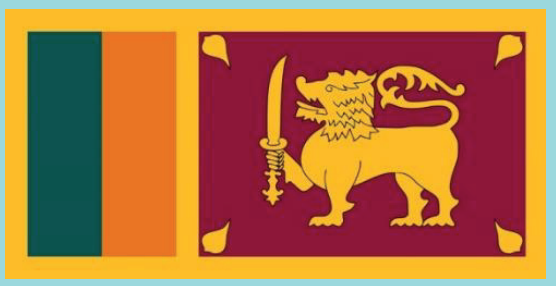

National Strategic Plan for Elimination of Dog Mediated Human Rabies Sri Lanka

2022 - 2026

Public Health Veterinary Services

Ministry of Health, Sri Lanka

2022

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Remarks from the NSP Team

Sri Lanka has been in the forefront of initiating an integrated one health approach towards Rabies disease management. A subdivision of Veterinary Public Health was created back in 1953 within the Ministry of Health to manage zoonotic disease and to spearhead Rabies control in an one health approach. Soon after Rabies control was incorporated into the National five-year plan incepting the importance of Rabies a significant reduction in human Rabies incidences was observed.

Over the decades Sri Lanka has attempted various strategies of Rabies control including dog population management, various vaccination techniques and shift in administration. Public Health Veterinary Services (PHVS) of the Ministry of Health is currently the focal point of Rabies control, entrusted with national responsibilities of preventing human and animal Rabies in collaboration with relevant stakeholders.

WHO and PHVS have initiated restructuring control strategies with aid of a National Strategic Plan (NSP) with expert guidance after the in-country Stepwise Approach towards Rabies Elimination (SARE) evaluation indicated lacuna in the current strategies. This NSP is oriented towards achieving zero dog-mediated human Rabies deaths by 2026 and elimination of dog Rabies by 2030.

We look forward to Sri Lanka becoming one of the pioneer countries in South Asia to eliminate dog-mediated human Rabies ahead of the timeline set for Rabies elimination under the Neglected Tropical Diseases (NTD) of Sustainable Development Goal (SDG) 03 by the Tripartite (FAO-OIE-WHO).

NSP Team

Executive Summary

This document provides the National Strategic Plan (NSP) for the elimination of Dog mediated Human Rabies from Sri Lanka through 2022 to 2026. The plan recommends actions focused on eliminating dog-mediated human Rabies by the 2026 and create a strong foundation to eliminate canine Rabies by 2030. Sri Lanka has the potential to reach these goals with the strong Rabies control infrastructure that has developed over the last few decades. Additionally, Sri Lanka is an island and borders are secured from cross-boundary dog movements resulting in a natural protection of canine vaccination coverage and incursion of the Rabies virus.

GOAL

To eliminate human deaths from Rabies in Sri Lanka

The NSP team has considered existing resources and made suggestion to augment efforts from baseline upwards. The primary areas for Sri Lanka to focus on to achieve these targets are to increase dog Rabies vaccination coverage, improve post exposure treatment (PET) approach and compliance in bite victims, and increase vigilance of animal Rabies. Sri Lanka has already achieved providing easily accessible PET to the public for no cost.

Since there is a well-established primary health care system, the country can now focus on controlling Rabies at the source; Rabies in free-roaming dogs. The NSP expands in length the challenges and solutions to effective mass dog vaccination (MDV). As the country reaches closer to Rabies elimination, mass dog vaccination efforts can be modified towards a more targeted approach based on surveillance reports. The key constituent to mediate these strategies is the use of a real-time information system that wasn't available in the last decades posing a huge challenge to project implementation and evaluation.

Key Objectives of Rabies Control Programme in Sri Lanka

1. **To strengthen leadership, legislation, stewardship, and management functions of the elimination of Human Rabies.**
2. **To ensure the delivery of comprehensive services, to eliminate the burden of human Rabies, and to promote health.**
3. **To empower communities towards active participation in the elimination of human Rabies.**

1.Introduction

1.1 History of Rabies Control in Sri Lanka

Sri Lanka was one of the first countries in Asia to prioritize rabies control. In 1953 by the recommendation of the World Health Organization (WHO), a veterinary Public Health Unit was established within the Ministry of Health to lead and coordinate rabies control strategies for the country. The country incorporated rabies control into the national five-year plans initiated in 1959 but implemented to reasonable effect from the 1980s (http://www.rabies.gov.lk/english/history.php)

Human Rabies was declared a notifiable disease in 1971 and later animal rabies was also made notifiable in 2012. A country-wide comprehensive rabies-control programme was launched in 1975, with the support of WHO focusing on laboratory diagnosis of rabies and effective distribution and availability of post-exposure prophylaxis to bite victims through the government infrastructure.

Various strategies including decentralizing control efforts, trialing oral bait vaccine, and introducing auto vaccination devices (auto plunger) to improve mass dog vaccine coverage and dog population management were executed over the last two decades. Sri Lanka still reports 20-30 human deaths annually (http://www.rabies.gov.lk/english/history.php).

1.2 Geography and Demographics

Sri Lanka is an island country of 65,610 km^2 in the Indian Ocean situated Southeast of India separated by the Palk Strait. The island is mostly low, flat to rolling plain with mountains in the south-central regions which include the highest mountains of the country. The entire country was once a shrub and subtropical evergreen forest, but the latest surveys indicate that only close to 30% of the land is covered by forests varying from about 70% tropical dry monsoon forests, 15% tropical moist monsoon forests and 5% tropical lower mountain forests.

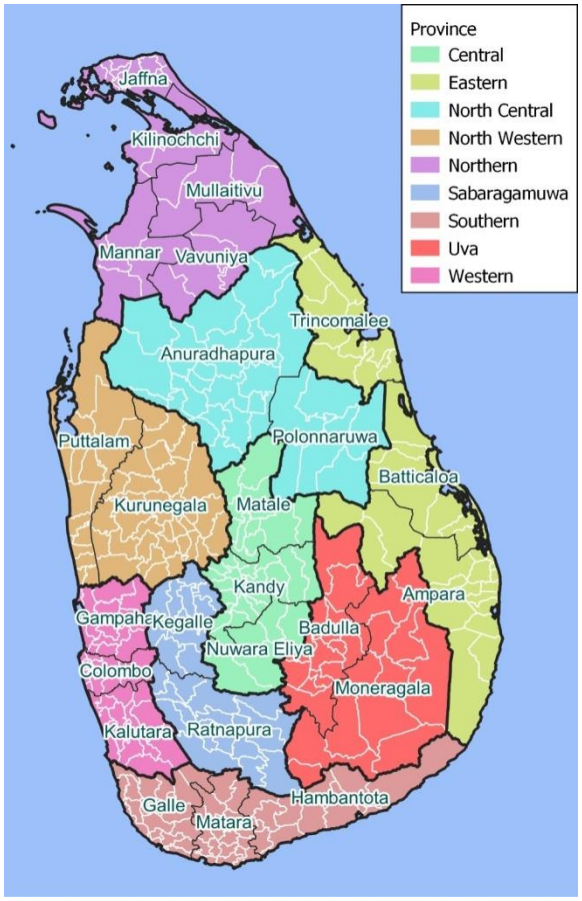

Figure 1.1 - Map of Sri Lanka province (bold black), district (black) and Divisional Secretary Division (white) boundaries.

Sri Lanka has a population of over 21 million people with a Human Development Index of 0.782 ranking at 71 out of 189 countries. The country is one of the leading countries with a high literacy rate in Asia with an average above 95%. Sri Lanka is considered a Sinhalese Buddhist country; Hinduism, Islam and Christianity are also practiced although in minority. The country is divided into 9 provinces which are further divided into 25 districts and 331 Divisional Secretary's Divisions (DS Divisions), as shown in Figure 1.1 above.

1.3 Organizational Structure

Sri Lanka's administration of Rabies control program is through a unique organizational structure consisting of an intersection of Animal Health and Human Health to collaborate zoonotic disease management and Rabies control in particular. Rabies is an archetypical disease for a one health control approach and a collaborative arrangement is in place.

The control of Rabies in animals is carried out by the Ministry of Health through an administrative body called "Public Health Veterinary Services" (PHVS) of Department of Animal Production and Health (DAPH), consisting of veterinary and medical professionals and is responsible for core rabies control activities (Figure 1.2). The veterinary staff of PHVS is appointed by DAPH and the medical staff is appointed by the Ministry of Health. It is physically placed under Deputy Director General (Public Health Services) I of the Ministry of Health. Through this placement, the DAPH via PHVS conducts canine rabies control activities using the resources of the Ministry of Health while human post-exposure treatment, bite case management and diagnostics remain under the Ministry of Health. Thus the Ministry of Health conducts both canine rabies control activities (with veterinary guidance from PHVS) and human rabies control activities.

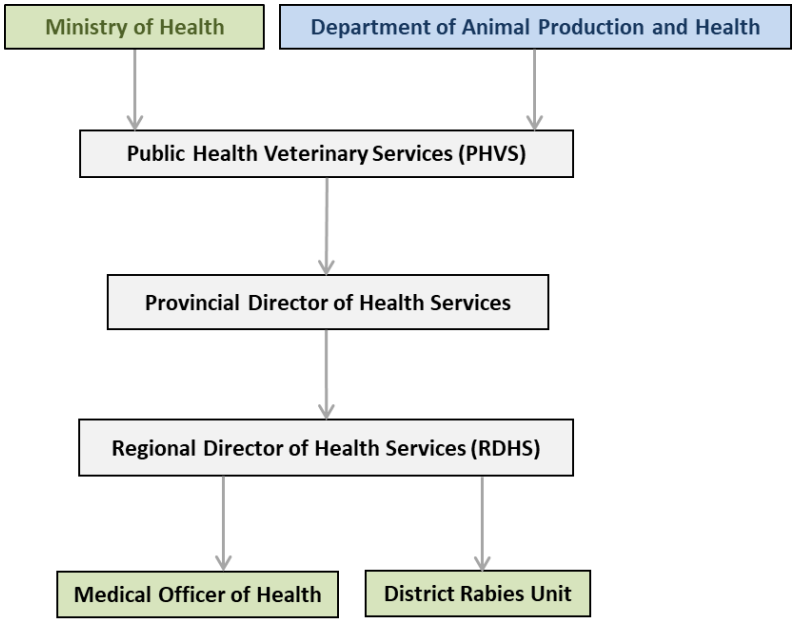

Figure 1.2 Outline of the administrative structure of Rabies control in Sri Lanka

1.4 Rabies Control Strategies

1. Mass dog Rabies vaccination
2. Post Exposure Treatment for bite victims
3. Integrated Bite Case Management (IBCM)
4. Dog population management
5. Rabies surveillance (animal and humans)
6. Legislation

1.5 Stepwise Approach towards Rabies Elimination (SARE)

- **SARE Overview**

The SARE tool was developed by the global Rabies community, led by FAO, to provide a structured participatory review in which stakeholders of Rabies control in a country can assess current Rabies control efforts and gain insights into activities that must be implemented to progress toward Rabies elimination. The SARE assessment generally takes place through a one or two-day facilitated workshop, progressing through numerous sections, and evaluating various components of rabies control. The outcome is a SARE score which places the country on a 5-stage pathway to Rabies elimination (Figure 1.3).

- **Sri Lanka 2019 SARE exercise**

A SARE workshop was held in 2019, concluding an overall national SARE score of 1.5 for Sri Lanka (Figure 1.3) and predicting a 13-year timeline to progress to Rabiesrabies freedom. Key priorities were identified with recommendations for short- and long-term requirements.

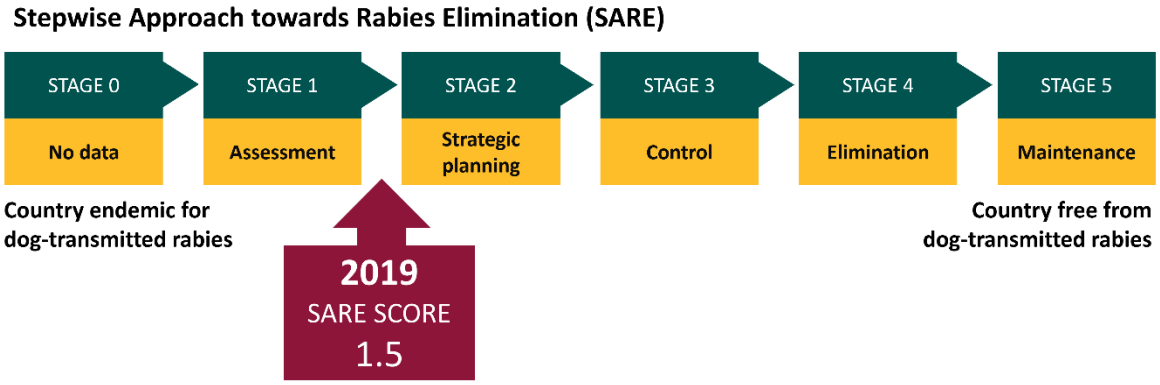

Figure 1.3 - Illustration of the SARE stages and the Sri Lanka 2019 SARE score

2. Methodology for the Review Process

To understand the current rabies control situation in Sri Lanka the required information was gathered using the following methods:

1. Examining and observing the patterns & trends using available data
2. Key informant Interviews
3. Focus group discussions
4. Field visits

2.1 Analysis of available data

Following data were obtained from the PHVS and Medical Research Institute (MRI) of the Ministry of Health.

Data obtained from PHVS:

1. Information on dog vaccination from 2016 to 2020 by province and district

a. Information on Medical Officer of Health (MOH) and Public Health Inspector (PHI) areas with the number of vaccination centres and vaccinators by province and district (Table 2.1)

b. Number of dog anti-Rabies vaccine doses administered by province and district during 2016 to 2020 (Table 2.2, Figure 2.1)

Table 2.1 - Primary health care infrastructure for mass dog vaccination by province and district (PHI - Public Health Inspector, DRPHI – District Rabies PHI)

Location (Province & District)	MOH areas	PHI areas	Number of DRPHII	Number of mass dog vaccination centers	Number of dog vaccinators	Human Population
Central			**3**		**28**	**2794184**
Kandy	23	181	1	6200	15	1492170
Matale	13	63	1	2600	8	527114
Nuwaraeliya	13	59	1	3402	5	774900
Eastern			**4**		**10**	**1763442**
Ampara	7	51	1	654	3	284867
Batticaloa	14	80	1	1938	3	585434
Kalmunai	13	17	1	1420	0	457911
Trincomalee	12	50	1	840	4	435230
North Central			**2**		**15**	**1394750**
Anuradhapura	21	83	1	2948	10	949802
Polonnaruwa	7	54	1	1349	5	444948
North Western			**2**		**30**	**2579610**
Kurunegala	28	173	1	6078	20	1736485
Puttalam	13	96	1	2400	10	843125
Northern			**5**		**16**	**1154415**
Jaffna	14	107	1	3464	6	622625
Kilinochchi	4	32	1	286	2	130624
Mannar	5	38	1	825	2	112185
Mullaitivu	6	22	1	2548	2	97249
Vavuniya	4	30	1	3200	4	191732
Sabaragamuwa			**2**		**24**	**2077465**
Kegalle	11	103	1	3040	14	894594
Ratnapura	19	170	1	1825	10	1182871
Southern			**3**		**28**	**2680338**
Galle	20	134	1	3675	11	1140618
Hambantota	12	77	1	2200	7	670170
Matara	17	138	1	2587	10	869550
Uva			**2**		**35**	**1392615**
Badulla	16	96	1	2163	18	889915
Monaragala	11	50	1	3660	17	502700
Western			**3**		**30**	**6197775**
Colombo	18	166	1	1961	9	2468434
Gampaha	14	182	1	6100	16	2435196
Kalutara	13	133	1	3044	5	1294145
Total	**348**	**2385**	**26**	**70407**	**216**	**22034594**

Table 2.2 - Dog Rabies vaccination doses administered by province and district from 2016 to 2020.

Location (Province & District)	2016	2017	2018	2019	2020
Central	**201448**	**233189**	**15523**	**146325**	**219327**
Kandy	88654	123001	0	69217	122669
Matale	65907	69919	9627	53604	69045
Nuwaraeliya	46887	40269	5896	23504	27613
Eastern	**64906**	**57469**	**7118**	**55349**	**76594**
Ampara	18095	19188	2322	19200	19159
Batticaloa	27154	20644	4796	14949	33266
Kalmunai	3212	0	0	3200	4949
Trincomalee	16445	17637	0	18000	19220
North Central	**148320**	**140506**	**19976**	**133228**	**199118**
Anuradhapura	91159	93063	6283	77528	134335
Polonnaruwa	57161	47443	13693	55700	64783
North Western	**212538**	**223461**	**5226**	**80289**	**162747**
Kurunegala	123581	134795	0	45312	111312
Puttalam	88957	88666	5226	34977	51435
Northern	**87817**	**94209**	**5731**	**43445**	**97340**
Jaffna	47846	67311	3406	22891	44599
Kilinochchi	10611	5340	2325	2642	9937
Mannar	5560	1433	0	5743	5186
Mullaitivu	10379	4055	0	7869	11631
Vavuniya	13421	16070	0	4300	25987
Sabaragamuwa	**101792**	**107363**	**4803**	**100552**	**98386**
Kegalle	56122	70704	4803	64544	61639
Ratnapura	45670	36659	0	36008	36747
Southern	**116665**	**152555**	**30808**	**108209**	**139701**
Galle	52973	71497	5480	51245	56945
Hambantota	21274	31064	6001	28147	56333
Matara	42418	49994	19327	28817	26423
Uva	**121934**	**150540**	**40594**	**124643**	**110902**
Badulla	50807	79052	17387	58850	53550
Monaragala	71127	71488	23207	65793	57352
Western	**206661**	**185318**	**17481**	**102090**	**133142**
Colombo	57899	47371	3820	15223	35881
Gampaha	85813	76363	13661	42163	47948
Kalutara	62949	61584	0	44704	49313
Total	**1262081**	**1344610**	**147260**	**894130**	**1237257**

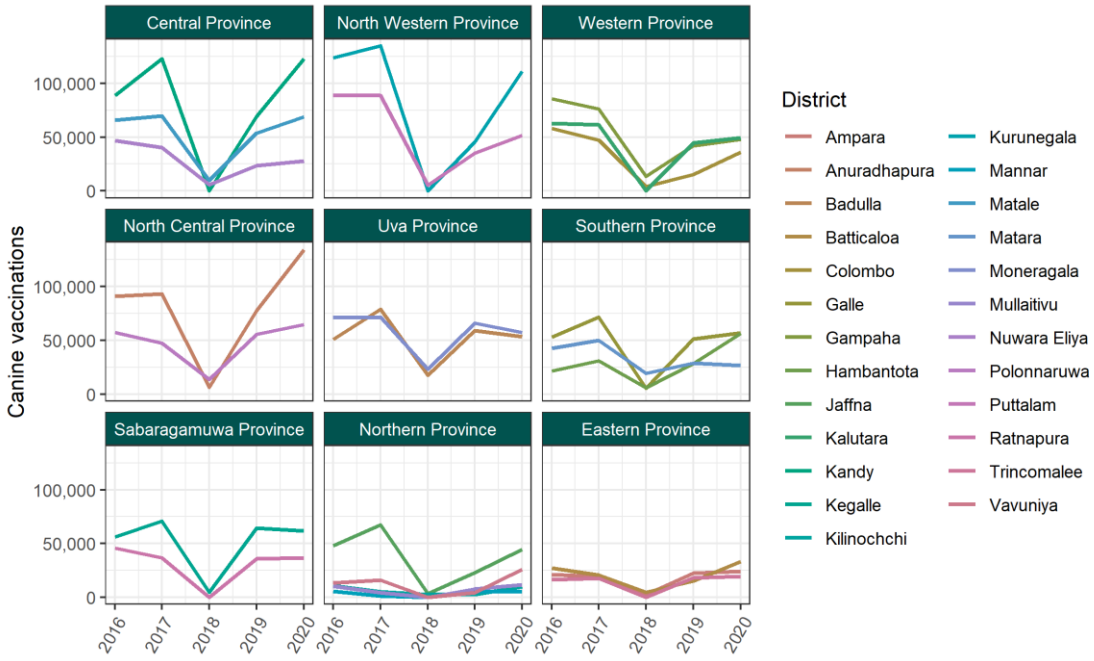

Figure 2.1 - Graph of reported canine Rabies vaccination doses by province and district from 2016 to 2020.

