(D. P. Wahlang)

PREFACE FROM
SAMPATH KUMAR, IAS
PRINCIPAL SECRETARY, GOVERNMENT OF MEGHALAYA
HEALTH & FAMILY WELFARE DEPARTMENT

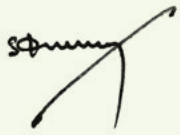
Rabies remains a significant public health challenge, particularly in regions where awareness, vaccination coverage, and healthcare infrastructure need strengthening. As a preventable disease, rabies continues to claim lives, especially in vulnerable populations like children and those in rural areas. It is imperative for us, as a state, to adopt proactive measures to eliminate this deadly disease.

The **State Action Plan for the Elimination of Rabies by 2030** outlines a comprehensive, multi-sectoral approach to achieve this .goal in Meghalaya. This plan is aligned with the national and global targets set by the World Health Organization (WHO) and the Government of India, aiming for the complete eradication of rabies by 2030. It incorporates strategies focusing on mass vaccination of dogs, enhancing public awareness, strengthening diagnostic and treatment facilities, and ensuring timely access to post-exposure prophylaxis.

We recognize that rabies elimination cannot be achieved by the health sector alone. It requires collaboration between the animal husbandry, local governance, education, and health sectors, alongside active community participation. The involvement of all stakeholders is crucial for sustaining the progress towards rabies-free status in the state.

This action plan also emphasizes capacity building at the grassroots level, improving the skills and knowledge of healthcare workers, veterinarians, and local authorities. By bolstering surveillance and ensuring data-driven interventions, Meghalaya aims to adopt a science-based approach in tackling rabies.

As we embark on this crucial journey, I urge all stakeholders, partners, and the citizens of Meghalaya to join hands in this mission. Together, we can make rabies a disease of the past, securing a healthier future for generations to come.



Shri. Sampath Kumar, IAS
Principal Secretary
Government of Meghalaya

Acknowledgment

The development of the **State Action Plan for the Elimination of Rabies from Meghalaya by 2030 (SAPRE)** has been a collaborative effort, and we are deeply grateful to everyone who has contributed their expertise, time, and resources.

We express our sincere appreciation to **Shri Al Hek,** Honourable Minister of Veterinary and Animal Husbandry, Government of Meghalaya and **Dr. M Ampareen Lyngdoh,** Honourable Minister of Health and Family Welfare, Government of Meghalaya for their invaluable leadership and support in championing this initiative.

Our heartfelt thanks also go to the **Department of Veterinary and Animal Husbandry, Department of Health and Family Welfare, Forest and Environment Department, Department of Urban Affairs and Shillong Municipal Board** whose relentless efforts have been instrumental in the creation of this action plan. We also extend our gratitude to the, the **National Centre for Disease Control (NCDC) & Department of Animal Husbandry & Dairying, Government of India** and other governmental bodies for their technical guidance and active participation.

We would like to acknowledge the technical assistance provided by the **United Nations Development Programme (UNDP)**, which has been critical in shaping this comprehensive plan.

We would also like to acknowledge the support of Access and Delivery partnership (ADP) global initiative funded by Government of Japan for bringing all the stakeholders together at a common platform for developing the SAPRE.

We further thank the **veterinarians, public health officials, local NGOs**, and **community leaders** for their grassroots involvement and commitment to spreading awareness about rabies prevention.

Participation and cooperation of each key stakeholder are key to making our state rabies-free by 2030.

Thank you to all the stakeholders who made the SAPRE a reality.

ABBREVIATIONS

ABC-AR	Animal Birth Control-Anti Rabies
ARC	Anti-Rabies Clinic
ARS	Anti-Rabies Serum
ARV	Anti-Rabies Vaccine
ASCAD	Assistance to States for Control of Animal Diseases
AWBI	Animal Welfare Board of India
AWO	Animal Welfare Organization
CNS	Central Nervous System
DAHD	Department of Animal Husbandry and Dairying
DFA	Direct Fluorescent Antibody Assay
DPM	Dog Population Management
DPMU	District Programme Management Unit
ELISA	Enzyme Linked Immunosorbent Assay
FAT	Direct Fluorescent Antibody Test
ICAR	IIndian Council of Agriculture Research
IEC	Information, Education and Communication
IVRI	Indian Veterinary Research Institute
IVA	Indian Veterinary Association
IVPH	Indian Veterinary Public Health Association
KVK	Krishi Vigyan Kendra
LFA	Lateral Flow Assay
MoHFW	Ministry of Health & Family Welfare
NHM	National Health Mission
NCDC	National Centre for Disease Control
NGO	Non-Governmental Organisation

NRCP	National Rabies Control Programme
OIE	Office International des Epizootic (World Organization for Animal Health)
PEP	Post-Exposure Prophylaxis
RKVY	Rashtriya Krishi Vikas Yojna
RRL	Regional Referral Laboratories
SAPRE	State Action Plan For Rabies Elimination
SOP	Standard Operating Procedure
TLP	Triple Layer Packaging
UNDP	United Nations Development Programme

CONTENTS

1 State Action Plan for Dog - Mediated Rabies Elimination

Introduction

Rabies is one of the most fatal zoonotic diseases which has tormented humans since antiquity. It is transmitted after the bite of a rabid animal and is almost 100 per cent fatal yet 100 per cent preventable by timely vaccination. Effective prevention and control of rabies could be achieved by concerted efforts of all stakeholders by adopting the 'One Health Approach'. This draft document on SAPRE intends to provide a roadmap ahead for the State in its attempt to contain, control, and ultimately eliminate the dreaded disease.

To achieve the global target of Zero Human Dog-Mediated Rabies Death by 2030, India has launched the National Action Plan for Dog-Mediated Human Rabies Elimination (NAPRE) based on 'One Health Approach' in 2021. As part of the action plan, a workshop was organized by the National Rabies Control Programme, National Health Mission (NHM), Meghalaya and Centre for One Health, National Centre for Disease Control (NCDC), Ministry of Health and Family Welfare (MoHFW) in collaboration with the United Nations Development Programme for the finalization of the State Action Plan for Dog-Mediated Rabies Elimination (SAPRE) by 2030.

Who is it for?

The SAPRE aims to provide a clear vision and to establish a well-defined role for all the stakeholders involved including professionals, veterinarians and medics, who are at the forefront in combating and eliminating rabies. The support and the commitment of the government at the centre, as it works in tandem with the respective ministries and departments at the central and State-levels, will further enhance the success of the plans and policies that have been laid out. The NGOs also play a vital role as they will facilitate the process of rescuing, rehabilitating, and liaising with the concerned authorities in stray dog control and management. Field veterinarians and medics are integral and indispensable to the scheme of things as their technical knowledge, expertise, and experiences gained are leveraged; further they are also directly involved in creating awareness, educating and sensitizing the masses on the zoonotic implications of the disease and dispelling the myths surrounding it.

Identification and collaboration of all stakeholders involved are imperative

towards the successful implementation of the plan as envisaged. For this purpose, stakeholders engaged in the operationalization of SAPRE have been categorized as Key Stakeholders, Supporting Stakeholders, and Private Partners based on mandates, existing roles, and responsibilities.

Key Stakeholders – It is the nodal agency for the overall formulation, planning, coordination, and implementation of the activities under NAPRE and SAPRE, and are directly involved in providing technical and logistic support to the State/District and local levels. They will help in formalizing SAPRE. The Key Stakeholders are:

- **Centre:** Animal Welfare Board of India under the Ministry of Fisheries, Animal Husbandry and Dairying (MoFAH&D); State: Animal husbandry department at the State and at levels below
- **Centre:** Human Health Sector: MoHFW; State: Health Department at the State and at levels below. Ministry of Animal Husbandry and Dairying under Animal Welfare Bord (AWBI)
- **Centre:** Wildlife and Environment Sector: Ministry of Environment, Forest and Climate Change; State: Forest department at the State-level, and similar forest authorities at national parks and notified zones.
- **Centre:** Ministry of Agriculture and Farmers Welfare, Indian Council of Agricultural Research
- **Centre:** Ministry of Housing and Urban Affairs; Urban Local Bodies at the District and Block level
- **Centre:** Ministry of Panchayati Raj; Rural Local Bodies at village level

Supporting Stakeholders – To assist the Key Stakeholders in the coordination and implementation of various aspects of NAPRE. They will provide technical assistance in activities planned for rabies elimination under various components.

- **Centre:** Ministry of Finance; State: Department of Finance and below the State level
- **Centre:** Ministry of Human Resources Development; State: Department of Human Resources, and those below the State level
- **Centre:** Ministry of Information and Broadcasting; State: Department of Information and Public Relations and those below the State level
- **Centre:** Ministry of Science and Technology, Department of Biotechnology
- **Centre:** Ministry of Drinking Water and Sanitation; State: Department of Drinking Water and Sanitation and, those below the State level Physical Health Education (PHE)
- National Human Rights Commission.

Private Partners – Primarily to assist in the implementation of the technical aspects of SAPRE with the logistics and expertise available to them, and providing support to Key Stakeholders at the field level. They are:

- NGOs active in the field of veterinary and health sectors
- Professional organizations and associations in the medical and veterinary sector

- International development organizations and United Nations agencies
- Private hospitals, institutions, clinics, and diagnostic labs both in the veterinary and health sectors

How does it work and what does it include?

The SAPRE has identified three key principles for rabies elimination: 'Prevention' by the introduction of cost-effective public health interventions to improve accessibility, affordability, and availability of post-exposure prophylaxis (PEP) in the community. 'Promotion' to improve understanding of rabies through advocacy, awareness, education, and operational research. 'Partnership' by providing coordinated support for the anti-rabies drive with the involvement of community, urban and rural civil society, government, private sectors, and international partners.

The SAPRE has identified two core components to achieve dog-mediated elimination of human rabies: A Human Health Component, to prevent human deaths due to rabies by ensuring timely access for PEP for all animal bite victims and creating a responsive Public Health System; and an Animal Health Component, to achieve at least 70 per cent Anti-Rabies Vaccination coverage among dogs in a defined geographical area annually for three consecutive years.

The basic concept in the formulation of the State Action Plan for Dog-Mediated Rabies Elimination (SAPRE) is to build a framework and devise a strategy with a dedicated network of professionals and their associations, policymakers, researchers, NGOs, community, local bodies, and other partners oriented towards the elimination of dog-mediated rabies.

The SAPRE is a blueprint adopted in line with the NAPRE, and serves as a guide in enabling the North Eastern States and other stakeholders involved which are specific to the needs of the region in general and the States in particular.

This vision document is to ensure that action plans tailored to the needs and aspirations of the States are put in perspective in their aim to systematically reduce rabies risk through sustained mass dog vaccinations and PEP, and public education until the country is completely free of dog-mediated rabies.

It is pertinent to note that sustained and concerted efforts of all the stakeholders involved are to be in sync with the 'One Health Concept' as we march forward in an exhaustive exercise to achieve the global goal of 'Zero Human Dog-Mediated Rabies Deaths by 2030.'

Measures available with States for controlling Dog-Mediated Rabies

The Department of Animal Husbandry and Dairying, MoFAH&D, GoI, is assisting State governments for canine anti-rabies vaccination under the Assistance to

States for Control of Animal Diseases (ASCAD) scheme. The Animal Welfare Board of India (AWBI) is providing financial aid to the registered NGOs for Animal Birth Control (ABC) Programmes. In addition, State funds are also being utilized by municipalities and State animal husbandry departments for carrying out ABC programmes and dog vaccination.

Animal Welfare Board of India (AWBI) and its efforts to increase the number of human resources involved in animal welfare. Here's a breakdown of the roles you mentioned:

Colony Animal Birds Caretakers: These are individuals responsible for the care and welfare of birds living in colonies or groups, often in urban or semi-urban areas where bird populations can be significant.

Honorary Animal Welfare Officers: These are volunteers or individuals appointed by AWBI to assist in the enforcement of animal welfare laws and regulations. They may help in rescue operations, inspections, and awareness campaigns.

Colony Animal Welfare Representatives: Similar to caretakers, these individuals may represent the welfare needs of animals in specific colonies or communities. They could liaise with authorities and organizations to ensure proper care and advocacy for these animals.

Animal Welfare Organizations: These are formal organizations dedicated to animal welfare advocacy, rescue, rehabilitation, and education. They work closely with AWBI and other authorities to promote animal welfare laws and ensure their implementation.

Each of these roles plays a crucial part in promoting and protecting the welfare of animals in India, contributing to broader efforts in animal rights and welfare across the country.

2 Epidemiology of Rabies in the State of Meghalaya

Epidemiology of rabies globally: Rabies is estimated to cause 59,000 human deaths annually in over 150 countries with 95 per cent cases occurring in Africa and Asia. Most cases are under-reported and 99 per cent of them occur in rural areas. Cases are mostly seen in children. India accounts for 59. 9 per cent rabies deaths in Asia and 36 per cent deaths globally.

Epidemiology of rabies in India: India is endemic for rabies, and accounts for 36% of the world's rabies deaths. The true burden of rabies in India is not fully known; although according to available information, it causes 18,000-20,000 deaths every year. About 30-60 per cent of the reported rabies cases and deaths in India occur in children under the age of 15 years as bites often tend to go unrecognized and unreported. Dogs are the source of the majority of human rabies deaths, contributing up to 99 per cent of all rabies transmissions to humans.

The cases occur throughout the year. Majority of the rabies cases are associated with dog bites. Monkeys, cats, wolves, jackals, and mongooses are the other important animals transmitting rabies in India. Bat rabies has not been conclusively reported from the country. However, serological evidences of exposure of bats to rabies or related lyssavirus are available.

Animals Transmitting Rabies in India

Frequent	Occasionally	Not reported
• Dogs	• Cats • Monkeys • Cattle and buffaloes • Mongooses • Foxes, wolves and jackals • Sheep and goats • Bears • Pigs • Donkeys • Horses • Camels • Spotted Deer • Squirrel	• Bats • Rodents • Birds

Epidemiology of rabies in the State of Meghalaya

- Rabies is a significant public health concern in Meghalaya with sporadic cases reported in humans, and posing a continuous threat to the population.
- The presence of a large stray dog population, including unrecorded dogs, contributes to the persistence of rabies and increases the risk of transmission to humans.

Status in Humans and Animals

- **Human Cases:** The recorded data reveals a notable pattern with only two rabies cases reported in 2019 followed by a commendable period of zero reported cases from 2020 to 2022. However, there was a notable increase in 2023, with 11 reported cases. Analyzing the factors contributing to this resurgence is crucial for targeted interventions. State
- **Animal Cases:** Meghalaya boasts a sizable dog population -- 2,56,972 dogs -- including a substantial number of unrecorded stray dogs. The unmanaged stray dog population presents a potential source for rabies transmission, emphasizing the importance of comprehensive vaccination programmes and population control strategies.

Mode of transmission of rabies

Rabies virus is predominantly neurotropic and kills the host in a short period once it has entered the neurons. Before death, the virus reaches the salivary glands and is excreted in saliva. Rabies virus gains entry through the contaminated saliva to another host when there is adequate licking on a pre-existing breach, or when the bite of the rabid animal creates a mechanical breach of the skin. Organ/ tissue (cornea) for transplantation should not be collected from suspected/ confirmed rabies or rabies-like encephalitis cases.

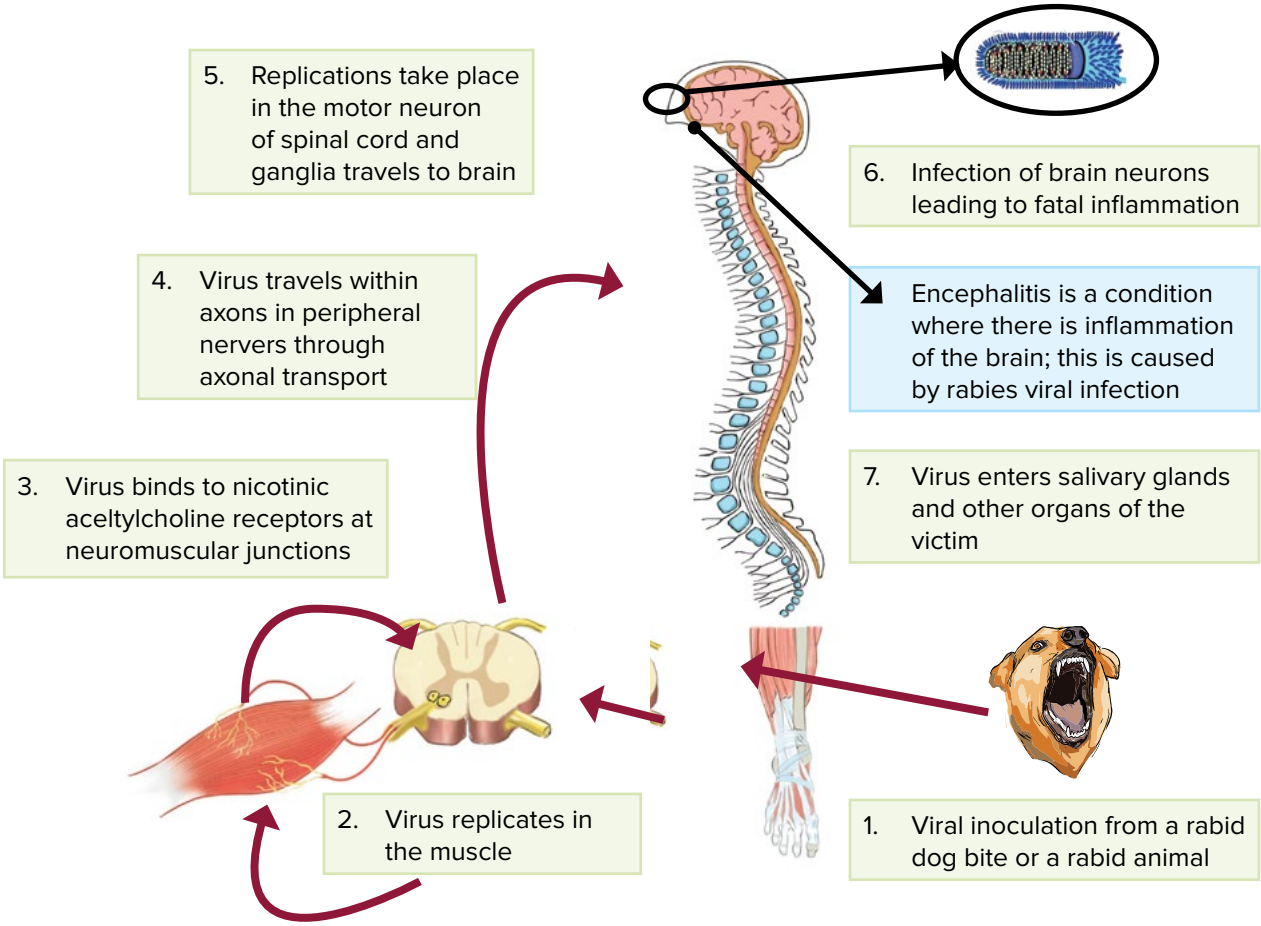
Common	Rare
• Bites from infected animals • Licks on broken skin and mucous membrane • Scratches	• Inhalation • Organ transplantation (Cornea) • Ingestion

Pathogenesis

On entering the human body through wounds or direct contact with mucosal surfaces, the rabies virus either multiplies at the local site of inoculation in non-nervous tissues or directly enters peripheral nerves and travels by retrograde axoplasmic flow to the central nervous system prior to its spread towards brain via the nerves. Within the brain, virus spreads from infected to contiguous cells. There may be regional differences in the intensity with which areas of brain become

infected. The main areas affected are usually the cerebellum, hypothalamus, hippocampus, and scattered neurons in the reticular formation. It may be that aggression in rabies is related to the presence of virus in mid brain raphe nuclei and medial hypothalamus, since these are the two inhibitory centers of aggressive behavior. It may also be that the distribution of virus in the brain has a bearing as to whether the disease manifests as dumb or classical furious rabies. It does not follow the hematogenous spread. The movement of the virus is extremely slow (15–100 mm per day) which results into a long incubation period. The virus then moves from the Central Nervous System (CNS) via anterograde axoplasmic flow within peripheral nerves and reaches salivary glands and other organs. The virus is widely disseminated throughout the body at the time of clinical onset. This has practical implications as organ transplantation has resulted in transmission of the disease to the recipient.

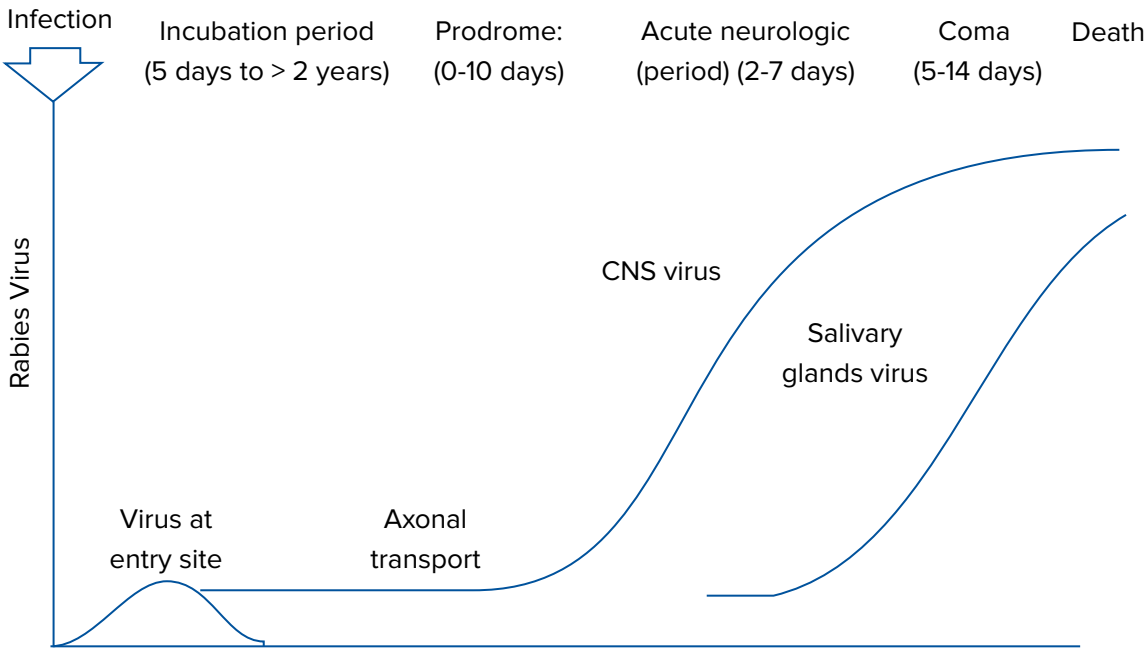
FIGURE: PATHOGENESIS OF RABIES



Incubation period

The average incubation period for rabies in humans is estimated between 30-90 days. It ranges between three weeks to three months (rarely four days to two years). Owing to of the wide range of incubation periods, PEP should be given as soon as possible, however, it should not be denied to persons reporting late. Factors which may influence the length of the incubation period include the site of bite, the amount of virus in saliva of the biting animal, strain of virus, age and immune status of the victim. It is shorter in case the bite is closer to brain and a massive dose of virus has been inoculated.

Figure: Incubation of rabies



Clinical features:

Rabies in humans

Once symptoms appear, the result is virtually always death, regardless of treatment. The time period between contracting the disease and the start of symptoms is usually one to three months but can vary from less than a week to more than a year. The time depends on the distance the virus must travel along the peripheral nerves to reach the CNS.

A patient affected with rabies shows the following symptoms:

- Hydrophobia (fear of water)
- Aerophobia (fear of breeze)
- Photophobia (fear of light)

Furious rabies

Furious rabies results in hyperactivity, excitable behavior, hallucinations, lack of coordination, hydrophobia (fear of water) and aerophobia (fear of drafts or of fresh air). Death occurs after a few days due to cardio- respiratory arrest.

Dumb rabies

The paralytic form, also known as dumb or apathetic rabies, makes up one in five cases. The patient is characteristically quiet and lucid throughout. The course of the illness is a little more prolonged, beginning with tingling or paralysis of the bitten limb.

Rabies in animals

In general, rabid animals of all species commonly exhibit typical signs of CNS disturbances with behavioral changes.

Rabies in dogs

The incubation period of rabies in dogs is three-eight weeks on an average but may vary from 10 days to as long as six months but is rarely more than four 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, and 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 the 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 three-eight days.

Rabies in cats

The clinical signs in cats are of a furious type and are similar to that in dogs, but 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 two-four days of the excitation phase, the paralysis of the posterior third of the body follows.

Rabies in cattle

Livestock are vulnerable victims of rabid carnivores and mongooses. The average incubation period of rabies in cattle is 15 days (depending on the site of bite),

and the average morbidity period is four 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 be mistaken for heat sign), aggression, hyperesthesia and/or hyperexcitability, 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, hyperexcitability and/or hyperesthesia, trismus, salivation, drooping ears, vocalization, recumbence, and death.

Rabies in horses and mules

The signs are like tetanus. The average incubation period is 12 days (depending on the site of bite), and the average morbidity period is six days with the majority 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 horses.

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 humans, paralysis and death in two-four days.

Rabies in wild animals

Rabies is also reported in a wide range of wild species such as wilds dogs, jackals, coyotes, wolves, foxes and raccoon dogs, skunks, mongooses, bats and also raccoons which are the primary hosts of rabies virus. Wild animals frequently lose their fear, and may attack humans or animal species they would normally avoid (porcupines for instance).

Across the world, wildlife rabies has been documented from Africa, continental Asia, Russian far east, northern China, and Korean peninsula, southern China and Taiwan, Israel, the West Bank, Gaza Strip and Turkey, the Islamic Republic of Iran, Oman, Saudi Arabia, Yemen and other Middle East, Asian and European countries, North America, eastern Canadian border and the US. In India, wildlife rabies has been reported in bear, hyena, jackal, leopard, mongoose, sambar deer, wolf and fox.

Rabies in monkeys

Clinical signs exhibited are similar to those in humans, with hydrophobia, paralysis, and anxiety. Non-human primates play a negligible role in the spread of the virus. In India, the langur (Semnopithecus entellus) and the Himalayan palm civet (Paguma larvata) were found positive for rabies virus by Fluorescent Antibody Test FAT& BT.

Rabies in bats

Lyssaviruses have been detected in bats throughout the world. In some parts of the world, it has been reported that rabies can be transmitted through exposure of bats. In India, there is no evidence to suggest the presence of bat-transmitted rabies so far, except the one reported case in 1954. Since then, no bat-borne rabies has been reported in India to date.

Rabies in rodents and rabbits

Very few examples of rabies virus infection have been observed in rodents. They are not primary hosts and do not play a role in the transmission or maintenance of rabies.

Risk Assessment

Table: The national guidelines for rabies prophylaxis include classification of animal bite exposure broadly based on WHO recommendations:

Category of Exposure	Type of Exposure
I	• Touching or feeding of animals • Licks on intact skin • Contact of intact skin with secretions/excretions of rabid animal / human case
II	• Nibbling of uncovered skin • Minor scratches or abrasions without bleeding
III	• Single or multiple transdermal bites or scratches • Licks on broken skin • Contamination of mucous membrane with saliva (i.e. licks)

Prevention of rabies in humans

Management of animal bite wound(s)

Do's	Act	Effect
Physical	Wash with running water	Mechanical removal of virus from the wound
Chemical	Wash the wound(s) with soap and water. Apply antiseptic	Inactivation of the virus
Biological	Infiltrate immunoglobulin into the depth and around the wound(s) in Category III exposures	Neutralization of the virus

- Washing of wounds is desirable up to 15 minutes and should be carried out as soon as possible with soap and water.
- Since rabies virus can persist and even multiply at the site of the bite for a long time, wound management must be performed even if the patient reports late.
- Tetanus and antibiotic prophylaxis: Tetanus prophylaxis should be given as per national guidelines. To prevent sepsis in the wound(s), a suitable course of an antibiotic may be prescribed.

Passive immunization with Rabies Immunoglobulin (RIG)

- **Equine Rabies Immunoglobulin (ERIG):** The anti-rabies serum provides passive immunity in the form of readymade anti rabies antibody to tide over the initial phase of the infection. Anti-rabies serum or RIG has the property of binding with the rabies virus, thereby resulting in the loss of infectivity of the virus.
- **Human Rabies Immunoglobulins (HRIG):** HRIG are free from the side effects encountered in a serum of heterologous origin, and owing to their longer half-life, are given in half the dose of equine anti-rabies serum. The anti-rabies sera should always be brought to room temperature (20–25°C) before use.
- **Dose of Rabies Immunoglobulins (RIG):** The dose of equine anti-rabies serum is 40 IU per kg body weight of patient and is given after testing of sensitivity, up to a maximum of 3000 IU. The Anti-Rabies Serum (ARS) produced in India contains 300 IU per ml. The dose of the human rabies immunoglobulins (HRIG) is 20 IU per kg body weight (maximum 1500 IU). HRIG does not require any prior sensitivity testing. HRIG preparation is available at a concentration of 150 IU per ml.