2. Information on Human ARV and rabies immunoglobulin (RIG) from 2014 to 2017 by district

Rabies is still an economic drain on Sri Lanka causing an approximate expenditure of 700 million LKR (3.5 million USD) on Human post-exposure prophylaxis (PEP) annually. Sri Lanka utilized 190,390 RIG vials and 271,261 ARV vials in 2017 alone (Table 2.3). Human rabies vaccine is available and administered through 207 hospitals across the country. District and province-wise data are provided in table 2.3 and figure 2.2.

Table 2.3: Annual number of human Rabies vaccine and RIG vials given by government hospitals from 2014 to 2017.

Location (Province & District)	Number of hospitals providing PET	2014		2015		2016		2017	
		RIG	Vaccine	RIG	Vaccine	RIG	Vaccine	RIG	Vaccine
Central	**21**	**11071**	**31315**	**11217**	**29650**	**28060**	**40454**	**20995**	**28464**
Kandy	9	8728	17290	7543	18330	13630	22164	11245	16395
Matale	4	1200	4905	2100	5080	6240	8040	5850	6450
Nuwaraeliya	8	1143	9120	1574	6240	8190	10250	3900	5619
Eastern	**16**	**12666**	**23500**	**10895**	**29250**	**27855**	**40927**	**18160**	**25442**
Ampara	6	4027	11280	3660	10140	11335	15485	7230	9112
Batticaloa	5	6312	9890	6135	16380	11310	18182	8490	12890
Trincomalee	5	2327	2330	1100	2730	5210	7260	2440	3440
North Central	**11**	**4990**	**21820**	**8790**	**20780**	**16510**	**31703**	**15990**	**21250**
Anuradhapura	6	3500	17160	5350	14820	10650	21033	10920	13920
Polonnaruwa	5	1490	4660	3440	5960	5860	10670	5070	7330
North Western	**24**	**7893**	**37830**	**11709**	**35515**	**34005**	**45503**	**28080**	**36794**
Kurunegala	17	7233	27300	9399	26910	22650	31693	17940	24299
Puttalam	7	660	10530	2310	8605	11355	13810	10140	12495
Nothern	**22**	**19880**	**32460**	**21125**	**31385**	**24650**	**38370**	**27465**	**38275**
Jaffna	8	11080	15690	6805	12175	7410	13403	11475	16885
Kilinochchi	6	600	4920	2900	6340	4490	5490	6240	7440
Mannar	3	1600	4830	1400	3120	3730	4855	1950	1950
Mullaitivu	3	1600	3900	2320	5850	4680	6980	3510	5910
Vavuniya	2	5000	3120	7700	3900	4340	7642	4290	6090
Sabaragamuwa	**24**	**4904**	**29220**	**5238**	**28080**	**31595**	**37351**	**9750**	**14600**
Kegalle	8	700	8150	1050	8970	8515	9405	6240	6760
Ratnapura	16	4204	21070	4188	19110	23080	27946	3510	7840
Southern	**34**	**16402**	**38910**	**10955**	**26520**	**38975**	**57990**	**17430**	**29233**
Galle	7	8652	13930	805	7800	12480	19580	7410	11713
Hambantota	14	4500	15800	4050	9360	15600	21170	1050	4950
Matara	13	3250	9180	6100	9360	10895	17240	8970	12570
Uva	**28**	**4533**	**32925**	**4757**	**21050**	**26280**	**34926**	**16380**	**22587**
Badulla	18	3818	21060	3352	15600	17550	25087	11310	16844
Monaragala	10	715	11865	1405	5450	8730	9839	5070	5743
Western	**22**	**31494**	**63275**	**21807**	**52175**	**55895**	**84627**	**36140**	**54616**
Colombo	7	17243	30310	12957	24775	26735	42499	17220	26971
Gampaha	7	9332	15240	2800	11410	18225	26493	12090	17240
Kalutara	8	4919	17725	6050	15990	10935	15635	6830	10405
TOTAL	**207**	**113833**	**311255**	**106493**	**274405**	**283925**	**411951**	**190390**	**271261**

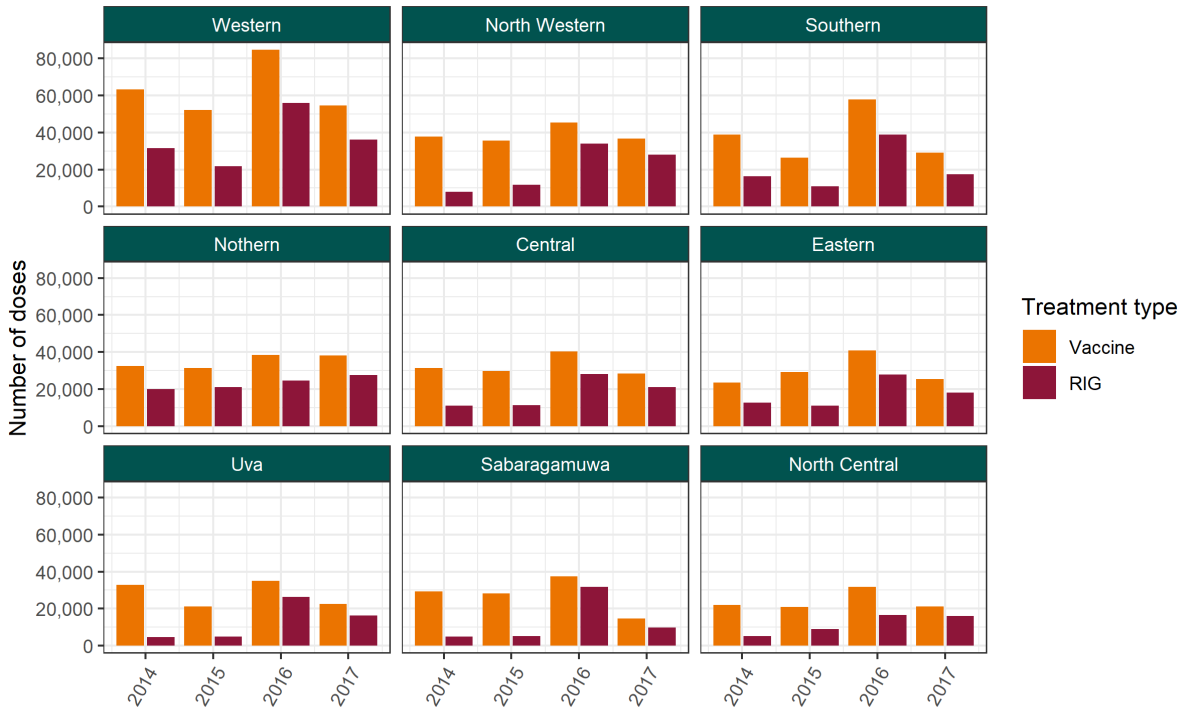

Figure 2.2 - Chart of human Rabies vaccine and Rabies immunoglobulin (RIG) doses reported to have been delivered by province from 2014 to 2017.

According to the above Figure 2.2, both the human rabies vaccines and Rabies immunoglobulins are used by each and every province throughout the 2014 to 2017, with the highest usage in the Western province. Use of Human Rabies vaccines and RIG are higher in all provinces in 2016

3. Information on human Rabies deaths

Sri Lanka reported 94 human Rabies deaths from 2016 to 2019 period and 31 deaths in 2020 (Table 2. 4 and Figure 2.3). High-risk groups of people succumbing to rabies have been identified to be adult men. However, human rabies deaths have been declining over the years up to 2016. Unfortunately, a consistent increase in human rabies cases has been observed from 2016 to 2020 (Figure 2.4).

Table 2.4 - Table of reported Rabies cases in humans and animals from 2016 – 2020.

Year	Number of human deaths	Male:Female	<15 Years	Incidence per 100,000	Number of dogs vaccinated	Total animals submitted	Total animals positive
2016	20	13:7	5	0.09	1,262,081	1056	567 (53.7%)
2017	23	17:4	3	0.11	1,344,610	928	363 (39.1%)
2018	25	19:6	4	0.12	147,260	452	210 (46.5%)
2019	26	21:4	2	0.12	894,130	1428	529 (37.0%)
2020	31	20:11	5	0.15	1,237,257	1106	493 (44.6%)

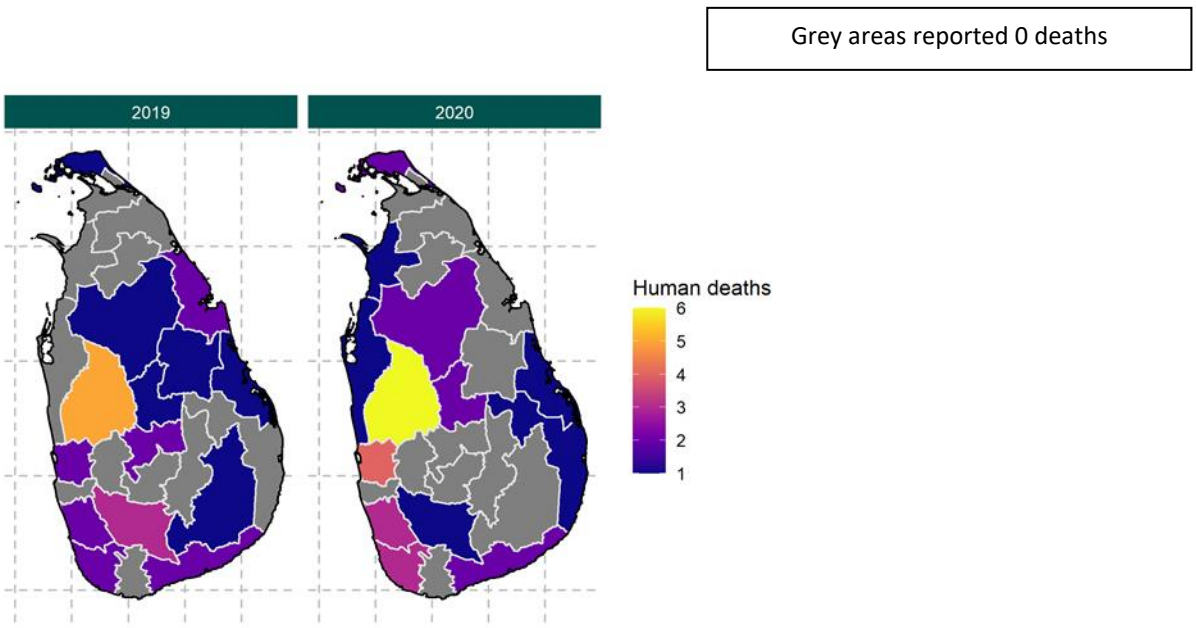

Figure 2.3 - Map of human Rabies deaths by district in 2019 and 2020 in Sri Lanka.

Source: http://www.rabies.gov.lk/english/static.php

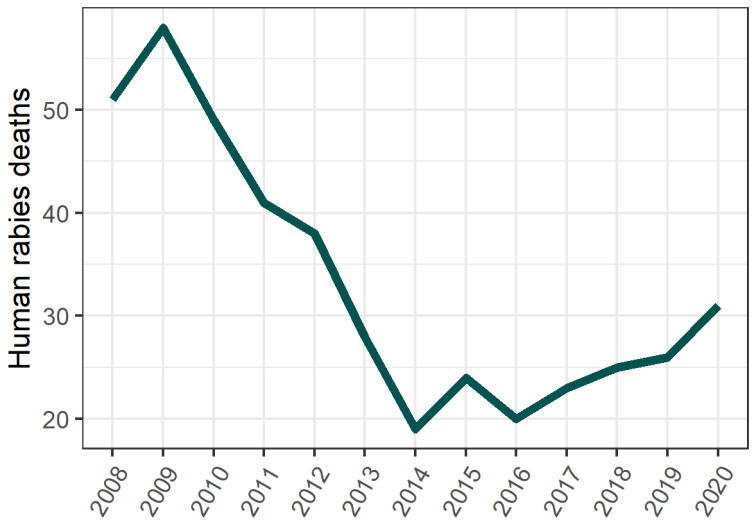

Figure 2.4 - Graph of reported human Rabies deaths from 2008 to 2020 in Sri Lanka

4. Information on the impact of pilot mop-up vaccination in Kalutara District from 2015 to 2018 (Table 2.5)

A new vaccination strategy was piloted in Kaltura from 2015 to 2018. The strategy involved an additional round of mass dog vaccination called 'mop-up' targeting puppies that weren't vaccinated during the regular annual vaccination. Therefore increasing the coverage of vaccination in owned and free-roaming dogs. The following figures in Table 2.5 show a decline in human and animal Rabies with the introduction of mop-up vaccination.

a. Number of dogs vaccinated
b. Number of human deaths
c. Number of animal heads submitted for investigation of Rabies
d. Number of animal heads positive for Rabies

Table 2.5 -Pilot mop-up vaccination in Kalutara district from 2015 to 2018

year	Number of vaccinations	Human Deaths	Animal Rabies	
			submitted	positive
2015	36307	3	10	6
2016	40787	3	90	54
2017	35940	0	75	22
2018		0	39	10

5. Data obtained from MRI: Animal head positives from 2014 to 2020 by district

Animal Rabies is reported throughout the island but Western, Southern and North-Western Provinces demonstrate better surveillance and better sample submission rates than the rest of the country (Figure 2.5 and Figure 2.6 below). Most animal samples submitted to the Medical Research Institute (MRI) have been diagnosed to be negative. All human Rabies suspected cases are confirmed by laboratory testing by Direct Fluorescent Antibody technique or RT-PCR at MRI situated at Colombo. MRI being the central laboratory, tests around 1000 samples, both humans and animals annually from all provinces and districts, with an average of 50% of them testing positive (Table 2.6).

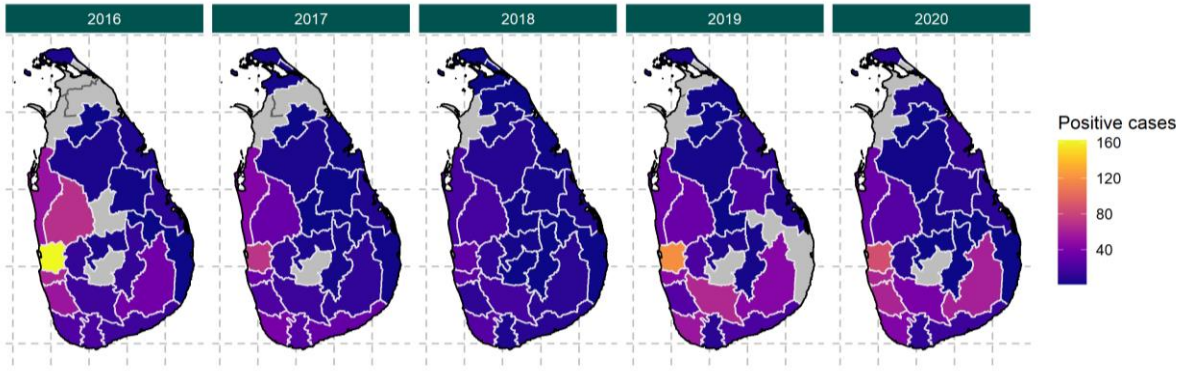

Figure 2.5 - Map of laboratory-confirmed animal Rabies by district from 2016 to 2020.

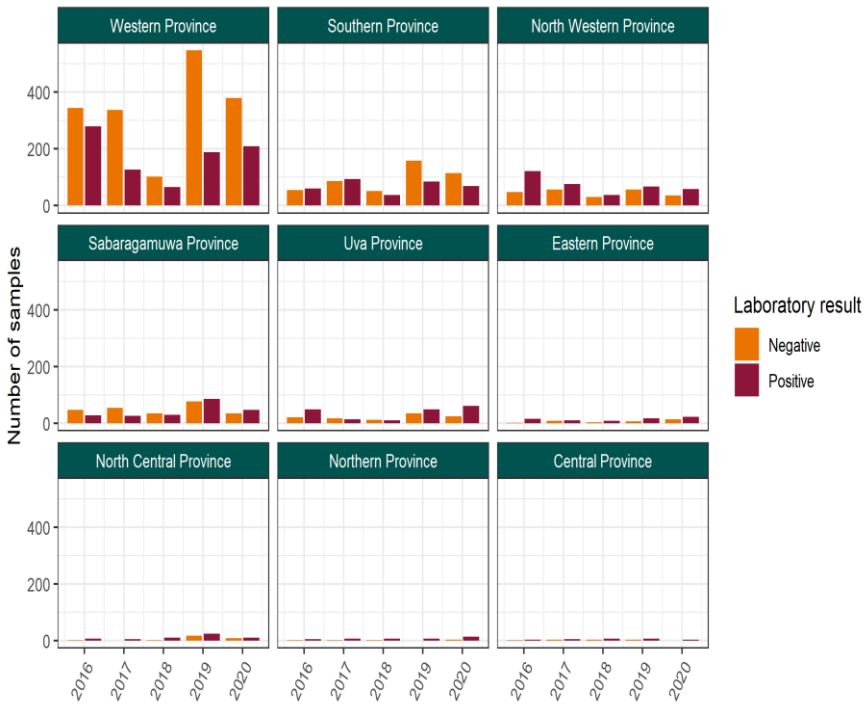

Figure 2.6 - Laboratory diagnosis of animal Rabies cases by province from 2016 to 2020

Table 2.6 - Number of animal samples tested and confirmed by MRI laboratory by province and district from 2016 to 2020.

Location (Province & District)	2016		2017		2018		2019		2020	
	Tested	Pos	Tested	Pos	Tested	Pos	Tested	Pos	Tested	Pos
Central	**6**	**4**	**9**	**5**	**10**	**6**	**10**	**7**	**4**	**4**
Kandy	5	4	5	4	4	3	8	6	1	1
Matale	1		2	1	3	2	2	1	3	3
Nuwaraeliya			2		3	1				
Eastern	**16**	**15**	**18**	**10**	**11**	**8**	**22**	**16**	**36**	**22**
Ampara	1	1	3	2	1	1			1	1
Batticaloa	10	9	7	6	5	5	6	6	12	8
Kalmunai										
Trincomalee	5	5	8	2	5	2	16	10	23	13
North Central	**8**	**6**	**5**	**5**	**11**	**10**	**42**	**25**	**18**	**10**
Anuradhapura	5	4	4	4	8	7	4	3	4	2
Polonnaruwa	3	2	1	1	3	3	38	22	14	8
North Western	**170**	**122**	**133**	**76**	**69**	**38**	**123**	**67**	**94**	**58**
Kurunegala	82	69	53	32	33	19	54	33	38	25
Puttalam	88	53	80	44	36	19	69	34	56	33
Northern	**6**	**5**	**8**	**7**	**7**	**6**	**7**	**7**	**16**	**13**
Jaffna	5	4	3	3	2	1	4	4	8	7
Killinochchi			4	3	1	1				
Mannar										
Mullaitivu					1	1	2	2	7	5
Vavuniya	1	1	1	1	3	3	1	1	1	1
Sabaragamuwa	**74**	**28**	**80**	**26**	**64**	**29**	**163**	**86**	**80**	**46**
Kegalle	41	12	40	11	29	11	63	21	30	7
Ratnapura	33	16	40	15	35	18	100	65	50	39
Southern	**115**	**60**	**181**	**94**	**89**	**37**	**242**	**84**	**184**	**69**
Galle	66	23	97	39	54	24	173	54	131	43
Hambantota	22	16	46	31	20	8	45	21	31	15
Matara	27	21	38	24	15	5	24	9	22	11
Uva	**68**	**48**	**31**	**14**	**22**	**10**	**83**	**48**	**85**	**61**
Badulla	17	12	6	3	7	1	9	3	2	1
Monaragala	51	36	25	11	15	9	74	45	83	60
Western	**623**	**279**	**463**	**126**	**169**	**66**	**736**	**189**	**589**	**210**
Colombo	227	63	197	32	65	27	277	46	232	62
Gampaha	307	162	199	72	68	29	362	119	257	86
Kalutara	89	54	67	22	36	10	97	24	100	62
Total	**1086**	**567**	**928**	**363**	**452**	**210**	**1428**	**529**	**1106**	**493**

2.2 Key informant interviews

The key informant interviews were conducted with following key personals:

1. Additional Secretary (Public Health Services)
2. Director General of Department of Animal Production and Health (DAPH)
3. Deputy Director General (Public Health Services) I

4. Director of Public Health Veterinary Services (PHVS)
5. Director of District General Hospital of Polonnaruwa
6. Former Regional Director of Health Services (RDHS)
7. Consultant Chief Virologist of MRI
8. Chief Medical Officer of the Rabies treatment Unit of the National Hospital of Sri Lanka

2.3 Focus group discussions

The focus group discussions were conducted with the following groups

1. District Rabies PHI (DRPHI)
2. Veterinary Surgeons of DAPH
3. Laboratory Services
    a. MRI
    b. Virology Laboratory of Teaching Hospital Karapitiya
    c. Veterinary Laboratory, University of Peradeniya
4. Epidemiology Unit of Ministry of Health
5. Non-Governmental Organizations
6. Departments of Wildlife conservation and Zoological Gardens
7. Veterinary Surgeons in private pet animal practice
8. Information Communication Technology Agency of Sri Lanka
9. Regional Directors of Health Services
10. Veterinary and medical officers of Public Health Veterinary Services
11. Commissioners and veterinarians of Local Governments
12. Directors of Education
13. Kennel clubs and dog breeders

2.4 Field visits

Following field visits were made:

1. Mass Dog Rabies Vaccination in Katugasthota, Kandy
2. Dog population control in Barigama, Kandy
3. Stray dog vaccination in Dimbulagala, Polonnaruwa
4. Integrated bite case management (IBCM) at District General Hospital Polonnaruwa
5. Post-exposure prophylaxis at District General Hospital Polonnaruwa
6. Human Rabies surveillance at District General hospital Polonnaruwa and Regional Director of Health Services Polonnaruwa
7. Use of a real-time information system through smart phone application for dog vaccination and sterilization by “Dogstar” foundation in Wattala

3. Rabies Control Strategies – Gaps/Challenges

3.1 Mass Dog Rabies Vaccination

3.1.1 Static vaccination centres

Mass dog vaccination (MDV) programs were initiated in Sri Lanka from 1985 and have henceforth been an integral part of dog Rabies control in the country. The Ministry of Health have vaccinated over one million dogs annually in the last two years across all the districts of the country costing close to 100 million LKR annually on dog vaccines.

Dog Rabies vaccination in the field is carried out through static MDV methods where predetermined strategic locations are advertised the day before the clinic. Publicity is conducted on the day before and the morning of MDV through posters and loudspeakers announcing the date, time and location. Each location is functional only for half a day, either the first half of the day (morning) or the second half of the day (evening). Each village has approximately 3 to 5 static vaccination points depending on the size of the village in a manner that the maximum distance for people to commute is 0.5km.

The vaccination is conducted by the District Rabies Unit of Regional Director of Health Services (RDHS) Office. Each district is divided into smaller health areas monitored by a Medical Officer of Health (MOH) and futher divided into smaller Public Health Inspector (PHI) areas proportionate to number of people in the area. These PHI areas are monitored by designated PHIs who report to their concerned MOH. At the beginning of each year, the District Rabies PHI (DRPHI), at the district level, prepares the annual dog Rabies vaccination schedule systematically covering each MOH area. The DRPHI visits the monthly conferences of MOH Offices to schedule MDV events. The dates for mass dog rabies vaccinations are fixed after discussing with all MOH Offices within the district. The places, sequence and order of MOH divisions, usually follow the previous year's program. Some of the local governments provide financial assistance (for posters and fuel for the vehicles of the District Rabies Unit) when requested.

The public is made aware of MDV dates using the standard poster. This same poster, which is used every year after changing the dates, had been in use for the past three decades and therefore the public at a glance knows that this is the announcement of MDV. This poster informs the public about the date, time and venue of the MDV program. On the day before the MDV and on the morning of the day of the vaccination the team announces this on the village roads, as well.

On the day of the MDV, a vaccinator visits the vaccination centre. The public brings their dogs for rabies vaccination. Members of the public are expected to bring their dogs for rabies vaccination to the static point location. These include both domestic dogs as well as free-roaming dogs (some of the free-roaming dogs have multiple "owners") and the dog owners receive a vaccination card for each

dog. This static vaccination center is opened only for half a day (either morning or evening). A separate vaccination team conducts vaccination of remaining free-roaming dogs using an auto-plunger immediately after completion of static point vaccination in the MOH area.

The MDV program is conducted annually at each MOH area. Therefore puppies born after the rabies vaccination program of a given year will not receive their first rabies vaccine until the next round of MDV scheduled in the subsequent year. Most of the deaths due to rabies in Sri Lanka during the past 10 years were caused by puppies less than one-year-old. A round of mop-up vaccination, conducted 6 months after the annual MDV day, if possible, would include such unvaccinated newly born pups that could be brought by the public. This leaves out only those dogs that are not brought by public for MDV program. It has been proven that among puppies, the antibody levels do not remain for one year after the first vaccination especially when mother is not vaccinated. Therefore 2 rounds of MDV is required annually to maintain sufficient vaccination coverage throughout the year.

Coverage of the dog Rabies vaccination program:

It is difficult to calculate the vaccination coverage as a percentage of the dog population due to the absence of dog survey data which provides the exact dog population in a given area. The usual vaccination coverage given is calculated using the dog population estimated as 1 dog per 8-persons ratio.

Accessibility to dog Rabies vaccination:

The MDV centers have situated a maximum of 500m apart from each other. In a village, there are approximately 3 to 5 static dog vaccination centers functioning during the MDV period. This enables residents to bring the dogs to their nearest vaccination center. Since there are an adequate number of static vaccination centers per village, residents can easily bring their dogs. This has encouraged residents to catch and bring some domestic dogs that are allowed to be free-roaming and other cooperative free-roaming dogs as well. Only areas where the public is not “dog concerned”, will lag behind in vaccination in this manner.

Procurement of dog Rabies vaccination:

Dog rabies vaccines should be procured timely without delays. Delay in the procurement process can cause dog rabies vaccine deficits or “out of stock” situations. The currently used dog rabies vaccine by the Ministry of Health has proven effective in dogs and is WHO-recommended. The unavailability of dog vaccines could lead to serious rabies outbreaks in the country. During the last five years Ministry of Health, Sri Lanka has managed to provide the stocks of dog rabies vaccine in a timely manner.

Quality of dog Rabies vaccines:

The quality of the dog rabies vaccine is vital. It is highly recommended that OIE standards of vaccine quality be applied to vaccine usage in Sri Lanka. Currently WHO recommended vaccines are imported which are similar to the recommendations of OIE. Substandard dog rabies vaccines will cause inevitable rabies outbreaks among dogs.

Cold chain maintenance of dog Rabies vaccines:

Cold chain maintenance of dog rabies vaccines has been followed well from the time it is received at the airport until it is administered to the dog. Storage facilities of dog rabies vaccines centrally, regionally and institutionally, are closely monitored with regard to potential temperature fluctuations. All these stages of vaccine storage are equipped to handle sudden temporary electricity failures which may affect the cold chain. The vaccinators carry the vaccine vials into the field using a four-sided square vaccine carrier lined with conditioned two or four ice packs on sides.

All individuals handling vaccines are aware and have been educated on the importance of cold chain maintenance. The temperature charts and vaccine vial monitors are used to monitor the cold chain maintenance. The provision of digital temperature monitoring devices would be beneficial in this regard.

Human resources:

PHVS conducts regular training of dog vaccinators recruited by RDHS Officers. This training includes training on vaccination of domestic/community dogs as well as free-roaming dogs directly and by using the auto plunger (auto vaccinator). The auto plunger is used for dogs that cannot be captured but tolerate human presence.

Documentation and reporting:

Vaccination details are collected on a paper handwritten and each vaccinated dog receives a vaccine card (whenever presented with a partial or fulltime owner). The number of dogs vaccinated is summarized on daily basis from each MDV. All the summaries are compiled at District Rabies Unit by MOH level for each district. The information on dog rabies vaccination coverage on monthly basis is provided to PHVS.

The PHVS also receive dog vaccination summaries from the veterinary surgeons of municipal councils (approximately 10) to whom they provide dog rabies vaccines. Few municipalities that purchase their own dog rabies vaccine, do not provide such data to PHVS. Urban councils and Pradeshiyasabhas (other two strata of local governments in the country, approximately 300) do not employ veterinary

surgeons and therefore do not conduct their own dog vaccinations. However, in some places, local governments assist the rabies control program of PHVS by providing human and logistic support. In some areas in the country, the local government representatives visit the MDV centers for the purpose of registering dogs, hence implementing dog registration ordinance. In addition, private practising veterinary surgeons also do not report rabies vaccination to PHVS, and such pet clinics are not registered at DAPH yet.

3.1.2 Rabies vaccination for free-roaming dogs

To vaccinate free-roaming dogs, each District Rabies Unit has an additional team. The free-roaming dog vaccination occurs immediately after completing MDV in a given MOH area. The team is equipped with a unique device known as an “auto plunger (auto vaccinator)” to vaccinate stray dogs. The team travels on every road in a given village to conduct this stray dog vaccination programme, a few weeks after the static/ fixed point MDV.

3.1.3 Rabies vaccination by the rapid response team

Currently, none of the districts has a dedicated rapid response team in this regard. The District Rabies Unit conducts ring vaccination and mop-up vaccination when the need arises and as they encounter a human rabies death or a suspected or confirmed rabid dog. Currently, there is no dedicated rapid response team and therefore in a need, some vaccinators in MDV in the field would be called back to the district for rapid response work if and when a need arises.

An intended dedicated rapid response team in the future, would also get involved in integrated bite case management (IBCM) including ring vaccination, brain sample collection, packaging brain tissue of suspected animals, transporting to laboratories, human rabies death investigation, contact tracing both humans and dogs, capturing, transportation and detention of rabies suspected dogs, surveillance etc.

3.1.4 Dog population surveys

The association between human and dog population size is well documented, however, the specific relationship between these populations varies both between countries and between settings within a country. Human census surveys, satellite imagery and spatial modelling generally provide a robust and wide-spread estimate of human population distribution and therefore provide a useful proxy upon which to estimate dog populations in regions with limited direct assessment. In addition to human density, other variables such as poverty and land type can be included in the model to improve the accuracy of predictions. The accuracy of these estimates is dependent on the accuracy of the predicted

association between the human and dog population, however, can provide useful information for the planning of interventions targeting the dog population. There is likely to be considerable variation in human to dog ratio as the size of the area reduces, and so these estimates are generally not a useful operational tool in the assessment of vaccination coverage.

Currently, there are limited robust evaluations of the dog population size and composition in Sri Lanka, with the few available peer-reviewed examples being limited to Western Province (Table 1, Figure 2).

Table 3.1 - Table of published studies of human: dog ratios in Sri Lanka

Ref	Source	Division	District	Human density (people/km^2)	Type	HDR
[7]	Sánchez-Soriano (2019)	Negombo	Gampaha	4,949	Urban	17
[8]	Matter (2000)	Mirigama	Gampaha	920	Urban	4.6
[9]	Pimburage (2017)	Bandaragama; Matugama	Kalutara	2,019 619	Urban	6.7
[10]	Pimburage (2011)*	Unpublished	Kalutara	Unpublished	Urban	8.5

* Pimburage et al 2011 .

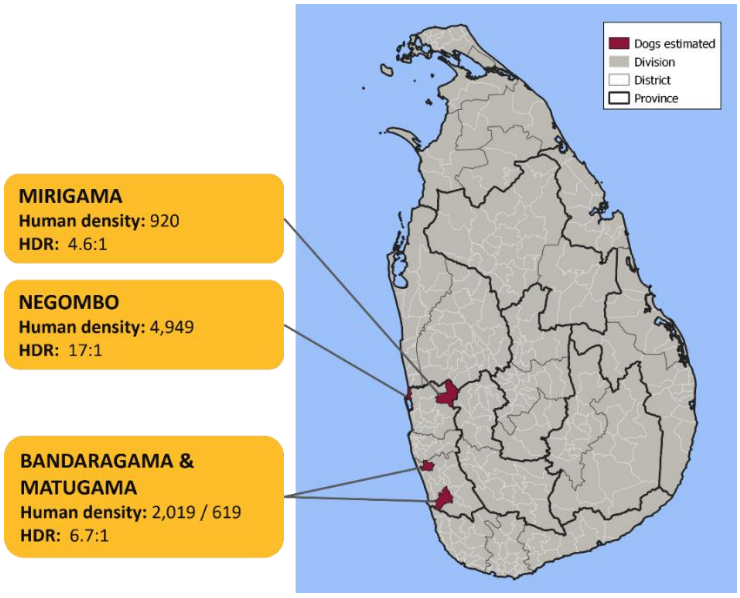

Figure 2.1 - Map showing Divisions with published human: dog ratio estimates, which are limited to Western Province.

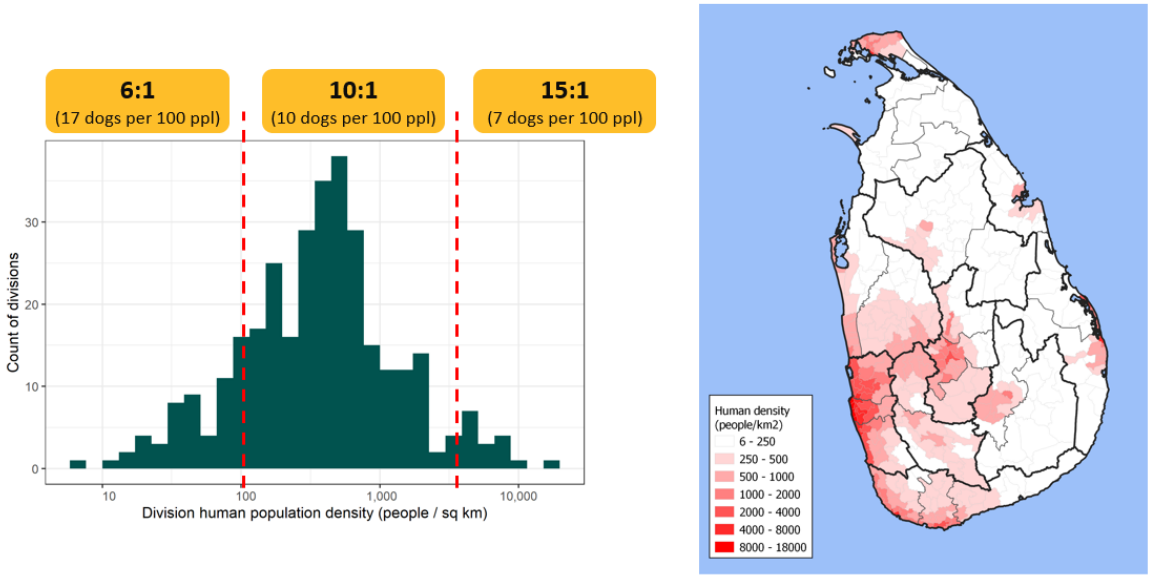

Figure 3.2 - Histogram of human population density of DS Divisions in Sri Lanka and illustrations of how human dog ratios may be applied to this. Right - Choropleth map of Sri Lanka DS Divisions coloured by human density.

The rabies control program in Sri Lanka uses the dog population estimate in all districts by using a conventional human:dog ratio as 8:1. Dog population surveys had not been carried out in many of the districts. Some districts such as Polonnaruwa and Rathnapura use a 1:6 estimate based on dog surveys conducted several years back in respective districts. Recently in Kalutara district a dog survey was conducted by PHVS as a pilot study.

The Settlement Type and Road Connectivity (STARC) tool was developed by the US Centre for Disease Control and Prevention to categorize geographic areas and enhance the strategic planning of MDV for greatest impact. An analysis to perform an initial STARC at the national Sri Lanka level was performed in October 2021. Based on this the total dog population of Sri Lanka was estimated to be 1,859,577. This estimate should be further refined based on field data from the ongoing campaign (Table 3.2, Fig 3.3).

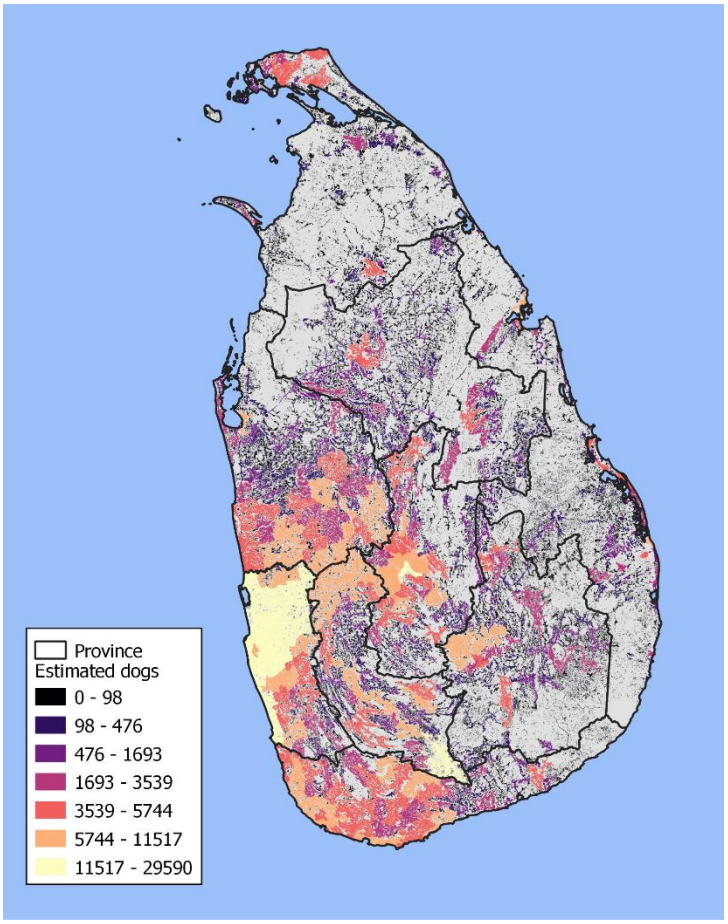

Figure 3.3 - Estimated dog distribution according to STARC mapping using estimated HDRs

Table 3.2 - Estimated dog population by Province

Province	Estimated dogs
Western	501,978
Southern	233,371
North Western	232,585
Central	228,338
Sabaragamuwa	180,074
Eastern	142,498
North Central	128,041
Uva	121,215
Northern	91,475
TOTAL	**1,859,577**

The outcome of the STARC mapping exercise is a detailed map of the estimated dog population distribution, which facilitates the prioritization of vaccination resources to regions that are likely to be of greatest significance to rabies transmission and burden based on connectivity and population density. The map below (Figure 3.4) provides the STARC prioritization map for Sri Lanka, showing the highly connected, high population density region through the southwest of the country.

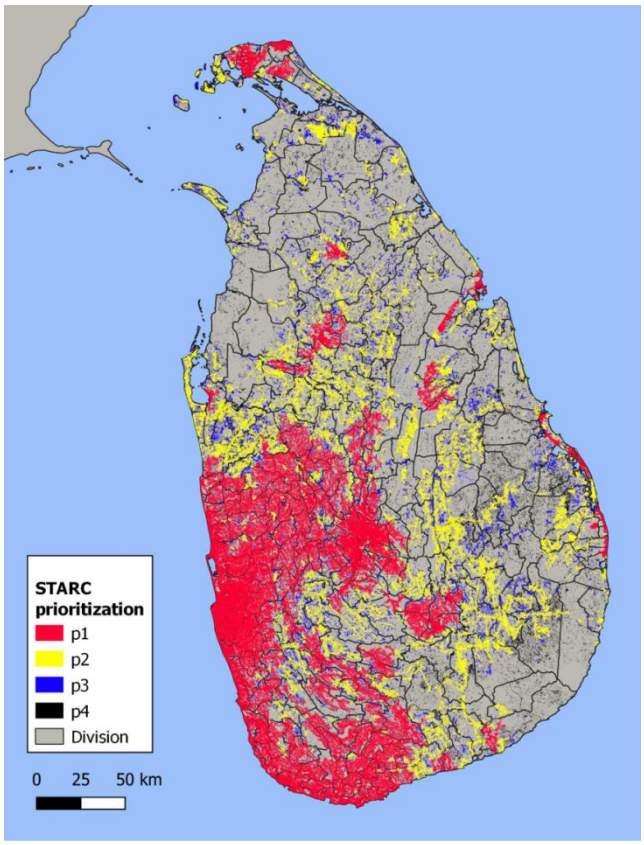

Figure 3.4 - STARC prioritization map

3.1.5 Observations

Strengths of the dog Rabies vaccination program:

1. Ministry of Health is vaccinating owned and free-roaming dogs through MDV and free-roaming dog vaccination.
2. The dog rabies vaccination from the Ministry of Health is provided free of charge to the public.
3. Adequate geographic coverage of MDV centres.
4. Sufficient publicity on dog rabies vaccination program.
5. Satisfactory accessibility to the public.
6. Presence of free-roaming dog vaccination program for rabies.
7. Timely procurement of dog rabies vaccines.
8. Good quality canine rabies vaccines are used.
9. Satisfactory cold chain maintenance of dog rabies vaccines.
10. Trained human resources.