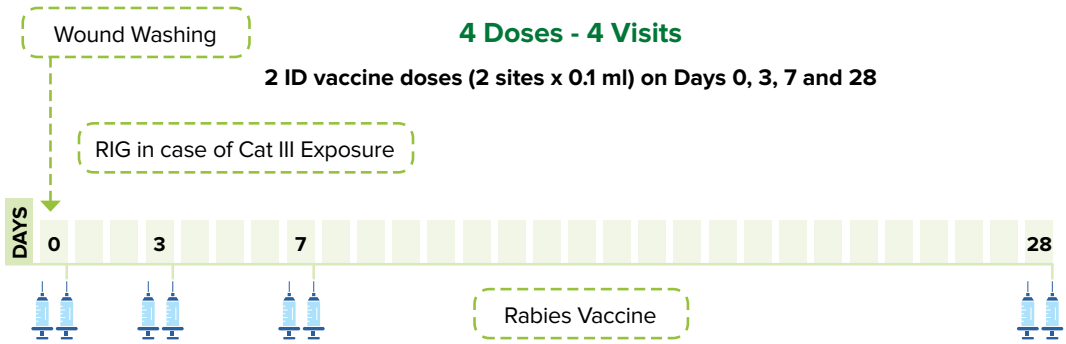
Active immunization with Anti-Rabies Vaccine (ARV): Active immunisation is achieved by the administration of safe and potent Cell Culture Vaccines (CCVs). The vaccination schedule as per the National Guidelines for Rabies Prophylaxis, 2019 (NRCP, NCDC, Delhi) is provided in the table below. The protocol for deciding the course of rabies PEP in case of an animal bite victim is given in the subsequent figure.

Type of Prophylaxis	Route of Administration*	Dose of Vaccine	Day of Dose	Injections Per Visit	No. of Visits
Post Exposure Prophylaxis	Intradermal	0.1 ml per dose	Day 0, 3, 7 and 28	2	4
	Intramuscular	1 entire vaccine vial	Day 0, 3, 7, 14 and 28	1	5
Pre-exposure Prophylaxis	Intradermal	0.1 ml per dose	Day 0, 7, and 21 or 28	1	3
	Intramuscular	1 entire vaccine vial	Day 0, 7, and 21 or 28	1	3

Type of Prophylaxis	Route of Administration*	Dose of Vaccine	Day of Dose	Injections Per Visit	No. of Visits
Re-exposure	Intradermal	0.1 ml per dose	Day 0 & 3	1	2
	Intramuscular	1 entire vaccine vial	Day 0 & 3	1	2

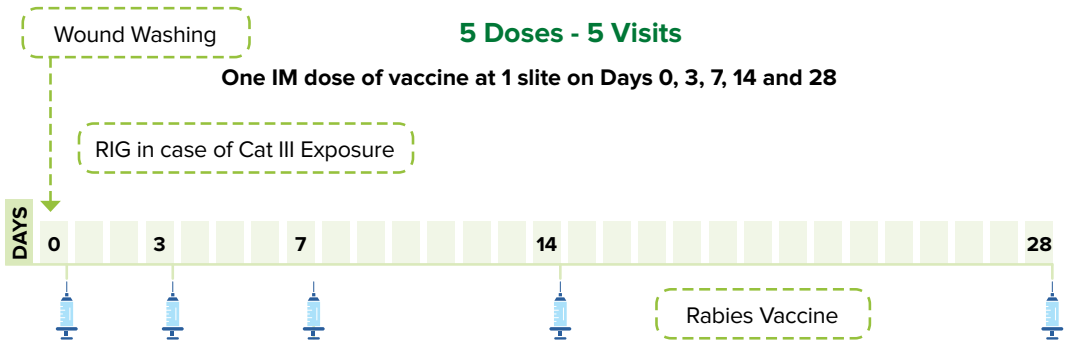
***Site of Injection.**
- **Adults:** Deltoid Muscle
- **Infants and small Children:** Anterolateral Thigh

4 Doses Intradermal Regime (ID)



Inject 0.1 ml reconstituted Rabies Vaccine at each of 2 sites per visit (Once on each Deltold area)

5 Doses Intramuscular Regime (IM)



Vaccine is administered IM in Detold area or antero-lateral aspect of thigh (not in Gluteal Region)

3 Guidelines for Declaring Regions Rabies Free

Countries or geographical regions seeking to declare themselves 'rabies-free' must adhere to the specific guidelines and criteria established by international organizations such as the World Health Organization (WHO), the World Organisation for Animal Health (OIE), and the Food and Agriculture Organization of the United Nations (FAO).

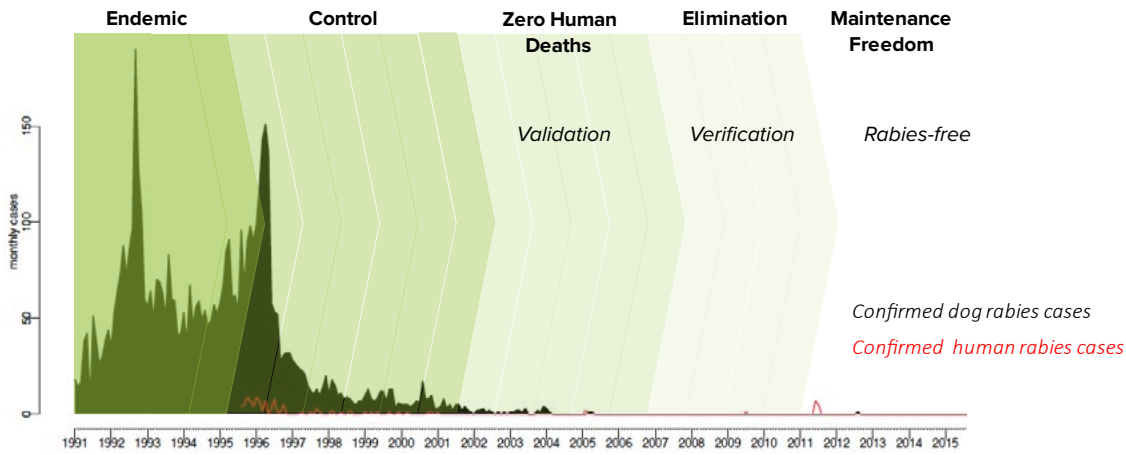
For India, the NAPRE envisages to formulate detailed Standard Operating Procedures (SOPs) and technical guidelines for declaring any area as rabies-controlled or rabies eliminated. The SOPs will be developed conforming to international standards and involve step-wise verification processes and detailed post elimination strategic plans for specific geographical/administrative unit in the country.

However, for better understanding of the programme, the criteria for certifying a geographical region/area as 'rabies free' by different international organizations are as follows:

Reaching 'Zero human deaths from rabies' (WHO)

WHO has also divided countries into five different stages of rabies elimination.

1. Endemic stage - 'Endemic' indicates the number of confirmed rabies cases per month in an endemic country with limited control measures in place.
2. Control stage - Indicates a steep decrease in rabies incidence after mass interventions.
3. Zero human rabies death - Shows interruption of dog-human rabies transmission and no human deaths.
4. Elimination Stage- Shows interruption of rabies transmission and no canine case.
5. Maintenance Stage- Refers to continuing freedom from disease, for instance, by preventing incursion and/or re-emergence of canine or human rabies.



The figure is based on a country data and shows progression of a country for rabies elimination (in terms of canine and human rabies cases) in a continuum of five phases, from endemicity, to elimination, to maintaining freedom from disease.

As per WHO, many countries have yet to reach zero human rabies deaths, while others have, or are close to the elimination stage of interrupting rabies disease transmission.

The section aims to define activities that allow a particular geographical region (Country/State /UT) to validate, verify and be declared as rabies free as per International Standards (WHO):

- Validate elimination of rabies as a public health problem, i.e., reaching zero human rabies deaths, defined as the absence of human death from dog-mediated rabies for at least 24 months in a country that is operating and continues to maintain adequate surveillance for rabies and demonstrates an effective rabies control programme in human and animal populations. The occurrence of cases caused by rabies variants other than canine rabies should not preclude validation of reaching zero human rabies deaths or verification of interrupting rabies transmission.
- Verify elimination of dog-mediated rabies, i.e., interrupting rabies transmission, defined as the absence of dog-mediated rabies cases for a period of at least 24 months in the presence of high-quality surveillance according to international standards.
- Be declared rabies free, which follows from verification, and recognizes countries or areas that are free of both dog rabies and terrestrial rabies. These definitions aim to assist public health authorities in assessing the risk for contracting rabies after contact with animals. They differ from the current OIE definition of rabies free countries for the purpose of animal movement.

A country or area that is free of terrestrial rabies is one in which:

- No case of indigenously acquired infection due to dog-mediated rabies virus has been confirmed in humans, dogs or cats or any other animal species at any time during the previous 24 months.
- Any autochthonous positive case was shown by molecular characterization and epidemiological investigation to be a spillover from wildlife. If an imported case in carnivores is confirmed, the status of the country or area shall not be affected if molecular characterization confirms the non-indigenous source of the virus, and epidemiological tracing backward and forward reveals no evidence of secondary dog infection.

If an imported case is confirmed, the status of the country or area shall not be affected if a risk assessment and/or molecular characterization confirms the non-indigenous source of the virus and epidemiological tracing backwards and forwards reveals no evidence of secondary infections in any wild or domestic carnivore. Laboratory-confirmed infection in some wild animals (e for instance, mongooses) should be considered an indicator of the presence and circulation of rabies.

Core elements of validation, verification, and rabies freedom

As per WHO, measures to validate rabies freedom must be underpinned by robust evidence and data that can be assessed independently, as premature cessation of control could result in the resurgence of the disease, with major public health, economic and political ramifications.

The core requirements for validation, verification and rabies freedom are:

- Rabies in all animal species and humans is notifiable.
- Continuous, effective surveillance is in operation and meets WHO and OIE standards for surveillance and diagnostic testing as per national guidelines.
- Adequate, targeted sampling is performed among the main susceptible domestic and wild animal species throughout the country.
- A national rabies control strategy (with mass dog vaccination and access to human PEP) has been effective in controlling rabies.
- Measures to prevent the importation of rabies-infected animals are in place as per OIE international standards and OIE Terrestrial Animal Health Code.

Validation of zero human deaths from rabies

Indicator: Absence of human deaths from rabies for 24 months

For a country to be recognized internationally as having eliminated rabies as a public health problem, with zero human deaths over 24 months, rabies must be notifiable in humans and animals, and the country must provide evidence of:

- An effective national rabies control and elimination strategy.
- Decrease in the number of dog rabies cases due to implementation of the national rabies control and elimination strategy.

- A decrease in the number of human deaths from rabies due to implementation of the national rabies control and elimination strategy.

If a country has verified interruption of transmission of dog-mediated rabies (see below), it will be considered also to have validated the elimination of rabies as a public health problem.

Verification of interruption of rabies transmission

The measure proposed as a means of verifying the interruption of rabies transmission; however, the requirements for verification remain under discussion.

Indicator: Absence of dog-mediated rabies cases for 24 months

For a country to be recognized internationally as having eliminated dog-mediated rabies, the disease must be notifiable in humans and animals. The country should be able to document the absence of dog-mediated rabies cases (absence of animal cases due to a canine rabies virus variant) for at least 24 months and provide evidence of a post-elimination strategy or contingency plan that covers access to dog vaccine and PEP, procedures for surveillance and epidemiological investigation of any introduction of rabies from other countries or regions.

OIE Provisions

OIE criteria for declaration of rabies-free status are set for the purposes of animal health, international trade and movement of animals. To declare rabies free territory or zones, guidelines have been prescribed by Terrestrial Animal Health Code (8.14) published by OIE.

According to OIE Terrestrial Code, Article 8.14.2., a country or zone will be considered free from infection with rabies virus when the following criteria are fulfilled:

It has a record of regular and prompt animal disease reporting infection with rabies virus being a notifiable disease in the entire country, and any change in the epidemiological situation or relevant events are reported.

- All susceptible animals showing clinical signs suggestive of rabies are subjected to appropriate field and laboratory investigations.
- An ongoing system of surveillance has been in place for the past 24 months, with a minimum requirement being an early warning system to ensure investigation and reporting of animals suspected of being infected.
- Regulatory measures for the prevention of infection with the rabies virus are implemented.
- No case of indigenously acquired infection with rabies virus has been confirmed during the past 24 months.
- If an imported case is confirmed outside a quarantine station, epidemiological investigations have ruled out the possibility of secondary cases.
- Preventive vaccination of animals does not affect the free status.

- An imported human case of rabies does not affect the free status.

The OIE Terrestrial Code, Article 8.14.4, states that a country or zone will be considered free from dog-mediated rabies when the following criteria are fulfilled:

- It has a record of a regular and prompt animal disease reporting system.
- Dog-mediated rabies is a notifiable disease in the entire country and any change in the epidemiological situation or relevant events are reported.
- An ongoing system of surveillance has been in place for the past 24 months, with a minimum requirement being an early warning system to ensure investigation and reporting of animals suspected of infection with the rabies virus.
- Regulatory measures for the prevention of infection with the rabies virus are implemented.
- No case of indigenously acquired dog-mediated rabies has occurred during the past 24 months.

A dog population control programme has been implemented and maintained. The following do not affect the status of a country or zone free from dog-mediated rabies:

- Preventive vaccination.
- Presence of rabies virus in wild animals.
- Imported human cases of rabies.

Imported cases outside quarantine stations whenever epidemiological investigations have ruled out the possibility of secondary cases.

4 Status of the State

Rabies being a zoonotic disease, its prevention and control largely depends on multi-sectoral collaboration wherein not only the critical engagement of the health sectors is required but also that of the veterinary and wildlife sectors. Rabies remained a neglected disease for years but with the phasing out of Nerve Tissue Vaccine in 2006, efforts towards its prevention and control gained momentum. Presently, with the easy access to good quality rabies vaccine for animals, steps to control and prevent the disease has attained a boost among the public and stakeholders. So too has the efforts to make rabies a priority zoonosis.

Efforts by the Health Sector

The Department of Health and Family Welfare under NHM has provisions for Rabies Control Activities both among the rural and urban population. The Integrated Disease Surveillance Programme (IDSP) in coordination with NRCP have undertaken these activities:

Surveillance: All cases of human rabies and animal bite-dog bite are reported and monitored both at the district and the State level.

Outbreak Investigation: All reported cases of human rabies are reported to the District Surveillance Unit and the respective Rapid Response Teams (RRT) of the district conducts outbreak investigation, maintains a line list for follow up and PEP.

Efforts by the Veterinary Sector

The Department of Animal Husbandry and Dairying under the Ministry of Fisheries, Animal Husbandry and Dairying initiated the Assistance to States for Animal Diseases (ASCAD) scheme in 2003-04. Provisions for providing Grants-In-Aid to the State governments for anti-rabies vaccination, strengthening the State Biological Production Centers and the State disease diagnostic labs, training veterinarians and para veterinarians, workshops, surveillance and monitoring of animal diseases, mass awareness programmes and cold chain maintenance are available under the central schemes of ASCAD and Rashtriya Krishi Vikash Yojana (RKVY).

Under The Prevention and Control of Infectious and Contagious Diseases in Animals Act, 2009, animal rabies is already a notifiable disease in India.

The Animal Welfare Board of India (AWBI) also has a separate scheme for Birth Control and Immunization of Stray Dogs under which registered NGOs and civic bodies are funded for mass dog anti-rabies vaccination and stray dog sterilization.

The Department of Animal Husbandry and Dairying has recently issued an advisory on control and eradication of dog-mediated rabies deaths in humans to all State animal husbandry departments and working on the inclusion of companion animals (dogs and cats) under the ambit of the Department of Animal Husbandry.

Different State and UT governments such as Kerala and Goa are taking up schemes/initiatives for rabies elimination in collaboration with notable NGOs.

The World Organization for Animal Health (OIE) has recognized the Rabies Diagnostic Laboratory, Department of Veterinary Microbiology, Veterinary College, KVAFSU, Hebbal, Bengaluru, as a twinning partner with the Animal and Plant Health Agency (APHA), Surrey, United Kingdom, and Centers for Disease Control and Prevention (CDC), Atlanta, GA, the US to support the project on 'Strengthening laboratory diagnosis of Rabies in India'. OIE has also recognized the laboratory as an OIE Rabies Reference Laboratory in 2020.

Efforts by the Municipal Corporations

In the urban areas, municipal corporations undertake stray dog management according to the 'Animal Birth Control (Dogs) Rules, 2001]' The Municipal Council dog-squad picks up unsterilized dogs (males and females), which are then neutered/sterilized, vaccinated with the anti-rabies vaccine, and returned to their locality after two-four days. The right ear of the dog is clipped to indicate sterilization.

Efforts by Non-Government Organizations and Private sectors

Several NGOs and animal welfare organizations are undertaking dog population management and vaccination programmes, playing an important role in the fight against rabies. Veterinarians across the State in urban areas conduct awareness shows, and vaccinations programmes in coordination with NGOs. Professional organizations such as IMA, IAP, IVA, IVPH, IAPSM, IAE, APCRI and Consortium Against Rabies are also contributing to sensitization and capacity building of the healthcare professionals in rabies.

Existing coordination and collaboration

- The State Department has highlighted advocacy for strong intersectoral coordination and collaboration for prevention and control of rabies in the State.
- Strengthening inter-sectoral coordination with veterinary, municipal corporation and local government bodies.

- Training on appropriate animal bite management, prevention and control of rabies, surveillance and intersectoral coordination.
- Strengthening surveillance of animal bites and rabies deaths reporting.
- The State Department is taking initiatives for sharing information regarding rabies cases incidence in the State and in collaboration with notable NGOs.
- Joint response team in collaboration with the human health and other concerned departments should be formed for surveillance and control of suspected and/or confirmed rabies incidence.
- Existing rapid response team.
- Rapid Response Teams (RRTs) of the Department have to be constituted including State-Level and District-Level Monitoring Committee. The RRTs are important for preventive and control measures for rabies in respective areas of the State.

THE ROLE OF AWBI

The Animal Welfare Board of India (AWBI) also has a separate scheme for Birth Control and Immunization of Stray Dogs under which registered NGOs and civic bodies are funded for mass dog anti-rabies vaccination and stray dog sterilization.

Under, 'The Prevention & Control of Infectious and Contagious Diseases in Animals Act, 2009', animal Rabies is already a notifiable disease in India and every State Governments has legal power to take steps to prevent and control the disease.

The AWBI's efforts to increase human resources involved in animal welfare include:

Colony Animal Birds Caretakers: These are individuals responsible for the care and welfare of birds and animals living in colonies or groups, often in urban or semi-urban areas where bird populations can be significant.

Honorary Animal Welfare Officers: These are volunteers or individuals appointed by AWBI to assist in the enforcement of animal welfare laws and regulations. They may help in rescue operations, inspections, and awareness campaigns.

Colony Animal Welfare Representatives: Similar to caretakers, these individuals may represent the welfare needs of animals in specific colonies or communities. They could liaise with authorities and organizations to ensure proper care and advocacy for these animals.

Animal Welfare Organizations: These are formal organizations dedicated to animal welfare advocacy, rescue, rehabilitation, and education. They work closely with AWBI and other authorities to promote animal welfare laws and ensure their implementation.

Each of these roles plays a crucial part in promoting and protecting the welfare of animals in India, contributing to broader efforts in animal rights and welfare across the country.

5 State Legislation and Public Health Laws

Existing State Provision

Rabies in humans is a notifiable disease: As per law passed by the State legislature, rabies cases reported in humans shall be notified to the authority by medicos, then the authority will notify the same to the government (State and Central). The Municipal Bodies will play a big role in reporting of the same as per Section 280, Chapter XV and Section 285, Chapter XV of Indian MC Act -2000.

Role of legislation in the fight against rabies: The State government has a big role to play in the fight against rabies by passing a legislation in the State Assembly pertaining to rabies control. A legislation will emphasize the following:

- Declaring “rabies as a zoonoses which is still prevalent in India.
- Declaring rabies as a notifiable disease as per the Prevention and Control of Infectious and Contagious Diseases in Animals Act – 2009.
- Bringing a bridge between animal husbandry and veterinary departments, health and family welfare department, and lead organizations dealing with rabies control by framing a common platform.
- Declaring Registration, Vaccination and Animal Birth Control (ABC) of Dogs a compulsory law (Legal aspect), the failure of which will attract penalty and/or even jail to pet owners.
- Making Intensified Awareness Programme on Rabies, Mass Rabies Vaccination Programme and Animal Birth Control (ABC), the three key components in rabies control (critical component) which is mandatory for all districts to achieve the targets.
- All pet breeding shops dealing in supply, breeding and import of pets/ exotic pets from outside the State should register with competent authorities and comply with rabies control rules.
- Municipal bodies in the State to strengthen their veterinary wings and be proactive in registration, ABC and rabies control as per Section 304, Chapter XVI and Section 325, Chapter XVIII of Indian MC Act-2000.
- Provision of funding for rabies control.

Reporting and Notification: Once the law is passed by the State Legislature, reporting and notification of rabies outbreak, rabies positive cases, rabies affected species, affected villages/places be made compulsory to the authority by the

veterinarians and medicos through proper channels. The concerned authority will then report and notify the same to the government (State and Central) after authentication for public interest. The municipal bodies will play a big role in reporting of the same as per Section 280, Chapter XV and Section 285, Chapter XV of Indian MC Act -2000.

Rabies a notifiable disease: Rabies to be declared a 'NOTIFIABLE DISEASE' as per the law passed by State Legislature.

Factors important in deciding whether a disease in Notifiable:

- Rabies is infectious, contagious, highly fatal disease (Etiology)
- Rabies is highly contagious through dog bites from both domestic and wild carnivores whether in rural or urban areas (Transmission)
- Rabies is a zoonotic disease (Zoo-Anthro-Zoonoses) (Public Health Concern)
- Causes high fatality rate in both animals and humans (High Mortality)
- Transboundary disease (Difficult to control)
- Incurred loss in prophylaxis and treatment (Economic loss)

Rabies in animals a notifiable disease: Same as in humans, but in this case, it will be notified by veterinarians. The municipal bodies will play a big role in reporting it as per Section 280, Chapter XV and Section 285, Chapter XV of Indian MC Act-2000.

Notifying a rabies case by authorities: Authorities will notify a rabies case based on:

- Suspecting outbreaks of rabies from a particular area/areas
- Confirmation of positive case (humans/animals) through laboratory diagnosis
- Potential treats of rabies transmission to other areas/people (zoonoses)
- Mortality rate and high economic loss from rabies positive cases
- Then rabies will be notified for public interest.

Notifying animal bite injuries: Veterinarians and medicos will notify animals bite cases to the authorities, especially in cases of

- No ownership of animals (dogs/cats/carnivores) (ownerless or stray animals).
- Vaccination of animals (dogs/cats/carnivore) is not done or no vaccination record is available.
- Animals or humans bitten by the above animals have not yet received any pre-exposure vaccination against rabies.

- Immuno-compromised animals or humans when bitten.
- When animals that bite others show signs of rabies (rabid dogs) or aggressive behaviour
- History of such stray animals from the community.

How is the legislature support for rabies control elaborated and implemented: The law on rabies control passed by the State legislature will provide the veterinarians, medicos, municipal bodies and administrative personnel a provision to implement rabies control with full legality as per the Prevention and Control of Infectious and Contagious Disease in Animals Act – 2009.

LAWS AND BYLAWS WHICH MAY BE USEFUL IN ENSURING A SUCCESSFUL DOG RABIES CONTROL PROGRAMME:

A provision under the law on rabies control passed by the State legislative will pass different laws and bylaws to ensure a successful rabies control programme such as:

- Compulsory registration, rabies vaccination and ABC of pet dogs/owned dogs with the concerned authorities as per AWBI Rules and Indian MC Act -2000.
- Garbage control, sewage disposal and registration and control/seizing cum rabies vaccination of stray dogs by municipal bodies (proactive) as per Indian Municipal Corporations Act - 2000 (Section 196 of Chapter XII, Section 301 of Chapter XV, Section 304 of Chapter XVI and Section 325 of Chapter XVIII)
- Compulsory pre-exposure vaccination against rabies for health workers, public health workers, wildlife workers, pet handlers, animal health workers, municipal personnel dealing in with restraining stray dogs/animals.
- Compulsory awareness programme on rabies to school children, public health education syllabus on rabies awareness in schools and colleges.
- Regular Mass Dog Vaccination (MDV) Programme in urban areas (municipal) and market areas to target the stray dog population, and in areas with high density of dog population in order to achieve more rabies vaccination coverage.

LAWS AND RECOMMENDATIONS AVAILABLE FOR DOG RABIES CONTROL IMPLEMENTATION:

- Pet Breeding Rule: Pet breeders dealing in breeding, importing of pets/exotic pets from outside the State to be compulsorily registered with authorities and to strictly follow the rules regarding control of the zoonoses including rabies as per Dog Breeding and Marketing Rules, 2017 (Amend)
- Transportation of animals: Transporters are to strictly follow rules as per Transport of Animals Rules, 2001 and 2016 (Amend) of Transport of Animals Rules -1978 to control zoonoses including rabies.
- Compulsory registration, vaccination and ABC of dogs/pets – (Recommendation)

- Compulsory pre-exposure vaccination to highly risk populations/individuals
- Garbage control and sewage disposal to be strictly followed by municipal/civic bodies to avoid the increase of dog population and decrease dog-bite cases incidence *(Recommendation)*
- Intensified awareness programme on rabies to pet handlers and communities - *(Recommendation)*

Compulsory dog vaccination: Once the law is passed by the State legislature, dog vaccination to be made compulsory to eliminate rabies in the long run. Both pre-exposure and post exposure rabies vaccination of dogs to be made compulsory to reduce incidence of cases to other population. For stray dogs – Animal vaccination programme to be made compulsory in coordination with municipal/civic bodies.

Emergency orders in the case of unexpected outbreaks: The District Magistrate will pass orders regarding unexpected outbreaks in a particular district/ area to deal with the outbreak such as: Healthcare for the positive cases, ban on the transportation of dogs, directives and advisory to public, collection of samples from suspected cases (animals and humans), proper disposal of dead animals and humans.

Creation of check post surveillance for transboundary movement of dogs: Check posts will streamline the transportation of dogs into the State. Dogs without proper health certificates, vaccination cards, and unfit dogs and other exotic pets/ animals/pets will be rejected the entry to the State to reduce the incidence of rabies, and other zoonoses and infections as per Transport of Animals Rules -2016 (Amend).

Indian Municipal Corporation Act – 2000

Rules related to rabies and other diseases: -

- Section 186, Chapter XII: Deals in sewage disposal and garbage control
- Section 280, Chapter XV- Obligation to give information of dangerous diseases
- Section 285, Chapter XV – Special measures in case of outbreak of dangerous or epidemic disease
- Section 301, Chapter XV – Disposal of dead animals
- Section 304, Chapter XVI – Registration and control of dogs
- Section 325 of Chapter XVIII – Seizing of certain animals

6 'One Health Approach' for Rabies Elimination

The 'One Health Approach' is a comprehensive and interdisciplinary strategy that recognizes the interconnection between human health, animal health, and the environment. When applied to human rabies elimination, the 'One Health Approach' emphasizes the collaboration and coordination of various sectors including public health, veterinary medicine, and wildlife management. The approach recognizes that rabies is a zoonotic disease primarily transmitted through the bites of infected animals, particularly dogs, and poses a significant threat to human health. By addressing the disease at its source and considering the complex interactions between humans, animals, and the environment, the 'One Health Approach' aims to prevent and control human rabies through interventions such as awareness generation, mass dog vaccination campaigns, responsible pet ownership education, surveillance and monitoring of rabies cases, and improved healthcare infrastructure for prompt and effective treatment. The integrated approach is essential for achieving sustainable and long-term success in eliminating human rabies, protecting communities, and preserving the health and well-being of both humans and animals.

Rabies is a classic 'One Health' challenge: More than 96 per cent 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 (PEP) to dog bite victims are available. However, imperfect awareness compounded by variable accessibility of PEP has resulted in the persistence of human rabies fatalities. Rabies is a typical example of a zoonotic infection that does not fit into the domain of any one single department having the responsibility of controlling it. Although there is an animal reservoir involved, mortality and morbidity mainly affect human beings. Therefore, for prevention, control and elimination of rabies an effective and concerted effort from the animal husbandry sector, human health sector, local governing bodies, communities and other stakeholders, is the need of the hour. Until now, rabies elimination efforts have been fragmented and uncoordinated across various sectors. In 2015, the WHO/FAO/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 deaths by 2030 worldwide and thereby contributing to the SDG 2.