Weakness of the dog Rabies vaccination program:

1. Absence of dog population surveys.
2. Annual vaccination is not sufficient and must be made more frequent.
3. Insufficient human resources in District Rabies Units.
4. Inadequate and undedicated vehicles for District Rabies Units.
5. Delays in reporting from dog Rabies vaccination centers to PHVS.
6. Absence of a dedicated rapid response team
7. Absence of reporting from DAPH on dog and other animal vaccinations
8. Absence of reporting from wildlife and zoo sectors.
9. Absence of reporting from private practising veterinary surgeons
10. Inadequate, irregular and incomplete reporting from Local Governments

Suggestions for improvement

1. Conducting dog population surveys once every five years.
2. Conducting post-vaccination surveys.
3. Conducting two vaccination rounds annually. After the annual vaccination, a mop-up vaccination can cover dogs less than one year who would have missed the annual vaccination round.

4. Update the cadre requirement for District Rabies Unit, obtain approval from the Department of Management Services, Ministry of Finance, and recruit the required human resources without delay.
5. A dedicated rapid rabies response team should be included in the District Rabies Unit.
6. Provide adequate and suitable vehicles to District Rabies Units of each RDHS Offices urgently.
7. Recruitment of a veterinary surgeon for District Rabies Units of each RDHS Office mainly for veterinary activities and coordination between the Ministry of Health and DAPH. The duty list of this veterinary surgeon should not overlap with that of District Rabies PHI and Regional Epidemiologist. Adequate resources should be provided for the smooth functioning of the duties of this veterinary surgeon.
8. Introducing a real-time information system to capture the data from static vaccination centres, vaccination of stray dogs and rabies suspected/confirmed animals
9. Liaising with the District Veterinary Surgeons of DAPH and Private Practising Veterinary Surgeons to obtain dog rabies vaccination summaries first to RDHS Offices and subsequently to PHVS.
10. Coordinated use of NGOs, kennels clubs and dog breeders for publicity and actual vaccinations
11. Coordinating local government to access their human resource and logistic assistance and law implementation
12. Liaising with Universities in the district to identify gaps and methods of field problem resolutions
13. Formulate rabies vaccination schedules for other pet animals like cats, rabbits, ferrets etc and domestic/farm animals. Need to include species other than dogs in PET recommendations in humans exposed.

3.2 Post-Exposure Treatment (PET)

3.2.1 Distribution of PET providing hospitals

Anti-rabies vaccine (ARV) (intra dermal type) for humans is administered in 210 Government Hospitals (these include all Base Hospitals and above: Base Hospitals, District & Provincial General Hospitals and Teaching Hospital) and anti-rabies immunoglobulin (RIG) administered in 78 selected Government Hospitals. The PET is not available in Central Dispensaries, Rural Hospitals and Divisional Hospitals. The distribution of hospitals providing ARV and RIG has been selected carefully to minimize vaccine wastage without reducing the accessibility to the public on these services.

The availability of resuscitation facilities was considered previously when identifying hospitals to provide RIG. There are 210 hospitals that provide ARV, among these only 78 hospitals administer RIG. Therefore a bite victim requiring RIG when approaching a hospital with only ARV, needs to be transferred to hospitals providing RIG. Currently according to WHO guidelines RIG is given without sensitivity testing, due to the very rare occurrence of hypersensitivity reactions. Expansion of RIG administration services to all hospitals providing ARV having the ability to manage these very rare allergic reactions will prevent the requirement of patient transfers between the two types of hospitals and will reduce any significant delays for RIG provision in all 210 hospitals. Patients accessing hospitals without PET facilities are transferred to hospitals which administer PET without significant delays.

In smaller hospitals, of the 210 (base hospitals and some of the District General Hospitals), PET is provided by the outpatient department (OPD) or emergency care unit. In teaching hospitals, there are dedicated rabies treatment units within the OPD setting. When a patient is presented with an animal bite that patient is given priority to be seen by the Rabies Unit / Rabies "on call" Medical Officer of OPD thus minimizing potential delays within the hospital settings. In teaching hospitals where there are separate Rabies Units which are functioning from 8 a.m. to 4 p.m., patients presenting after 4pm are admitted to the casualty ward and presented to the Rabies Unit on the following day. Thus, a delay exists in these settings which should be overcome by providing human ARV and RIG from the casualty wards. However, in some hospitals, such delays are prevented by the administration of human ARV and RIG at the casualty wards.

Presently Sri Lanka follows an outdated classification system structured by the Ministry of Health to assess the rabies risk of dog bite victims and to deliver PET. It is recommended to update the exposure classification, risk assessment and treatment protocols to WHO's latest recommendations published in the WHO Expert Consultation Technical series report, 2018.

3.2.2 Accessibility to PET

Considering the human rabies deaths for the last 10 years and the distribution of ARV and RIG, the affected persons have accessed the resources to obtain required care. Human rabies deaths (after a confirmed animal bite) due to the delay in accessing the PET are negligible. Almost all patients succumbing to rabies (since 2015, nearly 90%) have not sought any rabies PET.

3.2.3 Procurement of PET

PET should be procured timely without delays. Delays in procurement can cause lapses in treatment due to vaccine “out of stock” situations. Both RIG and human ARV have proven efficacy in reducing human mortality due to rabies and any “out of stock” situation could lead to unacceptable high number of rabies incidence. Ministry of Health, during the past 5 years, has managed to provide uninterrupted stocks of human ARV to 210 hospitals and RIG to 78 hospitals in the country.

3.2.4 Quality of PET vaccines

The quality of the PET vaccine is vital in order to build adequate and rapid protective immunity within victims. Sub-standard PET vaccines could cause inevitable deaths among rabid animal-bitten victims. Such situations will be reflected as high number of human rabies deaths occurring among those who were timely and appropriately vaccinated. The information from Sri Lanka suggests hardly any human rabies deaths among those who have received PET.

3.2.5 Cold chain maintenance of PET

Cold chain maintenance of PET vaccines has been followed well from the time it is received at the airport until it is administered to the patient. Storage facilities of PET vaccines centrally, regionally and institutionally are well in place and temperature fluctuation in storage is closely monitored. PET storage at all 3 levels are equipped with alternative sources of power supply and are prepared to face any interruption in electricity supply.

All personnel handling vaccines including pharmacists, nurses and medical officers are aware on the importance of cold chain maintenance. The temperature charts, electronic temperature monitoring devices and vaccine vial monitors are used to monitor cold chain maintenance. Only some institutions are provided with electronic temperature monitoring devices for refrigerators. Such electronic temperature monitoring should be provided to all refrigerators storing PET vaccines in all institutional settings. Coupling the human rabies vaccines with EPI vaccines (vaccines in the Expanded Program of Immunization) the cold chain maintenance and monitoring of cold chain maintenance can easily be done without any extra resources.

3.2.6 Human resource

Regular training programmes are conducted on PET to hospital Rabies Unit/OPD staff by PHVS/Consultant Virologists of MRI. Generally, human rabies deaths are quarterly reviewed from which any gaps/failures/deficits are regularly identified. Such points are essentially incorporated into regular training programs of staff administering PET.

3.2.7 Integrated bite case management (IBCM)

Hospitals receive patients (victims) attacked by dogs/other mammals. Depending on the attitudes and interpersonal relationships with the hospital staff the District Rabies PHI (DRPHI) receives this information. DRPHI then will immediately investigate the event as to who else has been exposed both people and animals, and if required will conduct a ring vaccination covering a 1km radius area of the event. Integrated bite case management takes place this way at present. This dog contact tracing, done by the DRPHI can be intensive depending on the severity of the first victim, the behaviour of the suspected dog/mammal, the cooperation of the public etc. In addition, the DRPHI also does contact tracing on the people who were potentially exposed in this case.

However, if the DRPHI is not informed in time of the victim, he will get information only when he gets the second part (slip) of the PET vaccine cards issued to the victim from the vaccination clinic, one month later. Thus if not informed rapidly, it would take about a month for the DRPHI to get to know the incident.

Each person receiving human ARV is usually registered in the animal bite registry. Those who do not require PET are not registered though it is an animal bite. The information in the animal bite registry does not flow via RDHS to PHVS (or to the EPID unit) and remains stagnant in the hospital. Information needs to flow from hospitals to veterinary surgeons in the field to conduct IBCM. Currently, such information reaches the DRPHI only through the second part of the vaccination slip to the District Rabies Unit which is very delayed. Additionally, the DRPHI is also responsible for dog contact tracing, catching, observing and monitoring without the involvement of veterinary surgeons. Since the bite information is delayed, the DRPHI will not be able to trace the biting dog in time. Some activities of IBCMis conducted by the District Rabies Unit. Due to the delays in information flow and non-involvement of veterinary surgeons, IBCM is ineffective.

3.2.8 Documentation and reporting

1. Every individual receiving PET is registered in the animal bite registry of the hospital, which is usually kept at the Rabies Unit/OPD. Information in the animal bite registry does not flow and remains stagnant. In some hospitals, this information is recorded in the injury registry. All mammal bites should be entered into an animal bite registry. It is important to monitor the bites of those who do not get PET since these can generate additional information which is essential to talk about the nuisance factor, total animal bites, and the impact of responsible dog ownership in time to come.
2. In the hospital, every individual acquiring human ARV is provided with a vaccination record (slip). These records have 2 separate sections one of which is given to the patients and the

second one is sent to RDHS Office. Usually, the hospital sends the second part of all vaccination records (slips) to RDHS Office at the end of each month. The District Rabies Unit of the RDHS Office should analyse the data from these records and take necessary actions to prevent the spread of the disease. However, by the time the information reaches the District Rabies Unit, it is too late to carry out any preventive measures. In a few districts where the RDHS Office is located close to the hospital and a good public relationship exists between the two, the DRPHI obtains the vaccination record (slip) rapidly.

3. Each Rabies Unit/OPD of the hospital should send a summary of the PET to PHVS on monthly basis. This is currently happening on a paper-based method and therefore is inefficient.

3.2.9 Observations

Strengths:

1. A well-established system of human ARV distribution and administration according to the Director General of Health Services' (DGHS) authorized PET protocol.
2. The Ministry of Health has an adequate supply of human ARV and RIG across the country
3. The administration of human ARV and RIG is free of charge to the public.
4. The geographic distribution of PET (current human anti-rabies vaccine) providing hospitals is adequate.
5. After regular working hours and on holidays, satisfactory arrangements have been made for the administration of PET (both RIG and ARV)
6. Dog bite victims have satisfactory accessibility to PET.
7. Timely procurement of human rabies vaccines.
8. Plausible quality of human rabies vaccines.
9. Satisfactory cold chain maintenance of human rabies vaccines.
10. Trained human resources.
11. All patients requiring PET is registered in the animal bite registry.
12. Each person getting PET receives a vaccination card.
13. Human contact tracing satisfactorily done on a paper format
14. Dog contact tracing is done

Weaknesses:

1. RIG not available in all hospitals providing ARV.

2. A delay in the provision of PET exists in some of the hospitals where there are Rabies Units. Since these Rabies Units are closed after 4 pm, the dog bite victims presenting after 4 pm have to be admitted to the casualty ward until the next day to provide PET from the Rabies Unit.
3. The current PET guideline by the Ministry of Health follows an old classification system of exposures to assess risks and indications for PET.
4. Although integrated bite case management is structured, it is not functioning completely as designed. It needs to be strengthened with the involvement of veterinary surgeons and para-veterinary staff conducting high-risk bite investigations immediately.
5. Currently, the information of possible rabid dogs from bite wards and hospitals are not reaching the District Rabies Unit immediately. This communication channel needs to be structured to facilitate immediate investigation and response.
6. Only some institutions are provided with digital temperature monitoring devices
7. Animal bite registry is not there in all hospitals administering PET (IG and ARV) and must include all bites (not only those that require PET)
8. Absence of rapid information flow from the animal bite registry to the District Rabies Unit and PHVS.
9. Significant delays in sending the second part of the vaccination card (slip) to District Rabies PHI to take appropriate action.
10. There is no protocol and infrastructure in place for the capture, detention, observation, euthanasia, brain tissue collection, packaging, and transportation of suspected dogs. Currently, interested PHIs or bite victims take initiative to send brain samples to MRI.

Suggestions for improvement

1. The administration of Equine/Human RIG currently requires in-patient admission in Sri Lanka. This procedure needs to be changed to OPD. This will increase the efficiency of RIG administration. RIG should be made available in all hospitals providing ARV.
2. PET needs to be provided in casualty wards of all teaching hospitals.
3. Sri Lanka should update National PEP guidelines including animal bite classification and to suit WHO Recommendations. This ensures uniform data collection and treatment across the country.
4. Recruitment of a veterinary surgeon for District Rabies Units of each RDHS Office. This veterinary surgeon can improve the efficiency of IBCM in addition to other identified field-level technical duties along with strengthening the link between the Ministry of Health and DAPH at the district level.

5. Storage and distribution of human rabies vaccines should be coupled with EPI vaccines.
6. All institutions should be provided with digital temperature monitoring devices
7. A periodic refresher course and training of nursing staff and doctors on animal bite management and PET schedules.
8. A real-time information system should be introduced to replace the existing hospital animal bite register. This information should be shared with district veterinary surgeons and the District Rabies Unit for implementation of IBCM. Real-time information systems with smartphone technology can improve IBCM and manage high-risk bite victims better and find other exposed individuals.
9. District Rabies Unit must collaborate with universities and research institutes in the area to assist in identifying gaps and challenges. The collaboration will result in suitable solutions with no cost to the Ministry of Health
10. Novel methods should be identified for educating the public, three-wheeler drivers etc. (can liaise with the Non-formal Education Director of Ministry of Education) in addition to school children whose programs already consist of dogs and rabies (grade 8 and 10 science syllabus) must continue. Teacher training colleges must be visited, and teachers must be taught what and how to educate children in this regard (in the teacher training instruction book on Health and physical education for grade 10). It is important to identify potential teachers on rabies such as District Rabies PHI, Veterinary Surgeon (Range, DAPH, District,), Consultant Community Physician, and Regional Epidemiologist
11. Education and publicity are to be given through all radio, television and papers.
12. Education awareness should be uniform to the entire country. The PHVS should develop materials including Audio-Visuals, presentations, posters, banners, handouts, social media posts etc. Training of Trainers (TOT) should be conducted to the district staff to train others as well as conduct the programmes.
13. Suspected dogs must be captured, detained, observed, and euthanized, brain tissue should be collected and sent to labs for confirmation and action must be taken accordingly.
14. Regional epidemiologists must closely and quantitatively observe the incidence of dog bites and daily vaccinations to detect possible elevations to execute prompt action.
15. Identify high-risk groups for animal bites (veterinarians, students, animal handlers, wildlife department staff, private veterinary ancillary staff, pet groomers, animal welfare workers, tri-forces, police) and rabies and encourage administration of pre exposure prophylaxis.

3.3 Dog Population Management

Methods used for dog population management in Sri Lanka include:

1. Prevention and control of breeding
2. Promotion of responsible dog ownership
3. Identification and registration of individual dogs
4. Habitat control (control of access to food)

3.3.1 Prevention and control of breeding

Dog population management using surgical sterilization also called catch – neuter- vaccinate –release (CNVR) method does not contribute to rabies control directly. This method of intervention can control the increase in free-roaming dogs in high-density populations. The method of sterilizing only female dogs is a cost-efficient approach of CNVR method.

In Sri Lanka, the main dog population management method used for the prevention and control of reproduction in the dog is the surgical sterilization of dogs, mostly females. This activity is also conducted similar to the dog rabies vaccination program. Female dog sterilization is usually outsourced through a government tender procedure at the district level. Each district is given a fund allocation to conduct female dog sterilization within the district. Each district separately calls for tender from service providers. The selected service providers with his team liaise with the District Rabies Unit to carry out this activity. Similar to the scheduling of the dog rabies vaccination program the DRPHI schedules the female dog sterilization program with MOH. The program is conducted from one MOH area to the other in a systematic manner similar to MDV.

The service provider has dog catchers and veterinary surgeons. The District Rabies Unit along with the Range PHI of the MOH does the organizing and provides publicity for the program. The public brings domestic and community dogs while the free-roaming dogs are caught by dog catchers of the service provider. A qualified veterinary surgeon (one or more) conducts the surgical sterilization procedure using satisfactory aseptic surgical procedures and manages surgical pain throughout and after the procedure. The veterinary surgeon carries out the surgery and preserves both ovaries for financial auditing purposes. The payments to the service providers are made according to the number of dog ovaries produced. These ovaries are stored at the MOH Office for a period of one year. Immediately after the surgery, during the anaesthesia recovery phase, anti-rabies vaccine is administered to all dogs and a small piece of the ear is nipped (ear notching) while a serial number is tattooed in the inner

part of the ear for identification purposes. For each dog operated, a few photographs at PHVS prescribed points in the process are taken and produced for accounting purposes and transparency.

The female dog sterilization program is annually conducted in each MOH area with a strong focus on free-roaming dogs. Due to the delays in sending allocations and the long process of procurement, there are inevitable delays in the selection of the service provider. Most of the time the selection and awarding of the contract is done in the latter part of the year leaving less than half a year to complete the program. Due to this, the targeted number of sterilizations cannot be achieved.

3.3.2 Observations

Strengths of the female dog sterilization program:

1. A qualified veterinary surgeon conducts the surgical sterilization procedure using satisfactory aseptic techniques and pain management throughout and after the procedure, and therefore dog welfare is attended.
2. Adequate geographical coverage of the dog sterilization program.
3. Sufficient publicity of the program.
4. Satisfactory accessibility to the public.
5. Coupled with dog rabies vaccination hence a possible elevation of immune status and maintenance of her immunity.
6. Free-roaming dogs are captured by catchers of the service provider

Weakness of the dog sterilization program:

1. Insufficient human resources including scarcity of trained dog catchers.
2. Inadequate vehicles to conduct the program.
3. Delays in procurement and payment process.
4. Delays in sending reporting summaries from District Rabies Unit to PHVS.
5. Meager and limited budget preventing year-round program
6. Delay in payments to completed surgeries
7. Proper dog surveys are not used to decide on the location of the clinic
8. The quantitative impact of spay program on dog population, bite and human rabies incidence has not been examined

Suggestions for improvement

1. Update the cadre requirement for District Rabies Unit, obtain approval from the Department of Management Services of the Ministry of Finance, and recruit the required human resources without delay.
2. Provide adequate and suitable vehicles to District Rabies Units of each RDHS Offices urgently.
3. Recruitment of a veterinary surgeon for District Rabies Units of each RDHS Office. Female dog sterilization could be one duty of the recruited veterinary surgeon.
4. Introducing a digital information system to capture the data from the female dog sterilization program.
5. Safe and effective chemical sterilization methods can be considered.
6. Chemical sterilization of male dogs – Zinc gluconate and Calcium chloride can be considered for permanent sterilization of male dogs. However, evidence indicates controlling the reproduction of males does not have a significant impact on population management.
7. Laws should be strengthened on waste food disposal methods by commercial entities and public institutions.
8. Better supervision of places of waste collection, processing and disposal by the local authority.
9. Proper mobile app-based dog surveys can be used for deciding dog-dense areas to better focus and locate the spay clinics.
10. Impact of the sterilization on bites and rabies incidence and dog population must be quantified for better justifiable fund allocations.

3.3.3 Habitat Management (control of access to food)

Habitat management by controlling garbage and food available to free-roaming dogs are effective ways to control the dog population.

As measures to control dengue, household waste handling programs were implemented by garbage removal services of the local government. This has greatly reduced the access of dogs to waste food in the streets. However, waste food in market areas and food shops are accessible to free-roaming dogs.

Workplaces, schools and religious places also dump waste food into open garbage dumping areas which have access to free-roaming dogs. Further due to the availability of food public tend to leave newborn puppies in these areas.

Currently, there are no direct measures for habitat control in view of eliminating dog-mediated human rabies.

3.3.4 Observations on habitat control

Strengths:

1. Proper garbage collection and dumping systems minimizing access of dogs to waste food have been introduced in a residential areas by most municipalities.
2. Teaching on importance of a clean and balanced environment in schools in several grades.

Weakness:

1. Improper, irresponsible and inadequate waste/garbage collection in workplaces, schools and religious places into which free-roaming dogs have access.
2. Most Urban councils and Pradeshiya Sabhas do not have their own efficient waste collection and proper disposal in place.
3. Inefficient implementation of Nuisance Ordinance by Police.
4. Absence of teaching proper eating and food waste disposal habits for school children.

Suggestions for improvement

1. Development and enforcement of legislation preventing irresponsible waste disposal in workplaces, schools and religious places.
2. Dog-proof fencing of such garbage collection, processing and dumping sites.
3. Vaccination and population control of stray dogs around such garbage collection, processing and dumping sites.
4. Better monitoring of garbage dumping sites by local governments on the presence of wild warm-blooded animals preventing sylvatic cycle of rabies.
5. Implementation of Nuisance Ordinance by Sri Lanka Police in an efficient manner.
6. Introduce teaching on proper food and food waste disposal habits in schools.

3.3.5 Promotion of responsible dog ownership

Despite the existence of Dog Registration Ordinance for several decades, dog registration is not adopted by most local governments except very few. Few local governments employ their workers to register dogs when such dogs are brought to MDV while cooperating with vaccinating team in MDV programs. An innovative approach for local governments to adopt the ordinance could help in this regard. Private practising veterinary surgeons manage, treat and vaccinate some dogs in almost all

cities. Such veterinary surgeons can promote responsible dog ownership and can help implement dog registration ordinances. Several kennel clubs in Sri Lanka has thousands of knowledgeable dog owners and breeders. Some politically and administratively influential members in such clubs, promote various regular public activities regarding dogs, help stray dogs in many ways and regularly educate their membership via various television channels, mass and print media and social media. Such clubs can be used to promote vaccination, collection of data and to promote responsible dog ownership if they can be linked with PHVS. Triforces and Police have their working dogs (tracking, sniffing) in more than 50 different locations in the country. They have their own public dog shows and public programs in which responsible dog ownership can be promoted if PHVS takes the initiative. Nevertheless, the concerned public, catch and bring some free-roaming dogs for MDV and surgical sterilization programs.

3.3.6 Observations on the promotion of responsible dog ownership

Strengths:

1. Municipality and private practising veterinary surgeons are in contact with PHVS and hence can be used to promote responsible dog ownership
2. Kennel clubs are in contact and can be used
3. In most places, communication between district-level health officials and respective local government is in place

Weakness:

1. No keen interest and leadership, being unaware on responsible dog ownership and dog registration ordinance
2. Not using already available communications with kennel clubs for this purpose
3. Insignificant involvement of Sri Lanka Police in this regard, though the required legal framework is in place
4. Poor leadership and attitude of district levels health officials in communicating with local government, police and DAPH

Suggestions for improvement

1. Hold meetings with all kennel clubs to initiate dog registration and identification
2. Make use of other public awareness methods including the use of social media to improve awareness and promote dog registration

3. Advice district level health officials to initiate communication with other related institutions involved
4. Establish linkage with private practising veterinary surgeons and to prepare and implement rules and regulations on the functioning of such veterinary clinics
5. Tri-forces and police kennels who have their own dog programs for public can be used

3.3.6 Identification and registration of individual dogs

The individual dogs are required, by law, to be registered with the local Government (Municipality, urban councils and pradeshiya-sabha). Usually, the local government charges a nominal fee for such registration. However, most dogs are not registered. To increase participation in registering the dog, the dog registration activity is sometimes linked with the dog rabies vaccination program.

During MDV, it was observed that each and every dog is registered by the vaccinator in the manual vaccination registry.

3.3.7 Observations on identification and registration of individual dogs

Strengths:

1. Presence of legislation for dog registration.
2. Presence of a system to carry out the registration procedure through the local government.

Weakness:

1. Lack of interest of the local governments to conduct dog registration activity.

Suggestions for improvement

1. Even though the actual dog registration activity according to the legislation is not happening, during dog rabies vaccination each and every dog is registered in a manual vaccination registry by the dog vaccinator. This can easily be converted to a dog registration activity by the Ministry of Health if provided with an electronic system, which can later be linked to MDV, dog population management activities, sterilization and IBCM.

3.4 Surveillance

The surveillance in rabies has two main components; animal rabies surveillance and human exposure surveillance. Both parts have a hospital component and a laboratory component.

3.4.1 Surveillance of dog rabies

The District Rabies PHI or PHVS do not get reporting of suspected rabid dogs from hospitals or from veterinary surgeons in other sectors (DAPH, wildlife, local governments, and private practitioner veterinary surgeons). In a few districts where DRPHI has close links with the OPD/ETU this information is passed on.

The laboratories receive animal heads for investigation of rabies. Presently the animal heads are brought voluntarily by the general public after an incident. There is no mechanism to collect brain samples, pack or to transport them appropriately to MRI. Although sometimes enthusiastic PHIs decapitate and advise the public on transportation and testing at MRI.

There are three main laboratories; Medical Research Institute - MRI, Teaching Hospital (TH) Karapitiya and Veterinary Laboratory of the University of Peradeniya which conduct laboratory testing for rabies in animals. The geographical distribution of these three laboratories do not represent all districts or provinces as seen in Figure 3.5. The Sellars staining technique is conducted in all three laboratories while fluorescence antibody (FAT) testing is conducted at both the MRI and Veterinary Laboratory of the University of Peradeniya. Thus, TH Karapitiya performs only Sellars staining technique on dog samples only and their inconclusive samples are sent to MRI for FAT. The MRI and TH Karapitiya send information monthly to PHVS. However, by the time the manual reporting informs of a rabies-positive dog head to the victim, it is usually too late to carry out any preventive measures to control dog rabies. Rarely, do keen district PHIs contact MRI and/or labs to get the results rapidly so that they can deploy ring vaccination without delay. In this regard, a real-time electronic reporting system was piloted with MRI successfully. This system linked the DRPHI with MRI to alert them with the details of a positive dog head, in order to take timely actions.

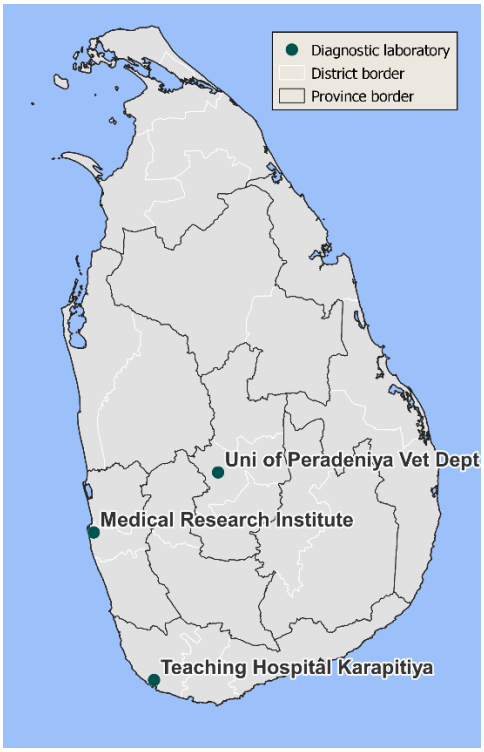

Figure 3.5 - Map of rabies diagnostic laboratories in Sri Lanka

Testing antibody titers of rabies in samples of dogs must be periodically conducted in all districts.

3.4.2 Surveillance of human Rabies

Human Rabies is a notifiable disease and hence all patients suspected of Rabies are reported to the Epidemiology Unit of the Ministry of Health (with a copy to the Regional Epidemiologist of the RDHS Office). Once the patient succumbs to the disease, a postmortem is essential and brain tissue is submitted to MRI for laboratory confirmation. The PHVS also receive this information through the District Rabies PHI since the Regional Epidemiologist is also included in the notification loop.

In the event of a human Rabies death, the DRPHI together with the Officials from PHVS conducts a thorough investigation of the case using a prescribed format and examine possible causes for lapse in appropriate PEP treatment. Each Rabies human death is discussed at the quarterly Rabies death review at PHVS, where the case is presented by the relevant DRPHI. The Epidemiology Unit of Ministry of Health, MRI and PHVS also participate in this quarterly meeting to identify any lapses in preventive procedures and to improve the system. The final decision whether the death was due to Rabies or not, is taken at this death review meeting.

3.4.3 Observations

Strengths of the Rabies surveillance (dog and human) program:

1. The notification of suspected human Rabies from hospitals is occurring.
2. There is a system to investigate and review human Rabies deaths.
3. The learning points (vaccination and population control of dogs, education etc.) from the death review are taken into forthcoming training programs.
4. MRI functioning as the reference laboratory and it is well equipped to conduct FAT, RT-PCR and RFFIT.

Weakness of the of the Rabies surveillance program:

1. The number and geographic coverage of laboratories with facilities for testing of dog Rabies is not adequate.
2. The manual information flow from laboratories to DRPHI and PHVS is unsatisfactory, inefficient and too slow to adopt impactful remedial measures.
3. Laboratory reports is not sent to any veterinary surgeon to complete IBCM efficiently.
4. District Rabies Units do not have dedicated rapid response team with required infrastructure and human resource for brain tissue collection, packaging and transportation of animal brains tissue to laboratories
5. Capture, detention and observation of Rabies suspected dogs is not in place
6. Testing antibody titers of Rabies in random sampled dogs does not happen.

Suggestions for improvement:

1. It is vital to implement a real-time electronic system for surveillance which will include reporting of suspected Rabies dogs and laboratory testing on Rabies. This will assist to establish IBCM, early preventive measures and reduce delays in information flow to District Rabies Units and to PHVS.
2. The number of laboratories with facilities to confirm animal Rabies should be increased to cover the entire island geographically.
3. Strengthening selected laboratories of DAPH for lateral flow assays to detect antigen in postmortem brain tissue samples.
4. Establish molecular sequencing at MRI
5. District Rabies Units should be equipped with human and logistic facilities for a dedicated rapid response team for brain tissue collection, package and transport of animal heads/brains.

6. Animal surveillance data should come from other sectors including DAPH, wildlife and private practicing veterinary surgeons and local governments. These groups should be included in the electronic information system.
7. Testing antibody titers of Rabies in random sampled dogs must be conducted in all districts in a periodic manner 4 weeks after vaccination.
8. Establish a 24/7 National Rabies Hotline for public to report Rabies suspected animals. The national hotline should alert the relevant RDHS to immediate capture and isolate the suspected animal.
9. RDHS need to be equipped to respond to reports of suspected rabid animal.
10. Once gaps in procedure are identified at quarterly death review meetings, PHVS must get assistance from higher educational/research institutes/universities to conduct applied research projects focusing potential solutions in this regard. Duties in this regard must be identified and assigned to individuals at PHVS so that they are accountable and answerable to those respective areas
11. Ear mark prospective district Rabies PHIs (from field PHIs) and focus on their further training in this regard
12. Restructure protocols for management of Rabies suspected animals (detention), their isolation, euthanasia and brain tissue collection.

3.5 Legislations

There are several legislations for the control of animal and human Rabies.

3.5.1 Rabies control ordinance (1894) (Rabies ordinance): 7 of 1893, 7 of 1906, 24 of 1921, 6 of 1929, 17 of 1930, 16 of 1934, 61 of 1939, 13 of 1941, 23 of 1946, 29 of 1947 and acts: 22 of 1955, 23 of 1956.

The law, however, has not been updated and the definition of dog in concern (either domestic or free-roaming) must be mentioned. Most free-roaming dogs at large (as the law indicates) are either partially owned or owned by many people. The powers vested with the local governments (Municipality, Urban council and Pradeshiyasabha) are not exercised since only a few Municipalities have employed veterinary surgeons. Others (urban councils and Pradeshiyasabha) do not have such vacancies and no trained staff, which has been the case for 30-40 years. Thus, except in a few municipalities, no dog isolation kennels for suspected dog observation is available. Such monitoring is essential for rabies suspected dogs of whom after death, brain tissue collection, storage and transportation to the laboratory must be done by a responsible person.

The fact that DAPH was installed much later in the country and that Animal Health Department was in various other institutions which has made this situation worse. Beating tom-tom as means of educating public, as indicated in the law, does not happen now. If a dog is found with rabies signs, it must be examined by a medical officer according to the act. This must be changed to the veterinary surgeon. Dog destruction by local government is mentioned in many places of the ordinance which must be deleted since the current law does not allow it. The judicial powers are vested with the Magistrate and when an owned dog is found wandering free in the streets, a maximum fine of Rs 100 is imposed which must be amended as appropriate to current situation. If anyone obstructing the police officer carrying out his duty in this regard, he/she can be fined with Rs 100, 3 months' imprisonment or both which also must be renewed. The fee for a license to import a dog, currently issued by DG/DAPH (then by local government) had been Rs 5 which has been practically changed but law must be changed accordingly because dog importation and breeding for sale is a well-organized and a lucrative profession. Any one illegally importing a dog can be fined by the Magistrate with Rs100 or 3-months imprisonment which must be changed as appropriate. The law describes of an "informant share" from all fines because the rulers wanted information from public. Currently this does not apply.

Animal Diseases Act No. 59 of 1992 and the Gazette Extraordinary of the Democratic Socialist Republic of Sri Lanka 36, states the immunization of animals should be done under the authority of the Director General of the Department of Animal Production and Health (DAPH).

3.5.1.1 Observations made:

Strengths

Some laws regarding dogs as the reservoir of rabies is in place, dog seizing and detention facility has been identified for all local governments. Need for identification of suspected rabid dogs has been identified. Importance of notification to public in this regard identified. Role of coordinating entire process has been included. Need to identify suspected dogs by a medical professional has been identified. Need for rabid dog destruction has been identified to curb spread of rabies. Need to identify and seize other stray animals has been identified. Need of punishment for rabid dog owners if not properly informed (therefore, responsible dog ownership which has its own ordinance via dog registration) or anyone disturbing the role of police in this regard, has been identified. Magistrate is empowered to impose punishment. Role of veterinary in dog importation and dog breeding identified. Encouragement of providing information to authority has been identified. A law implementing agency has been identified.

Weaknesses

Types of dog has not been specified. Current local government structure (Municipality, Urban council, Pradeshiyasabha) does not exactly fit into the descriptions. Dog seizing does not happen now and dog detention facilities must be owned by the local government which is not mentioned. Identification of suspected rabid dogs must be largely done by the public and informed to the police. Brain tissue collection, packaging and transport of heads of rabies-suspected dogs not included. Public notification using tom-tom is not done anymore. Integrated multidisciplinary approach in dealing with rabid dogs not identified. The role of the police in this endeavour does not take place. Medical professionals to identify a suspected rabid dogs must be changed. Punishments does not suit the current value of money and period of imprisonment. Powers and charges/fees for dog importation and dog breeding by authority are not well defined. Currently, the informets share does not apply. The law implementing agency and method DAPH/local government/Ministry of Health not specified. No citation/reference to Animal Diseases act which states that the authority is DAPH.

Suggestions

All types of dogs (as totally owned, partially or owned at times, and totally stray) must be mentioned. Dog seizing must be deleted. The current categorization of local governments must be included. Role of Grama-Niladari, midwife and public health inspector in identifying suspected rabid dogs with the help of the public must be included. Brain tissue collection, packaging and transportation must be included. The need for responsible dog ownership and implementation via implementation of dog registration ordinance must be included. Current means of providing publicity must be included. Seizing stray animals other than dogs must be implemented by local government and facilities established (animal diseases ordinance and nuisance ordinance must be cited. An integrated multidisciplinary approach with identified different stakeholders (Local government, Ministry of Health, DAPH are key players) in dealing with rabid dogs must be identified. Role of Police in identifying and detaining rabid dogs must be redefined (Police ordinance must be cited). A qualified veterinary surgeon to identify suspected rabid dogs must be included. Euthanasia of rabid dogs must be included. Punishment for not informing or disturbing preventive actions must be increased in an appropriate manner. Authority on dog importation and dog breeding and currently appropriate fees must be introduced. Rewarding for providing information can be introduced. The Authority of implementing this law must be clearly specified (citing the Animal diseases ordinance).

3.5.2 Dog Registration Ordinance

Ordinances: 25 of 1901,20 of 1915 3 of 1920 21 of 1921, 26 of 1938,61 of 1939,12 of 1945,23 of 1946,29 of 1947, and Act 60 of 1961

Dog registration Act, which is not renewed since 1962, is about the registration of dogs within the Municipality, urban council and pradeshiyasabha limits. The Government agent (GA) is mentioned in the law, but, needs new definition due to provincial council set up established much later. Someone who owns a dog within such limits (municipal, urban or pradeshiyasabha), needs to pay an annual registration fee of Rs 5 but the chairman and council can decide on the amount. Anyone who keeps a dog outside such limits must pay 25 cents per year per dog. Within Colombo municipality, registration for a female dog is Rs7.50 per annum. The amounts obviously need to be revised. A tenant keeping a domestic dog, must get registration for him/herself and must enter the information into the "dog register" at the local government. (This amount is being collected by local governments in the Northern province in Jaffna mostly Rs 20 per year but in no other municipality).

When the local government catches a stray dog, it is detained, and the owner must claim it within 3 days of disappearance. Then the penalty must be paid, and the dogs be released. If not, they must be either destroyed or handed over to an organization for management. Currently, this detaining facility is available only in a very few municipalities and this law is not implemented. However, Nongovernmental dog welfare organizations can maintain shelters and keep in contact with the local government for this purpose. This provision is also present in the Rabies ordinance. The Village council ordinance must be implemented which includes the same law, and all fines collected shall be utilized accordingly. However, in the Village council ordinance 11, 60 of 1961(articles 36B1, 36B2 and 36B3) only deals with any ox, buffalo, goat, sheep, horse and pig but not dog. The dog, therefore, must be included in to the section and law must be implemented.

To impose the fines and punishments, the legal powers is vested with the Magistrate, but the Police must take the initiative. This does not happen because Police Ordinance does not include it in this manner and the Police work according to Police ordinance.

3.5.2.1 Observations:

Responsible dog ownership is implemented through dog registration at the local governments. Powers are vested with local government. The law could be amended by the Minister.

Strengths

Importance of dog registration as means of introducing responsible dog ownership has been identified. Seizing and detention of free-roaming dogs are identified as a responsibility of local government. Role of tenants in owning a dog has been specified.

Weaknesses

Responsible dog ownership implementation authority by local government is weak and not uniform. Fees not currently appropriate. Village Council Ordinance mentions domestic animals but not dog.

Suggestions

Law implementation must be monitored. Dog registration fee must be made currently appropriate. Service given by local authority in return to such owners must be examined. Dog detention and observation facility must be established and included in the law. It is possible to strengthen, expedite and legalise current procedure of dog registration during islandwide mass dog vaccination campaigns by some of the local governments

3.5.3 Nuisance Ordinance

Ordinances: 15 of 1862, 61 of 1939,3 of 1946,57 of 1946

Nuisance Ordinance which indicates that nuisance is a criminal offence must be implemented by the same local government authority with the assistance of Department of Police. However, Department of Police work on Police Ordinance which does not specify many situations specified in the Nuisance Ordinance but the authority is given to Police to coordinate with local government, health authority and the veterinary surgeon.

Owner of any animal causing public nuisance could be brought before Magistrate by the Police and fined Rs 50. The Nuisance act must be revised in a manner that the free-roaming dog is directly and specifically included. The fine must be revised accordingly. Under this ordinance, those who keep foul and offensive drains, collection of dung, keeping cattle, goat, swine or any other animal in a disturbing manner, can be found guilty. Casting and disposal of animal waste into drains is a punishable offence according to this law. Therein, article 6D which deals with potential human epidemic and 6E for the preservation of public health and suppression of nuisance, is relevant to dogs.