As rabies disproportionately affects poor and rural communities, eliminating human deaths from the disease is also consistent with SDG 1 to "end poverty in all its forms" and the commitment of member States to "leave no one behind".

The ‘One Health Approach’ is the most successful model which has been adopted by many countries for rabies elimination. The target for rabies elimination can only be achieved by sustained and synergistic political commitment and administrative support of all stakeholders from the highest level up to the village level. ‘One Health Approach’ is the globally acknowledged means and a rational way of solving complex issues and challenges by harnessing the expertise of concerned stakeholders across sectors.

The ‘One Health Approach’ recognizes that the health of humans, animals, and the environment are interconnected and that addressing health challenges requires a collaborative, interdisciplinary approach. Here are some strategies commonly employed in ‘One Health’ programmes:

Interdisciplinary collaboration: ‘One Health’ programmes bring together professionals from various fields including human health, veterinary medicine, environmental science, and public health. Collaboration among these disciplines enables a holistic understanding of health issues and facilitates the development of comprehensive solutions.

Surveillance and monitoring: Monitoring the health status of humans, animals, and ecosystems is essential for early detection and response to emerging health threats. ‘One Health’ programmes emphasize the establishment of surveillance systems that track disease trends, identify potential outbreaks, and monitor environmental indicators of health.

Disease prevention and control: ‘One Health’ initiatives prioritize preventive measures to mitigate the risk of disease transmission among humans, animals, and the environment. It includes vaccination campaigns, vector control programmes, hygiene promotion, and biosecurity measures to reduce the spread of infectious diseases.

Capacity building: Strengthening the capacity of health professionals, veterinarians, researchers, and policymakers is essential for effective ‘One Health’ implementation. Training programmes, workshops, and educational initiatives are conducted to enhance skills, promote interdisciplinary collaboration, and build resilience to health threats.

Risk communication and public engagement: Effective communication is vital for raising awareness about ‘One Health’ principles, fostering community participation, and promoting behaviouralchange. ‘One Health’ programmes employ strategies such as risk communication campaigns, community outreach, and stakeholder engagement to educate the public and encourage informed decision-making.

Policy development and advocacy: Advocating for policies that support ‘One Health’ approaches is crucial for integrating interdisciplinary perspectives into health governance. ‘One Health’ programmes work with policymakers to develop evidence-based policies, regulations, and guidelines that address health challenges at the human-animal-environment interface.

Research and innovation: Research plays a fundamental role in advancing knowledge, developing new technologies, and improving interventions in 'One Health'. The programmes support interdisciplinary research initiatives, promote data sharing and collaboration, and facilitate innovation to address complex health issues.

Sustainable development and environmental conservation: Recognizing the impact of environmental degradation on health, 'One Health' programmes advocate for sustainable development practices that promote ecosystem health and resilience. Strategies include conservation efforts, sustainable resource management, and addressing climate change-related health risks.

By employing these strategies in a coordinated manner, 'One Health' programmes aim to achieve improved health outcomes for humans, animals, and the environment while addressing the complex interconnections between health and the ecosystem.

7 SAP for Dog- Mediated Rabies Elimination from Meghalaya

Approach for rabies elimination:

The State Action Plan for Dog-Mediated Rabies Elimination (SAPRE) in Meghalaya is conceptualized after wider consultations across stakeholders, lessons learned from the ongoing activities in the State and is based on the recommendations of various stakeholders which include the NCDC, MoFAHD, the State veterinary department, the State health department, Shillong municipality, forest and wildlife department, Animal Welfare Board, NGOs and others. The successful implementation of SAPRE is based on five major pillars.

Figure - Major pillars of SAPRE

SAPRE provides a broad framework for combating rabies. It is a guidance document for the districts/ stakeholders to develop their action plan specific to their needs.

Vision and mission of the NAPRE

Vision: To achieve zero human deaths due to dog-mediated Rabies by 2030.

Mission: To progressively reduce and ultimately eliminate human rabies in India through sustained, mass dog vaccination and appropriate post-exposure treatment.

KEY PRINCIPLES OF SAPRE

The State Action Plan for Dog-Mediated Rabies Elimination in Meghalaya is based on three key principles:

Prevention: Introduce cost-effective public health intervention techniques to improve accessibility, affordability, and availability of post-exposure prophylaxis (PEP) to all people in need.

Promotion: Improve understanding of rabies through advocacy, awareness, education, and operational research.

Partnership: Provide coordinated support for the anti-rabies drive with the involvement of community, urban and rural civil society, government, private sectors, and international partners.

CORE COMPONENTS OF SAPRE

The national action plan will have two core components to achieve the elimination of dog-mediated human rabies:

HUMAN HEALTH COMPONENT

To prevent human deaths due to rabies by ensuring timely access for PEP for all animal bite victims and creating a responsive public health system.

ANIMAL HEALTH COMPONENT

To achieve at least 70 per cent anti-rabies vaccination coverage among dogs in a defined geographical area annually for three consecutive years.

STRATEGIES FOR SAPRE

The strategies of both human and animal health components are:

STRATEGIES OF HUMAN HEALTH COMPONENT OF SAPRE:

To ensure availability of Anti-Rabies Vaccine (ARV) and Anti Rabies Serum (ARS) to all animal bite victims at all levels of health facilities

- The cost-effective Intra-dermal rabies vaccines for PEP has been made available in the PHC/CHC/DH and other public health hospitals. Medical officers and healthcare workers have been trained in wound management and vaccination. The State will organize refresher training/ workshops for the MoH&FW at district-level once a year.
- ARV/ARS have been declared as essential drug in the state of Meghalaya. Financial assistance from NHM for ARV/ARS procurement has been facilitated for the current financial year. The same would be applicable in the National Free Drugs Initiative scheme. Also, in the

State-run MHIS insurance scheme, the ARV/ARS vaccination is listed for insurance coverage.

- To improve and strengthen infrastructure for treating the victims of animal bites- by dogs, the Model Anti-Rabies Clinics have been shifted to Civil Hospital, where there is provision for specialty services (availability of emergency, surgery and other specialty services).
- Ensuring availability of trained human resource concerning appropriate animal bite management/ID inoculation/ ARS infiltration.
- Ensure uninterrupted supply of ARV/ARS and close monitoring of ARV/ ARS demand and supply positions to avoid stock out positions (Annexure 5 - guidance document).
- Ensuring and upgrading adequate cold chain facilities to store ARV/ARS stocks at appropriate levels.
- Establishing monitoring mechanism for recording and reporting of Adverse Event Following Immunization (AEFI) for rabies.

Capacity building of professionals in appropriate animal bite management (Details in Chapter XV on Training)

- Training of health professionals and paramedical on rabies pre and post-exposure prophylaxis as per national guidelines.
- Training of State, district and below district-level healthcare professionals on programme 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/professionals exposed to an environment conducive for rabies virus transmission.
- Promoting pre-exposure prophylaxis among children through involvement of the Indian Academy of Pediatrics as rabies is an optional vaccine in IAP Schedule.

Strengthening surveillance of animal bites and rabies cases in humans (Details in Chapter IX on Surveillance)

- Ensuring implementation of rabies notification in human health sectors through the web portal for notification of animal bite victims/rabies cases.
- Strengthening the periodic reporting system about animal bites and rabies incidence through IDSP and Integrated Health Information Platform (IHIIP).
- Resource mapping: Mapping the facilities (State/district-wise) for management of animal bite victims, treatment facilities for suspected rabies cases or Infectious Diseases hospitals and mapping of laboratories for rabies diagnostics.
- Establishing sentinel surveillance system for animal bite cases through Model Anti-Rabies Clinics.

To strengthen diagnostics capacity on rabies (Details in Chapter X on Laboratory Diagnostics)

- The already existing State Referral Lab of IDSP would be strengthened to provide the recommended ante mortem and post mortem diagnostic facilities such as Directs Fluorescent Antibody Test/ Sellers Stain/ Molecular Diagnosis by PCR and ELISA at the State-level. The proposal has been sent to NCDC for strengthen the lab.
- Training and capacity building of district-level lab professionals on SOPs for handling and transportation of samples (State-level training workshop).

To promote operational research in rabies

The State has started with the State Health Resource Center which would conduct operational research, situational analysis and implementation studies.

The following studies/ research would be conducted in the State at regular intervals:

- To estimate rabies burden and incidences of animal bites.
- Estimations of coverage of ARV and ARS among animal bite victims, compliance, and dropout rate of the vaccination, and AEFI if any.
- Study to examine the operational feasibility and effectiveness for the modified regimen for rabies PEP.
- To study the health-seeking behaviors of the community and reasons for the dropout.
- Mapping of rabies biological supply chain and market landscape to be done by Meghalayan Medical Drugs Services Limited (MMDSL).

To strengthen intersectoral coordination mechanism between the veterinary and medical sectors for regular sharing of reports/ data on animal rabies and set up guidelines for joint

RESPONSES TO OUTBREAKS

- Joint workshop of district-level medical/ veterinary department on rabies and joint gap analysis for formulation of Action Plan for Rabies Elimination was conducted by the State health department, NCDC and UNDP.
- Joint Steering Committees have been formed at district-levels involving the health department, veterinary department, NGOs, and the district administration.

INFORMATION EDUCATION AND COMMUNICATION (IEC) FOR INCREASING AWARENESS ABOUT THE DISEASES AND THE IMPORTANCE OF SEEKING TIMELY AND APPROPRIATE TREATMENT FOR ANIMAL BITES (DETAILS IN CHAPTER ON IEC/BCC)

- Development of 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 [health professionals/ veterinary professionals/ children-school health education / community or field workers (ASHA/ANMs and paravets/ general community/ media)].
- Including IEC especially in schools.

PUBLIC-PRIVATE PARTNERSHIP THROUGH INVOLVEMENT OF NGOS AND COMMUNITY ORGANIZATIONS (DETAILS IN CHAPTER VIII ON STAKEHOLDERS)

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

STRATEGIES FOR ANIMAL HEALTH COMPONENTS:

ESTIMATION OF CANINE POPULATION

- To obtain data on the number of strays (free-roaming dogs), community-owned dogs and pet dogs to be vaccinated and to calculate the logistics requirement (money, human resource -and material).
- Community-owned dogs (which are fed by certain communities but are roaming freely), stray dogs (unowned dogs and free roaming).
- Various practical tools are available including Livestock Census 2012, dog registration register, and population estimates.
- For a more accurate population count, dog population estimation can be done as per the Standard Operating Procedure described in Annexure 6.

Identification of rabies risk zone

- The veterinary department in coordination with the health department will identify high risk, medium risk and low-risk zones at the village, block and district levels based on the epidemiological data of rabies (number of human and animal rabies cases), number of dog bites, sharing of the border with neighboring high risk/medium risk areas. The data would be shared on a monthly basis (details of sharing data in Chapter IX on Surveillance) in the District Joint Steering Committee to take action.
- The rabies risk zone identification for prioritizing activities of the animal health component may be done as per technical evidence and data available in both sectors. The zones may be reviewed monthly/quarterly/ yearly category status.

Planning and implementing strategic mass dog vaccination programme (More in Chapter XI on Dog Vaccination) –

The objective of the strategic mass dog vaccination programme is to achieve anti rabies vaccination in at least 70 per cent of the dog population annually for three consecutive years, and maintain the 70 per cent vaccination status in a defined geographic area. It means that vaccinations have to be conducted in 70per cent of dogs every year for three years to provide adequate protective 'herd immunity' in that population. If at least 70 per cent vaccination coverage is maintained every year, rabies would be eliminated from the defined dog population, and five-eight years to eliminate rabies in an area or region.

- Mass Dog Vaccination (MDV) against rabies could also be prioritized in the areas where mass ABC surgeries have been undertaken. Dogs that have been sterilized should be revaccinated to maintain anti-rabies immunity in the dog population.
- Intensive vaccination campaigns lasting from one day to one month are effective in rabies control. Vaccination campaigns must reach at least 70per cent of the dog population of the selected area.
- The vaccination coverage should not be compromised in pursuit of speed.
- The Department of Animal Husbandry in coordination with the municipal corporation, panchayati institution and NGOs has to take the lead in strategic MDV campaigns and ensure availability of Anti-Rabies Vaccine (ARV) at all levels of animal health facilities.
- Private veterinary practitioners and veterinary students can be involved to assist in MDV drives which can be done as per the Standard Operating Procedure in Annexure 7.

Assessment of post-vaccination coverage-

- To assess the success of MDV, it is essential to conduct sero-monitoring of the vaccinated dog population.
- A survey should be undertaken within a week of the MDV campaign in the vaccinated areas to assess the numbers of marked /unmarked dogs, and conduct proportional counts (the number of dogs with color mark) and also by using a questionnaire survey of the household.
- A revaccination campaign should be organized if the coverage is found to be below 70 per cent of the estimated dog population.
- The details of animals vaccinated in the field could be reported using the Monthly Animal Health Report form to the local authority.
- The local authority then can issue a completed mass vaccination certificate to the village/block/district.
- The post vaccination coverage can be done as per the Standard Operating Procedure in Annexure 8.
- Reporting format for MDV by the Block, district and State-level is detailed in Annexure 9.

Dog Population Management (DPM)

Dog population management aimed to limit the man-dog conflict and to reduce the numbers of stray dogs to an acceptable level through Animal Birth Control (ABC).

- To establish a strategic robust DPM.
- It is desirable that the State veterinary sector coordinates with the stakeholders involved in DPM such as local governing bodies, NGOs, and AWBI.
- Creation of dedicated Animal Welfare Para-Police/Animal Law Enforcement Agency.
- A permanent and dedicated human resource for ABC and ARV programme could be used.
- The concept of community dogs should be included, and Animal Welfare Organizations (AWOs) should be identified as caretakers for their sterilization and vaccination.
- The services of AWOs will be utilized constructively for prevention and control of rabies in their jurisdiction. Wherever possible local governments can take assistance in social mobilization, general awareness, and rescue operations for undertaking the MDV and DPM.

To promote responsible dog ownership

- Promoting responsible dog ownership and encouraging neutering/ sterilization of pet animals is important to make the community understand cohabitation, behavior, ecology, and basic needs of dogs.
- It should include advocacy and ensuring that pet dogs or community-owned dogs are properly vaccinated and treated against diseases. Advocacy among the community about preventing dog bites, preventive vaccines and waste management.
- Advocacy to promote the registration of pet dogs and community-owned dogs.

Solid Waste Management (SWM)

Proper solid waste management is important as domestic garbage/waste attracts stray dogs leading to an increase in population and incidences of dog bites. Environmental control of stray dogs is an effective strategy for DPM by reducing the access to food to the stray dogs by ensuring proper food waste disposal. The two activities important in SWM:

- Identifying hotspots in the community where congregations of dogs are common.
- Creating awareness among communities about waste management and its relation to the increase in the dog population.

While disposal of animal carcasses should be done according to the regulations in the Prevention and Control of Infectious and Contagious Diseases in Animals Act 2009-14, the Central Pollution Control Board guidelines 2020-18, and Section 393 of Indian Penal Code.

Community involvement

Building partnerships, social mobilization, and ensuring community participation are crucial for the success of the SAPRE.

Community involvement in rural and urban areas is necessary for identifying problem areas and bite victims, ensuring treatment compliance, effective vaccination camps, and responsible dog ownership and reducing human-dog conflict.

In urban areas: Resident Welfare Associations, cooperative societies (any societies registered under the Society Registration Act.

In rural areas - Rangbahshnong and Nongma.

Collaboration among different departments, authorities, NGOs and medicos, veterinarians in private sectors will be required for the best utilization of the available resources.

Plan of implementation for SAPRE at the State-level Short-term plan- (Year 2024, 2025)

Preparatory phase

- Convene joint steering committee at State level.
- Advocacy for prioritizing rabies in the State.
- Proposing for funds to different funding agencies/ministries to begin different components of the programme. Identify and establish funding (schemes, programme), components under funding (such as vaccines, training, IEC).
- Establishing State Programme Management Unit (SPMU)/ District Programme Management Unit (DPMU) in all districts.
- Establishing ABC centre based on priority in the districts with in-house animal shelter.
- Making registration of pet dogs compulsory through legislation.
- Development of SOP for animal bite management, dog enumeration plan, MDV, and DPM as per the national guidelines and the ABC Act.
- Conducting the dog census and collecting baseline data for key performance indicators.
- Estimate burden of human and animal rabies in the State.
- Disseminating technical guidelines on the canine rabies control programme to all the relevant stakeholders.
- Training medical officers, veterinarians, and support staff.
- Identify villages/taluks/districts/ based on animal bite cases and evidence as high-risk areas, medium risk areas , and low-risk areas.
- Achieve intersectoral collaboration by sharing information among stakeholders.
- Initiate inter-departmental collaboration (animal husbandry and veterinary departments, municipality and local self-governing bodies, NGOs) through MoUs.
- Identify and strengthen the regional, district laboratories, State reference laboratories and national referral laboratories.
- Initiate capacity building, professional education and staff training for activities planned.
- Start aggressive campaigns for vaccination of dogs and responsible dog ownership.

- Initiate strategic MDV in selected areas.
- Evaluates vaccination coverage in canines with an aim to vaccinate a minimum of 70per cent population.
- Developing a common platform for data sharing and joint outbreak response teams.

Medium-term plans- Phase 2 Activities (Year 2026, 2027, 2028)

- Scale-up dog vaccination
- Continue advocacy and awareness generation on animal and human rabies.
- Scale-up implementation of the programme throughout the State.
- The ABC centre must be scaled up in other districts/areas having high dog-bite incidences.
- 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).
- Evaluate vaccination coverage in canines.
- Continue registration of pet and community-owned dogs.
- Continue MDV.
- 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.
- Declare dog-mediated rabies free zones (villages/blocks/districts) and State.

Long term plans- Phase 3 and Phase 4 activities (2029, 2030)

- Maintain dog vaccination status and intensified rabies surveillance
- The vaccination of dogs and DPM would be a 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 review the progress.
- Continue the advocacy and creating awareness on animal and human rabies.
- All States implementing ID route for rabies PEP in major health facilities.

- Declare dog-mediated rabies free zones (villages/blocks/districts) and States and regions.
- Continue surveillance activity for human and dog rabies.
- Upgrade surveillance of rabies from canine to other animals.
- Continue implementation of DPM.
- Conduct joint field investigations in case of human rabies cases.
- Characterization and analysis of circulating rabies virus variants by a national or international laboratory.
- Get declaration of animal rabies free country by OIC.
- Get declaration of animal rabies free country by WHO.
- Verify freedom from rabies every year 2030 onwards.

8 Stakeholders Involved in 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 categorised as Key Stakeholders, Supporting Stakeholders and Private Partners.

Key Stakeholders: They will act as a nodal agency for the overall formulation, planning, coordination and implementation of the activities as envisaged under SAPRE. They will be directly involved in providing technical and logistic support to the district and the levels below. Key stakeholders are:

- Health and family welfare department at the State and district levels.
- Animal husbandry and veterinary department at the State and district levels.
- Forest department at the State level and similar forest authorities at National Parks and notified zones.
- State urban affairs department.
- State community and rural development block.
- Rural Local Governing Bodies (LGB) at village level.

Supporting Stakeholders: They assist Key Stakeholders in the coordination and implementation of various aspects of SAPRE. They will provide technical assistance in activities planned for rabies elimination from the State under various components. The supporting stakeholders are:

Department of Finance at the State and at levels below.

- Ministry of Human Resources.
- Department of Information and Public Relation at the State and at levels below.

Other Stakeholders: They would primarily assist in the implementation of technical aspects of SAPRE with the available logistics and expertise available to them and provide support to the Key Stakeholders at the field level. Private partners fall into the following categories.

Non-government organizations active in the field of rabies in health and veterinary sectors.

- Professional organizations and associations in the medical and veterinary sector.
- International Development organizations and UN agencies.
- Private hospitals, institutions, clinics, diagnostic labs both in the veterinary and health sectors.

List of NGOs and their defined roles and responsibilities

Sl. No.	NGOs	Roles and responsibilities	Remarks
1	Shillong Happy Tails. East Khasi Hills.	i) Rescuing stray dogs and cats and providing basic medical care including first aid. ii) Bringing the suffering stray animals to nearby government and private clinics. iii) Creating awareness among the public about animal welfare, Animal Birth Control, pet parents, and cruelty against animals including in social media. iv) Reporting of cruelty against animals to authority.	Not yet registered with **AWBI**
2	The Human United for Animal and Nature (HUFAN). East Khasi Hills.	-do-	-do-
3	Street Animals Rescue Society (SARS). East Khasi Hills.	-do-	-do-
4	Roilang Animal Welfare Organization. West Jaintia Hills.	-do-	-do-
5	Treiborlang Animal Welfare Organization. West Jaintia Hills.	-do-	-do-

Sl. No.	NGOs	Roles and responsibilities	Remarks
6	Sumarhok Animal Welfare Organization. West Jaintia Hills.	-do-	-do-
7	Umthad Animal Welfare Organization. West Jaintia Hills.	-do-	-do-
8	Yakhihlang Animal Welfare Organiztion. West Jaintia Hills.	-do-	-do-
9	Farm Connect Development Society. West Jaintia Hills.	-do-	-do-
10	Maialang Animal Welfare Organization. West Jaintia Hills.	-do-	-do-
11	Nangroi Multi-purpose Co-Operative Society. West Jaintia Hills.	-do-	-do-
NB: None of the NGOs have a veterinarian in their organization.			

Responsibilities of agencies in rabies control programme

Role of the health department:

The health department plays a critical role in the prevention and control of human rabies. Among its key roles and responsibilities are:

Surveillance and reporting: The health department is responsible for establishing and maintaining a surveillance system to monitor the occurrence of human rabies cases. It includes collecting and analyzing data on suspected and confirmed cases (clinical/ laboratory), conducting investigations, and ensuring timely reporting to relevant authorities. Surveillance helps identify areas of high incidence, detect outbreaks, and guide targeted interventions.

Public awareness and education: The health department plays a vital role in raising public awareness about rabies prevention and control. It develops and implements educational campaigns to inform the public about the risks associated with rabies, the importance of timely medical care after a potential exposure, responsible pet ownership, and the benefits of vaccinating domestic animals. The efforts aim to promote behavior change and reduce the incidence of human rabies cases.

Post-exposure prophylaxis (PEP): The health department ensures access to appropriate post- exposure prophylaxis (PEP) for individuals who have been bitten by or exposed to a potentially rabid animal. It includes providing guidelines and protocols for healthcare professionals to follow in assessing and managing cases of animal bites, administering PEP, and monitoring patients for any signs of rabies. The department also collaborates with healthcare facilities to ensure the availability of rabies vaccines and immunoglobulins.

Healthcare provider training: The health department conducts training programmes for healthcare providers on the diagnosis, management, and reporting of rabies cases. The programmes aim to improve the capacity of healthcare professionals to recognize and respond to potential rabies cases promptly. Training also focuses on the appropriate use of PEP and the proper handling and transportation of samples for laboratory testing.

Collaboration and coordination: The health department collaborates with other sectors, such as the veterinary department, animal control agencies, and local government authorities, to implement a ‘One Health approach’ to rabies prevention and control. It involves regular coordination meetings, information sharing, joint outbreak investigation, joint planning and implementation of activities, and leveraging the expertise and resources of each sector.

Policy development and implementation: The health department develops and enforces policies and regulations related to rabies prevention and control. It

includes guidelines on animal vaccination, responsible pet ownership, reporting and management of animal bites, laboratory testing procedures, and the handling of rabies cases. The department ensures that the policies are effectively communicated, understood, and implemented at all levels of the healthcare system.

Monitoring and evaluation: The health department monitors and evaluates the effectiveness of rabies prevention and control programmes. It involves assessing the coverage and impact of vaccination campaigns, tracking the incidence of human rabies cases, evaluating the availability and accessibility of PEP, and analyzing surveillance data to identify gaps and areas for improvement. Monitoring and evaluation help inform evidence-based decision-making and guide strategic interventions.

By assuming these roles and responsibilities, the health department plays a crucial part in preventing and controlling human rabies. Its efforts in surveillance, public awareness, vaccination campaigns, PEP administration, healthcare provider training, collaboration, policy development, and monitoring contribute to reducing the incidence of rabies and protecting the health and well-being of communities.

ROLE OF THE VETERINARY SECTOR:

The programme in the States will be implemented through the State veterinary department, municipalities, and block institutions. In SAPRE, the role envisaged for the animal sector is:

- Advocacy with different stakeholders for prioritizing animal rabies to achieve commitment at all levels so that resources could be mobilized for the elimination of the disease.
- Mapping of high risk, medium risk and low risk areas of rabies in association with health department and other stakeholders to prioritizing areas for MDV and DPM.
- Ensure uninterrupted supply of logistics human resource and material for undertaking mass vaccination and ring vaccinations activities for the areas targeted for rabies elimination.
- Capacity building for veterinary professionals, paravets, 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.
- Intersectoral coordination and sharing of information on rabies among the health and wildlife health sector 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 and agencies for technical support on rabies prevention and control.
- Monitor and evaluate the control programmes implemented by the field units.
- Establishment/strengthening of check-post/quarantine centres since unvaccinated as well as diseased animals can easily enter and introduce rabies in areas where the cases have reduced.
- To coordinate with stakeholders involved in strategic DPM.
- Since the Veterinary Council of India is responsible for making provisions for the regulation of veterinary practice and standards of veterinary education, animal rabies will be included as a priority disease in the curriculum of para-veterinary students.
- Increase the involvement of internees in activities of MDV and MDPM during their routine.

Role of Animal Welfare Board of India:

- 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 DPM plan as per the ABC Rules.
- Services and assistance of Animal Welfare Organizations can be utilized for certain aspects of DPM and MDV drives; and isolation and observation of aggressive dogs suspected with rabies.
- The services of AWOs will be utilized constructively for prevention and control of rabies in their jurisdiction. Wherever possible local governments can take assistance from AWOs in social mobilization, community awareness and rescue operations for undertaking the MDV and DPM.
- The State needs to utilize the working human resources of the AWBI for ABC and vaccination support.

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:

- Develop a strong volunteer network for community engagement and mobilization.

- Promotion of ARV campaigns.
- Promote responsible pet ownership.
- Intensify rabies awareness education and interpersonal communication campaign.
- Surveillance/reporting of suspected animal rabies cases.
- Ensure animal bite management in animals.

Role of SPMU/DPMU

In the initial phase of implementation of the programme, the key stakeholders will be responsible for carrying out the activities of SPMU/DPMU with existing staff. Once the SPMU/DPMU is established in all the districts, it will perform the following roles and responsibilities.

- Planning for ABC and MDV activity.
- Compiling surveillance data from health, veterinary &and forest department.
- Monitoring the key performance indicator.
- Keeping the DC/CEO and concerned authority abreast about gaps in the programme,.
- Plan for monthly convergence meeting and steering committee.
- Verifying the number of sterilizations done every month.
- Verifying dog vaccination status at regular intervals.
- Planning for dog census.
- Other roles delegated from time to time.

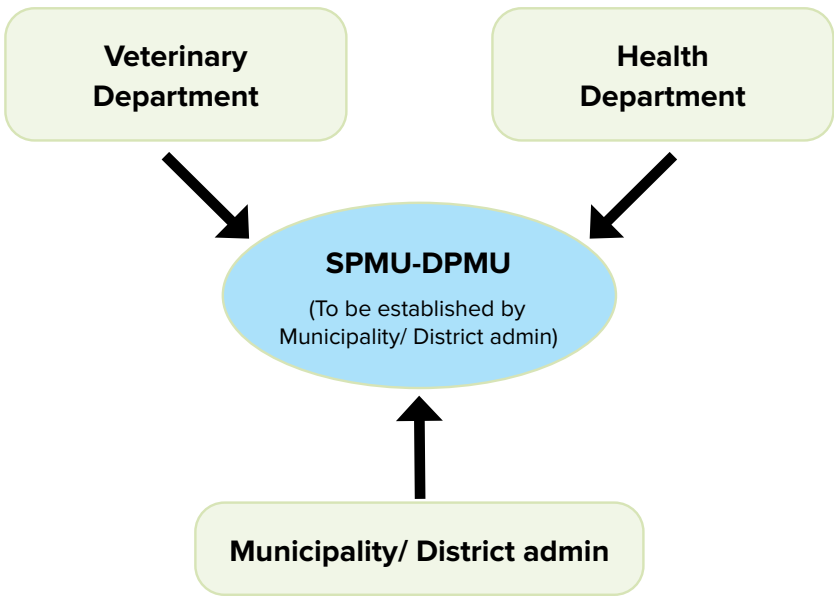
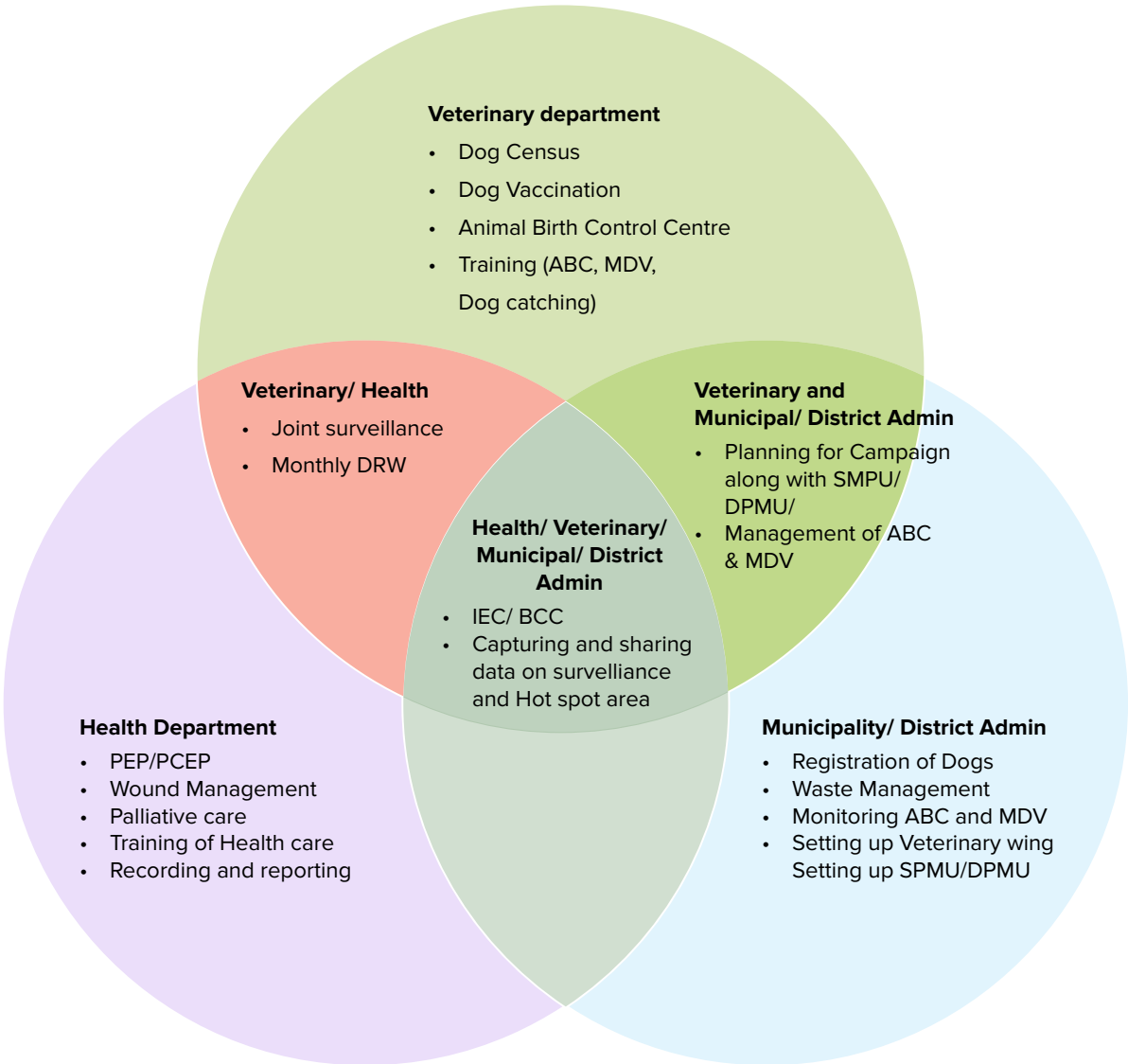


Figure – Shared responsibility among the stakeholders

1. Animal Welfare Board
2. Multilateral Organisation
3. N.G.O
4. Rangbah-Shnong/ Nongma



9 Rabies Surveillance Under SAPRE

Surveillance is defined as the routine systematic collection, compilation, analysis and interpretation of data and the prompt dissemination of the information for public health action. A strong and dependable surveillance system is the backbone of every health system and national health programme. It provides information for decision-making and aids in the evaluation of the public health interventions.

For rabies elimination, Surveillance remains a key component which will help identify problem areas and enable timely action. A systematic and linked surveillance system of both human health and animal health component is necessary under SAPRE. Such a system encompasses real-time data sharing of pre-defined required information.

Training:

The department needs to conduct training for rabies surveillance for:

- Master trainers for sample collection.
- Hands-on training for field staff.
- Refresher course for medical officers and staff nurses on administration of ARV and RIG.
- Training for medical officers on rabies surveillance (reporting, Case Investigation).

Surveillance -Human Component

At present the existing surveillance mechanism is daily reporting of public and private health facility on the P Form in the IDSP-IHIP portal and monthly reporting as per Annexure XI of the National Rabies Control Programme. At the grassroot level, animal bites are reported on the S form on the IHIP app. The surveillance of the human component needs to be strengthened under SAPRE.

Strengthening the existing surveillance mechanism:

- Strengthening the current surveillance activities of rabies notification and reporting of incidences of animal bite victims.
- Resource mapping: Mapping the facilities (State/ district wise) for management of animal bite victims.
- Resource mapping: Mapping the facilities on the availability of ARV and ARS and to ensure its availability in all CHCs/PHCs/SDs and UPHCs.

- Conduct Case Investigation of each suspected rabies case and death as per the Case Investigation Form (Annexure enclosed)
- Treatment facilities for suspected rabies cases or Infectious Diseases hospitals and mapping of laboratories for rabies diagnostic.
- Establishing sentinel surveillance system for animal bite cases through Model Anti-Rabies Clinics

Case Definition

Case Definition	Type of reporting/ format
Suspect Case: Death of a human with a history of dog bite few weeks/ months preceding death. ***Wherever available, the details of such cases should be shared as per the case investigation form of IDSP***	To be reported in S form by ANM/Health workers
Probable Case: A suspected human case plus history of exposure to a (suspect/probable) rabid animal. Exposure is usually defined as a bite or scratch from a rabies-susceptible animal (usually dogs). It could also be lick exposure to open wound, abrasion, mucous membranes of the patient.	To be reported in P form (by Medical Officers/ Doctors)
Probable rabid animal is a suspect rabid animal 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. ***Wherever available, the details of such cases should be filled in the Case Investigation form of IDSP.***	
Laboratory confirmed case: A suspect or a probable human case that is laboratory-confirmed. Laboratory confirmation by one or more of the following: 1. Detection of rabies viral antigens by direct Fluorescent Antibody Test (FAT) or by ELISA in clinical specimens, preferably brain tissue (collected post mortem). 2. Detection by FAT on skin biopsy (ante mortem). 3. FAT positive after inoculation of brain tissue, saliva or CSF in cell culture, or after intracerebral inoculation in mice or in suckling mice. 4. Detectable rabies-neutralizing antibody titre in the serum or the CSF of an unvaccinated person. 5. Detection of viral nucleic acids by PCR on tissue collected post mortem or intra vitam in a clinical specimen (brain tissue or skin, cornea, urine or saliva)	

A suspect rabid animal is a rabies-susceptible animal (usually dogs) which presents with any of the following signs at 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.	To be reported in P form (by Medical Officers/ Doctors)

Joint Outbreak Investigation

A joint outbreak investigation involving the veterinary, health and municipal departments is a crucial step in addressing a case of human rabies. Such collaboration ensures a comprehensive and coordinated response towards identifying the source of the outbreak, prevent further transmission, and implement effective control measures. An overview of the key aspects involved in a joint outbreak investigation:

Case identification and confirmation: The health department identifies and confirms the case of human rabies through clinical evaluation, laboratory testing, and medical history analysis. Once a case is confirmed, it triggers the need for a thorough investigation to understand the extent and potential sources of the outbreak.

Epidemiological assessment: The health department, in collaboration with the veterinary department, conducts an epidemiological assessment to gather information about the affected individual, including their exposure history, contact with animals, and travel patterns. The assessment helps in identifying potential sources of infection and determining the scope of the outbreak.

Animal contact investigation: The veterinary department plays a crucial role in investigating animal contacts associated with the confirmed case. It includes tracing and examining animals, particularly dogs, that may have transmitted the rabies virus. The veterinary department may perform animal testing, such as post-mortem examinations or laboratory analysis of animal samples, to confirm rabies infection.

Environmental assessment: The municipal department is responsible for conducting an environmental assessment to identify areas or factors that may contribute to the spread of rabies. It includes assessing the presence of stray animals, animal shelters, waste management practices, and other environmental factors that could increase the risk of exposure to rabid animals.

Collaborative data analysis: The veterinary, health and municipal departments jointly analyze the data collected during the investigation. The analysis includes mapping and identifying patterns of human and animal rabies cases, determining the source and routes of transmission, and identifying potential risk factors contributing to the outbreak.

Control measures implementation: Based on the findings of the investigation,

the three departments collaborate to implement appropriate control measures. It may include targeted vaccination campaigns for domestic animals, particularly dogs, in the affected areas to interrupt the transmission cycle. Other measures may involve public awareness campaigns, enforcement of responsible pet ownership practices, enhanced surveillance, and collaboration with relevant stakeholders especially headmen and dorbar shnong to address specific risk factors identified during the investigation.

Communication and coordination: Effective communication and coordination among the three departments are essential throughout the outbreak investigation. It ensures that information is shared in a timely manner in a common data sharing platform, decisions are coordinated, and control measures are implemented consistently. Regular meetings, joint action plans, and information-sharing mechanisms help maintain alignment and streamline efforts.

Monitoring and evaluation: The three departments continue to monitor the progress and effectiveness of the control measures. It includes assessing the impact of vaccination campaigns, tracking human and animal rabies cases, evaluating the implementation of responsible pet ownership practices, and adjusting strategies as needed. Monitoring and evaluation provide valuable insights for future outbreak preparedness and response.

By conducting a joint outbreak investigation, the veterinary, health, and municipal departments combine their expertise and resources to address human rabies outbreaks comprehensively. The collaborative approach strengthens the control measures implemented, enhances communication and coordination, and ultimately contributes to the containment and prevention of rabies transmission, protecting both human and animal health within the affected area.

Surveillance - Animal Component

Surveillance of the animal component needs to be structured in a way that it encompasses disease notification, surveillance based on certain events, and ideally, should involve multiple key stakeholders like the municipal boards, public and private veterinary clinics, and NGOs.

The surveillance programme for animals shall include laboratory and serological Surveillance as per the standard guidelines by DAHD. Recording and reporting of all events of animal bites and animal rabies cases occurring in the community is an essential step for maintaining surveillance and it will be undertaken through a common portal. Various recording and reporting formats would be framed for the animal health facility in the government and the private sector according to the standard guidelines by DAHD which would be implemented to strengthen the surveillance activities. The formats would be available at all animal health facilities at the block and district levels.

Surveillance in wild animals

As rabies virus is maintained in a wide range of wild animals, there may be disease transmission at the domestic-wildlife interface in areas adjoining the forests. Therefore, a collaboration between livestock and forestry sectors (wildlife) is important for disease surveillance, sharing of disease outbreak information and prevention and control programme. Activities will be undertaken by State forest department in coordination with the veterinary department, local governing bodies and NGOs.

- **Free-ranging wild animals -** In case any clinical signs/pathological lesions of suspected rabies is detected in any susceptible free-ranging wild animal, the respective wildlife/forest authorities should inform the veterinary department. The samples will be referred to the regional/ State/national referral laboratory by respective wildlife/forest authorities.
- **Captive wild animal -** In case any clinical signs/pathological lesions of suspected rabies are detected in any susceptible captive wild animal, the respective zoo authorities should inform the veterinary department. The samples will be referred to regional/State/national laboratories by respective wildlife forest authorities.

In both cases, active surveillance must be conducted to:

- Identity whether there is a presence of any other wild animal in the area which may be having clinical signs or have pathological lesions of suspected rabies.
- Identify whether there is any suspected rabies case among the domestic animals in the vicinity.
- Determine whether any domestic animal have been bitten by wild animals in the vicinity.
- Determine whether there were any suspected, probable, or confirmed animal rabies case in the vicinity among free roaming dogs, pet dogs, community-owned dogs in local communities inhabiting the perimeters of wildlife areas, forest, reserves.
- In such cases, the community leader should notify the local wildlife/forest authorities and the veterinary department.

Events-based surveillance system and public health action to be taken for animal health sector

Observed abnormal behavior in a stray animal (dogs running amok or causing unprovoked bites)

Following events could be observed by the veterinary sector and action to be taken includes:

- Complete epidemiological investigation of the event and active case search in and around areas.

- Follow-up on the animal that had bitten the livestock/pet animal -- status alive or dead.
- Notify to the authorities in standard format -- block/ district with Unique Case ID/State Level
- Conduct risk assessment and ensure PEP of those in contact with suspected animal.
- In case of death, send the biological sample to the lab with TPL.
- Issue advisory/ IEC about dead body disposal and use of milk or meat in case of livestock animal.

Death of a pet following animal bite/unexplained death without history of exposure or death of a livestock following animal bite/unexplained death without history of exposure

Action to be taken:

- Complete an epidemiological investigation of the event and enquire about the status of vaccination.
- Follow-up of the animal that had bitten the livestock/pet animal - status alive or dead.
- Send sample to the lab in the Triple Layer Packaging (TLP) (saliva/brain tissue, if dead).
- Issue advisory/IEC about dead body disposal and use of milk or meat in case of livestock animal.
- Notify to the respective authorities.
- Do risk assessment and ensure PEP of those in contact with the dead animal.

Unexplained death of wild animal (captive and free-roaming both)

The event can be observed by a common man/forest dweller/ workers / woodcutters/wildlife officer/forest officers/veterinary/healthcare worker

Action to be taken:

- Immediately inform the concerned wildlife officer/ LGB.
- Complete Epidemiological Investigation of the event through RRT.
- Send sample to the lab in the TLP (saliva/brain tissue, if dead).
- Issue advisory/ IEC about dead body disposal and use of milk or meat in case of livestock animal.
- Notify to the respective authorities.
- Conduct risk assessment and ensure PEP of those in contact with the dead animals.

Death of any stray animal-dogs

The event can be observed by a common man/vet/ municipal workers/healthcare worker

Action to be taken:

- Immediately inform the municipal/LGB, and the animal should be immediately removed from the community to prevent further risk of exposure. It should be confined and appropriate action to be taken as per local laws.
- The appropriate biological sample shall be taken after the death of the animal (samples from the CNS for laboratory diagnosis, if available).
- Active search of cases and exposed animals in and around the area.
- Conduct risk assessment and ensure full rabies PEP for those exposed.

Standard Case Definition to be used for Surveillance System

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:

Standard case definition for animal rabies

Case	Definition
Suspected animal rabies	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 (biting two or more people or animals and/or inanimate objects), abnormal vocalization and diurnal activity of nocturnal species. Or any animal showing the signs of dumb form of rabies.
Probable animal rabies	A suspected case plus reliable history of contact with a suspected, probable or confirmed rabid animal and/or An animal with suspected rabies that is killed, died or disappears within four-five days of observation of illness.
Confirmed animal rabies	A suspected or probable animal case confirmed in a laboratory.
Not a case	A suspected or probable case that is ruled out by laboratory tests or epidemiological investigation (appropriate quarantine period in eligible animals).

LABORATORY SURVEILLANCE

Lab-based surveillance would be done when the suspected/confirmed animal is dead and post mortem is done and laboratory confirmation is needed to confirm whether it was a case of rabies. It is especially important when the dog is known to cause bites in an area.

Virological surveillance - The brain tissue samples from carcasses (especially dogs and cats) shall be collected and subjected to a rapid antigen detection test and FAT to find a rabies case. Samples tested positive to FAT could be archived for molecular analysis and research purposes to identify the circulating virus in the region.

STANDARD OPERATING PROCEDURE (SOP)- DATA SHARING

Objective: The purpose of the SOP is to establish a systematic process for sharing data and information between the health, veterinary and municipal departments on epidemiological data and event alerts. Effective data sharing is essential for a coordinated response to public health threats.

Scope: The SOP applies to all personnel involved in data management, surveillance, and response related to rabies cases within the department.

RESPONSIBILITIES:

HEALTH DEPARTMENT:

- Sharing of dog bite cases on weekly basis.
- Identify and confirm rabies cases and outbreaks.
- Maintain and manage rabies related data and records.
- Share relevant data with appropriate stakeholders for collaborative response.

VETERINARY OFFICIALS:

- Collaborate with the health department on rabies surveillance and response efforts.
- Assist in identifying potential sources of rabies.
- Implement control measures for street dog populations as needed.

PROCEDURE:

1. Identification of clinically suspected cases:
    a. The health department confirms a rabies suspected case or outbreak.
    b. The health department immediately initiates data collection and management.

2. Data collection and management:

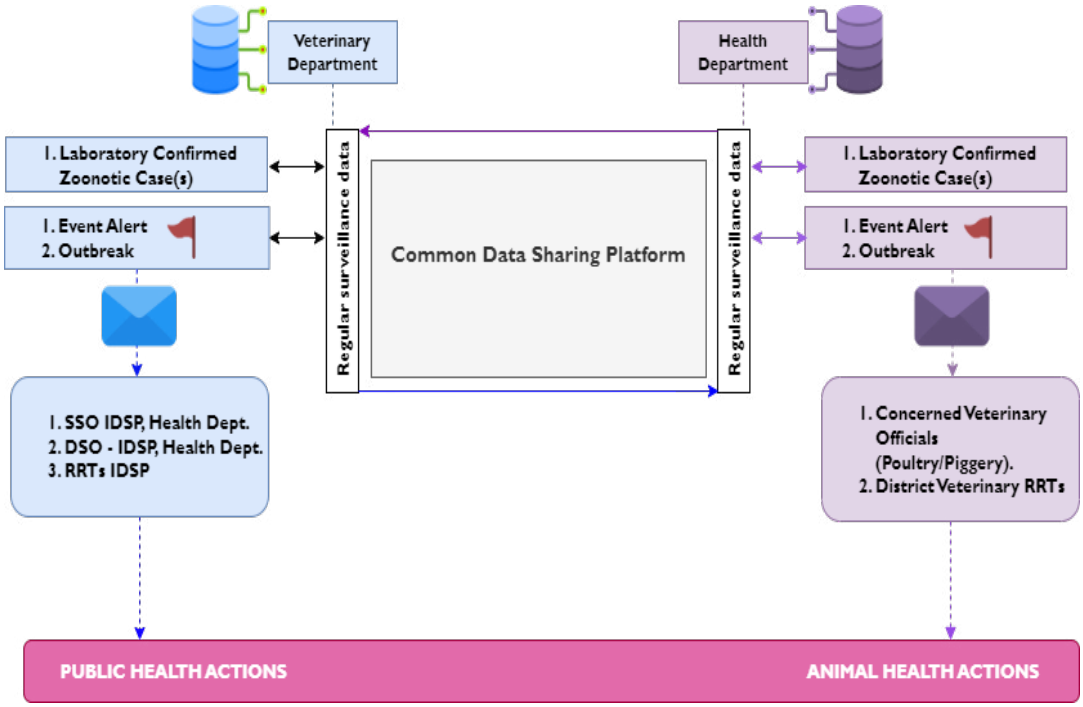
   a. The data manager (IDSP) collects and compiles relevant information on clinically suspected cases.

   b. Data includes patient demographics, clinical information, laboratory results, and potential source information.

   c. Data should be shared promptly upon notification of a dog bite incident.

3. Data Sharing with veterinary officials:

   a. The health department (IDSP) regularly shares dog bite cases and confirmed clinically suspected rabies cases data with the veterinary and the municipal officials through a common data sharing platform.



10 Laboratory Diagnosis of Rabies

Human component

Introduction

Rabies, an acute progressive, fatal encephalomyelitis, transmitted through the bite of a rabid animal, is responsible for an estimated 61,000 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 (PEP) 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 and Antibody Detection and assays for Viral Nucleic Acid Detection and identification of specific biomarkers. The diagnosis of rabies is essentially clinical, and the role of the rabies laboratory undisputed and warranted in many situations.

Need for laboratory diagnosis in human rabies

Two distinct forms of rabies, furious and paralytic, are recognized in humans. The diagnosis of the classical furious (encephalitic) form, which constitutes about 80per cent of human rabies cases, relies on distinctive clinical signs and symptoms and rarely poses diagnostic difficulties. However, laboratory assistance may be necessary for paralytic or atypical forms, accounting for approximately 20 per cent of human rabies cases. Such cases often present challenges due to the absence of a history of animal bites, other atypical clinical manifestation such as aerophobia, and the lack of diagnostic facilities for antemortem diagnosis of human rabies, leading to diagnostic dilemma.

Early diagnosis is crucial to ensure timely administration of pre or post exposure prophylactic vaccination for the patient, their family members, and the medical and nursing staff involved in the treatment. Additionally, it facilitates case closure with family members

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 and 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.

Strengthening of Pasteur Institute, Shillong, for rabies diagnosis and sero surveillance in human facilities available at the institute

General Information:

Name of the Institute: Pasteur Institute, Shillong

Name of the district and State: East Khasi Hills, Meghalaya

Complete address of the Institute: Shillong, East Khasi Hills, Meghalaya

Email and Phone number: departmentmicrobiology2023@gmail.com

Background on the expertise available at the institute:

Proposed plan

Proposed methods for rabies diagnosis

- Serological test
  - Anti-rabies antibodies detection in serum and cerebrospinal fluid (CSF)
  - Method available -Immunofluorescence Assay (IFA)
- Viral RNA Detection
  - Method available – Real Time Polymerase Chain Reaction (RT-PCR) from saliva, tears, CSF and brain
- Antigen detection from skin/hair follicles at nape of the neck and from corneal smear and brain.
  - Method – direct immunofluorescence test.
- Training of veterinarians for sample collection
- Pre-exposure prophylaxis to be provided to all veterinarians, para-vets and vaccinators from the health department.

Equipment for rabies diagnosis

Sl. No.	Method	Equipment required	Available or not
1	IFA (Serology)	IFA analyzer	Available
2	RT-PCR	Nucleic Acid extractor, Thermocycler	Available
3	Direct Immunofluorescence	Fluorescence Microscope	Not Available

Proposed requirements (equipment and human resources)

Sl. No.	Method	Equipment required	Available or not
1	Fluorescence Microscope	Equipment	1
2	Data Entry Operator	HRH	1
3	Laboratory Technician	HRH	1
4	Laboratory assistant	HRH	1

The State Disease Diagnostic Lab, Shillong -- Disease investigation should be strengthened for diagnosis of rabies in animal. The State lab will undertake capacity building on various epidemiological and microbiological aspects of rabies.

Standard Operating Procedures for scion and transport from suspected human rabies case (Death of a human with a history of dog bite a few weeks/ months preceding death)

Place for sample collection - Secluded room like a mortuary.

Persons collecting the sample should have a current rabies titre (in the last two years) of at least 0.5 IU/mL/ vaccinated against rabies virus (pre-exposure prophylaxis). Alternatively, yearly single-shot booster can be given to the persons assigned to collect the sample even without a rabies virus neutralizing antibody titre monitoring.

PPE - heavy rubber gloves, laboratory gown/ apron with protective sleeves, boots, surgical masks and face shield.

Samples

Brain Tissue (most ideal)

Nuchal skin biopsy

Cerebrospinal Fluid (CSF)

Brain tissue collection

Brain tissue can be obtained through the orbital route using disposable plastic pipette/biopsy needle or via the occipital route through the foramen magnum using lumbar puncture needle (trans-foramen magnum route is more preferred as orbital route contain fragments of orbitofrontal cortex, whereas the trans-foramen magnum route will obtain samples from the cerebellum, hippocampus and medulla).

Brain tissue collection via the orbital route

- Keep the person (case) in supine position.
- Disinfect the eye particularly the medial angle of the eye by applying cotton soaked in 10 per cent povidone iodine and allow to dry, and then with cotton soaked in 70 per cent ethyl alcohol and allow to dry.
- Hold the head of the person against a support in a fixed ventral position and then pass/ introduce a trocar below the medial angle of the eye to make a hole in the posterior wall of the orbit/ eye socket.
- Insert a 2-mL disposable plastic pipette/biopsy needle through the hole into the cranium and with a slight twisting movement the pipette/needle is directed towards the opposite wall of the skull passing through the brain tissue and then it is withdrawn slowly.
- Expel the collected brain tissue inside the pipette/needle in a sterile container and seal it. *Do not add preservatives or additional fluids in the container.*
- Store the brain tissue at –20 °C or less until shipping to the reference laboratory.
- Disinfect the penetrating wound at the medial angle of the eye by applying cotton soaked in 10 per cent povidone iodine and allow it to dry, and then place a dry cotton over the same and paste it with an adhesive tape.

Brain tissue collection via occipital route through foramen magnum

- Keep the person (case) in prone position.
- Locate the external occipital protuberance and the transverse processes of C1(Atlas).
- Disinfect the area behind the external occipital protuberance but anterior to

the imaginary line connecting the transverse processes of C1(Atlas) by applying cotton soaked in 10 per cent povidone iodine and allow to dry, and then with cotton soaked in 70 per cent ethyl alcohol and allow to dry.

- Using scalpel, make a deep incision on the disinfected area. A 2-mL disposable plastic pipette/lumbar puncture needle is inserted through the incision, and through the foramen magnum. With a slight twisting movement, the pipette/needle is directed towards the eye passing through the brain tissue (cerebellum, hippocampus, medulla) and then withdrawn slowly.
- Expel the collected brain tissue inside the pipette/needle in a sterile container and seal it. *Do not add preservatives or additional fluids in the container.*
- Store the brain tissue at –20 °C or less until shipping to the reference laboratory.
- Disinfect the incised wound at the back of the head by applying cotton soaked in 10per cent povidone iodine and allow it to dry, and then place a dry cotton over the same and paste it with an adhesive tape.

Nuchal skin biopsy collection

- Keep the person (case) in prone position.
- Disinfect the nape (posterior region of the neck at the hairline) by applying cotton soaked in 10 per cent povidone iodine and allow to dry, and then with cotton soaked in 70per cent ethyl alcohol and allow to dry.
- Using scalpel and toothed-forceps, take a section of skin five to six mm in diameter and around five to seven mm in depth from the posterior region of the neck at the hairline. *The biopsy specimen should contain a minimum of 10 hair follicles and be of sufficient depth to include the cutaneous nerves at the base of the follicle*.
- Place the specimen on a piece of sterile gauze moistened with sterile/distilled water and then keep it in a sterile container and seal it. *Do not add preservatives or additional fluids in the container.*
- Store nuchal skin biopsy at –20 °C or less until shipping to the reference laboratory.
- Disinfect the wound at the posterior region of the neck at the hairline by applying cotton soaked in 10 per cent povidone iodine and allow it to dry, and then place a dry cotton over the same and paste it with an adhesive tape.

Cerebrospinal fluid (CSF) collection

- Keep the person (case) in in left/right lateral position.
- Disinfect the person's back by applying cotton soaked in 10 per cent povidone iodine and allow to dry, and then with cotton soaked in 70 per cent ethyl alcohol and allow to dry.
- Drape the back of the person with the sterile cut sheet.
- Identify the highest point of the iliac crest by palpating. The point when extended to the back corresponds to L4(4th lumbar vertebra) body.
- Choose the intervertebral space (in between two spinous processes) above L4, i.e L3-L4 intervertebral space.

- Take a 22G lumbar puncture needle and introduce it through the skin in the chosen intervertebral space (L3-L4) and advance the needle slowly angling slightly towards the head until the needle goes through a slight resistance and observe for the flow of CSF. The depth of insertion and angle or orientation of the needle being advanced can be changed little by little until a positive tap is achieved.
- Collect the CSF sample in a sterile container(s). *Do not add preservatives to the container(s).*
- Store the CSF at 2 to 8 °C (for antibody testing) and at –20 °C or less (for molecular testing) until shipping to the reference laboratory. *At least 0.5 ml or more of CSF should be collected.*
- Disinfect the punctured wound at the person's back by applying cotton soaked in 10 per cent povidone iodine and allow to dry, and then place a dry cotton over the same and paste it with an adhesive tape.