Observations:

Managing and disposing of animal waste, managing animals in a publicly disturbing manner of house occupants may them be owners or tenants have been identified as offense. Local authorities to notify

those responsible, board of health in local governments to discuss, proceed to court via Police and Magistrate to impose punishment have been identified.

Strengths

Offenses of sending animals (including dogs) stray or disowning them to the streets has been identified as a punishable offense for occupants within local governments.

Weaknesses

Dog specifically has not been identified in several places but other animals are identified.

Suggestions

Dog must be specifically identified, their vaccination against rabies, treatment, noise pollution and waste disposal must be specifically identified. A method and systems of reporting of such offenses must be introduced.

3.5.4 Animal Diseases Act (No. 59 of 1992)

According to this act, the legal power of animal disease control and prevention lies with Director, the Department of Animal Production and Health. Therefore, Ministry of Health must strengthen the relationship with DAPH via PHVS or preferably directly, at the level of the Director General and not below. This is especially important since DAPH or veterinary surgeons do not accept PHVS to be the veterinary (or ONEHEALTH) arm of Ministry of Health. Establishment and building trust and confidence between the two institutions, is essential if meaningful work is to proceed and for 70% dogs to be vaccinated.

Since the appointments, transfers, increments and disciplinary action power of all veterinary surgeons including the Director of PHVS lies with the Director General of DAPH the dog rabies control focal point of DAPH should be PHVS. The DG of DAPH should delegate some of the legal powers with regard to control and prevention of dog rabies to PHVS.

Identifying and sealing of infected areas and premises, closure of roads and control on animal trafficking are the responsibility of Director DAPH which further demands such a relationship. Immunization of animals in an area, seizure, destruction and disposal of infected and those who are in contact with animals are integral powers vested with the Director DAPH. If the PHVS is to do it as it is currently being done, their linkage with DAPH must be made stronger, cordial and meaningful.

Testing animals for disease detection, which essentially includes Rabies, is the responsibility of Director DAPH. Therefore, at least at provincial level, the DAPH must get further involved in certifying/approving/confirmation of animal which are Rabies tested positive through the DAPH arm in the Ministry of Health, which is the PHVS. Epidemiology division of DAPH can be used by PHVS and EPID division of the Ministry of Health which reports animals suspected to be Rabid by veterinary surgeons.

Registration and licensing of veterinary drugs, importation of such drugs, and veterinary clinics clearly shows importing antirabies vaccine is a legal mandate of DAPH. Obtaining approval from DAPH drug control authority alone may not be sufficient in this regard. Registration of private veterinary clinics, a process which has been started already by DAPH according to the power vested on the Director DAPH. Such information on private veterinary clinics can be easily provided to the Ministry of Health (PHVS) and thereafter dealt with in order to obtain data on dogs with owners and anti-rabies vaccinations performed by such private veterinary clinics, which are over 100 in the country. This is also a good means to introduce microchipping and to popularize responsible dog ownership. It must be mentioned that the oldest kennel club in Sri Lanka, Ceylon Kennel Club (CKC) is planning to hand over microchips, introducers and readers to all private practising veterinarians in the Colombo district.

3.5.4.1 Observations:

Areas of interest dealing with animals with regard to Rabies, its control using all biological, importation and exportation, breeding, establishing veterinary clinics and their regulation have been identified.

Strengths

All areas required as appropriate for dog rabies control (importation and exportation of dogs and biological, breeding of dogs, private veterinary clinics, travel restrictions and provincial closure of access to identified areas, have been identified and powers vested appropriately.

Weaknesses

Involvements of the Ministry of Health via PHVS, and it being the focal point of rabies control both in man and animals, have not been identified.

Suggestions

The veterinary arm of the Ministry of Health (PHVS) must be included as the focal point of rabies control both in humans and animals. The fact that PHVS is a veterinary division managed with the

concurrence of DAPH which must be specifically mentioned. Geographically better distribution of public health networks, perhaps jointly with Ministry of Health, DAPH and local governments must be included. Involvement of the Police must be specified, and appropriate sections must be included into Police Ordinance.

3.5.5 Prevention of Cruelty to Animals Ordinance

Ordinances Nos 13 of 1907, 19 of 1912, 43 of 1917, Y of 1919, 33 of 1921, 16 of 1927, 17 of 1970, 12 of 1945, 22 of 1955

Even after the independence in 1947, some ordinances have been passed which normally would be called Acts. Provision for the disabled, starving, use of ill animals for labor, killing animals with cruelty and diseased animals dying on streets, are dealt with in this act. The owner (if owned) is liable to pay the state (local government) all expenses in dealing with owned animals. It is true that the local government is not geared towards implementing this law. A Magistrate, Senior Superintendent of Police (SSP) or, Government Agent (GA) can order to destroy suffering animals if it is a victims of cruelty. Offenders are fined, jailed or both of which the maximum punishment is Rs 100-200, 3 months in imprisonment or both. These must be amended to suit the current values and administrative structure such as provincial councils in place of GA. Though these may not be directly related to Rabies and stray dogs, road kills are of interest. A rabid dog could be ill-treated, injured and subjected to cruelty. These are criminal offences according to law. The role of the veterinarian in this regard has not been included and distress and ill-treatment of animals is defined very subjectively, which needs correction. Only in one article (No. 10) of the ordinance, the decision-making involves Municipal veterinary surgeons, not in others.

3.5.5.1 Observations:

The use of animals for various work, killing and not treating and managing them properly are criminal offences. Individuals who are empowered to destroy animals are mentioned. Dealing with Rabid dogs have been specifically identified.

Strengths

Animals, activities and crimes with regard to them have been identified into which a rabid dog can and must be included.

Weaknesses

The role of veterinarian to objectively identify animal related offences must be included. Destruction of dogs does not happen anymore due to a parliament paper against it and therefore dog destruction must be deleted.

Suggestions

The role of the veterinarian is to be included in identifying the offence objectively. Punishment must be increased as appropriate to current days.

3.5.6 Local Government Ordinance (Municipal, Urban council and Pradehsiyasabha)

Local government is the third and the lowest level of governance in Sri Lanka, after central and provincial governments.

3.5.6.1 Municipal Council Ordinance – 29 of 1947 includes cattle and pigs specifically, nuisance by animals and seizure of animals and detention. A Municipal magistrate could be appointed who has powers, among many others, on contagious disease ordinance and contagious disease (animal) ordinance, Nuisance ordinance, Police ordinance and Penal code within the Municipal limits.

3.5.6.2 Urban Council Ordinance: – 61 of 1939 very similar to Municipal, laws on stray animals specifically cattle and nuisance by animal, specifically cattle are included. This must be amended to include dogs and dog registration act (to promote responsible dog ownership) which are not included.

3.5.6.3 Pradeshiyasabha act: Act Nos, 15 of 1987, 34 of 1993, 14 of 1999

Article 60: Leads or drives of any elephant, ox, horse, pig, or other animal in a disturbing manner is dealt with by law.

Local governments (Municipality, Urban councils and Pradeshiyasabha), only some Municipalities carryout duties accordingly. The powers can be seen in Rabies ordinance, prevention of cruelty ordinance and dog registration ordinance. Even those municipalities, do not have dog detention facilities and trained, skilled and dedicated staff have not been employed in required numbers. While Urban councils and Pradeshiya sabhas do not directly do anything with regard to stray dogs and rabies, they have the mandate to do so. Therefore, depending on the attitude and skills of the leadership of such urban councils and Pradeshiya sabhas, dogs and rabies is attended, vaccinated and garbage and waste disposal is attended.

3.5.6.4 Observations:

Powers with regard to dealing with free roaming dogs, seizure, detention, vaccination are with the local governments.

Strengths

Areas of activity have been identified adequately.

Weaknesses

Deficiencies in human and logistic resources in all local governments in dog seizure, law implementations, implementation of dog registration act, no “board of heath”, no municipal magistrates at present, coordinated multi stake holder situation not specified and their roles not identified.

Suggestions

Improve logistics of dog seizure, detention and observation of dogs, implement islandwide dog registration ordinance to promote responsible dog ownership, to improve and include sentences on coordinated efforts on rabies control with a multi-disciplinary approach with several stakeholders.

3.5.7. Police Ordinance

Ordinance Nos, 16 of 1865, 7 of 1866, 18 of 1871, 6 of 1873, 7 of 1873, 3 of 1875, 1 of 1878, 7 of 1880, 1 of 1883, 3 of 1883, 13 of 1884, 11 of 1886, 23 of 1891, 4 of 1897, 13 of 1905, 22 of 1906, 14 of 1907, 17 of 1908, 7 of 1910, 17 of 1912, 12 of 1914, 39 of 1916, 40 of 1921, 14 of 1924, 20 of 1927, 12 of 1933, 21 of 1939, 36 of 1945, 32 of 1947, Law Nos, 3 of 1974, Act Nos, 15 of 1949, 50 of 1954, 32 of 1956, 15 of 1962, 2 of 1968, 3 of 1972, 41 of 1984.

Rabies ordinance and prevention of cruelty ordinance provide lots of powers to the Police even though they do not exercise such powers. There is no knowledgeable, skilled and committed persons to do this in the Police and their different current priorities have some influence on this fact. Police Department is governed by Police ordinance which does include only one section namely no 64 on animals which has diluted the powers vested by other laws. This discrepancy must be amended. However, their recently established Community Police Department under a separate DIG (Deputy Inspector General), in which unarmed police officers live in villages mixing up with society to prevent crimes, would facilitate attention on stray dogs and rabies.

3.6 Intersectoral Collaboration

The relationship between the PHVS of DAPH in the Ministry of Health and DAPH requires further strengthening. There is hardly any collaboration between district veterinary surgeons of DAPH and other sectors with regard to dog rabies control. The current system in which the Ministry of Health coordinated dog Rabies control via PHVS with all stakeholders appear to work satisfactorily and needs strengthening. Identification of conventional stake holders is a must in this regard while novel institutes, individuals and groups also must be included. Kennel clubs, Dog breeders, tri forces, Police kennels and private practicing veterinary surgeons are novel and useful approaches to this system. The personality of the representative from stakeholder groups in the task force must be with the correct appropriate positive mindset, with teamwork, attitudinally correct leadership qualities and with efficient communicating ability. Only such individuals can change the way the public think and change a system to be law-abiding.

National Rabies Task Force

A Rabies Taskforce should be created by the Ministry of Health that shall review, guide and coordinate multi-approach strategies to achieve zero dog-mediated rabies deaths in Sri Lanka by 2026. The purpose of the Taskforce is to improve intersectoral coordination of activities and provide clear communication channels for updates and reports. Defining the contributing members, allocating responsibilities to them and agreeing on a meeting schedule should be priorities for the first meeting of such task force.

The rabies task force may consist of appointed individuals from the following institutions:

- Ministry of Health
- Public Health Veterinary Services (PHVS)
- Department of Animal Production and Health (DAPH)
- Department of Wildlife Conservation (DWC)
- Department of Education
- Ministry of Higher Education and Research
- Sri Lanka Police
- Information and Communication Technology Agency
- Medical Research Institute (MRI)
- Deans of Medical Colleges
- Dean of Faculty of Veterinary Medicine and Animal Science, Peradeniya
- Department of Government Information
- Department of Agriculture
- NGO with previous experience of rabies control activities
- Sri Lanka Veterinary Association
- Sri Lanka Medical Association

4. National Strategic Plan (2022-2026)

Vision: Provide maximum protection to public from deadly rabies and other zoonotic diseases causing disability.

Mission: To contribute to the attainment of highest possible level of rabies immunization coverage among dog population through sustainable equitable and culturally acceptable manner.

Goal: To eliminate human deaths from Rabies in Sri Lanka

Targets:

1. To eliminate dog-mediated human rabies by 2025 and to maintain the elimination level up to 2026

2.To increase dog vaccination coverage from 50% (2015, baseline) to >75% by 2026

3. To investigate 80% of bite cases by District Rabies Unit

Objectives:

1. To strengthen leadership, legislation, stewardship, and management functions of the elimination of Human Rabies.

2. To ensure the delivery of comprehensive services, to eliminate human rabies, and to promote health.

3.To empower communities towards active participation in the elimination of human rabies.

Strategies:

Objective 1: To strengthen leadership, legislation, stewardship, and management functions of the elimination of Human Rabies.

Key Strategies

1.1. Revise appropriate legislation to implement the national rabies policy
1.2. Strengthen the governance and stewardship for Rabies elimination.
1.3. Establish, and strengthen the One Health approach among multi-stakeholders to promote coordinated actions
1.4. Advocacy to relevant higher authorities to ensure commitment toward Rabies elimination

Objective 2: To ensure the delivery of comprehensive services, to eliminate human rabies, and to promote health.

Key Strategies

2.1 Ensure early Post-Exposure Treatment, through comprehensive service delivery
2.2 Achieve herd immunity in dog reservoirs by achieving over 70% of vaccination coverage against rabies
2.3 Investigate rabies burden among other animal reservoirs (other than dogs) and take necessary rabies control measures
2.4 Manage the population of animal reservoirs with special emphasis on dogs, through appropriate humane methods
2.5 Strengthen and reorient the rabies surveillance towards elimination of human deaths due to rabies
2.6 Implement Integrated Bite Case Management (IBCM) and rapid response
2.7 Enhance the rabies diagnostic capacity and improve the networking of rabies laboratories
2.8 Build the capacity in terms of human resources and logistics to ensure comprehensive service delivery
2.9 Promote research and development to generate evidence for quality service delivery

Objective 3: To empower communities towards active participation in the elimination of human rabies.

Key Strategies

3.1 Empower communities through health education
3.2 Improve reach to the high-risk groups through specialized interventions
3.3 Empower all stakeholders and partners to ensure participation in policy development service implementation, and provision of care
3.4 Promote research and development to empower communities and promote Responsible pet ownership

The most important key strategy to achieve the zero status of human rabies deaths by 2030 is to achieve herd immunity in dog reservoirs by achieving over 70% of vaccination coverage against rabies (above strategy No. 2.2). In this strategy the **most important activity** is to conduct timely routine biannual free mass dog vaccination programmes (both static vaccination centers and free-roaming dogs) (sixth activity in strategy No. 2.2 of Table 4.4). **The critical requirements** to conduct above mentioned timely routine biannual free mass dog vaccination programmes are the provision of transport facilities for District Rabies Units and revising the vaccinator cadre as 1 per 50,000 population and recruiting relevant cadre for District Rabies Units (first and second activities in strategy No. 2.8 of Table 4.4).

4.4. Activity Plan -National Strategic Plan for Elimination of Dog Mediated Human Rabies Sri Lanka (2022-2026)

Objective 1: To strengthen leadership, legislation, stewardship, and management functions of the elimination of Human Rabies.			
Strategy	Activities	Responsible partner	Status
1.1 Revise appropriate legislation to implement the national rabies policy	Amend legislations to suit currently existing context and work surroundings	Attorney General Department, PHVS	GAP
	Carry out relevant amendments in the Rabies control ordinance as suggested in section 3.5	Attorney General Office, PHVS	GAP
	Amend, implement and monitor the implementation of Dog Registration Ordinance	Attorney General Office, Ministry of Local Government, PHVS	GAP
	Amend, implement and monitor the implementation of Nuisance Ordinance	Attorney General Office, Police Department, PHVS	GAP
	Add necessary provisions in Animal Diseases Act to include PHVS as the focal point of both in human and animal rabies control	Attorney General Department, DAPH, Ministry of Livestock Development, PHVS	GAP
	Amend Prevention of Cruelty to Animals Ordinance including veterinarians in identifying the offense objectively and increase the punishment as appropriate to current days	Attorney General Department, PHVS	GAP
	Amend Local government ordinance appropriately enabling island wide dog rabies control, including euthanasia protocols	Ministry of Local Government, Attorney General Department, PHVS, Sri Lanka Police	GAP
	Strengthen and implement laws on waste food disposal methods by commercial entities and public institutions	RDHS, DRCC, Sri Lanka Police	GAP
	Use of legal powers vested with DAPH in rabies status declaration	DAPH, Attorney General Department, PHVS	GAP
	Advice police to implement ordinances in its current format	DRU, Sri Lanka Police	GAP
	Change Police Ordinance accordingly and appropriately to suit other ordinances	Ministry of Health, Attorney General Dept, Police	GAP
1.2 Strengthen the governance and stewardship for	Formulate National Steering Committee on Rabies *(Consider National steering committee Reference NSP 2013)*	Secretary Health	GAP
	Establish National Rabies Task Force (NRTF) with all identified stake holders	Secretary Health	GAP

Rabies elimination	Formulate Provincial/ District Rabies Coordination Committee (DRCC)	Secretary Health, PDHS	GAP
	Delegate required powers vested with DG of DAPH to D/PHVS for PHVS of the Ministry of Health as the focal point of dog rabies control programme	DAPH, Ministry of Health, Attorney General Office,	GAP
	Identify central and provincial team leaders in Ministry of Health, empower them and give targets	PHVS	GAP
	Identify centrally D/PHVS as the team leader with a mechanism for objectively monitoring the program	DAPH, Ministry of Health	
	Identify district leaders (RDHS Puttlam) in respective stake holders, empower, appreciate and give targets	PHVS, EDHS, PDs of DAPH	GAP
	Use communication as a tool of energizing, activating, motivation, appreciation, time and task management	PHVS	GAP
1.3 Establish, and strengthen the OneHealth approach amongmulti-stakeholders to promote coordinated actions	Conduct quarterly progress review meetings with the participation of Director Public Health Veterinary Services, Director Animal Health (Public Health Division) of DAPH	PHVS, DAPH	GAP
	Collect and study all available relevant information to identify potential stakeholders and contributions by each of them	PHVS	GAP
	Identify measurable tasks and contributions by each stake holder at national and provincial levels	PHVS	GAP
	Participate in workshops, conferences, meetings of other institutions to share knowledge and to strengthen links	DRU, RDHS, PHVS	
	Coordinate activity with district teams with other ONE HEALTH centers in the country and outside on rabies and other relevant zoonoses	RDHS, PHVS	GAP
	Conduct combined Rabies controlling programs (e.g.: Mass Dog Vaccination) with the involvement of multi-stakeholders	RDHS, DRU	GAP
	Conduct Annual Progress Reviews of Rabies Controlling activities with the participation of relevant key stakeholders	PHVS, Rabies Task Force	GAP
	Research to strengthen One-Health approach	PHVS, Faculty of Veterinary Sciences - Peradeniya	GAP
	Develop a mechanism to ensure data sharing among stakeholders	DAPH, RDHS, PHVS	GAP

1.4 Advocacy to relevant higher authorities to ensure commitment toward Rabies elimination	Conduct district level advocacy meeting for the leaders of relevant stakeholder groups	RDHS, PHVS	GAP
	Identify the lead role by Ministry of Health centrally and provincially and importance of maintaining diplomatic and professional relationships with all stake holders to meet national targets	Ministry of Health	GAP
	Objectively monitor data collection, storage, data flow and analysis and their contributions to prompt decision making and communicate with stake holders	RDHS,RE, PHVS	GAP
	Objectively monitor contributions by each stake holder at provincial level and communicate with stake holders	RDHS, PHVS, Rabies Task Force	GAP
	Advocate Relevant bodies to ensure Political commitment	Ministry of Health, DAPH	GAP
	Advocate higher government authorities to ensure smooth functioning of Rabies control activities	Ministry of Health, DAPH	GAP
	Advocate local International technical and donor agencies to ensure continuous support	Ministry of Health, DAPH	GAP
Objective 2: To ensure the delivery of comprehensive services, to eliminate the burden of human Rabies			
Strategy	Activities	Responsible partner	Status
2.1 Ensure early Post-Exposure Treatment, through comprehensive service delivery	Update National Post Exposure Treatment (PET) guidelines including animal bite classification to suit WHO Recommendations	PHVS, MRI, NHSL Rabies Unit	GAP
	Identify hospitals that need basic requirements to provide PET, and hospitals that need to upgrade with basic facilities to provide PET base on demand	DGHS	GAP
	Provide human rabies vaccines as pre-exposure prophylaxis to high risk groups	Ministry of Health	Strength
	Ensure Well established system with wide coverage of human ARV distribution and administration with minimum vaccine wastage	Ministry of Health	Strength
	Ensure adequate supply of good quality human ARV and RIG across the country	Ministry of Health	Strength
	Administer human ARV and RIG free of charge to the public	Ministry of Health	Strength
	Register all patients requiring PET in the animal bite registry and provide a vaccination card	Ministry of Health	Strength
	Ensure availability of RIG in all hospitals providing ARV	DGHS	GAP