Sample transport

- Assemble all materials for packing and shipping of samples/specimens, including specimen box, zip-lock bags, Styrofoam-lined shipping box, specimen shipment list, dry ice and other packing materials. *Make sure the labels on the specimen shipping list match the labels in the specimen box.*
- Wrap the specimen box (containing the specimen) with absorbent paper. Place the specimen box into a zip-lock bag and seal the bag.
- Place the sealed zip-lock bag (containing the specimen box) in the bottom of the shipping box. *If necessary, use sheets of bubble wrap or paper to ensure specimen remain in a vertical position.*
- Fill a Styrofoam-lined shipping box with dry ice. *To protect your hands and eyes, use heavy gloves and safety glasses when filling the shipping box with dry ice.*
- Fill empty space in the box with bubble wrap or paper. *This will help prevent shifting of the specimen box when the ice dissipates.*
- Place the Styrofoam lid on top of the shipping box. *Do not tape the Styrofoam lid to the box.* Put the completed specimen shipment list in a zip-lock bag and place it on top of the Styrofoam lid. *Remember to photocopy the specimen shipment list and retain a copy for records.*
- Secure the outer lid of the shipping box with tape. When using dry ice, the packaging must permit the release of carbon dioxide gas to prevent a build-up of pressure that could rupture the package. Leave an air gap when taping to ensure that carbon dioxide is released.
- Label the shipping box with a dry ice sticker.
- Use a pre-printed label or marker to label each shipping box with the recipient lab address and the return address information. *Both addresses should include a contact name and telephone number.*
- Contact the recipient lab before shipping the specimen to ensure that the staff is prepared to receive the shipment.

Biomedical Wastes (BMWs) - Segregate, treat and dispose the generated BMWs as per Biomedical Waste Management Rules 2016.

Environmental disinfection - Disinfect the environmental surfaces with 1per cent sodium hypochlorite (bleach) solution that is freshly prepared. Ensure a 15-minute contact time.

ANIMAL COMPONENT

Rabies is a major zoonosis for which diagnostic techniques have been standardized inter-nationally. As there are neither gross pathognomonic lesions nor specific and constant clinical signs for rabies, confirmatory diagnosis can only be made in the laboratory.

Laboratory techniques are preferably undertaken on Central Nervous System (CNS) tissue removed from the cranium (for example, brain stem, Ammon's horn, thalamus, cerebral cortex, cerebellum and medulla oblongata). A composite of CNS samples should be tested and the brain stem is the most important component of the sample. Laboratories should follow appropriate biosafety and containment procedures as determined by bio-risk analysis.

Clinical observation may only lead to a suspicion of rabies because signs of the disease are not characteristic and may vary greatly from one animal to another. The only way to undertake a reliable diagnosis is to identify the virus or some of its specific components using laboratory tests.

IDENTIFICATION OF THE AGENT:

Agent identification is preferably undertaken using primary diagnostic tests such as the

- Direct fluorescent antibody (DFA) test,
- Direct rapid immunohistochemistry test (dRIT), or
- Pan-lyssavirus polymerase chain reaction (PCR) assays.

DFA test, dRIT, and PCR provide a reliable diagnosis in 98–100 per cent of cases for all lyssavirus strains if an appropriate conjugate or primer/probe is used.

For a large number of samples, conventional and real-time PCR can provide rapid results in specially- equipped laboratories.

Histological techniques such as Seller staining (Negri bodies) are no longer recommended for diagnosis.

In cases of inconclusive results from primary diagnostic tests (DFA test, dRIT, or pan-Lyssavirus PCR), further confirmatory tests (molecular tests, cell culture or mouse inoculation tests) on the same sample or repeat primary diagnostic tests on other samples are recommended. Wherever possible, virus isolation in cell culture should replace mouse inoculation tests.

Diagnosis of human and animal rabies is a challenge due to the lethality of

the rabies virus and difficulties encountered to obtain samples for undertaking laboratory diagnosis. However, strengthening rabies diagnostics at various levels is essential for the State of Meghalaya while envisaging a plan to eliminate the disease. A definitive, reliable diagnosis of rabies in humans and animals requires appropriate laboratory structure with adequate biosafety measures. The importance of various laboratory methods in humans and animals and their importance are:

Importance of rabies diagnosis

Although the diagnosis of classical rabies can be made easily based on history and the typical clinical signs and symptoms, the paralytic form of the disease is often difficult to diagnose. Apart from this reason, the laboratory support for rabies is important also for:

- Confirmation of clinical diagnosis-especially in paralytic/atypical cases.
- Prophylactic vaccination to relatives, clinical and nursing staff.
- Characterization of causative agent/molecular epidemiology.
- State Rabies Control Programme/SAPRE: surveillance and estimation of disease burden.

The confirmation of rabies diagnosis in animals is required for appropriate public health response and intersectoral coordination

Conventional tests available for rabies diagnosis:

1. Detection of antigens:
    - Fluorescent Antibody Test (FAT).
    - Direct Immunohistochemistry Test (dRIT).
    - Virus isolation (Rapid Tissue Culture Infection Test- RTCIT).
    - Mouse Inoculation Test (MI).
    - Rapid Immunochromatography Test/ Lateral Flow Assay (LFA).
    - Reverse Transcription Polymerase Chain Reaction (RT-PCR).
2. Detection of Antibody:
    - Enzyme-linked immunosorbent assay (ELISA).
    - Rapid Fluorescent Foci Inhibition Test (RFFIT).
    - Fluorescent Antibody Virus Neutralization (FAVN) test.

Laboratory network

Organization of laboratory network for rabies diagnosis is of utmost importance under SAPRE. It is envisaged that a tiered structure of laboratory facilities for rabies diagnosis needs to be established at various levels in a phased manner. The laboratory facilities will be entrusted to provide diagnosis, surveillance, training,

and quality monitoring of the activities undertaken for both human health and animal health components. List of existing laboratories at each level for humans and animal health.

State-level laboratories

Since there is no veterinary college in Meghalaya, the only State Referral Laboratory (SRL) is the State Disease Diagnostic Laboratory (SDDL) of the Animal Husbandry and Veterinary Department, Government of Meghalaya, Shillong, which may serve as the referral laboratory for rabies diagnosis in the State. The SRL will undertake capacity building on various epidemiological and microbiological aspects of rabies. Strengthening of SDDL is required for laboratory confirmation of rabies in animals following which it can functions as aSRL.

Role of State-level laboratories:

Animal diagnostic laboratory – Provide training on brain sample collection, packing, transportation, processing of samples by Lateral Flow Assay (LFA) to district-level laboratories (at least two /district).

- Test the samples by employing Direct Fluorescent antibody Assay (DFA)/ Direct Rapid Immunohistochemistry Test (dRIT).
- Transport of samples (brain/serum) in the cold chain to the regional laboratory with the details.

District-level laboratory

The capacities of district laboratories will be strengthened in a phased manner. Human resource will be trained on important aspect of rabies diagnosis. At the block level, the Rapid Diagnostic Tests (RDTs) like LFA by the block-level veterinarian will be prompted for confirmation of a clinical diagnosis of the animal.

Role of district-level laboratories

- Provide training on collection of samples, packing, transportation to block/ village level /Wildlife veterinarians and medical officers and staff.
- Submit postmortem animal samples (brain/serum) to the State-level laboratories for DFA/dRIT along with the result of LFA.
- Conduct Lateral Flow Assay (LFA).
- The samples will be referred to the higher level as per standard guidelines.

Minimum diagnostic facilities

A standard diagnostic laboratory for rabies has to be set up which will provide specific diagnosis for rabies. The laboratory has to have basic facilities such as sufficient laboratory space, good quality control, and proper biosecurity measures in place.

Standard diagnostic tests for rabies

	Antigen detection		RNA detection		Virus Isolation		Antibody detection	
Species (time of test)	Sample	Test	Sample	Test	Sample	Test	Sample	Test
Human (antemortem)	Skin/ hair follicles	FAT	Skin/ hair follicles saliva tears CSF	RT-PCRd	Saliva tears CSF	RTCIT	Serum CSF	RFFIT FAVN test IFA ELISA
Human (postmortem)	Brain Skin/ hair follicles	FAT DRIT IHC	Brain skin/ hair follicles	RT-PCR	Brain	RTCIT MI	NA	NA
Animal (postmortem)	Brain	FAT DRIT IHC LFA	Brain	RT-PCR	Brain	RTCIT MI	NA	NA

Standard Operating Procedure for sample collection, packaging and transportation

Clinical observation may only lead to a suspicion of rabies since signs of the disease are not characteristic and may vary greatly from one animal to another. The only way to perform a reliable diagnosis of rabies is to identify the virus or some of its specific components using laboratory tests.

Sample collection for rabies is to be perform by trained veterinary personnel (veterinarians and technicians) who may be required to collect samples from deceased animals for rabies testing as part of their professional duties. Other individuals should not attempt rabies sample collection procedures.

Precautions should be taken when handling central nervous system tissues from suspected rabies cases. Gloves should always be worn and precautions must be taken to prevent aerosols. Cutting tools such as scissors and scalpels should be used with care to prevent injury and contamination.

Where to perform sample collection:

- Sampling (i.e. removal of head or brain) should be performed in a secluded area, away from other animals and people.
- Nearby surfaces (table, floor) should be easy to disinfect, or sampling should take place in an area that can be blocked off from other animals. Rabies virus is very liable and highly susceptible to routine disinfectants, desiccation, UV light, and heat, although like most viruses, it can be preserved by extreme cold.

- Place newspaper or other disposable absorbent material underneath the animal's head to protect surfaces from damage by tools and to help absorb any liquids that are released.
- For small animals, it may be possible to perform the procedure with the carcass partly in or on a body bag, which can then be used for disposal.

COLLECTION OF SAMPLES

Usually the brain is collected following the opening of the skull in a necropsy room, and the appropriate samples are collected. The step may be hazardous if laboratory technicians are not fully trained, or under field conditions.

Sampling for postmortem diagnosis in humans and animals: Brain tissue is the preferred specimen for postmortem diagnosis in both humans and other animals. In many situations, it may not be possible to remove the brain for postmortem sampling owing to factors such as family consent or practical and biosafety issues related to the removal of animal brains in the field. Some of these challenges can be overcome by collecting samples with effective, well-established techniques that require less invasive postmortem routes, such as through the orbit or foramen magnum. A diagnostic sample can be collected without opening the skull, for example, by introducing a 5-mm drinking-straw or a 2ml 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. Samples can be collected from the rachidian 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.

For small animals and wildlife, submit the entire head to the rabies laboratory for testing.

- Removal of the head is relatively easy and carries minimal risk of exposure to neural tissue and cerebral spinal fluid (CSF).
- Do not remove any skin, ears or the snout from the head, but if the animal has large horns that will make it difficult to package, these can be removed (it is most easily done while the head is still attached to the body).
- If the animal is infested with ticks or fleas, spray the head with insecticide before packaging. Also note the presence of any quills or sharp bone fragments on the lab submission form.

HEAD REMOVAL TECHNIQUE:

If possible (and assuming the animal is not frozen), place the body in dorsal recumbency and extend the neck by pushing the top of the nose toward the ground, or bend the neck back over the edge of the table. Locate the larynx. Using a sharp knife, make an incision through the skin immediately behind

the larynx, and continue cutting down through all the soft tissues of the neck to the vertebral column. At this point, a strong pair of pruning shears or similar instrument can be used to cut through the vertebral column of very small animals, and in very young animals (kittens, puppies) it may even be possible to separate the column with the knife alone. Alternatively, the vertebral ligaments can be torn by forcefully twisting the head 180-360 degrees. In larger cats and dogs, it is best to disarticulate the neck by cutting the ligaments on each side of the vertebral column. This is typically done at the first cervical vertebra (atlanto-occipital joint), but can be done anywhere along the cranial cervical spine. Move the head up and down to identify the most obvious mobile joint in the neck, and angle the knife to cut down into the joint space on each side. Cutting the ligaments will immediately and substantially increase the mobility of the head. Once through the vertebral column, cut through the remaining skin and soft tissues to completely detach the head from the body.

Removal of the head from a frozen animal can be more challenging depending on the animal's size and the position in which it is frozen. In some cases, it may be necessary to partly thaw the body enough to extend the neck for head removal, but it is not necessary (nor recommended) to wait for the entire body to thaw. In very small animals, it may still be possible to cut the tissues with a heavy knife, as described above, but for larger specimen a hatchet and mallet or saw will likely be necessary. If the head and neck are tightly curled around (typically the most difficult position for head removal), identify the back of the skull and begin cutting. Cut the hide using a knife first, and if possible, create a shallow crevice in the underlying tissue in order to seat the hatchet or saw. Cut or saw down through the vertebral column, and then continue through the rest of the soft tissues of the neck. The saw or mallet will work best on hard/totally frozen tissue; tissue that has partially thawed and is softer is more easily cut with a sharp knife.

Disposal of the body/carcass

- Once sampling is complete, the owner of the animal or the property on which it was found is responsible for disposal of the remaining tissues. Concerned authority may supervise the disposal process.
- Carcasses from small wildlife can be sent to landfill.
- In rural areas where municipal bylaws permit, the body can be buried on the property immediately if desired (particularly for livestock), but the tissues cannot be collected by a deadstock operator or sent for rendering until test results have confirmed that the animal is negative for rabies.
- Under no circumstances will tissues will be returned from the laboratory to the owner or any other party.

Cleaning equipment and environment after sampling:

- Rabies virus is very labile and highly susceptible to routine disinfectants such as household bleach or common quaternary ammonium compounds (QAC).

- Remove as much organic material as possible from instruments using disposable paper towel, and then submerge the instruments in disinfectant solution (always follow label directions for dilution and contact time).
- Used disinfectant solution does not pose a significant risk, but should nonetheless be disposed directly down a drain.
- Place any paper towel or newspaper used to clean or protect surfaces during sampling with the rest of the body (in the body bag) for disposal once rabies test results are available. Otherwise, these items should be bagged appropriately and disposed as biological/biohazardous waste.
- Spray any potentially contaminated surfaces in the sampling environment with disinfectant solution, allow the appropriate amount of contact time (five-ten minutes for most common disinfectants) and then wipe or rinse off.

SHIPMENT OF RABIES SAMPLES

During the shipment of suspect material for diagnosis (animal heads, brain or other tissue samples), no risk of human contamination should arise: Brains must be placed in a leak-proof rigid container (animal heads will be wrapped in absorbent material) as prescribed in the International Air Transport Association (IATA) Dangerous Goods Regulations. When it is not possible to send refrigerated samples, other preservation techniques may be used. The choice of the preservative is closely linked to the tests to be used for diagnosis:

- Formalin inactivates the virus, thus the isolation tests cannot be used and diagnosis depends on using a modified and less sensitive direct Fluorescent Antibody Test (FAT), immunohistochemistry or histology.
- Infectivity at room temperature may be extended for several days if brain material is kept in a mixture of 50 per cent glycerol in phosphate buffered saline (PBS). Glycerol/PBS slows bacterial action and therefore protects against the chemical and biological effects of putrefaction. It does not protect against titre decline due to thermal conditions and therefore, because rabies is thermo-labile, the virus titre will decline during glycerol/PBS storage. Under normal transport conditions in the tropics, this protection may only be effective for a matter of several days. Therefore, whenever possible samples in glycerol/saline should be kept refrigerated. As the virus is not inactivated by glycerol/PBS, all laboratory tests can be used on these samples.

11 Dog Vaccination

The objective of the Mass Dog Vaccination (MDV) campaign is to get 70 per cent of the dogs in the State vaccinated. Methods that will be employed to achieve the target–

- Vaccination of pet dogs in veterinary clinics.
- MDV to be done bi-annually for street dogs.
- ABC vaccination to be done at every ABC centre.
- Post dog vaccination coverage.

Vaccination of pet dogs in veterinary hospital/clinic

All pet owners are to be encouraged to get their dogs vaccinated at their nearest government/Private veterinary hospitals/clinics. Provision for free rabies vaccination for dogs to be made at all the government veterinary hospitals. Apart from vaccination, responsible pet ownership to be promoted during the visit for vaccination.

A digital record to be maintained for all the dogs that are being vaccinated at government/private veterinary hospitals or clinics on real-time basis with proper identification details (male/female, colour/age/owner name and address).

Mass dog vaccination

A bi-annual vaccination campaign for street dogs must be conducted throughout the State of Meghalaya with an aim to cover 35per cent of dogs in each round of the campaign. The districts would be the planning units with the district veterinary unit, DPMU and district administration/urban affairs department working together in the planning, implementation, and evaluation of the MDV campaign. During the campaign, digital platform to be used to record the coverage of vaccination on real-time basis. A detailed break-up about the calculation of targets, logistics, IEC and HR need to be done prior to the vaccination campaign along with earmarking funds for the campaign. A mop-up round must be planned if the village wise targets were not achieved.

Vaccination at Animal Birth Control centre

All street dogs kept in the ABC centre must be vaccinated before releasing them

into the public. A target of 12-14 dog vaccination per day must be done in every ABC centre. At any point of time, 48-56 dogs must be present in the ABC centre.

Post dog vaccination coverage

To assess the extent of vaccination, post dog vaccination coverage should be done shortly after the MDV is concluded. Methods of determining the coverage are detailed in the Annexure.

Campaign – The campaign must be planned for at least a month with pre-campaign, campaign and post-campaign activities defined. The aim of the campaign is to cover 35 per cent of the dogs in the district planning unit area. The campaign must be conducted twice a year to achieve the target of 70 per cent dog vaccination.

Vaccination of dogs must be conducted village/urban local bodies/ ward wise in the district.

Pre-Activity

Planning for –

- IEC/BCC activity
- Training
- Human Resource
- Logistics and cold chain
- Mobility support
- Microplanning village- wise targets
- PEP required for accidental dog bite & wound management

During Campaign

Planning for –

- Informing the village head men
- Safety of dog catchers and dogs
- Reporting and management of suspected rabid dogs

After Campaign

Evaluation of –

- Area wise performance
- Root cause analysis for poor performing areas
- Plan for Mop-up round
- Fund utilisation (UC/SOE)

Example Calculation (Microplanning)

Calculation of targets

Current dog population of Meghalaya - 2,50,000

35 per cent to be vaccinated - 87,000

12 districts in Meghalaya - 7292 dogs/ district

Calculation of village

Approximate number of villages in Meghalaya - 7000

Villages per district - 584

Dogs to be vaccinated per village - 13 dogs/ village

HR required

Each team to have one trained vaccinator and three dog catchers - 4 members in a team

Each team to complete two villages a day or 26 dogs/day

Vaccination will require two days (deworming and vaccination)

Out of 20 working days, 10 would be required to complete the deworming and vaccination activity

On a single day we need to vaccinate 729.2 dogs in order to complete vaccination in 10 days

If a single team vaccinates 26 doges per day, we would require 28.04 or 29 teams in one district

Total HR required at a district would be 29*4= 116

*The bigger district might require longer period of time.

12 Animal Birth Control

Animal Birth Control (ABC) programmes in Meghalaya are initiatives aimed at controlling the population of stray dogs and managing their numbers through humane methods. The programmes typically involve sterilization surgeries (often referred to as spaying for females and neutering for males) performed by veterinarians on stray dogs to prevent them from reproducing.

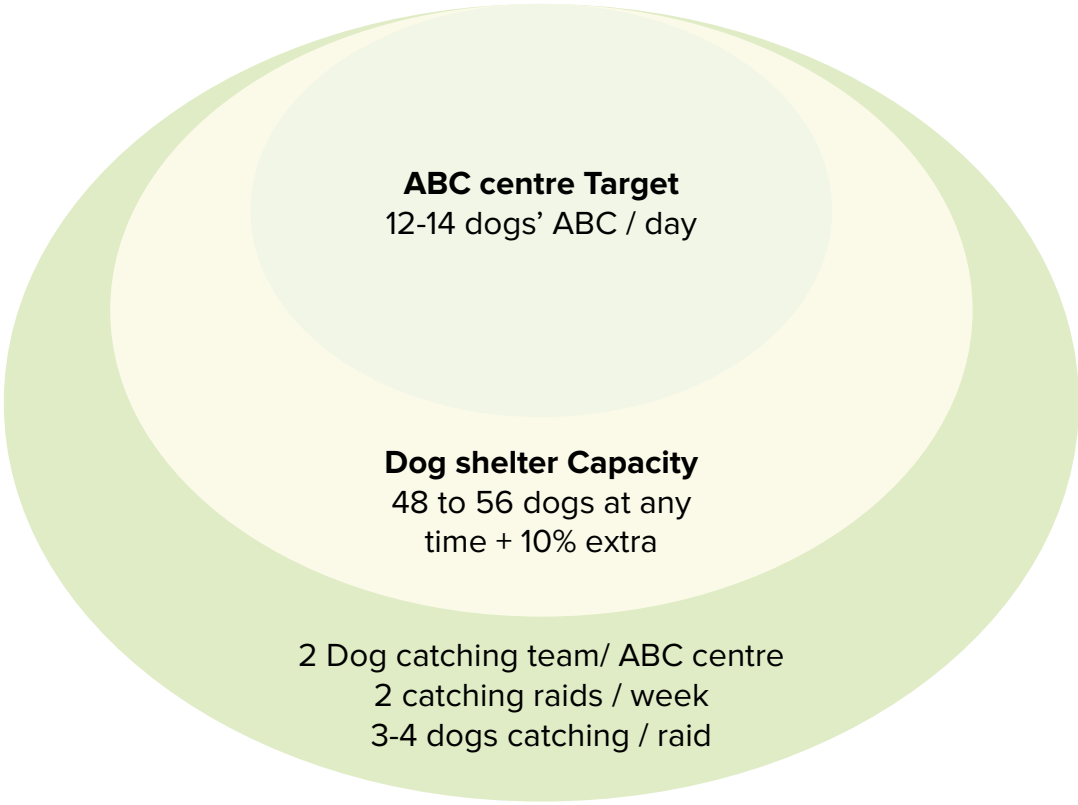
Overview of ABC programmes in Meghalaya:

Objective: The primary objective of ABC programmes is to control the population of stray dogs humanely, thereby reducing the incidence of dog bites, rabies transmission, and conflicts between humans and stray animals.

Implementation: ABC programmes are typically carried out by the animal husbandry department, municipal/district administration and NGOs. The organizations work in collaboration with local authorities and animal welfare boards to implement sterilization and vaccination campaigns.

Sterilization and vaccination: Stray dogs are captured from the streets or brought to designated ABC centres, where they undergo sterilization surgeries under the supervision of qualified veterinarians. In addition to sterilization, dogs will be vaccinated against rabies and other contagious diseases to prevent the spread of infections. A target driven approach must be employed to evaluate the performance of the ABC centre and bring the fertility rate under control. Instead of honorarium or fixed salary, an incentive driven model may be used for catching dogs by municipality or the veterinary department target-driven model mentioned in Annexure). Every ABC centre should have adequate space for sheltering the dogs as per the targets of ABC that needs to be achieved for the district. Every district must have at least one ABC centre.

Figure – Target-driven model for ABC centre



Community awareness: ABC programmes must be accompanied by community outreach and education initiatives aimed at raising awareness about responsible pet ownership, the benefits of sterilization, and the importance of vaccinating pets against rabies.

Overall, ABC programmes play a crucial role in promoting animal welfare, reducing human-animal conflicts, and protecting public health in Meghalaya. Continued efforts and support from governments, NGOs, and communities are vital for the effective implementation and expansion of the programmes nationwide.

13 Awareness Generation

IEC (Information, Education, and Communication) and BCC (Behavior Change Communication) strategies are crucial for raising awareness, promoting behavior change, and mobilizing communities in the effort to eliminate rabies from Meghalaya. A comprehensive plan incorporating both IEC and BCC elements:

Tailored messaging: Develop targeted messages tailored to different segments of the population, including urban and rural residents, children, pet owners, and healthcare workers. Messages should emphasize the importance of rabies prevention through vaccination, responsible pet ownership, and prompt medical treatment in case of animal bites.

Multi-channel communication: Utilize a variety of communication channels to reach diverse audiences, including traditional media such as radio, television, and print, as well as digital platforms like social media, websites, and mobile apps. Community-based approaches such as street plays, community meetings, and door-to-door campaigns can also be effective.

Community engagement: Foster community engagement and participation by involving local leaders, community organizations, schools, and religious institutions. Organize community events, workshops, and awareness sessions to educate residents about rabies prevention, responsible pet care practices, and the importance of reporting animal bites.

Capacity building: Conduct training sessions for healthcare workers, veterinarians, and community health volunteers to enhance their knowledge and skills in rabies prevention, diagnosis, and treatment. Empower them to serve as advocates for rabies elimination within their communities and provide them with the necessary tools and resources.

Visual aids and educational materials: Develop visually appealing educational materials such as posters, brochures, and leaflets that convey key messages about rabies prevention in an accessible and culturally appropriate manner. Distribute the materials widely in schools, healthcare facilities, community centres, and public spaces.

School-based programmes: Integrate rabies awareness into the school curriculum through educational materials, interactive sessions, and extracurricular activities. Engage students in activities such as poster competitions, skits, and storytelling sessions to reinforce key messages about rabies prevention and responsible pet ownership.

Peer education: Train peer educators, particularly youth and community influencers, to disseminate information about rabies prevention and encourage positive behavior change among peers and within their communities. Peer-led activities such as peer-to-peer discussions, drama performances, and social media campaigns can be highly effective in reaching younger audiences.

Monitoring and evaluation: Continuously monitor the reach and effectiveness of IEC/BCC activities through surveys, focus group discussions, and feedback mechanisms. Use the data to assess progress, identify gaps, and make necessary adjustments to communication strategies for maximum impact.

By implementing a comprehensive IEC/BCC strategy that engages diverse stakeholders, leverages multiple communication channels, and emphasizes community participation, Meghalaya can effectively raise awareness about rabies prevention and mobilize support for the elimination of the deadly disease.

Methods that would be employed for the IEC and BCC activity in the State:

Sl No.	Target Population	Mode of Dissemination	Activities
1	Healthcare workers (MO, Staff Nurse, Pharmacist, Lab Tech)	Posters, Leaflets/ Pamphlets, Short Videos	Display of posters/Videos on 'How, When & Where' to give ARV/ ARS, wound washing and wound management.
2	High-risk workers (Veterinary, Vaccinators, Dog catchers, Forest officials, Zoo keepers)	Posters, Leaflets/ Pamphlets, Short Videos	1. What to do when bitten by dog/ animals 2. Awareness regarding importance of PrEP 3. Handling of dogs/animals during vaccination
3	Children	School-based activities	1. Workshop on rabies, its prevention and responsible dog ownership 2. Including rabies as a chapter in school books 3. Drawing, quiz competition and rally (on World Rabies Day)
4	Pet owners	Posters, Leaflets/ Pamphlets, Short Videos/ Social Media	1. Promoting responsible dog ownership 2. Registering the pet dogs under municipality

Sl No.	Target Population	Mode of Dissemination	Activities
5	Community (Markets, Public Places)	Making, Posters, Leaflets/ Pamphlets, Short Videos/ Social Media, Doordarshan, FM, AIR	1. Awareness regarding the rabies control programme 2. Promoting responsible dog ownership 3. Promoting registration of dogs 4. Making articles conducted by Dorbar-shnong and Nongma 5. Awareness regarding importance of vaccination of humans and dogs in prevention of rabies.

14 Infrastructure, Human Resource and Logistics

Infrastructure, Huma Resource (HR) and continuous supply of logistics is important in kick starting and running the programme. The availability of cold chain, trained human resource for vaccination/dog catching/sterilization of dogs, adequate space for animal shelter, and ABC centre is critical for the success of the programme.

Model Anti-Rabies Clinic

The existing resources of district hospitals will be strengthened as Model Animal Anti-Rabies Clinics (ARC) in adherence to the proposed Indian Public Health Standards (IPHS) standards. Over a period of five years, all district hospitals will have designated model ARCs. The centres will provide animal bite management facilities, counselling to animal bite victims, and referral services for suspected rabies patients, surveillance activities and intersectoral coordination with other stakeholders.

Minimum requirements for model ARCs:

Anti-Rabies Clinics/Centres are the health facilities manned by trained doctor/s and nurse/s where individuals with rabies exposure are evaluated and managed. Strengthening existing ARCs and establishment of new centres based on community need assessment is an important objective of the NRCP.

District nodal officers are advised to do mapping of existing district-wise ARCs in the government health facilities (PHC/ CHC/ district hospital or other tertiary-level health institute) as well as list of all private health centres with a facility for treatment of animal bite victims or indoor treatment facility for rabies cases. The need assessment for establishing new ARCs at the identified health facilities may simultaneously be carried out by the State Nodal Officer. Model ARCs should meet these minimum requirements -

Facilities: The minimum facilities envisaged at ARC are:

- Management of animal bite wounds -- wound washing facility.
- Availability of rabies post exposure prophylaxis -- Anti-Rabies Vaccine and ERIG.
- Functional referral services for hydrophobia cases.
- Standardized recording and reporting systems.

Staffing pattern at ARC: The minimum required staff at each ARC:

- I/C physician (Nominated by DHS)
- One nurse (GNM) (To be hired through NRCP)

**All trained in animal bite management and rabies pre and post exposure prophylaxis*

Physical infrastructure: Minimum requirements at the ARC:

- Visible signage at the entrance as well as outside the centre.
- Visible organizational chart.
- Time schedule (functional hours of ARC).
- Visible flow chart/algorithm of 'decision to treat'.
- Visible IEC messages.
- Separate wound washing facility with preferably continuous tap water (water available should be safe and clean). If tap water is not available, water should be stored in clean covered buckets).
- Refrigerator with a calibrated thermometer, exclusive for vaccine/ RIG storage.
- Vaccine carrier for temporary storage.
- Facility for proper biomedical waste management with availability of colour-coded waste bins and sharp boxes.
- Weighing scale.

Requirement – To establish an effective wound washing area, the following aspects need to be considered:

- **Location –** Identify an appropriate location within the healthcare facility, preferably near the emergency department, casualty, dressing room, or dedicated animal bite treatment area/ anti-rabies clinic (ARC). Avoid locating it adjacent to toilet areas.
- **Spacious room –** The area should have sufficient space (minimum 6X6 ft) to accommodate patients (often mother and child) and necessary fixtures. It should be designed to promote infection control practices, including providing hand hygiene facilities and personal protective equipment (PPE).
- **Water supply –** Continuous clean running tap water should be available for wound washing procedures. Adequate plumbing, drainage, and access to clean water are essential.
- **Medical supply –** Ensure there is plinth or bench for proper wound management and attending medical procedures.
- **Ventilation –** Ensure the area is well ventilated (exhaust fan fitted), well-lit and easily accessible for patients and staff.
- **Waste management –** Proper high-rise drainage (no stagnation) of water and biomedical waste management (both solid and liquid) should be followed as per standard protocol/guidelines.

Logistics:

- Equine Rabies Immunoglobulin.
- Tissue culture anti-rabies vaccine approved by DCGI for ID/IM route.
- Consumable: Self-mounted insulin syringes (AD), dressing kits, soap, and gloves.
- IV fluids and emergency drugs for adverse reaction

Recordings and reporting formats to be available at ARC

- Animal bite exposure register.
- Rabies PEP Card (in duplicate one, for the victim and one for ARC records)
- ARC monthly monitoring formats.
- Copy of 'National Guidelines for Rabies Prophylaxis' available at NCDC website www//http//ncdc.gov.in)
- SOP for sample collection for anti-rabies antibody titer estimation.
- Other reporting formats as given by competent authorities.

Existing infrastructure in health facilities with PEP and rabies care services

Public health facilities	No. of facilities	Anti-Rabies Serum/ Immunoglobulin	Anti-Rabies Vaccine
State Dispensary	12	12	12
PHC	116	116	116
UPHC	19	19	19
CHC	29	29	29
District Hospital	12	12	12

Vaccine procurement- human health

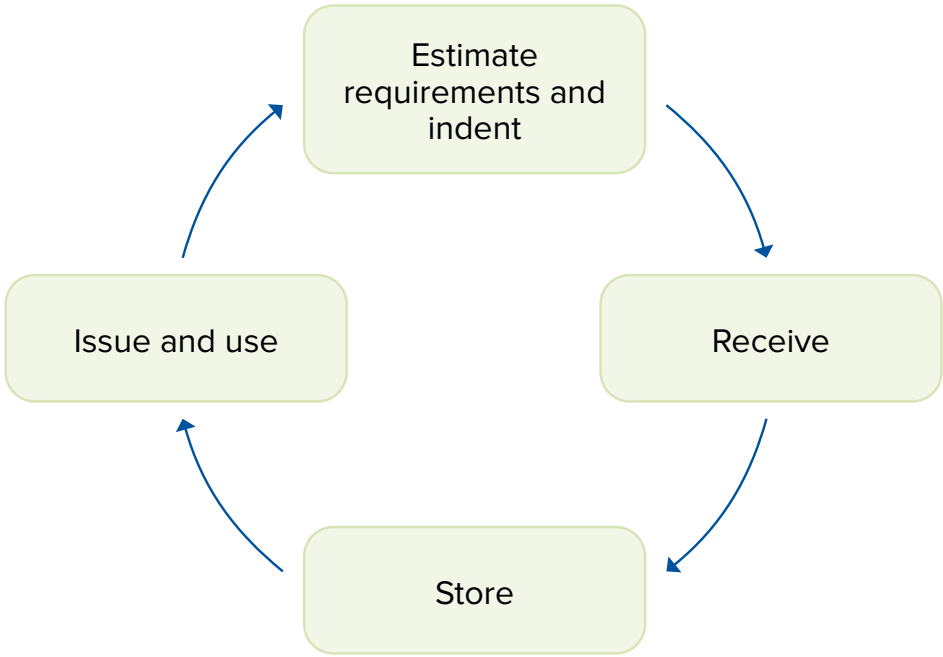
Currently procurement of Anti-Rabies Vaccine is done through NHM under the National Rabies Control Programme (NRCP) and from the State fund through the Directorate of Health Services-MI (Medical Institutions).

Procurement of human Anti-Rabies Serum vaccines

Manufacturing of human rabies vaccine is a complex biological process and require a minimum of three-four months for manufacture and testing. Accordingly,

procurement agencies must plan taking into consideration the minimum lead time required and wastage rate for the vaccine.

Logistic Management Cycle



Lead Time - Time taken from ordering of new stock and its actual receipt. It depends on availability of vaccines, transportation, terrain, and weather.

Buffer stock – A buffer stock of 25per cent or three months must be maintained in the State level to deal with erratic supply of vaccines and syringes. It also serves as cushion or buffer against emergencies.

Wastage factor - The requirement of vaccine must include 10 per cent wastage factor or accounted for procurement of vaccines and syringes, as per the NAPRE guideline 2021.

Monthly requirement of rabies vaccine = Prevalence of dog bite X four doses (doses of vaccine)

Sl. No.	Level	Working Stock (Months)	Buffer Stock (Months)	Lead Time Stock (Months)	Stocks (Months)	
					Max	Min
1	State	2	0.5	3	5.5	3.5
2	District	2	0.5	0.25	2.75	0.75
3	PHC/CHC	1	0.25	0.25	1.5	0.5

As per national guidelines, the preferred route of administration for human rabies vaccine is intradermal. It is cost-effective and requires 0.2 ml/visit/patient for intradermal route vs. 1 ml/visit/patient for intra muscular route)

Tenders should be issued for fixed quantities rather than the rate contracts.

Anti-Rabies Vaccine and Anti-Rabies Serum are part of the essential drug list of the National Health Mission (NHM). The budget for human rabies vaccine, and Anti-Rabies Serum may be proposed under NHM PIP under national free drug initiative.

Animal Shelter and Animal Birth Control Centre:

The Animal Birth Control Centre shall have sufficient space for proper housing and free movement of dogs, and the place should have proper ventilation, natural lighting and must be kept clean.

Only a stipulated number of animals, according to the housing capacity of the ABC centre, shall be captured.

Each kennel where dogs are kept should bear in visible writing the name of the locality and kennels for individual dogs should be at least be three feet wide, four feet deep and at least six feet high (3X4X6 ft.). Kennels for three to five dogs can also be provided for where each dog gets at least three feet by four feet floor space.

Water and sanitation facility for the dogs should also be taken into consideration when planning to place the kennel in the animal shelter.

The kennel should be provided with a door or gate of vertical iron bars and the gaps between adjacent bars shall be no more than two inches and adequate roofing is necessary to provide shade and shelter from inclement weather and to prevent the dogs from escaping.

The dog capturing team shall consist of:

- The driver of the van.
- Two or more trained employees of the local authority or Animal Welfare Organisation trained in humanely capturing street dogs.
- One representative of any of the AWO nominated for the purpose.

The acceptable methods of catching are;

- By hand
- Sack and loop Method
- Butterfly nets
- Balinese pole-net.

The ABC centre infrastructure shall be designed in such a manner as to carry out area-wise ABC in a phased manner of at least 70 per cent dogs in the targeted

area before a newer area is taken up. The infrastructure shall include, but not be limited to:

- Pre-operation preparation areas
- Operation theatres
- Post-op care
- Kennels
- Kitchen
- Store rooms for rations and medicines
- Refrigerator with a calibrated thermometer, exclusive for vaccine
- Parking area
- Residential rooms for veterinarians and attendants
- Quarantine wards
- Ambulances,
- Deep burial/ Incinerator

Human resource required for sterilization and treatment of dogs:

1. Doctor
2. Veterinary Assistants
3. Muster Rolls

The detailed infrastructure requirement is mentioned in the Chapter XVI on Budget.

Rabies vaccine procurement for canines

Total dog population in Meghalaya: 2,50,293

Target dog population for vaccination coverage (70 per cent): 1,75,205

Tentative post exposure rabies vaccination coverage (10 per cent): 25,030 doses

Total doses of rabies vaccine requirement: 2,00,235 (cost discussed in Chapter XVI on Budget)

Accessories and cold chain equipment requirement for canine rabies vaccine

- Refrigerators:13
- Vaccine carriers: 120
- Cool box with an ice gel pack: 1,200

LOGISTICS REQUIREMENTS:

Sl. No.	Materials	No. required
1	Disposable syringes (2ml)	175205
2	Gloves	6,000
3	Mouth gags	120
4	Dog catcher (pole)	120
5	Dog catcher (net)	120
6	Automatic gun tranquilizer	-
7	Dog registration card	1,75,205
8	Relevant registers and forms	-
9	Ethanol, disinfectants	-
10	Dog collars	50,000
11	Camera for digital records	1
12	Others such as cotton, Dettol soap, marker pens	-

SPMU/DPMU

SPMU/DPMU is the planning unit for ABC and MDV. It must have an office space with computers, printer, and an active internet connection.

Standardized dog collars must be issued by SPMU/DPMU for identification of dogs following MDV, sterilization and registration of pet dogs.

Human resource required in the SPMU/DPMU –

1. Programme Manager
2. Statistician
3. Data entry operator

15 Awareness Generation

Introduction:

Rabies remains a significant public health threat despite being preventable. Effective control requires a multi-pronged approach involving various stakeholders at different levels.

Goal: To strengthen rabies prevention and management efforts at both State and district-levels through targeted training programmes.

Types of training:

State-level training:

Training of trainers on the aspects of the programme

Objectives:

- Enhance understanding of the National Rabies Control Programme (NRCP) and its objectives.
- Foster collaboration and coordination among different departments for effective programme implementation.
- Equip participants with skills for advocacy, communication, and resource mobilization.

Duration: Two days

Trainers: Experts from health, animal health, and social mobilization sectors

Target audience: Representatives from health, animal husbandry, veterinary, forest, education, and other relevant departments

Content: NRCP guidelines and best practices, overview of rabies, laboratory diagnostics, rabies surveillance, inter-sectoral coordination, resource mobilization, monitoring and evaluation.

Assessment: Pre- and post-test, participant feedback.

Training of trainers on Animal Birth Control, Mass Dog Vaccination and dog catching at Veterinary College, Khanapara, Guwahati

Enhance the skill of veterinary officers on dog vaccination and sterilization

Duration: One week

Trainers: Experts from animal health

Target audience: Representatives from animal husbandry and veterinary departments.

After the training, the district master trainer, will in turn, impart training to other officers, staff, NGOs volunteers and municipality staff including dog catchers of the district at the Vocational Training Center, Upper Shillong.

Training on laboratory components

Objectives:

- Update knowledge and skills on safe handling of rabies virus and other high-risk pathogens.
- Enhance diagnostic capacity for timely and accurate rabies detection.
- Ensure adherence to biosafety and biosecurity protocols.

Duration: Two-day workshop.

Trainers: Qualified laboratory professionals with experience in rabies diagnostics.

Target audience: Laboratory personnel from human and animal health sectors.

Content: Rabies virus biology, diagnostic techniques, biosafety and biosecurity, waste management, quality control.

Assessment: Practical exercises, written exams, laboratory proficiency testing.

District-level training

Training for Medical Officers and paramedics:

Objectives:

- Improve knowledge of rabies epidemiology, surveillance, and animal bite management.
- Equip participants with skills for proper wound management and post-exposure prophylaxis (PEP) administration.
- Strengthen coordination between human and animal health sectors.

Duration: One-day workshop.

Trainers: Trained medical and veterinary professionals with experience in rabies management.

Content: Rabies epidemiology, surveillance, animal bite management, PEP administration, collaboration between sectors.

Assessment: Case studies, role-playing exercises, practical demonstrations.

Training for dog catching teams:

Objectives:

- Enhance skills for safe and humane capture of stray dogs.
- Promote responsible dog ownership and rabies vaccination awareness.
- Ensure proper handling and transportation of captured animals.

Duration: One-day workshop within 12 months.

Trainers: Veterinary professionals and animal welfare specialists.

Content: Safe and humane dog catching techniques, responsible dog ownership, rabies vaccination awareness, animal handling and transportation.

Assessment: Practical dog catching exercises, written test on animal welfare principles.

Training for pharmacists/storekeepers:

Objectives:

- Enhance understanding of cold chain management principles for rabies vaccines.
- Ensure proper storage, handling, and distribution of vaccines to maintain potency.
- Minimize vaccine wastage and optimize vaccine availability.

Duration: One-day workshop within 12 months.

Trainers: Pharmacy professionals with expertise in cold chain management.

Content: Importance of cold chain for rabies vaccines, storage and handling procedures, inventory management, minimizing vaccine wastage.

Assessment: Practical exercises on vaccine handling and storage, written test on cold chain principles.

Training fund

Sl. No.	Components	Source of fund
1	Human Health Component	NRCP – NHM
2	Animal Health Component	ASCAD, PMSKY, State animal husbandry funds, local governing bodies-municipalities (urban), PRI (RURAL)

16 Proposed Budget SAPRE

Animal health

For eliminating rabies by 2030, the following budget has been proposed to ensure smooth functioning of various key activities in the programme. The document provides a comprehensive overview of the budgetary plans and financial priorities for the upcoming fiscal year. As the programme continues its mission to eliminate dog-mediated rabies by 2030, the proposed budget serves as a roadmap for allocating resources, managing expenditures, and achieving strategic goals.

The overview delves into key aspects of the proposed budget, including vital funding priorities, and strategic initiatives. What is shared in the document is an overview of the budget, detailed budget will be shared with the respective departments.

Sl. No.	Particulars	Requirements	Budgets
1	ABC cum animal shelter with bathroom and attendant room	1 per district @ ₹ 12 lakhs per center **Total - 12 Centres**	₹ 1,44,00,000.00
2	Vehicle for transporting rescued canines	1 per district @ ₹ 10 lakhs 20 thousand per district **Total - 12**	₹ 1,22,40,000.00
3	Human resource	1 Doctor 2 Veterinary assistants 2 Attendants **Total - 5 per Centre**	₹ 1,05,77,700.00
4	Food and water for dogs at shelters	For 60 dogs capacity ABC @ ₹ 700 per week, **₹ 13,44,000**	₹ 1,61,28,000.00
5	Maintenance charges of Animal Birth Control centre cum shelter	₹ 10,000 per month per centre **₹ 1,20,000**	₹ 14,40,000.00

Sl. No.	Particulars	Requirements	Budgets
6	Human resource required in dog catching, training and remuneration	₹ 6,23,490 **Total - ₹ 6,23,490 x 12 districts**	₹ 74,81,880.00
7	Pre-exposure Prophylaxis Rabies vaccines for doctors, staff, dog catchers and anti-rabies vaccines for dogs	**₹ 80,000 x 12**	₹ 9,60,000.00
8	Rabies vaccine procurement	**2,00,235 doses x ₹ 100**	₹ 2,00,23,500.00
9	Cold chain	13 refrigerators + 120 vaccine carrier	₹ 6,25,000.00
10	Remuneration	Remuneration for vaccinator @ ₹ 50/- per dog	₹ 87,60,250.00
11	Logistics requirement		₹ 2,30,78,150.00
12	Surveillance and Laboratory		₹ 7,00,000.00
13	IEC/BCC	1. Organizing awareness campaign 24 Campaign (2 per district) @ ₹ 20,000.00 2. Advertisement cost, posters/pamphlets /TV/ FM	₹ 9,80,000.00
Total			**₹ 11,73,94,480.00**

HUMAN HEALTH

For human health, the key activities have already been proposed in the 2024-2026 PIP and the approved RoP is shared:

Sl. No.	Sub-Activities	Amount proposed in lakhs FY 2024-25			Amount proposed in lakhs FY 2025-26		
		Unit	Unit cost	Total budget proposed	Unit	Unit cost	Total budget proposed
1	Procurement of ARV	37463	₹300	112.39	30000	₹300	₹300
2	Procurement of ARS	4734	₹500	23.67	4500	₹500	₹500
3	State-level training	1	5.00	5.00	1	5.00	5.00
4	District-level training	11	0.19	2.13	11	0.19	0.19
5	IEC at State	1	5.00	5.00	1	7.00	7.00
6	IEC at district level	11	0.30	3.30	11	0.30	0.30
7	Printing at State level	1	3.00	3.00	1	3.00	3.00
8	Printing at District level	11	0.50	5.50	11	0.50	0.50
9	Meeting at State level	1	2.00	2.00	1	2.00	2.00
10	Meeting at District level	11	0.40	4.40	11	0.40	0.40
	Total	**166.39**			**144.83**		

17 Monitoring and Evaluation

Monitoring indicators to assess the progress at the State level:

The State/ districts progress will be jointly monitored by national/State nodal agencies in health and veterinary sectors. A set of input and process indicators are identified to measure the outcome and the achievement of the goal of rabies elimination.

Input indicators:

The input indicators are those which will assess the progress of the States/ districts with respect to their preparedness for formulation and operationalization of district action plans. The input indicators are also a measure of the successful implementation of the State Action Plan for Dog-Mediated Rabies Elimination through continues advocacy among stakeholders at the national and the State level. The input indicator for monitoring and responsible stakeholders are:

Monitoring indicators to assess at the State- level

Sl. No.	Indicators	Responsible stakeholders
1	Number of districts where advocacy for the rabies control programme has been done at all levels	**State Animal Husbandry Department, and State Health Department**
2	Number of districts which have formulated SAPRE and submitted it to national nodal agencies in the human and veterinary sector	**Animal Husbandry Department, Health Department,**
3	Number of districts which have structured mechanism for rabies notification both in the human and veterinary sector	**State Animal Husbandry Department, and State Health Department**
4	Development of relevant technical guidelines; Standard Operating Procedures for human and animal health components of SAPRE	**State Animal Husbandry Department, and State Health Department and wild life sector**

Sl. No.	Indicators	Responsible stakeholders
5	Number of districts which have designated State Program Management Unit for operationalization of SAPRE for both human and animal health component	**State Animal Husbandry Department, and State Health Department, Wildlife sector**
6	Percentage of fund utilized from the earmarked funding for animal and human components	**State Animal Husbandry Department, and State Health Department**
7	Number of districts which has organized training programmes for medical, veterinary and allied human resource for different components of SAPRE	**State Animal Husbandry Department, and State Health Department**
8	Number of school health awareness programme for rabies prevention	**State Animal Husbandry Department, and State Health Department**
9	Number of districts which have planned and executed and completed dog enumeration exercises or mapping of risk zones for undertaking animal health component activities	**State Animal Husbandry Department, and State Health Department, Wildlife sector and taskforce identified by State govt for SAPRE**
10	Number of districts which have planned and executed and completed mass dog vaccination	**State Animal Husbandry Department, State Animal Welfare Board**
11	Number of districts which have planned executed and completed strategic DPM/ABC activities	**State Animal Husbandry Department, State Animal Welfare Board**
12	Number of Sate labs strengthened to carry out lab diagnosis for rabies as envisaged under NAPRE both in the health and veterinary sector	**State Animal Husbandry Department, and State Health Department**

PROCESS INDICATOR

Process indicators are those defined to measure the progress of the core component of SAPRE -- human health and animal health component. The process

indicators to assess the progress of target achievements and their means of verification are:

PROCESS INDICATORS FOR HUMAN HEALTH COMPONENT

Activities	Technical Indicator	Objectively Verifiable Indicator(s)	Means of Verification	Source of Information
1. Timely completition of PEP for animal bite victims.	Number of districts which have adequate supply of ARV and ARS at animal bite management facilities	ARV/ARS procurements and utilization per centage of facilities with no rabies vaccines and serum stock out	Stock register, records and reports available at animal bite management facilities /hospital records/ media reports about shortage/ public grievances	**State Health Departments and State Nodal Officers of NRCP DVDAMS portal/ Media supervision reports**
	Number of districts which have implemented ID Route in major facilities	Percentage of facilities implementing ID route of ARV	NRCP format	**State Health Department SNONRCP**
	To assess the RIG utilization and coverage	Percentage of designated health facilities with no RIG stock-outs Percentage of Category three bites received RIG	Review of annual report on RIG use NRCP monthly format	
	PEP completion rate among eligible rabies exposed cases	Percentage of eligible cases with PEP completed	NRCP reports	**NRCP reports Operational research**

Activities	Technical Indicator	Objectively Verifiable Indicator(s)	Means of Verification	Source of Information
	Pre-exposure Prophylaxis among high risk categories and children	Percentage of at-risk groups that receive complete dose of pre-exposure prophylaxis as per guidelines	NRCP reports	**NRCP reports, Immunization reports**
2. Capacity building	Trained staff of animal bite management	Number of staff trained in facilities on appropriate animal bite management and rabies PEP	Number of training certificates issued	**NRCP Training Reports**
		Percentage of facilities with trained staff with the bite wound management guidelines	Trained participants list	
3. Diagnostic support	Strengthening laboratory diagnostic capacity for human rabies diagnosis	Percentage of laboratories equipped with diagnostic facilities Number of samples for rabies submitted and tested	Laboratory assessment reports	**NRCP reports SRL & RRL Reports Report of Disease Surveillance unit**
4. Surveillance	Strengthening surveillance of rabies cases and animal bites	Percentage of facilities reporting rabies cases and animal/ dog bites	NRCP reports and IDSP/IHIP reports	**NRCP IDSP disease alert report Surveillance unit (web portal)**

Activities	Technical Indicator	Objectively Verifiable Indicator(s)	Means of Verification	Source of Information
5. Dog enumeration of vaccination	Enumeration exercise/ Risk zone mapping	Percentage of blocks/ districts completed enumeration of dogs Percentage of mapped high-risk areas in the district	State animal department format	**State Animal Husbandry Department**
	Mass Dog Vaccination with a target to vaccinate more than 70per cent of the dog population annually	Proportion of dogs vaccinated for rabies	Post-vaccination surveys in each of the States	**State Animal Husbandry Department's Annual Vaccination Reports**
		Percentage of States with 70 per cent vaccination coverage	Number of doses of rabies vaccine administered	**State Animal Husbandry Department's Annual Vaccination Reports**
	Dog Population Management	Percentage Change in Dog population in respective areas	Change in the animal free-roaming dogs, pet and community-owned dogs	**Survey reports of State Animal Husbandry Department**
6. Diagnostic support for animal rabies diagnosis	Strengthening lab capacity	Number of labs strengthening the veterinary sector for rabies diagnosis	Reports	**Reports**

Activities	Technical Indicator	Objectively Verifiable Indicator(s)	Means of Verification	Source of Information
7. Containment	Containment of rabies cases in identified areas	Proportion of animal Rabies cases confined and number of containment zones declared	Rabies cases confined and containment zones established	**State Animal Husbandry Department's Outbreak Reports**
8. IEC	Raise awareness on responsible dog ownership among citizens	Percentage population/ household aware of responsible dog ownership	KAP survey	**Survey report**
9. Surveillance	Strengthening surveillance of animal rabies	Percentage of animal rabies cases captured by surveillance system Proportion of outbreaks responded to in time	Surveillance system evaluation report/ records review	**State Animal Husbandry Department reports (web portal)**
Other Process Indicators				
10. Advocacy, communica-tion and social mobilization	Measuring public awareness about the risk of rabies and prevention of dog-bite	Percentage of population aware of r abies, prevention and control	KAP survey	**KAP survey results**

Activities	Technical Indicator	Objectively Verifiable Indicator(s)	Means of Verification	Source of Information
11. Inter-sectoral coordination	Assess level of partnerships and multi-sectoral collaboration among ministries, other government agencies, NGOs and private sectors for implementation of the SAPRE	Proportion of identified stakeholders onboard in Joint Monitoring Committees and joint task forces constituted by the State	Number of stakeholders attending periodic review meetings	Monitoring Reports
12. Resource mobilization	Assessment of resources to support rabies elimination activities	Budget for rabies prevention and control provided in human component	Approved budget and record of budget allocation	State Health Department Financial Report
	Assessment of Resources to support the Rabies elimination activities	Budget for animal ARV, training, IECs provided in animal component	Approved budget and record of budget allocation	State and National Animal Husbandry Department reports/ SAPRE operational plan document
		Numbers of partners involved in the project	Budget report	NRCP Annual report

Activities	Technical Indicator	Objectively Verifiable Indicator(s)	Means of Verification	Source of Information
13. Operational research	To invite development partners/ agencie s to participate and manage aspects of the project	Percentage of applicable studies done	Study reports	Dissemination of results manuscript
	Conduct studies to examine operational feasibility and effectiveness for modified regimen for rabies post exposure prophylaxis	Number of studies done	Study reports	Dissemination of results manuscript
	Conduct studies for estimating the coverage of ARV and ARS and compliance of the vaccination	Number of studies done	Study reports	Dissemination of results manuscript
	Conduct molecular epidemiologic al studies of Lyssa viruses circulating in animals in India	Number of studies done	Study reports	Dissemination of results manuscript

OUTPUT/OUTCOME INDICATORS:

The indicators are to assess the overall impact of activities undertaken under SAPRE and to see the progress towards the ultimate goal of achieving zero human deaths due to dog-mediated rabies by 2030 (Reduction to below 1per cent of the incidence of rabies in humans as well as in animals). The outcome target and indicators thereof are:

Technical Indicator	Objectively Verifiable Indicator(s)	Means of Verification	Source of Information
	Number of districts which have	**Publication / amendment**	**State Gazette**
	rabies as notifiable	through the State Public	
To progressively reduce and ultimately eliminate human rabies	diseases in humans and animals Health / State Disaster Act/ Epidemic Act Gazette	**Health / State Disaster Act/ Epidemic Act Gazette**	
in India through sustained,			
mass dog vaccination and appropriate post-exposure treatment	Percentage decrease in rabies in humans	**Monthly / quarterly/ yearly surveillance records**	**Annual Reports, Surveillance Reports**
	Percentage decrease in rabies in	**Surveillance records**	**Annual reports,**
	animals		**Surveillance Reports**

Glimpses of the Stakeholders Workshop

The Department of Health and Family Welfare, Meghalaya, organized a two-day workshop on December 4-5, 2023 at Windermere Resort, Shillong. The event aimed to develop a comprehensive State Action Plan to eliminate dog-mediated rabies in Meghalaya by 2030, under the National Rabies Control Programme. The workshop was supported by UNDP India and the Access and Delivery Partnership (ADP), a global initiative funded by the Government of Japan.

The primary objective of the workshop was to develop both state and district-level action plans to combat rabies, in alignment with the global target of eliminating dog-mediated human rabies by 2030.

The workshop was inaugurated by **Dr. Joram Beda (IAS),** Commissioner & Secretary of Health, Meghalaya, in the presence of several key dignitaries:

- **Shri E. Kharmalki (IAS),** Director of Urban Affairs, Meghalaya
- **Shri Sachin Gavade Shankar (IFS),** Divisional Forest Officer, Forest Department, Meghalaya
- **Dr. H.C. Lyndem,** Director of Health Services (Medical Institutions)
- **Dr. Heliko Marak,** Director of Animal Husbandry and Veterinary Department
- **Dr. Simmi Tiwari,** NCDC, Joint Director, COH, and D**r. Chiranjeev Bhattacharjya,** National Programme Officer, UNDP

Dr. Joram Beda (IAS)
Commissioner & Secretary of Health, Meghalaya

Dr. Simmi Tiwari
National Centre for Disease Control, Joint Director, COH

Shri E. Kharmalki (IAS)
Director of Urban Affairs, Meghalaya

Shri Sachin Gavade Shankar (IFS)
Divisional Forest Officer, Forest Department, Meghalaya

The workshop saw the participation of district veterinary officers, health officials, and representatives from urban bodies across Meghalaya, reflecting a multi-sectoral approach to rabies elimination.