	Provide RIG in outpatient/emergency care setting of hospitals	DGHS	GAP
	Provide PET in casualty wards of all hospitals providing ARV	DGHS	GAP
	Store and distribute human rabies vaccines coupled with EPI (Expanded Program of Immunization) vaccines to ensure cold chain maintenance	DDG(PHS)1, Chief Epidemiologist	GAP
	Provide digital temperature monitoring devices to all relevant institutions for cold chain monitoring of human Rabies vaccines	Epidemiology Unit	GAP
	Develop and implement a real-time information system to replace existing hospital animal bite register	DGHS, PHVS, ICTA	GAP
	Conduct periodic refresher course and training for Nursing Officers and Medical Officers on animal bite management and PET guidelines	PHVS, MRI	GAP
	Trained human resources	Ministry of Health	Strength
	Provide bite data daily to RDHS in order to respond to rabies suspected animals immediately	Ministry of Health, Bite ward	GAP
2.2 Achieve herd immunity in dog reservoirs by achieving over 70% of vaccination coverage against rabies	Conduct national dog population survey every 5 years and assess dog vaccination coverage	RDHS, PHVS	GAP
	Utilize GPS Mapping of mass dog rabies vaccination centers	RDHS, PHVS	GAP
	Timely procure good quality dog rabies vaccines for MDV	MSD,PHVS	Strength
	Ensure cold chain maintenance of dog rabies vaccines	MSD/DRU	Strength
	Continue training of human resource	RDHS, PHVS	Strength
	Conduct timely routine biannual free mass dog vaccination programmes (both static vaccination centers and free roaming dogs)	RDHS, PHVS	GAP
	Provide dog rabies vaccination (both static centers and free roaming dogs) free of charge to the public	Ministry of Health	Strength
	Sufficient publicity on dog rabies vaccination program.	DRU	Strength
	Adequate geographic coverage of MDV centers for satisfactory accessibility to public.	DRU	Strength
	Refer those who missed dog vaccination to DAPH veterinary offices and private practicing veterinarians for vaccination?free of charge	DRU, MINISTRY OF HEALTH, DAPH	GAP
	Conduct post vaccination surveys in each district	RDHS, PHVS	GAP
	Conduct Mop up vaccinations on need after mass dog vaccinations	DRU, PHVS	GAP
	Conduct ring vaccinations rapidly when the need arises	DRU, PHVS	GAP
	Identify areas which requires special attention, around jungle patches, public markets, places of worship, schools	DRU, local government	GAP

	Develop and implement a real-time information system for mass dog vaccination	PHVS, ICTA	GAP
	Provide digital temperature monitoring devices to all relevant centers for cold chain monitoring of animal Rabies vaccines	Epidemiology Unit	GAP
	Liaise with veterinary surgeons of DAPH to obtain their dog vaccination numbers	RDHS, DAPH, PHVS	GAP
	Liaise with private sector veterinary surgeons to obtain their dog vaccination numbers	RDHS, PHVS, SLVS	GAP
	Liaise with existing NGOs working on mass dog rabies vaccination at national and district level	RDHS, PHVS	GAP
2.3 Investigate rabies burden among other animal reservoirs (other than dogs) and take necessary rabies control measures	Develop and implement animal rabies digital surveillance incorporating relevant sectors including DAPH, wildlife, private practicing veterinary surgeons and local governments.	PHVS, ICTA, DAPH, DWC, PC&LG	GAP
	Monitor wild animal deaths, and submit carcasses to labs for rabies diagnosis	PHVS, DWC	GAP
	Refer road kills of wild animals to laboratories for rabies detection	DWC	GAP
	PHVS to communicate with animal health division of DWC for coordinated action in an emergency	PHVS, DWC	GAP
	Initiate Rabies virus strain identification through molecular sequencing	MRI, PHVS, DWC	GAP
	Conduct on effective dog vaccination and population control around patches of jungles	RDHS	GAP
	Develop and issue Safety Guidelines for currently observed shift in type of pets (eg: from dog and cat to reptiles and other mammals)	PHVS	GAP
	Impose restrictions to other mammals used for various activities such as amusement, work (mongoose), increasing human welfare (animals for prisoners)	PHVS	GAP
	Analyze the feasibility on possibility & potential for the use of oral bait vaccine on wild animals	DWC, PHVS	GAP
2.4 Manage the population of animal reservoirs with special emphasis on dogs, through	Conduct a national programme on surgical sterilization of female dogs	Ministry of Health	Strength
	Quantitatively evaluate and report the impact of dog population management programmes using software	RE	GAP
	Liaise with stakeholders conducting dog population management after dog survey in the area for better publicity, assistance & to implement a focused program with greater impact	RDHS, PHVS, NGOs	GAP
	Consider chemical sterilization of female and male dogs if required based on evidence generated	PHVS, DRU	GAP

appropriate humane methods	Develop and implement a registration system to register all dogs at the time of mass dog rabies vaccination programme using a digital electronic system	Local Government, PHVS, ICTA	GAP
	Introduce a real-time digital information system to capture the data from female dog sterilization program	PHVS, ICTA, DRU	GAP
	Implement proper garbage collection and dumping systems minimizing access of dogs to waste food	Local government	GAP
	Educate the importance of clean and balanced environment with proper eating and food waste disposal habits in government and private sector including schools in several grades	Ministry of Education	GAP
	Provide dog proof fencing for garbage collection, dumping & processing sites	Local Government, Ministry of Environment	GAP
	Establish Puppy re-homing programmes, and develop and maintain facilities to observe suspected rabid animals	Local Government, NGOs	GAP
	Quarterly meetings with NGOs, Kennel Clubs on achievement of objectives and strategies	RDHS, PHVS	GAP
2.5 Strengthen and reorient the rabies surveillance towards elimination of human deaths due to rabies	Continue notification of suspected human rabies from hospitals	Epidemiology Unit	Strength
	Establish SMS alert system and a monitoring mechanism to ensure follow up PET	PHVS, ICTA	GAP
	Implement Animal rabies Notification mechanism and systematic data reporting to a centralized database	DG-DAPH, PHVS	GAP
	Develop an active surveillance system for both domestic and wild animals to support declaration of rabies free status	PHVS, DAPH, DWC	GAP
	Investigate and review of human rabies deaths	PHVS, DRU, Epidemiology Unit, MRI	Strength
	Implement a real-time digital system (for dog rabies vaccination, dog sterilization, dog registration, laboratory surveillance and hospital animal bite register) with GPS facilities for surveillance linking hospitals and laboratories with district rabies units	PHVS, ICTA, DRU	GAP
	Establish a system in which provincial DAPH receives a copy, in addition to the submitted person, of daily reports from labs on rabies positive animals, for information and possible action	MRI, DAPH	GAP
	Generate evidence on population dynamics (specially breeding and deaths) of free roaming dogs with emphasis on identifying potentials of diluting herd immunity level	PHVS, Faculty of Veterinary Sciences	GAP
	Rapid action taken when increased numbers of daily dog bitten victims are reported to hospital	RE, RDHS	GAP

	Decision making on dog vaccination frequency depending on longevity of immunity in free roaming dogs and factors affecting	PHVS, Faculty of Veterinary Sciences	GAP
2.6 Implement integrated bite case management (IBCM) and rapid response	Develop SOPs and guidelines on integrated bite case management	PHVS	GAP
	Establish and function a 24/7 National Rabies Hotline for public to report rabies suspected animals	PHVS	GAP
	Increase in daily ARV and bite objectively monitored by VS RDHS, informing accordingly to rapid response team	VS in RDHS Office, RDHS	GAP
	Deploy rapid response teams to identify GPS location, identify rabid suspected dog, catch for observation (or euthnise if rabid), collect brain tissue, transport sample to laboratories for testing	VS, RDHS	GAP
	Conduct human and dog contact tracing using current formats	VS, DRU	GAP
	Identify suspected rabid dogs, capture, and transport, for detention & observation	VS, DRU, Local Government, NGOs	GAP
	Conduct ring vaccinations for suspected dog rabies reported from hospitals	DRU	GAP
	Develop a real-time information system linking the hospitals with DRU	PHVS, ICTA	GAP
	Collect & transmit data rapidly to PHVS, PD of DAPH & local government by veterinary surgeon of RDHS	VS, RDHS	GAP
2.7 Enhance the rabies diagnostic capacity and improve networking of rabieslaboratories	Strengthen MRI as reference/validation laboratory	DGHS, MRI	GAP
	Expand rabies diagnostic capacities on animal and human rabies diagnosis to five additional laboratories covering the entire country Suggested hospitals to develop are: 1. Teaching Hospital Jaffna 2. Teaching Hospital Batticaloa 3. Teaching Hospital Anuradhapura 4. Teaching Hospital Rathnapura 5. Teaching Hospital Karapitiya	DGHS	GAP
	Select five DAPH laboratories to provide rapid rabies diagnosis using lateral flow assays.	DAPH	GAP
	Develop guidelines and protocols for five new DAPH laboratories and validation and plan utilization of 25 existing Veterinary Investigation centers (VIC) of DAPH	DAPH, MRI	GAP
	VICs of DAPH to assist in brain sample collection and transportation to nearest laboratory.	DAPH, PHVS	GAP
	Establish molecular sequencing facilities at Medical Research Institution	MRI	GAP

	Establish mechanism for MRI to lead all diagnostic laboratories, collect, analyze, and interpret data, coordinate and upgrade labs	MRI director/PHVS	GAP
	Develop real-time digital reporting system to create rapport among laboratories, District teams and Public so that lab will CC daily reports to district team and DAPH provincial director	MRI director/PHVS	GAP
	Develop a join mechanism with potential stakeholders to ensure sending all suspected animal samples to Rabies laboratories.	Ministry of Health, DAPH	GAP
	Identify gaps and deficiencies in sample receipt, communication network, data collection and storage and response to victims for lessons to be learnt for improvements	MRI director/PHVS	GAP
2.8 Build the capacity in terms of human resources and logistics to ensure comprehensive service delivery	Revise vaccinator cadre as 1 per 50,000 population and recruit relevant cadre for District Rabies Units	PDHS, PHVS	GAP
	Provision of transport facilities for District Rabies Units Required transport facilities are: 1 double cab, a 10-seater van and two three wheelers	Secretary Health	GAP
	Provide required equipment for District Rabies Units to implement vaccination programme	PDHS, RDHS, PHVS	GAP
	Recruit class 1 PHII for each District Rabies Unit as the designated rabies PHI	PDHS, RDHS, PHVS	GAP
	Establish Rabies Rapid response team (equipped with trained HR and infrastructure) under each RDHS	RDHS, PHVS	GAP
	Recruit a veterinary surgeon on contract basis for District Rabies Units of each RDHS Office.	PDHS, PHVS	GAP
	Prepare the duty list for the proposed RDHS veterinary surgeons	PHVS	GAP
	Revisit identified roles by RE in this regard and modify if and when required and introduce measurable targets	Ministry of Health DG	GAP
	Provide required resources (logistics) to the RDHS veterinary surgeon	PDHS	GAP
	Provide required IT equipment and connectivity support for DRUs, laboratories and hospitals after a gap analysis to facilitate implementation of digital information system	PDHS. PHVS	GAP
	Establish network with district and national levels stake holders for better program implementation	RE/RDHS	GAP
	Train, empower, assign person and provide equipment for brain sample collection, sample packaging and transportation to the district team	PHVS	GAP
	Identify gaps and deficiencies in procedures in district using provincial and national higher education and research institutions	RE/RDHS	GAP

2.9 Promote research and development to generate evidence for quality service delivery	Conduct Training Need Assessments for different levels/ categories of employees involved in Rabies prevention and control activities	PHVS, RDHS	GAP
	Review the progress of NSP and Rabies control activities and conduct SARE assessment in Sri Lanka	PHVS	GAP
	Conduct research to generate evidence /Identify Best practices for Rabies elimination including new strategies such as efficient dog handling techniques (hand catching vs auto plunger) and oral rabies vaccination.	PHVS, Faculty of Veterinary Medicine and Animal Sciences - Peradeniya	GAP
	Conduct periodic surveys to test antibody titers of rabies in random sampled dogs at district level	RDHS	GAP
	Identify gaps especially district related in procedures, IBCM and improved vaccination coverage	RDHS	GAP
	Evaluating school children periodically and public to see whether knowledge imparted has been of value (KAP studies)	RDHS, PHVS	GAP
	Use school children on their Scientific method lesson in GCE (A/L) for research	RDHS, DRU, PHVS	GAP
	Measure changes in society periodically regarding food waste disposal after education programs	RDHS, PHVS	GAP
	Allocate funds for research activities for surveys, data analysis, transport and publications at district levels	RDHS, PHVS	GAP
	Conduct surveys to determine the factors associated with dog bites (such as provocation)	DRHS, PHVS	
	Conduct surveys to determine actual numbers of dogs in district	PHVS	GAP

Objective 3: To empower communities towards active participation in the elimination of human rabies.

Strategy	Activities	Responsible partner	Status
3.1 Empower communities through health education	Liaise with DRU to educate teachers in Montessori, Grade 8 & 10 science syllabus and Grade 10 teachers guide, private tuition teachers	Secretary, Ministry of Education	GAP
	Identify potential teachers/educators on dogs and rabies as resource persons	PHVS, RDHS	GAP
	Educate public that deserve special attention through Director Non formal education	Provincial Education Department	GAP

	To include information on rabies in education programs for members and public and in dog shows conducted by tri forces and Police kennels	Secretary Ministry of Defense	GAP
	Triforces and Police kennels resource utilization on conducting research on development and persistence of immunity against vaccines	Veterinary surgeons in triforces and Police kennels	GAP
	Liaise with DRU on teachings regarding proper and clean eating habits and responsible disposal of food waste	Ministry of Education, PHVS	GAP
	PHVS should lias with media for improved public education	PHVS	GAP
	National level health education programmes for public on the importance of dog rabies vaccination conducted through radio, television and papers	PHVS, DRU, Universities, other higher education and research institutes	GAP
	Educating children through the national education curriculum. Educating the educators since it is already in grade 8 and 10 science syllabus and include in grade 10 heath teachers guide	PHVS Ministry of Education	GAP
	Use of midwife and grama-niladari for education purposes	RDHS, local government	GAP
	Conducting different activities in fine arts liaising with district team	Universities and other educational institutes, PHVS	GAP
	Periodically collect all research publications related to dogs specially behavior, neurological conditions of rabies and sociological aspects	Universities, PHVS	GAP
3.2 Improve reach to the high-risk groups through specialized interventions	Identify high risk groups for animal bites (veterinarians, students, animal handlers, wildlife dept staff, private veterinary ancillary staff, pet groomers, animal welfare workers, tri-forces, police) and rabies and encourage administration of pre exposure prophylaxis	Ministry of Rehabilitation, Local governments, Triforces and Police, PHVS	GAP
	Identify and educate public categories who are unlikely to search for medical assistance when an animal bites them such as poor, drug addicts, alcoholics	Ministry of rehabilitation, Ministry of Education, PHVS	GAP
	Educate veterinarians, professionals, NGOs and public on how pups dogs and other warm blooded animals from streets and jungles must be adopted safely	PHVS, DWC. Local government	GAP
3.3 Empower all stakeholders and partners to ensure participation in policy	Encourage local governments (municipality, urban council, pradeshiya sabha) to suggest remedial laws for all 7 ordinances related to dogs and rabies so that the current rabies control procedures can be strengthened and Liaise with DRU to assist in rabies control activities	Secretary, Ministry of Public Services, Provincial Councils and Local Government	GAP
	Other stakeholders, to study the 7 ordinances and suggest possible contributions and changes to the authority	Rabies Task force	GAP
	Advice Department of Police to change Police Ordinances to suit all 7 ordinances in the current administrative context	Rabies Task force	GAP

development service implementation, and provision of care	Include dogs and rabies as a requirement in the New division on community police circulars		
	Registration of Kennel clubs and dog breeders, for their potential contributions in this regard as experienced stake holders	PHVS, DAPH	GAP
	Establish linkage with private practicing veterinary surgeons to prepare and implement rules and regulations on functioning of such veterinary clinics	PHVS, DAPH	GAP
	Introduce evaluating and rewarding methods to schools on proper food waste disposal methods for children	PHVS, Ministry of Education	GAP
	Request all local and international NGOs, who have different extents of experience on aspects at the field level to study ordinances and suggest appropriate changes	Rabies Task Force	GAP
3.4 Promote research and development to empower communities and promote Responsible pet-ownership	Ministry of Higher Education and Research: Liaise with PHVS, identify gaps in district activity & conduct focused field research	PHVS, Ministry of Higher Education and Research	GAP
	Conduct Research to develop programs/ interventions and health messages that effectively reach to the high-risk groups	PHVS, Ministry of Higher Education	GAP
	Conduct Research to promote Responsible Pet-ownership to Sri Lankan setup	PHVS, DAPH, Local government	GAP
	Conduct Research to evaluate the effectiveness of conventional health educational programs and to introduce evidence based behavioral change communication strategies to promote health	PHVS, HPB	GAP
	Develop or Revise “Rabies Module” in the School curriculum and develop suitable IEC materials for children	PHVS, Ministry of Education	GAP

4.5 Monitoring & Evaluation Framework -National Strategic Plan for Elimination of Dog Mediated Human Rabies Sri Lanka (2022-2026)

Impact Indicator	2022 (baseline)	2023	2024	2025	2026
Number of (dog mediated) human rabies cases reported	15	10	5	0	0
Key Outcome indicators					
Dog vaccination coverage (%)	60-70%	70%	70%	>75%	>75%
Dog head rabies positivity rate (%)	30- 50%	20-30%	<20%	0	0
Mininstry of Health areas implementing IBCM (% out of total Ministry of Health areas in Sri Lanka)Districts?	10%	50-60%	100%	100%	100%

Objective 1: To strengthen leadership, legislation, stewardship, and management functions of the elimination of Human Rabies.