Key Sessions and Discussions:

1. **Overview of National Rabies Control Programme (NRCP):** The session focused on the goals and objectives of NRCP, highlighting the importance of operationalizing the State Action Plan for Rabies Elimination (SAPRE).
2. **Dog Bite Case Surveillance:** State officials discussed the importance of robust surveillance systems for tracking dog bite cases and rabies outbreaks.
3. **Rabies Elimination Techniques:** Technical sessions addressed strategies such as the Animal Birth Control (ABC) technique and its challenges in controlling the stray dog population.
4. **Group Discussions:** Participants were divided into groups to develop district-specific action plans. The discussion was facilitated by experts from NCDC and UNDP, who guided the participants through the process of aligning district action plans with the state-level strategy.

The workshop culminated in the finalization of the **State Action Plan for Dog-Mediated Rabies** Elimination and the development of corresponding **District Action Plans.** The closing ceremony included discussions on recommendations and the way forward for the implementation of the action plans. The workshop was a crucial step toward achieving the ambitious goal of eliminating dog-mediated rabies from Meghalaya by 2030. The event concluded with a vote of thanks, delivered by **Dr. Tapas Kumar Mahato,** SPO, UNDP, acknowledging the efforts of all participants and stakeholders involved.

Dr. (Mrs.) Iadalang Lyngdoh
NRCP Nodal

Dr. Chiranjeev Bhattacharjya
National Programme Manager - HSS, UNDP

Dr. Raghavendra Appasaheb Honnakamle (PH)
Assistant Director, NCDC

Dr. Tapas Kumar Mahato
Senior Project Officer - HSS, UNDP

Annexure: 1

NOTIFICATION FOR HUMAN RABIES CASES OR DEATH

GOVERNMENT OF MEGHALAYA
HEALTH & FAMILY WELFARE DEPARTMENT
****

RK YAP 13/3/23

ORDERS BY THE GOVERNOR

NOTIFICATION

Dated Shillong the 3rd March, 2023.

No. Health.19/2014/101: Rabies is endemic throughout the country and is responsible for extensive morbidity and mortality. About 96% of the mortality and morbidity is associated with dog bites. Cats, wolf, jackal, mongoose and monkeys are other important reservoirs of rabies in India.

The **National Action Plan for Dog Mediated Rabies Elimination from India by 2030** provides a strategic framework for stakeholders for the reduction of Rabies in the country so as to achieve the World Health Organization Target of zero deaths due to Rabies by the year 2030.This requires a strong surveillance system so that the exact magnitude of disease can be obtained which will help to develop strategies and provide public health professionals with critical information to make informed decisions about saving human lives

Therefore, all Government and private health care facilities (including medical colleges)and all Medical Officers/Doctors/health workers whether in Government, Private/NGO sector and/or individual practitioner in the State shall have to take adequate steps for timely diagnosis of Human Rabies (Suspect, Probable or Confirmed) cases and shall notify every Human Rabies Case and/or death to the Director of Health Services (Research) through the concerned District Medical and Health Officer in the Reporting Formats devised by the National Rabies Control Programme (NRCP).

Failure to report notifiable disease is a criminal offence and action will be initiated against defaulters.

Sd/- (R.M.Kurbah, IAS.,)
Secretary to the Govt of Meghalaya,
Health & Family Welfare Department

Memo No. Health.19/2014/101-A **Dated Shillong the 3rd March, 2023.**

1. P.S. to Minister i/c Health & Family Welfare Department for kind information of the Minister.
2. P.S. to Chief Secretary to the Govt. of Meghalaya for kind information of Chief Secretary.
3. P.S. to Principal Secretary, Health & Family Welfare Department for kind information.
4. P.A. to the Commissioner & Secretary/Secretary, Health & Family Welfare Department for kind information.
5. The Mission Director, National Health Mission, Meghalaya, Shillong for kind information.
6. The Deputy Commissioner,
   East Khasi Hills, **Shillong**/ West Khasi Hills, **Nongstoin**/ West Garo Hills,**Tura**/ East Garo Hills, **Williamnagar**/ South Garo Hills, **Baghmara**/ West Jaintia Hills, **Jowai**/ East Jaintia Hills, **Khliehriat**/ North Garo Hills, **Resubelpara**/ South West Khasi Hills, **Mawkyrwat**/ South West Garo Hills, **Ampati**/ Eastern West Khasi Hills, **Mairang**/ Ri-Bhoi District, **Nongpoh** for kind information and necessary action.

Directorate of Health Services
Research Vaccine Production etc
Meghalaya, Shillong
Receipt No 1394 Date 13/3/2023

7. The Director of Health Services (MI)/(MCH&FW), Meghalaya, Shillong for kind information and necessary action.
8. The Director of Health Services (Research), Meghalaya, Shillong w/reference to letter No. DHS (R)/NRCP/ACVT/107/2022/850, dated-27.01.2023 for kind information and necessary action.
9. The Director, NEIGRIHMS, Meghalaya, Shillong for information and necessary action.
10. The Director of Printing & Stationery, Meghalaya, Shillong with a request to publish the above in the next issue of the Meghalaya Gazette and to supply the undersigned with 50 (fifty) copies of the published gazette.
11. The State Informatics Officer, NIC, Meghalaya, with a request to upload the Notification in the Health Department website.

By Orders etc.,

Under Secretary to the Govt. of Meghalaya,
Health & Family Welfare Department.
****

Annexure: 2

NOTIFICATION FOR STATE-LEVEL ZOONOTIC COMMITTEE

AR M- Marbaniang 19.6.19

GOVERNMENT OF MEGHALAYA
HEALTH & FAMILY WELFARE DEPARTMENT

ORDERS BY THE GOVERNOR
NOTIFICATION

Dated, Shillong. the 18th June, 2019

No. Health.210/2004/Pt-I/8: In partial modification of this Department's letter No. Health 210/2004/Pt/201 dt. 29.11.2018, the Governor of Meghalaya is pleased to constitute the State Level Zoonosis Committee (SLZC) to address the challenges of Zoonotic Diseases with the following members :

1.	Secretary, Health & Family Welfare Department	-	Chairperson
2.	Director of Health Services (MI)Meghalaya. Shillong	-	Member
3.	Director of Health Services, Meghalaya, Shillong (Research) or Representative	-	Member
4.	Director, Animal Husbandry& Veterinary, Meghalaya, Shillong or Representative	-	Member
5.	Director of Urban Affairs, Meghalaya, Shillong or Representative	-	Member
6.	Chief Executive officer, Shillong Municipal Board or Representative	-	Member
7.	Joint Commissioner of Food Safety or Representative	-	Member
8.	Assistant Drug Controller, Meghalaya, Shillong	-	Member
9.	Additional Principal Chief Conservator of Forest, Meghalaya	-	Member
10.	Dean, NEIGHRIHMS, Meghalaya, Shillong.	-	Member
11.	HOD Community Medicine, NEIGRIHMS, Meghalaya, Shillong	-	Member
12.	Joint Director of Health Services (MCH &FW) I/C IDSP	-	Member Secretary
13.	State Programme Officer, National Vector Borne Diseases Control Programme.	-	Member

Terms of Reference :

1. To advise to various facets of the work on Zoonosis prevalent in the State and list zoonosis infections/diseases according to priority and importance under the various heads like bacterial, viral, fungal, parasites and protocol to enable the scientists in the filed to tackle the problem on a priority basis.
2. To formulate the terms of reference and modus-operandi for developing the networking between various sectors viz. medical, veterinary and allied departments/institutions.
3. To review the burden of priority zoonotic disease prevalent in the state and advice the respective state authorities on specific measures to be taken for prevention and control of zoonotic diseases.
4. To monitor the progress of efforts undertaken by respective state authorities for prevention and control of emerging and remerging zoonotic disease.
5. To pursue the formation of Zoonotic Committee at the District Level and provide guidance to district committees on specific issues arising out of zoonosis.
6. To advise the authorities for capacity building and joint training of medical & veterinary professionals.
7. To advise regarding the location and requirement of special laboratories at the State or regional level for diagnosis of selected zoonotic diseases.
8. To identify those involved in zoonotic diseases research for potential collaboration.
9. The Committee will normally hold its meeting in the Capital at least twice a year. In the meeting the committee will evaluate progress, and review the plans for collaborative activities.
10. The expenditure on TA/DA of the members of the Committee shall be met from the source from which their pay and allowances are drawn.

Sd/- P .Bakshi IAS,
Secretary, Govt. of Meghalaya,
Health & Family Welfare Department.

Memo. No. Health.210/2004/Pt-I/8-A **Dated, Shillong. the 18th June, 2019**

Copy to :

1. P.S. to Minister, Health & Family Welfare Department for kind information of the Minister.
2. P.S. to Additional Chief Secretary, Health & Family Welfare Department for kind information of Additional Chief Secretary.
3. Secretary, Govt. of Meghalaya, Health & Family Welfare Department
4. Director of Health Services (MI), Meghalaya, Shillong

5. Director of Health Services (MCH &FW) with reference to letter No. HSM/IDSP/SLZC/2018/5897 dt. 26.10.2018.
6. Director of Health Services (Research) Meghalaya, Shillong.
7. Director, Animal Husbandry & Veterinary, Meghalaya, Shillong.
8. Director of Urban Affairs, Meghalaya, Shillong.
9. Chief Executive Officer, Shillong Municipal Board, Meghalaya, Shillong.
10. Joint Commissioner of Food Safety, Meghalaya, Shillong.
11. Additional Principal Chief Conservator of Forest, Meghalaya, Shillong.
12. Dean, NEIGRIHMS, Meghalaya, Shillong
13. HOD Community Medicine, NEIGRIHMS, Meghalaya, Shillong.
14. Director of Printing & Stationery, Meghalaya, Shillong for publication in the Gazette.
15. Joint Director of Health Services (MCH &FW) I/C IDSP, Meghalaya, Shillong.
16. State Programme Officer, National Vector Borne Diseases Control Porgramme.

By Order etc.,

Under Secretary to the Govt. of Meghalaya,
Health & Family Welfare Department.

Annexure: 3

State-level joint steering committee for the State Action Plan for Rabies Elimination

GOVERNMENT OF MEGHALAYA
HEALTH & FAMILY WELFARE DEPARTMENT

ORDERS BY THE GOVERNOR
NOTIFICATION

Dated Shillong, the 9th March, 2023.

No. Health.36/2023/5: The Governor of Meghalaya is pleased to constitute a **"State Level Joint Steering Committee for the State Action Plan for Rabies Elimination "** with the following members who may work in tandem with the Committee.

State Level:

1. Chief Secretary, Govt. of Meghalaya	- Chairman.
2. Principal Secretary/ Commissioner & Secretary, Health & Family Welfare Department	- Co-Chairman.
3. Principal Secretary/ Commissioner & Secretary Animal & Husbandry	-Member.
4. Principal Secretary/ Commissioner & Secretary Forest & Environment Department	- Member.
5. Principal Secretary/ Commissioner & Secretary Urban Affairs Department	- Member.
6. Principal Secretary/ Commissioner & Secretary Housing Department	- Member.
7. Principal Secretary/ Commissioner & Secretary Public Health Engineering Department	- Member.
8. Principal Secretary/ Commissioner & Secretary Information & Public Relations Department	- Member.
9. Secretary, Health & Family Welfare Department	- Member.
10. The Mission Director, National Health Mission (NHM)	- Member.
11. Principal Chief Conservator of Forest (HoFF)	- Member.
12. Director, Housing Department	- Member.
13. Director, Urban Affairs Department	- Member.
14. The Director of Health Services (MI)/ Director of Health Services (Research)	- Member.
15. State Nodal Officer, National Rabies Control Programme	- Member Secretary.
16. Representative of Civic Bodies involved in Rabies Control	- Member.
17. Representative of NGOs	- Member.

Term of Reference:

1. The Committee will be responsible for the monitoring of all the collaborative activities of the State Action Plan for Rabies Elimination (SAP-RE).
2. The Committee will monitor the uninterrupted supply of logistics required for the execution of the Plan.
3. The Committee will also ensure and facilitate the integration, cooperation, collaboration and Communications required amoung stateholders at all level for successful implementation of the SAP-RE with one Health Approach.

Sd/-(Dr.Joram Beda, IAS),
Commissioner & Secretary to the Govt. of Meghalaya,
Health & Family Welfare Department.

Memo.No. Health.36/2023/5-A **Dated Shillong, the 9th March, 2023.**

Copy to:-

1. P.S. to Hon'ble Chief Minister, Govt. of Meghalaya for kind information of the Hon'ble Chief Minister.
2. P.S. to Minister i/c Health & Family Welfare Department for kind information of the Minister.
3. P.S. to Chief Secretary, Govt. of Meghalaya for kind information of the Chief Secretary.
4. P.S. to the Principal Secretary to the Government of Meghalaya, Health & Family Welfare Department for kind information of the Principal Secretary.
5. P.A. to the Commissioner & Secretary to the Government of Meghalaya, Health & Family Welfare Department for kind information of the Commissioner & Secretary.
6. Principal Secretary/ Commissioner & Secretary, Animal & Husbandry Department for kind information.
7. Principal Secretary/ Commissioner & Secretary, Forest & Environment Department for kind information.
8. Principal Secretary/ Commissioner & Secretary, Urban Affairs Department for kind information.
9. Principal Secretary/ Commissioner & Secretary, Housing Department for kind information.
10. Principal Secretary/ Commissioner & Secretary, Public Health Engineering Department for kind information.
11. Principal Secretary/ Commissioner & Secretary, Information & Public Relations Department for kind information.
12. Secretary, Health & Family Welfare Department for kind information of the Secretary.
13. The Mission Director, National Health Mission (NHM), Meghalaya, Shillong for kind information.
14. Principal Chief Conservator of Forest (HoFF), Meghalaya, Shillong for kind information.
15. Director, Housing Department, Meghalaya, Shillong for kind information.
16. Director, Urban Affairs Department, Meghalaya, Shillong for kind information.
17. The Director of Health Services (MI), Meghalaya, Shillong for kind information.
18. Director of Health Services (Research),Meghalaya, Shillong for kind information.
19. State Nodal Officer, National Rabies Control Programme, Office of the Director of Health Services (R) for kind information.
20. Representative of Civic Bodies involved in Rabies Control for kind information.
21. Representative of NGOs for kind information.

By Order etc.,

Under Secretary to the Govt. of Meghalaya,
Health & Family Welfare Department.

Annexure: 4

District-level joint steering committee for the State Action Plan for Rabies Elimination

GOVERNMENT OF MEGHALAYA
HEALTH & FAMILY WELFARE DEPARTMENT

ORDERS BY THE GOVERNOR
NOTIFICATION

Dated Shillong, the 9th March, 2023.

No. Health.36/2023/6: The Governor of Meghalaya is pleased to constitute a **" District Level Joint Steering Committee for the Action Plan for Rabies Elimination "** with the following members who may work in tandem with the Committee.

District Level:

1.	Deputy Commissioner	- Chairman.
2.	District Medical & Health Officer	- Co-Chairman.
3.	District Veterinary Officer	- Co-Chairman.
4.	District Nodal Officer at National Rabies Control Programme	- Member Secretary.
5.	District Veterinary Officer at District Animal Husbandry & Dairying	- Member Secretary.
6.	Representative Urban Local Governments (Municipality corporations/Council)	- Member.
7.	Representative Rural Local Governments (Panchayati Raj Institutions)	- Member.
8.	Representative NGOs/AWO	- Member.

Term of Reference:

1. The Committee will co-ordinate amoung stakeholders for the implementation of the plan at the District level.
2. The Committee will monitor the uninterrupted supply of logistics required for the execution of the Plan.
3. The Committee will also ensure and facilitate the integration, cooperation, collaboration and Communications required amoung stateholders at all level for successful implementation of the SAP-RE with one Health Approach.

Sd/-(Dr.Joram Beda, IAS),
Commissioner & Secretary to the Govt. of Meghalaya,
Health & Family Welfare Department.

Memo.No. Health.36/2023/6-A **Dated Shillong, the 9th March, 2023.**

Copy to:-

1. P.S. to Hon'ble Chief Minister, Govt. of Meghalaya for kind information of the Hon'ble Chief Minister.
2. P.S. to Minister i/c Health & Family Welfare Department for kind information of the Minister.
3. P.S. to Chief Secretary, Govt. of Meghalaya for kind information of the Chief Secretary.
4. P.S. to the Principal Secretary to the Government of Meghalaya, Health & Family Welfare Department for kind information of the Principal Secretary.
5. P.A. to the Commissioner & Secretary to the Government of Meghalaya, Health & Family Welfare Department for kind information of the Commissioner & Secretary.
6. P.A. to the Secretary to the Government of Meghalaya, Health & Family Welfare Department for kind information of the Secretary.
7. The Deputy Commissioner,
   East Khasi Hills, **Shillong**/ West Khasi Hills, **Nongstoin**/ West Garo Hills,**Tura**/ East Garo Hills, **Williamnagar**/ South Garo Hills, **Baghmara**/ West Jaintia Hills, **Jowai**/ East Jaintia Hills, **Khliehriat**/ North Garo Hills, **Resubelpara**/ South West Khasi Hills, **Mawkyrwat**/ South West Garo Hills, **Ampati**/ Eastern West Khasi Hills, **Mairang**/ Ri-Bhoi District, **Nongpoh** for kind information.
8. District Medical & Health Officer,
   East Khasi Hills, **Shillong**/ West Khasi Hills, **Nongstoin**/ West Garo Hills,**Tura**/ East Garo Hills, **Williamnagar**/ South Garo Hills, **Baghmara**/ West Jaintia Hills, **Jowai**/ East Jaintia Hills, **Khliehriat**/ North Garo Hills, **Resubelpara**/ South West Khasi Hills, **Mawkyrwat**/ South West Garo Hills, **Ampati**/ Eastern West Khasi Hills, **Mairang**/ Ri-Bhoi District, **Nongpoh** for kind information.
9. District Veterinary Officer,
   East Khasi Hills, **Shillong**/ West Khasi Hills, **Nongstoin**/ West Garo Hills,**Tura**/ East Garo Hills, **Williamnagar**/ South Garo Hills, **Baghmara**/ West Jaintia Hills, **Jowai**/ East Jaintia Hills, **Khliehriat**/ North Garo Hills, **Resubelpara**/ South West Khasi Hills, **Mawkyrwat**/ South West Garo Hills, **Ampati**/ Eastern West Khasi Hills, **Mairang**/ Ri-Bhoi District, **Nongpoh** for kind information.
10. District Nodal Officer, National Rabies Control Programme,
    East Khasi Hills, **Shillong**/ West Khasi Hills, **Nongstoin**/ West Garo Hills,**Tura**/ East Garo Hills, **Williamnagar**/ South Garo Hills, **Baghmara**/ West Jaintia Hills, **Jowai**/ East Jaintia Hills, **Khliehriat**/ North Garo Hills, **Resubelpara**/ South West Khasi Hills, **Mawkyrwat**/ South West Garo Hills, **Ampati**/ Eastern West Khasi Hills, **Mairang**/ Ri-Bhoi District, **Nongpoh** for kind information.
11. District Veterinary Officer at District Animal Husbandry & Dairying
    East Khasi Hills, **Shillong**/ West Khasi Hills, **Nongstoin**/ West Garo Hills,**Tura**/ East Garo Hills, **Williamnagar**/ South Garo Hills, **Baghmara**/ West Jaintia Hills, **Jowai**/ East Jaintia Hills, **Khliehriat**/ North Garo Hills, **Resubelpara**/ South West Khasi Hills, **Mawkyrwat**/ South West Garo Hills, **Ampati**/ Eastern West Khasi Hills, **Mairang**/ Ri-Bhoi District, **Nongpoh** for kind information.
12. Representative Urban Local Governments (Municipality corporations/Council) for kind information.
13. Representative Rural Local Governments (Panchayati Raj Institutions) for kind information.
14. Representative NGO/AWO for kind information.

By Order etc.,

Under Secretary to the Govt. of Meghalaya,
Health & Family Welfare Department.

Annexure: 5

Source of funds proposed for SAPRE

The funds are available at various levels for undertaking the activities of human and animal health component. The successful execution of the rabies elimination plan depends upon the judicious use of the available resources in an efficient manner keeping in view of the 'One Health Approach'. The proposed sources of funds for both the components are:

Sl. No.	Human Health Component	
1	ARV -ARS	**National Free Drug Initiative. State Revenue**
2	Training	**NRCP- NHM, State Budget**
3	IEC	**NRCP- NHM, State Budget**
4	Laboratory	**NRCP- NHM, State Budget**
5	Operational research	**NRCP, ICMR**

Sl. No.	Animal Health Component	
1	Vaccination	**ASCAD, RKVY, State animal husbandry funds, local governing bodies- municipalities (urban), PRI (RURAL)**
2	Training	**ASCAD, PMSKY, State animal husbandry funds local governing bodies- municipalities (urban), PRI (RURAL)**
3	IEC	**ASCAD, State animal husbandry funds, local governing bodies- municipalities (urban), PRI (RURAL)**
4	DPM	**AWBI, local governing bodies- municipalities (urban), PRI (RURAL), NGOs, Corporate Social Responsibility**
5	Laboratories	**ASCAD, State animal husbandry funds**
6	Operational research	DAHD, ICAR

Annexure: 6

Guidance notes for preventing a shortage of rabies vaccine, human and Anti Rabies Serum/ Immunoglobulin

1. Manufacturing of human rabies vaccine is a complex biological process and require a minimum of three-four months for manufacture and testing. The districts/ procurement agencies may be sensitized about the minimum lead time required for supply and plan accordingly.
2. The annual requirement of Anti Rabies Vaccine and Anti Rabies Serum must be calculated four-six months in advance. The requirement must include 10 per cent wastage factor and buffer stock for three months (as lead time from order placement to actual delivery of vaccines). Accordingly, the tender/ purchase order needs to be placed in advance.
3. As per the Drugs and Cosmetics Rules, 1940, the batch of human rabies vaccine has to be released by the manufacturer after testing in the manufacturer's laboratory and ensuring that the vaccine complies with the specifications. It is also mandatory, as per procedures defined, to submit the samples of human rabies vaccine along with protocols to the Central Drugs Laboratory (CDL), Kasauli, for evaluation and lot release before it is supplied in the country. Normally, testing of human rabies vaccine takes approximately three to four weeks.
4. Tenders should be issued for fixed quantities rather than the rate contracts.
5. Human rabies vaccineand Anti-Rabies Serum stock must be monitored on a regular basis. Monitor the district/institute-wise stock situation and accordingly plan the supply based on consumption. If necessary, additional procurement order may be placed.
6. The districts shall analyze the average time required for completing the tender process to the actual placement of the order and accordingly, the procurement procedures to be started well in advance to avoid shortage of human rabies vaccineand Anti-Rabies Serum supply.
7. The district authorities need to be sensitized to analyze their annual requirement and the lead time required for completing all procedures well in advance, guard against shortages in the supply of human rabies vaccineand Anti-Rabies Serum.
8. Anti-Rabies Vaccine and Anti-Rabies Serum are part of the essential drug list of the National Health Mission (NHM). Budget for human rabies vaccineand

Anti-Rabies Serum may be proposed under NHM PIP under national free drug initiative.

9. As per national guidelines, the preferred route of administration for human rabies vaccine is Intradermal. It is cost-effective and requires 0.2 ml/Visit/ patient for intradermal route vs. 1 ml/visit/patient for intra muscular route).

In case of shortage of human rabies vaccine, please inform the National Pharmaceutical Pricing Authority (NPPA), Department of Pharmaceuticals (DoP) or Ministry of Health and Family Welfare (MoHFW). Non-supply of human rabies vaccine due to the pendency of bills should not be referred to DoP/MoHFW/ CDSCO.

Annexure: 7

Standard Operating Procedure for Dog Population Estimation

The population estimate of Free Roaming Dogs (FRD) in the intended area for conducting mass canine vaccinations and even animal birth control (ABC) is essential to:

- To estimate the magnitude of resources required for interventions such as MDV. For instance, the number of vaccines required, dyes, identification marks, bikes, human resource.
- To evaluate the efficacy of interventions and course correction for subsequent MDV campaigns.

Methods for Dog Population Estimation

In the Indian context, the approach for estimating the canine population should be resource and time-efficient while simultaneously providing the most accurate estimate for meeting the target (at least 70 per cent of dog population). Methods suggested for estimating the FRD population for vaccination:

1. **Mark-Release-Recapture Methods:** As the name suggests, a sample of dogs are captured and marked in a manner that does not affect animal survival and then released back into the population. Allow the marked dogs to mix randomly through the total population and then the dogs are captured a second time. The number of recaptured dogs (marked dogs) to first-time captures in the second sample gives the Lincoln-Petersen estimate of total population size. This method can be planned in two ways: -
    - **Single-Sight (SS) Surveys -** A survey is done involving two surveyors in each team, travelling on a two-wheeler through all parts of an allocated zone and recording details of every dog they see. Both people keep a look out for dogs, one is responsible for driving and the other records details of the dogs sighted in the mobile phone app.
    - **Sight-Re Sight (SRS) Surveys -** After conducting the SS survey, SRS is done to check the accuracy of SS. It is done by conducting a survey again in the same region (one or two days continuously) and then marking all dogs with a physical marker (such as dyes), or virtually (pictures of the dog through mobile app. All dogs seen on the second day are recorded irrespective of whether or not they were 'marked' as seen on the first day. A minimum of two surveys should be conducted and the details should be matched to ascertain the number of dogs seen once and those seen twice during the entire survey.

2. **Using statistical software -** The population estimate with 95 per cent Confidence Intervals can be obtained by using the Application Super Duplicates tool https://chao.shinyapps.io/SuperDuplicates/. As per the review of literature currently available on dog enumeration, probabilistic models developed on capture-recapture technique is the most feasible method adapted for the Indian context which has provided the most accurate population estimation to actual dog population.
3. **Using the local animal census database -** The canine census has been included in the 2012 Livestock Census. If enumeration of the dog population is not possible, the block-level census could be used for planning. However, this is not a recommended method as it could lead to under vaccination and shortage of resource material in the selected area.
4. **Local house-to-house questionnaire - based surveys -** To estimate the number of owned dogs, the mean number of owned dogs per household and dog: human ratios. Since the total human population or number of households is generally known through national population censuses, an estimate of the owned dog population can then be extrapolated.

Planning of dog enumeration in an identified area –

Before you begin -

- Identify the number of villages/wards/administrative units where the MDV is being planned.
- Map the boundaries, the internal streets/roads of the village/wards/administrative units.
- Draw detailed street maps of the selected block to ensure that every street is covered.
- Make a list of owned and un-owned dogs in the local community which would be called as community-owned dogs. All dogs that conform to the definition of free roaming dogs must be included in the survey.

Identify and train the survey team-

- The survey teams should carry writing materials, GPS or any other handheld device or mobile with GPS and camera.
- An attempt should be made to ensure that the composition of the teams and the pre-determined routes followed by the team are the same in all the subsequent surveys.
- The teams should record the GPS waypoints, take photographs of the animal, and record the various characteristics of the encountered dog. Care should be taken not to disturb the natural behavior of dogs by not driving too close to the animals while still maintaining their pre-set route.
- A minimum of two surveys should be conducted and the details should be

matched to ascertain number of dogs seen once and those seen twice during the entire survey.

CALCULATE THE DOG POPULATION THROUGH STATISTICAL EXTRAPOLATION.

- USING SOFTWARE-Once the survey team has completed their rounds, the population estimate can be obtained by using the Application Super Duplicates tool (https://chao.shinyapps.io/SuperDuplicates/). The values observed must be directly added to the online app.

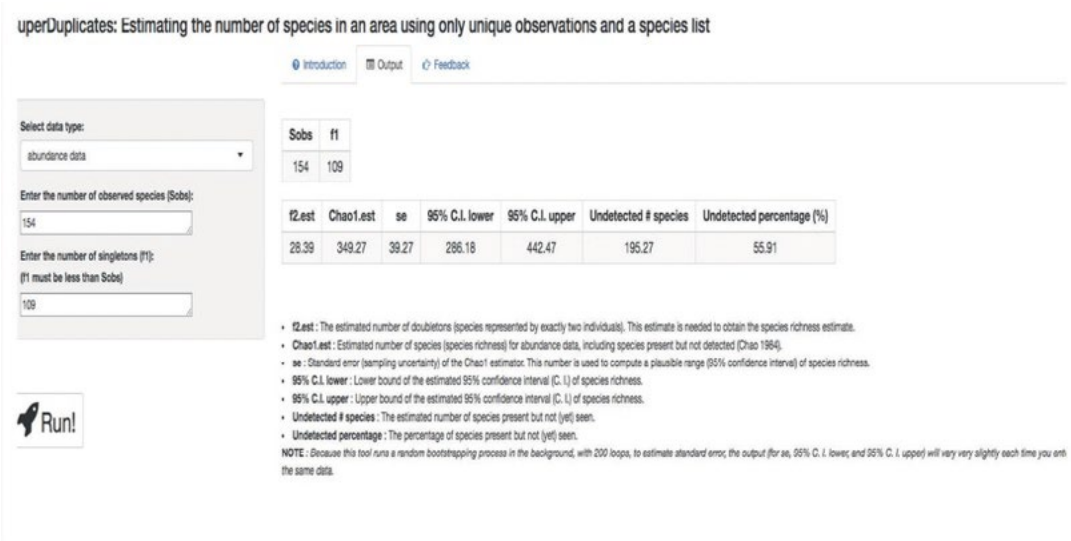


Figure: User Interface for the Application Super Duplicates (AS)

Figure: Super duplicates used for estimating the number of species in an area

Using formula for population estimate

(Lincoln – Petersen method)

Estimate of population size

= (Number of animals marked and released x Number of animals captured in second survey,) (Number of marked animals recaptured in second survey)

a. *Population estimate*

$$= \frac{\text{(Total number of dogs counted in the sample blocks} \times \text{Total number of blocks)}}{\text{(Number of sample blocks where dog enumeration is done)}}$$

b. To calculate the density of stray dog in the block

$$\frac{\text{(Number of free roaming dogs)}}{\text{(Area of the block)}}$$

Once the dog population is estimated, target population for intervention should be identified and planning done for operational requirements for implementing the MDV programme in the identified areas.

Annexure: 8

Standard Operating Procedure for Mass Dog Rabies Vaccination Campaign

District-wise dog population as per 20th Livestock Census 2019

Sl.No	Name of the District	Dog population
1	East Khasi Hills	27498
2	Ri Bhoi	3702
3	West Khasi Hills	21745
4	South West Khasi Hills	43540
5	East Jaintia Hills	16287
6	West Jaintia Hills	32378
7	North Garo Hills	16483
8	East Garo Hills	7497
9	West Garo Hills	55956
10	South West Garo Hills	6821
11	South Garo Hills	18386
Meghalaya		**2,50,293**

Details of dog population in Meghalaya as per 20thLivestock Census 2019

1	Rural	**Dog Population**		
		Male	Female	**Total**
		137768	95270	**2,33,038**
		Dogs		
2	Urban	Male	Female	**Total**
		10375	6880	**17,255**
		Dogs		
3	Rural + Urban	Male	Female	**Total**
		148143	102150	**2,50,293**

Stray dog population		
Rural	Urban	**Total**
7787	2866	**10,653**

Annexure: 9

Standard Operating Procedure for Mass Dog Rabies Vaccination Campaign

Planning of Mass Dog Rabies Vaccination Campaign

A meeting with stakeholders (AHD, Health, LGB, NGO, Rabies Committee) must be set to discuss the: -

- Strategies on how to cover most of the population.
- Logistics include the source of vaccines, human resources and their identification, how to inform the community about the activity, where to get the dog population list, and the activities on the vaccination day.

Orientation of the vaccination teams a plan of action during MDV

- The vaccination teams should be divided into groups and briefed on the schedule for the day, location, and the selected route.
- The local official could accompany them so that no areas are left un-covered.
- The team should be equipped with enough ARV while maintaining a cold chain to undertake MDV.
- Registration and permanent identification of all vaccinated dogs should be done with the issuance of a card for pet animals and owners.
- In the case of free-roaming/stray dog vaccination, dog handlers could be used to catch and restrain dogs humanely as per the ABC rule and be vaccinated.
- The use of a colour spray for all vaccinated dogs as temporary marking could be done for the stray/community owned dogs.
- A survey should be undertaken soon after the completion of the MDV (within three days) of the campaign to assess the number of marked and unmarked dogs.

Training of vaccinators, vaccine handlers, and dog catchers

- Only trained volunteers should be involved in MDV. The volunteer should be trained on proper vaccination techniques and humane dog catching. Vaccine handlers must be trained on the proper handling, storage of vaccines, disposal of used materials, and vaccine utilization reporting.
- All volunteers involved in MDV campaigns should complete the vaccination against rabies through pre- exposure prophylaxis as they are considered high-risk personnel.

Selection of vaccination strategy

Four basic methods have been described for conducting MDV programme*:

- **House-to-house visits-** field mobile teams to visit individual houses and vaccinate the pet animals.

- **Hospital/ clinic visits-** Dog owners take their dogs/cats at any time to private or government veterinary clinics.
- **Vaccination camps-** Temporary vaccination posts can be set up at a central location within villages or cities which are convenient and commonly used by the community members.
- **Capture/vaccinate/release campaigns-** In case the programme is merged with the sterilization programme.
    - **Mobile street vaccination plans-** For pet dogs, community dogs and FRDs where vehicles would be used for gauging the areas and setting the base for vaccination.
    - **A combined approach of all the above methods-** For instance, house-to-house vaccination can be combined with vaccination camp and mobile street vaccination plan.

**Administration of rabies vaccine can be linked with other health interventions (for instance, deworming, neutering and other vaccination programmes), which might provide additional health benefits for the dog and provide an incentive for engagement of both owners and veterinary practitioners in vaccination campaigns*

Identification mark for the vaccinated dog

All dogs which are vaccinated must be visually marked to identify the animals -- vaccinated and not vaccinated. Various techniques can be used to provide identification marks (temporary or permanent) such as the use of coloured tags, paint or spray marks, or plastic collars as temporary marking has proven to be useful in identifying vaccinated dogs.

(Local governing bodies of Mumbai and New Delhi have already made pet registration compulsory in their wards. In such cases and for pet dogs, registration and permanent identification of vaccinated dogs should be done and the owner must be provided with Animal Health Booklet which will have the updated vaccination record.)

Recording

A vaccination form must be filled up during vaccination and collected after each vaccination drive. A certificate of vaccination must be accomplished and given to the dog owner as proof of vaccination.

Communication strategy for MDV camps

A successful campaign should involve an intensive communication strategy about the date and time of vaccinations. A detailed vaccination schedule of the place to be visited by the teams should be prepared in advance and distributed to all the concerned in-charges who in turn inform the public so that they can bring in their pets and community dogs to the designated areas. Mass community engagement campaigns must be done before the beginning of MDV.

Duration of the vaccination programme

The prescribed duration for vaccination in a village or ward must be one-three days depending on the land area and population density. However, the entire selected area should be covered such that 70 per cent of dogs are vaccinated in the shortest period for the vaccination strategy to be effective.

Facilities required for MDV and post-vaccination survey

1. **Human resource**
   - State Programme Management Unit
   - Project manager
   - Veterinarians
   - Dog catchers
   - Support staff for logistics
   - Trained AI technicians
   - Post-vaccination survey staff
   - Laboratory staff
2. **Vaccine -** Anti-Rabies Vaccine in the cold chain-maintained environment
3. **Logistics**
   - Communication devices
   - Dog catching equipment
   - Camera for digital records
   - Marker pen (permanent)
   - GPS device
   - Dog registration card
   - Sample label
   - Needle and syringe (18 gauze, 10 ml)
   - Cool box with an ice pack
   - Capturing nets, capturing pole, etc.
   - Relevant registers and Forms
   - Hand gloves
   - Cotton/tissue paper
   - Dyes/identification tools
   - Disinfectant
   - Ethanol 70
   - Vaccine and vaccine carriers
4. **Diagnostics -** ELISA kits for antibody titration, laboratory testing- courier charges/fees.
5. **Vehicle**
   - Staff transport and goods motorcycle
   - Vehicle for Field Team
   - Post vaccination survey
   - Rent/Fuel allowance

Annexure: 10

Standard Operating Procedure for Assessment of Post Dog Vaccination Coverage

Assessing MDV coverage

To estimate the number of dogs (pet dogs, community-owned dogs and street dogs) vaccinated in the MDV to and for differentiation between vaccinated and unvaccinated dogs. The mass vaccination aims at the method most apt for estimation and should be done as per the local requirement. Vaccination coverage estimation can be done as per the local requirement using the following method:-

Direct observation of marked and unmarked dogs-

Identification of coloured marked collar or ear notching of vaccinated dogs shortly after the MDV is concluded. It should be done immediately (within a week) after the completion of the vaccination campaign. A good technique for observing vaccination among the free-roaming dog population.

Surveys for pet dogs post-vaccination

Dog owners could be asked to produce vaccination certificates to identify dogs vaccinated in the ongoing vaccination campaigns in the case of pet animals.

(Note- The duration of temporary marks on the animal should be considered when planning an evaluation as collars may be lost or removed and paint marks may wash off after several days. Restricted/ household vaccinated dogs that are kept inside the house or backyard are often not observed)

Calculation of doses of vaccine used in comparison with the estimated dog population

However, the level of vaccination coverage calculated using this data is generally overestimated.

Formula for calculation of minimum number of animal rabies vaccine required = Dog Population X

*0.07*Coverage X 0.1 Vial /Dog.*

For eg: Dog population estimated in an area as 10,000,00 X 0.07 =70,000 dogs need to be vaccinated to achieve herd immunity

1 vial = vaccinates 10 dogs.

*Hence to vaccinate 70,000 dogs, = 70,000 x 0.1 =7000 vials would be required (*70 % vaccination coverage)*

Sero surveillance-

To be conducted regularly to determine sero-conversion post MDV as per the prescribed guidelines to monitor the dog vaccination activities. Reporting format for MDV by the block, district and State level are in **Annexure 11.**

A revaccination campaign should be organized if the vaccination coverage is found to be below 70per cent of the estimated dog population.

Annexure: 11

Monthly reporting format for vaccination coverage and canine rabies

Monthly reporting format for vaccination coverage district and block

(The details of animals vaccinated in the field should be reported using the Monthly Animal Health Report Form (annexure) and then enter the data in the NAPRE portal by the veterinary and local governing body sector.)

1. District and block

2. Village

District/ block/ village name	No. of dogs in district (as per census, or as per local dog enumeration)	No. of dogs vaccinated in MDV	No. of dogs vaccinated routinely	% Coverage (Total vaccinated/ Total dog population)	Remarks

3. Reporting Animal Health Centre, Number

For the nil report, the form may be crossed with 'NIL' written across the form.

(Signature of District/Block Officer)

Monthly reporting form for canine rabies for district and block

(Animal Husbandry Department to State health department and National programme management unit animal and human health)

1. 1.District
2. No of Blocks:

District/ block/ village name	No. of dogs in district (as per census, or as per local dog enumeration)	No. of suspected* rabies in dogs	No. of lab confirmed rabies in dogs	Remarks

*(*Animal rabies should include both confirmed by laboratory and diagnosed on clinical grounds)*

For the nil report, the form may be crossed with 'NIL' written across the form.

(Signature of District Officer)

Annexure: 12

Reporting format for model anti-rabies clinic

State:

District:

Block:

Address:

Name and designation of ARC nodal officer:

_____

_____

Contact No.: _____

(ARC Facility Coding) _____

Month: _____ Year: _____

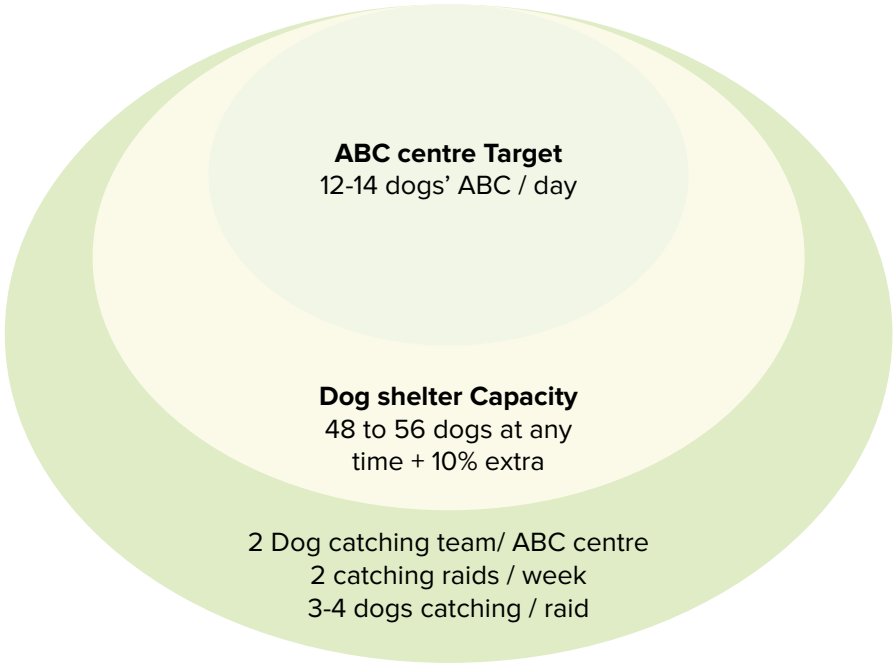
Component	Indicator	Mark as Required		
Human Resource (trained in animal bite management and rabies pre and post Eeposure prophylaxis)	**Human resource**	**Total no. of post sanctioned/ no. of post filled**	**Trained (Yes/ No)**	**If yes- provide date of the training**
	Physician (Trained)			
	Nurse (GNM) (Trained)			
	Pharmacist (Trained)			
	Others			
Physical infrastructure	Visible signboards at the entrance of the centre as well as outside the centre	**Yes/No**		
	Visible organizational chart	**Yes/No**		
	Time schedule (functional hours of ARC)			
	Visible flow chart/algorithm of “decision to treat”	**Yes/No**		
	Visible IEC messages	**Yes/No**		
	Separate wound washing facility with preferably continuous tap water	**Yes/No**		
	Facility for proper biomedical waste management with availability of colour-coded waste bins and sharp	**Yes/No**		

Component	Indicator	Mark as Required
Logistics	National Guidelines for Rabies Prophylaxis 2019	**Available / Not Available**
	Dressing kits	**Available / Not Available**
	Self-mounted insulin syringes (AD)	**Available / Not Available**
	Weighing scaler	**Available / Not Available**
	Soap and gloves	**Available / Not Available**
	IV fluids and emergency drugs for adverse reaction	**Available / Not Available**
	Autoclave	**Available / Not Available**
	Vaccine carrier	**Available / Not Available**
	Refrigerator with a calibrated thermometer	**Available / Not Available**
	Collection of blood samples and referral services for hydrophobia cases and titre estimation	**Yes/No**
	Standardized recording and reporting systems	**Yes/No**
Services rendered and availability of reporting formats (Online/ Offline)	Anti-Rabies Vaccine (ARV)	Yes/No
	Rabies Immunoglobulin/Anti Rabies Serum- Human (ARS)	Yes/No
	Animal bite exposure register	Yes/No
	Rabies vaccination card/rabies treatment card in duplicate	Yes/No
	Line list format of suspected / probable /confirmed of Rabies	Yes / No
	Human rabies / hydrophobia cases monthly format from Infectious Disease Hospital /any other hospitals	Yes / No
	Monthly reporting format of animal bites	Yes / No

Component	Indicator	Mark as Required
Rabies Awareness/ Education activity	Camps organized in villages	Yes / No
	Health education sessions in villages	No of sessions
		Population Covered
	Health education sessions in schools	No of sessions
		No of Children covered
Any other activity conducted/ intended to conduct		

Annexure: 13

Animal Birth Control (Target-driven model)



Rationale - Strengthening the Animal birth control centres

Strategies

1. 12-14 dogs' ABC/ day for 4 working days at ABC centre. The other days pet dogs can be sterilized.
2. ABC for pet dogs can be done in existing Govt. Vety. Hospital
3. Dog shelters should have facility to keep 48-56 + 10 per cent extra dogs at any point of time
4. Dog catching team may comprise of 3-4 members.
5. Each ACB centre must have minimum of two teams for catching dogs
6. Two Catching raids to be done every week
7. 3-4 dogs to be caught in every catching raids
8. Instead on Honorarium we can incentivise dog catching activity
9. >3 dogs catch Rs. 500/ member, 3-2 dogs catch Rs. 350/member and 1 dog catch Rs. 100/member
10. Increase the number of ABC centres based on the targets to be achieved every year. (Consider the ideal TFR, while setting target for ABC in the districts)

11. Bigger districts can have more the one ABC centre, to be opened in a phased wise manner.
12. Following will be the HR for ABC centre -
    a. Doctor
    b. Veterinary Assistant
    c. Attendants
    d. 6-8 trained dog catchers
    e. 2 drivers

(Minimum ABC to be done - 12*4 days = 48/Week, 48*4 = 192/ Month, 192* 12 = 2,304 / Year)

Annexure: 14

SAMPLE REQUISITION FORM

SAMPLE REQUESTING/SUBMISSION FORM

Submitter/Sender Date:

Name of submitter:

Clinic/Organization name:

Address:

Town/Village: Pin: District:

Phone: Email:

Test Animal Owned Stray Wild (Please tick)

Species: Alive Dead (Please tick)

Animal name or ID: ..... Age: .....

Vaccination history:

Date of death:

Tested animal was: Euthanized Killed Found dead (Please tick)

Owner (if different from Sender): Phone:

Address of test animal:

Town/Village: Pin: District:

Explain the situation / Clinical signs:

Other Potential disease rule-outs:

Necropsy done: Yes No

Cremation: i.. Mass (no remains returned)

ii. Individual (ashes returned) arranged by owner or vet clinic, refer to cremation services on back.

Exposure No human exposure Human exposure

Date of exposure:

Type of exposure: Bite, where on body: Non-bite

Person (s) exposed: ..... Age:

Where did exposure occur?

Phone No:

Laboratory only (Please tick)

Whole body	Head	Brain	
Alive	Dead		
Condition:	Good	Fair	Autolyzed
	Traumatized	Dried	No tissue

Hippocampus	Sufficient / Insufficient
Cerebellum	Sufficient /Insufficient
Brain stem	Sufficient /Insufficient

Comments:

Date sent to Laboratory: **Date received at the Laboratory:**

Signature of the Officer

Note:

- It is the responsibility of the submitter to perform the specimen collection, provide appropriate containers, package safely for sample submission and complete appropriate forms.
- Specimen(s) should be collected and properly shipped under optimal specimen storage conditions (see test directory for Storage & Preservation of Specimen Prior to Shipping).
- Each specimen must be clearly labeled with a unique identifier, which should also be listed on the completed submission form.

Annexure: 15

Revised investigation form for Suspected Human Rabies case

National Rabies Control Program
National Centre for Disease Control
Ministry of Health and Family Welfare
Government of India

INVESTIGATION FORM FOR SUSPECTED HUMAN RABIES CASE

1. Information about the interviewer

Name of interviewer		Date of Interview	
Designation		Start Date	
Contact		End Date	

2. Information about patient

Name of Patient		Sex		Age (Years)	

Occupation

Level of education

☐ Illiterate ☐ Primary School ☐ Graduate ☐ Professional Degree
☐ Below Primary ☐ Secondary School ☐ Post graduate ☐ Unknown
☐ Other (Specify)

Is the patient Immunocompromised?

3. Information about respondent

Name of respondent		Age of respondent			
Contact information		State		District	
City/Locality		Village		Pincode	

To the main respondent:

What was your relationship to [deceased's name]?

☐ Parent ☐ Sibling ☐ Parent-in-law ☐ Community leader
☐ Husband/wife ☐ Child ☐ Friend or neighbour ☐ Son-in-law/daughter-in-law
☐ Health care worker (facility name): ☐ Other(specify):

4. Exposure (during previous 12 months)

Did any family pets or livestock die during 12 months before the patient's illness?

☐ Yes (Date of death) ☐ No ☐ Unknown

Did (deceased) have any contact with animal (bites, scratch, lick) within 12 months before the illness that led to death?

☐ Yes ☐ No ☐ Unknown

If yes, please describe the animal contact events

4.1 On what date did (deceased) have contact with this animal? ---/-----/-------

4.2 What type of animal?

☐ Dog ☐ Cat ☐ Livestock ☐ Other (Specify)

4.3 Place of exposure?

4.4 Was the animal owned?

☐ Owned by deceased ☐ Owned by community ☐ Not Owned ☐ Wild ☐ Unknown

Owner Name and Address:

4.5 Did the animal have any signs of disease (describe)?

☐ Aggression ☐ Paralysis ☐ Biting ☐ Hyper Salivation
☐ Lethargy ☐ Other

4.6 Is the animal alive today? (If no, estimate date of death?)

☐ Yes ☐ Unknown ☐ No (Date of death)

4.7 Was the animal observed for at least 10 days after the exposure?

☐ Yes, alive after 10 days ☐ Yes, died during observation ☐ No ☐ Unknown

4.8 Was the animal tested for Rabies?

☐ Yes, Rabies Positive ☐ Yes, Rabies Negative ☐ No ☐ Unknown

4.9 Brain sent for Testing?	☐ Yes:	(Date of death)	☐ No	☐ Unknown

4.10 Was the deceased bitten by this animal?

☐ Yes ☐ No ☐ Unknown

4.11 Was the animal vaccinated?

☐ Yes ☐ No ☐ Unknown

4.12 Did the deceased have other contact with the animal (i.e. licked, scratched)?

☐ Category of Bite I	Touching or feeding of animals, Licks on intact skin. Contact of intact skin with secretions /excretions of rabid animal/human case.
☐ Category of Bite II	Nibbling of uncovered skin. Minor scratches or abrasions without bleeding.
☐ Category of Bite III	Single or multiple transdermal bites or scratches, licks on broken skin. Contamination of mucous membrane with saliva (i.e. licks).

4.13 Location of Bite on Body?

☐ Head ☐ Trunk ☐ Upper Limb ☐ Hands ☐ Lower Limb ☐ Genitalia

4.14 What treatment did the patient receive after this contact with the Animal?

☐ Washed the wound ☐ Sought medical care

☐ Neural tissue contact with open wound/mucous membrane ☐ Other

4.14 What treatment did the patient receive for this contact?

☐ Washed the wound ☐ Sought medical care ☐ Received rabies vaccination

NOTE:

5. Details on Animal Bite Management

5.1 Did (deceased's name) receive treatment after the animal exposure above?

☐ Yes ☐ No ☐ Don't Know

5.2 Was any of this treatment received at home?

☐ Wound Washing ☐ Over the counter medications ☐ Traditional medicines

☐ Unknown ☐ Other

5.3 Where did (deceased's name) go for medical care for any of the exposures listed above?

	Facility 1	**Facility 2**	**Facility 3**
Facility Type	☐ Traditional Healer ☐ Registered Medical Practitioner	☐ Traditional Healer ☐ Registered Medical Practitioner	☐ Traditional Healer ☐ Registered Medical Practitioner
Facility Name			
Facility Location			
Date(s) visited	1: --/--/---- 2: --/--/---- 3. --/--/----	1: --/--/---- 2: --/--/---- 3. --/--/----	1: --/--/---- 2: --/--/---- 3. --/--/----
-Antibiotics/Tetanus -Rabies Vaccine - Rabies Immunoglobin -Specify If Other			

5.4 Reason for Incomplete PEP?

☐ Animal well after observation period ☐ Animal results negative ☐ Specify if other:

☐ Victim previously immunized ☐ Victim refused further doses

☐ Lost to follow-up ☐ Referred out of province

5.5 If the patient received rabies vaccination, please record the type of vaccine and dates received:

☐ Cell Culture Vaccine i. No. of injections ii. Date started --/--/----

CCV	**Vaccine 1**	**Vaccine 2**	**Vaccine 3**	**Vaccine 4**	**Vaccine 5**
Date					

Route (IM or ID)						
Site						

5.6 RIG received or not? ☐ Yes --/--/---- ☐ No ☐ Unknown

5.7 Had the patient ever been vaccinated against rabies prior to this exposure? If Yes mention details.

☐ Yes: Year of Vaccination --/--/---- ☐ No ☐ Unknown

6. Signs and Symptoms related to Rabies

6.1 Time from onset of death

Symptom	Yes	No	Unknown	Symptom	Yes	No	Unknown
Fever	☐	☐	☐	Malaise	☐	☐	☐
Headache	☐	☐	☐	Nausea	☐	☐	☐
Vomiting	☐	☐	☐	Anxiety	☐	☐	☐
Muscle spasm	☐	☐	☐	Dysphasia	☐	☐	☐
Anorexia	☐	☐	☐	Ataxia	☐	☐	☐
Priapism	☐	☐	☐	Seizures	☐	☐	☐
Aerophobia	☐	☐	☐	Hydrophobia	☐	☐	☐
Localized weakness	☐	☐	☐	Localized pain	☐	☐	☐
Confusion	☐	☐	☐	Delirium	☐	☐	☐
Agitation	☐	☐	☐	Aggressiveness	☐	☐	☐
Autonomic instability	☐	☐	☐	Hyperactivity	☐	☐	☐
Insomnia	☐	☐	☐	Hypersalivation	☐	☐	☐

6.1.1 When did the illness that led to death begin?

Day_____Month_____Year_____ ☐ Unknown

6.1.2 If you don't remember the exact date, approximately how long did the illness begin?

Day_____Month_____Year_____ ☐ Unknown

6.1.3 How many days after onset of the illness did (deceased's name) die?

Number (estimate if needed):

6.2 During the illness did (deceased's name) seek medical assistance?

☐ Yes: (Date): --/--/---- ☐ No ☐ Unknown

6.3 During the illness was (deceased's name) admitted to a hospital?

☐ Yes: (Date): --/--/---- ☐ No ☐ Unknown

6.4 Whether any specific test (ELISA/PCR/FAT/MAT/MRI/Other) performed for Lab confirmation of Rabies

Name of Test performed	Date	Result	Comment

6.5 What was the date of (deceased's name) death? Day_____Month_____Year_____

6.6 Where did (deceased's name) die?

☐Home ☐ Hospital (specify)

☐ Other health facility (specify) ☐Other (specify)

6.7 Did anyone else in the community develop an illness similar to (deceased's name) within the past 12 months? (If "Yes", collect contact information for other suspected cases to initiate verbal autopsy of additional cases.)

☐Yes ☐ No ☐ Unknown

If yes, please describe:

7. Post-mortem information

7.1 Post mortem report available (if any):

☐ Yes ☐ No ☐ Unknown

7.2 Death certificate available? ☐Yes ☐ No ☐ Unknown

7.2.1 Did (deceased's name) have any evidence of recent wounds?	☐ Yes	☐ No	☐ Unknown
7.2.2 Did (deceased's name) have any evidence of healed wounds?	☐ Yes	☐ No	☐ Unknown

8. Contact investigation

8.1 Collect the names and contact information for any mentioned below who had contact with the suspected rabies case in the 14 days or before symptom onset until death.

	☐ Family	☐ Community members	☐ Hospital workers	☐ Any Other
Name				
Address				
Contact Number				

8.2 Collect the names and contact information for any people who had contact with the **animal suspected** of transmitting rabies to the case. Including details of Animal owners.
Risk assessments should be conducted with these people to rule out potential exposure.

	Name and Address	Relation
1		
2		
3		

8.3 Final Impression:

Information guide enumerators in deciding on the likelihood of human rabies

Human exposure to rabies

Possible exposure: A person who had close contact (usually a bite or scratch) with a rabies-susceptible animal in (or originating from) a rabies-infected area **(question 4).**

Probable exposure: A person who had close contact (usually a bite or scratch) with an animal displaying clinical signs consistent with rabies at time of the exposure or within 10 days following exposure in a rabies-infected area **(questions 4.4, 4.5, 4.6)**.

Confirmed exposure: A person who had close contact (usually a bite or scratch) with a laboratory-confirmed rabid animal **(question 4.7)**.

Please submit the form to:

National Rabies Control Programme (NRCP)
National Centre for Disease Control (NCDC)
(Directorate General of Health Services)
Ministry of Health & Family Welfare
Government of India

Address 22, Sham Nath Marg, Delhi-110054, India
Email: nrcp.ncdc@gmail.com
Telephone Number:011-23930178

Annexure: 16

REVISED INVESTIGATION FORM FOR SUSPECTED HUMAN RABIES CASE

National Centre for Disease Control
Ministry of Health and Family Welfare
Government of India

Line List of Suspected/ Probable/ Confirmed Rabies Cases/ Deaths*

Date:

Name of the Health Facility/Block/District/State:
Address of the Hospital
Name & Designation of Nodal Person
Contact Number:

Type of Health Facility/Block/District/State:

Email ID:

S.No	Name	Age	Sex	Contact Number	Village	Sub District/ Taluk/Block/ Mandal	District	Biting Animal	Suspected / probable/ Confirmed	Address of place wherebite incidence took place	Category of Bite	Status of PEP (Complete/ Partial/ Nil/NA)	Name of the health facility reported Rabies case	Outcome of patient (Death in Hospital/ LAMA/ Alive)	Bite from Stray Dog/ Pet Dog	Mobile Number	Date

To be reported by Health facilities to District Nodal Officer, State Nodal Officer & National Program Division (Delhi) atnrcp.ncdc@gmail.comevery month before 5th day

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