Strategy	Activities	Process Indicators	Output Indicators	Outcome Indicators
1.1 Revise appropriate legislation to implement the national Rabies policy	Amend legislations to suit currently existing context and work surroundings	1. Number of legislations identified for amendments 2. Number of amendments proposed	1. Percentage of legislations amended	1. Number of cases with new amended legislations 2. Number of institutions with waste food being not accessible for free roaming dogs 3. Number of MOH areas where laws have been implemented
	Carry out relevant amendments in the Rabies control ordinance as suggested in section 3.5			
	Amend, implement and monitor the implementation of Dog Registration Ordinance			
	Amend, implement and monitor the implementation of Nuisance ordinance			

	Add necessary provisions in Animal Diseases Act to include PHVS as the focal point of both in human and animal Rabies control			4. Number of times Nuisance Ordinance implemented by MOH area 5. Number of cases won by MOH area
	Amend Prevention of Cruelty to Animals Ordinance including veterinarians in identifying the offense objectively and increase the punishment as appropriate to current days			
	Amend Local government ordinance appropriately enabling island wide dog rabies control, including euthanasia protocols			
	Strengthen and implement laws on waste food disposal methods by commercial entities and public institutions			
	Use of legal powers vested with DAPH in rabies status declaration			
	Advice police to implement ordinances in its current format			
	Change police ordinance accordingly and appropriately to suit other ordinances			
1.2 Strengthen the governance and stewardship for Rabies elimination	Formulation of National Steering Committee headed by the Secretary Health *(Consider National steering committee Reference NSP 2013)*		1. National steering committee established 2. NRTF created 3. 9 Provincial Rabies Coordination Committees created 4. 25 DRCC formulated 5. Powers vested with DG of DAPH is	1. Number of NSC and NRTF meetings conducted annually with >80% participation 2. Number of districts conducting more than 8 DRCC meetings per year with >80% participation 3. PHVS of DAPH in Ministry of Health recognized as the focal point by OIE 4. Number of vaccines obtained by PD DAPH from DRU by district
	Establish National Rabies Task Force (NRTF) with all identified stake holders			
	Formulation of Provincial/ District Rabies Coordination Committee (DRCC)			
	Delegate required powers vested with DG of DAPH to D/PHVS for PHVS of the Ministry of health as the focal point of dog rabies control programme			
	Identify central and provincial team leaders in Ministry of Health, empower them and give targets			
	Identify centrally PHVS as the team leader with a mechanism for objectively monitoring the program			
	Identify district leaders in respective stake holders, empower, appreciate and give targets			
	Update case definition and rabies control protocols			

	Use communication as a tool of energizing, activating, motivation, appreciation, time and task management		delegated to D/PHVS 6. Central, provincial and district team leaders identified	5. Number of monthly vaccine reports sent from PD DAPH to DRU by district
1.3 Establish, and strengthen the OneHealth approach among multi-stakeholders to promote coordinated actions	Conduct quarterly Progress review meetings with the participation of Director Public Health Veterinary Services, Director Animal Health (Public Health Division) of DAPH Collect and study all available relevant information to identify potential stake holders and contributions by each of them Identify measurable tasks and contributions by each stake holder at national and provincial levels Participation for workshops, conferences, meetings of other institutions to share knowledge and to strengthen links Coordinate activity with district teams with other ONE HEALTH centers in the country and outside on rabies and other relevant zoonoses Conduct combined Rabies controlling programs (e.g.: Mass Dog Vaccination) with the involvement of multi-stakeholders Conduct Annual Progress reviews of Rabies Controlling activities with the participation of relevant key stakeholders Research to strengthen One-Health approach Develop a mechanism to ensure data sharing among stakeholders	1. Invitation generated from D/Animal Health of DAPH to D/PHVS 2. Invitation generated from D/PHVS to relevant stakeholders	1. Number of quarterly progress review meetings conducted per year by D/Animal Health of DAPH with D/PHVS 2. Annual progress review conducted with relevant key stakeholders 3. Number of workshops, conferences, meetings of other institutions participated by PHVS	1. Number of districts sending relevant monthly summary information from District DAPH Office to DRU and vice versa 2. Number of districts conducting rabies control programmeswith the involvement of multi-stakeholders
1.4 Advocacy to relevant higher authorities to ensure commitment	Conduct district level advocacy meeting for the leaders of relevant stakeholder groups Identify the lead role by Ministry of Health centrally and provincially and importance of maintaining diplomatic and professional	1. Number of districts sending letters for advocacy meetings	1. Number of districts conducting advocacy meetings	1. Number of meetings PHVS conducted with Rabies task force and OIE

toward Rabies elimination	relationships with all stake holders to meet national targets			
	Objectively monitor data collection, storage, data flow and analysis and their contributions to prompt decision making and communicate with stake holders			
	Objectively monitor contributions by each stake holder at provincial level and communicate with stake holders			
	Advocate Relevant bodies to ensure Political commitment			
	Advocate higher government authorities to ensure smooth functioning of Rabies control activities			
	Advocate local International technical and donor agencies to ensure continuous support			

Objective 2: To ensure the delivery of comprehensive services, to eliminate the burden of human rabies

Strategy	Activities	Process Indicators	Output Indicators	Outcome Indicators
2.1 Ensure early Post-Exposure Treatment, through comprehensive service delivery	Update National Post Exposure Treatment (PET) guidelines including animal bite classification to suit WHO Recommendations	1. Number of meetings conducted to update National Post Exposure Treatment (PET) guidelines 2. Number of hospitals completed the survey 3. Issue of DGHS circular for all hospitals on RIG and ARV: a) RIG to be given in all ARV hospitals b) RIG provided in outpatients setting c) PET given in causality wards	1. National Post Exposure Treatment (PET) guideline updated to suit WHO Recommendations 2. Number of training programmes on PET conducted per year 3. of hospitals with ARV facility providing RIG 4. Percentage of hospitals with ARV	1. 100% accessing the government hospitals receive PET according to updated PET guideline
	Identify hospitals that need basic requirements to provide PET, and hospitals that need to upgrade with basic facilities to provide PET base on demand			
	Provision of human rabies vaccines as pre-exposure prophylaxis to high risk groups			
	Ensure well established system with wide coverage of human ARV distribution and administration with minimum vaccine wastage			
	Ensure adequate supply of good quality human ARV and RIG across the country			
	Administration of human ARV and RIG is free of charge to the public			
	All patients requiring PET is registered in the animal bite registry and provided with a vaccination card			

	Ensure availability of RIG in all hospitals providing ARV Ensure provision of RIG in outpatient/emergency care setting of hospitals Ensure provision of PET in casualty wards of all hospitals providing ARV Store and distribute human rabies vaccines coupled with EPI (Expanded Program of Immunization) vaccines to ensure cold chain maintenance Provide digital temperature monitoring devices to all relevant institutions for cold chain monitoring of human Rabies vaccines Develop and implement a real-time information system to replace existing hospital animal bite register Conduct periodic refresher course and training for Nursing Officers and Medical Officers on animal bite management and PET guidelines Trained human resources Providing bite data daily to RDHS in order to respond to rabies suspected animals immediately	4. Percent of hospitals with ARV having device and internet connection to use the real-time information system	facility providing RIG in outpatients setting 5. Percentage of hospitals with ARV facility providing PET in causality wards 6. Percentage of RMSD where storage and distribution of ARV is coupled with EPI vaccines 7. Percentage of RMSD with digital temperature monitoring for human ARV storage 8. Percentage of hospitals with ARV facility where storage and distribution are coupled with EPI vaccines 9. Percentage of hospitals with ARV conducting digital temperature monitoring for human ARV storage	

			10. Percentage of hospitals with ARV facility using the real-time information system 11. Number of doctors trained on PET per year 12. Number of Nurses trained on PET per year 13. Number of hospitals with ARV facility receiving the PET training programme	
2.2 Achieve herd immunity in dog reservoirs by achieving over 70% of vaccination coverage against rabies	Conduct national dog population survey every 5 years and assess dog vaccination coverage GPS Mapping of mass dog rabies vaccination centers Timely procurement of good quality dog rabies vaccines for MDV. Cold chain maintenance of dog rabies vaccines. Trained human resource. Conduct timely routine biannual free mass dog vaccination programmes (both static vaccination centers and free roaming dogs) Provide dog rabies vaccination (both static centers and free roaming dogs) free of charge to the public Sufficient publicity on dog rabies vaccination program.	1. Number of districts receiving training on dog population survey by PHVS 2. Number of static vaccination centers mapped in each MINISTRY OF HEALTH area 3. Number of districts receiving training on post vaccination survey by PHVS	1. Percentage of MINISTRY OF HEALTH areas completing the dog population survey 2. Percentage of MINISTRY OF HEALTH areas with 100% mapping completed 3. Percentage of MINISTRY OF HEALTH areas completing the biannual vaccination for each year	1. Percentage of dog population vaccinated against rabies

	Adequate geographic coverage of MDV centers for satisfactory accessibility to public. Refer those who missed dog vaccination to DAPH veterinary offices and private practicing veterinarians for vaccination Conduct post vaccination surveys in each district Conduct Mop up vaccinations on need after mass dog vaccinations Conduct ring vaccinations rapidly when the need arises Identify areas which requires special attention, around jungle patches, public markets, places of worship, schools Develop and implement a real-time information system for mass dog vaccination Provide digital temperature monitoring devices to all relevant centers for cold chain monitoring of animal Rabies vaccines Liaise with veterinary surgeons of DAPH to obtain their dog vaccination numbers Liaise with private sector veterinary surgeons to obtain their dog vaccination numbers Liaise with existing NGOs working on mass dog rabies vaccination at national and district level	4. Number of dogs referred by DRU to DAPH veterinary offices 5. Number of dogs monthly vaccinated by NGO in collaboration with DRU. 6. Percentage of DRU with ARV having device and internet connection to use the real-time information system	4. Percentage of DRU using the real-time information system for dog rabies vaccination 5. Percentage of MINISTRY OF HEALTH areas with completed post vaccination surveys for each year 6. Percentage of veterinary offices providing monthly reports of dog vaccination in each district for a given year 7. Percentage of private VS providing monthly reports of dog vaccination in each district for a given year 8. Number of NGOs providing monthly reports of dog vaccination in each district for a given year. 9. Percentage of veterinary offices providing at least 3 monthly reports of dog vaccination in each district for a given year	

			10. Percentage of private VS providing at least 3 monthly reports of dog vaccination in each district for a given year 11. Number of NGOs providing at least 3 monthly reports of dog vaccination in each district for a given year.	
2.3 Investigate rabies burden among other animal reservoirs (other than dogs) and take necessary rabies control measures	Develop and implement animal rabies digital surveillance incorporating relevant sectors including DAPH, wildlife, private practicing veterinary surgeons and local governments. Monitoring wild animal deaths, submitting carcasses to labs for rabies diagnosis Refer road kills of wild animals to laboratories for rabies detection PHVS to communicate with animal health division of DWC for coordinated action in an emergency Initiate Rabies virus strain identification through molecular sequencing Conduct on effective dog vaccination and population control around patches of jungles Safety Guidelines for currently observed shift in type of pets (eg :from dog and cat to reptiles and other mammals) Restrictions to be imposed on other mammals used for various activities such as amusement, work (mongoose), increasing human welfare (animals for prisoners) Analyze the feasibility on possibility & potential for the use of oral bait vaccine on wild animals	1. Real time rabies digital surveillance system developed 2. Number of training programmes held on real-time information system for animal rabies surveillance 3. Number of monthly samples received by DAPH labs from DWC 4. Number of samples received for strain identification per month 5. Number of identified high risk areas 6. Number of dog population control programs conducted around jungle patches 7. Number of meetings conducted between DWC	1. Number of organizations using the real-time information system for animal rabies surveillance by district 2. Number of joint activities conducted with DRUs 3. Number of dogs underwent sterilization around jungle patches	1. Number of animal rabies cases reported via real-time information system 2. Dog vaccination coverage around jungle patches 3. Percentage reduction in wildlife rabies incidence

		and PHVS on oral bait vaccine on wild animals		
2.4 Manage the population of animal reservoirs with special emphasis on dogs, through appropriate humanemethods	Conduct a national programme on surgical sterilization of female dogs Quantitatively evaluate and report the impact of dog population management programmes using software Liaise with stakeholders conducting dog population management after dog survey in the area for better publicity, assistance & to implement a focused program with greater impact Consider chemical sterilization of female and male dogs if required based on evidence generated Develop and implement a registration system to register all dogs at the time of mass dog rabies vaccination programme using a digital electronic system Introduce a real-time digital information system to capture the data from female dog sterilization program Proper garbage collection and dumping systems minimizing access of dogs to waste food Teaching on importance of clean and balanced environment with proper eating and food waste disposal habits in schools in several grades Providing dog proof fencing of garbage collection, dumping & processing sites Establish Puppy re-homing programmes, and develop and maintain facilities to observe suspected rabid animals Quarterly meetings with NGOs, Kennel Clubs on achievement of objectives and strategies	1. Percentage of REs quantitatively evaluate and report the impact of dog population management programmes activity 2. Percentage of Ministry Of Health areas conducted dog population management activities per month in collaboration with NGOs 3. Number of meetings conducted by PHVS to take the decision on chemical sterilization 4. Number of dogs registered annually by MINISTRY OF HEALTH area 5. Number of garbage collection, dumping & processing sites fenced in each district for a given year	1. Number of dogs sterilized each month by NGOs 2. Percent of DRU using the real-time information system for sterilization programme 3. Percent of DRU using chemical sterilization 4. Percent of DRU using the real-time digital information system for dog registration	1. Percentage of free roaming female dogs sterilized 2. Percentage reduction of free roaming dogs

2.5 Strengthen and reorient the rabies surveillance towards elimination of human deaths due to rabies	Notification of suspected human rabies from hospitals Establish SMS alert system and a monitoring mechanism to ensure follow up PET Implement Animal Rabies Notification mechanism and systematic data reporting to a centralized database Develop an active surveillance system for both domestic and wild animals to support declaration of rabies free status Investigate and review of human rabies deaths Implement a real-time digital system (for dog rabies vaccination, dog sterilization, dog registration, laboratory surveillance and hospital animal bite register) with GPS facilities for surveillance linking hospitals and laboratories with district rabies units Establish a system in which provincial DAPH receives a copy, in addition to the submitted person, of daily reports from labs on rabies positive animals, for information and possible action Decision making using studies on population dynamics (specially breeding and deaths) of free roaming dogs with emphasis on identifying potentials of diluting herd immunity level Rapid action taken when increased numbers of daily dog bitten victims are reported to hospital Decision making on dog vaccination frequency depending on longevity of immunity in free roaming dogs and factors affecting	1. Number of hospitals trained for real-time information system 2. Number of laboratories trained for real-time information system	1. Percent of hospitals with ARV using the real-time information system 2. Percent of laboratories using the real-time information system 3. Percent of DRU using the real-time information system	1. 100% of human rabies suspected cases notified 2. 200% increase in samples received for rabies diagnosis to each laboratory
2.6 Implement integrated bite case management	Develop SOPs and guidelines on integrated bite case management Establish and function a 24/7 National Rabies Hotline for public to report rabies suspected animals	1. Establishment of 24/7 functioning hotline 2. SOPs/guidelines for IBCM developed	1. Number of calls received each month by the hotline	1. Percent of ring vaccination conducted by DRU for suspected dog rabies reported from hospitals

(IBCM) and rapid response	Increase in daily ARV and bite objectively monitored by VS RDHS, informing accordingly to rapid response team Deploy rapid response teams to identify GPS location, identify rabid suspected dog, catch for observation (or euthnise if rabid), collect brain tissue, transport sample to laboratories for testing. Conduct human and dog contact tracing using current formats Identify suspected rabid dogs, capture, and transport, for detention & observation Conduct ring vaccinations for suspected dog rabies reported from hospitals Develop a real-time information system linking the hospitals with DRU Collect & transmit data rapidly to PHVS, PD of DAPH & local government by veterinary surgeon of RDHS	3. Number of suspected dog rabies reported to DRU from hospitals by district 4. Percent of bite cases investigated by DRU 5. Number of monthly brain tissue samples collected by DRU	2. Number of calls reported to DRU each month 3. % of bite cases, the dogs and victims traced 4. Percent of animal bites reported within 24 hours from hospital to DRU, PHVS, PD DAPH in each week 5. Number of GPS locations provided by DRU monthly 6. Number of suspected brain tissue transported to labs by DRU	2. Number of dogs captured, detained and observed by DRU on monthly basis
2.7 Enhance the rabies diagnostic capacity and improve networking of rabies laboratories	Strengthen MRI as reference/validation laboratory Expand rabies diagnostic capacities on animal and human rabies diagnosis to five additional laboratories covering the entire country Suggested hospitals: 6. Teaching Hospital Jaffna 7. Teaching Hospital Batticaloa 8. Teaching Hospital Anuradhapura 9. Teaching Hospital Rathnapura 10. Teaching Hospital Karapitiya Select five DAPH laboratories to provide rapid rabies diagnosis using lateral flow assays. Develop guidelines and protocols for five new DAPH laboratories and validation and plan utilization of 25 existing Veterinary Investigation centers (VIC) of DAPH	1. procurement process to expand rabies diagnostic capacities initiated 2. Workshop to develop guidelines for brain tissue collection, transport, lateral flow assays and fluorescent antibody testing conducted 3. Percent of laboratories having device and internet connection to use the real-time information system	1. Five labs with expanded capacity and five labs with lateral flow assays functioning 2. Availability of guidelines for brain tissue collection, lateral flow assays and laboratory testing procedures 3. Percentage of laboratories using real-time information system	1. Number of Fluorescent antibody test, lateral flow assays conducted each month by laboratory 2. Number of molecular sequencing conducted each year 3. Number of reference samples sent for validation each month

	VIC s of DAPH to assist in brain sample collection and transportation to nearest laboratory.			
	Establish molecular sequencing facilities at Medical Research Institution			
	Establish mechanism for MRI to lead all diagnostic laboratories, collect data, analyse, interpret, coordinate and upgrade labs			
	Develop real-time digital reporting system to create rapport among laboratories, District teams and Public so that lab will CC daily reports to district team and DAPH provincial director			
	Develop a join mechanism with potential stakeholders to ensure sending all suspected animal samples to Rabies laboratories.			
	Identify gaps and deficiencies in sample receipt, communication network, data collection and storage and response to victims for lessons to be learnt for improvements			
2.8 Build the capacity in terms of human resources and logistics to ensure comprehensives ervice delivery	Revise vaccinator cadre as 1 per 50,000 population and recruit relevant cadre for Rabies Control Unit	1. Approval obtained from Department of Management Services for revised cadre for DRU. 2. Number of vaccinators newly recruited by each district. 3. Procurement process initiated for purchasing of vehicles and equipment. 4. Application call for VS for RDHS Offices.	1. Percent of districts with the required number of vaccinators as per population 2. Percent of DRU units with dedicated double cabs 3. Percent of DRU units with two three wheelers 4. Percent of DRU with adequate vaccine carriers	1. Coverage of dog rabies vaccination 2. Percentage of ICBM conducted 3. 200% increase in the submission of animal brain tissue for rabies diagnosis 4. Reduction of dog mediated human rabies 5. 100% monthly information exchange
	Provision of transport facilities for District Rabies Units Required transport facilities are: 1 double cab, a 10-seater van and two three wheelers			
	Provide required equipment for District Rabies Units to implement vaccination programme			
	Recruit class 1 PHII for each District Rabies Unit as the designated rabies PHI			
	Establish Rabies Rapid response team (equipped with trained HR and infrastructure) under each RDHS			
	Recruit a veterinary surgeon on contract basis for District Rabies Units of each RDHS Office.			
	Prepare the duty list for the proposed RDHS veterinary surgeons			

	Revisit identified roles by RE and CP in this regard and modify if and when required and introduce measurable targets Provide required resources (logistics) to the RDHS veterinary surgeon Provide required IT equipment and connectivity support for DRUs, laboratories and hospitals after a gap analysis to facilitate implementation of digital information system Establish network with district and national levels stake holders for better program implementation Train, empower, assign person and provide equipment for brain sample collection, sample packaging and transportation to the district team Identify gaps and deficiencies in procedures in district using provincial and national higher education and research institutions	5. Duty list of VS of RDHS Office developped 6. Percent of VS RDHS having devices and internet connection to implement the real-time information system	5. Percent of DRU with adequate auto plungers 6. Percent of district with class 1 PHI as District Rabies PHI 7. Percent of RDHS with veterinary surgeons. 8. Percent of RDHS with Isolation kennels, double cab for VS, catching vehicle, catching equipment, LFA, Deep freezer and Necropsy supplies. 9. Percent of RDHS with a dedicated rapid response team.	with other organizations including DAPH
2.9 Promote research and development to generate evidence for	Conduct Training Need Assessments for different levels/ categories of employees involved in Rabies prevention and control activities Review the progress of NSP and Rabies control activities and conduct SARE assessment in Sri Lanka Conduct research to generate evidence /Identify Best practices for Rabies elimination including new strategies such as efficient dog handling techniques	1. Percentage of DRU trained on periodic surveys to test antibody titers of rabies in random sampled dogs at district level	1. Percent of MINISTRY OF HEALTH areas with random antibody titer testing conducted 2. SARE assessment conducted in 2025	

quality service delivery	(hand catching vs auto plunger) and oral rabies vaccination. Conduct periodic surveys to test antibody titers of rabies in random sampled dogs at district level Identify gaps specially district related in procedures, IBCM and improved vaccination coverage Evaluating school children periodically and public to see whether knowledge imparted has been of value (KAP studies) Using school children on their Scientific method lesson in GCE (A/L) for research Measuring changes in society periodically regarding food waste disposal after education programs Allocating funds for research activities for surveys, data analysis, transport and publications at district levels Conducting surveys to determine reason for dogs to bite (such as provocation) Conducting surveys to determine actual numbers of dogs in district	2. Research priorities in relation to reduction of human rabies developed	3. Number of survey/research publications done	

Objective 3: To empower communities towards active participation in the elimination of human rabies

Strategy	Activities	Process Indicators	Output Indicators	Outcome Indicators
3.1 Empower communities	Liaise with RDU to educate teachers in Montessori, Grade 8 & 10 science syllabus and Grade 10 teachers guide, private tuition teachers	1. Number of programmes jointly conducted	1. Percentage increase in awareness on rabies among public	1. Percentage of traced victims of dog bites attending to hospital

through health education	Identify potential teachers/educators on dogs and rabies as resource persons	2. Number of educations programmes conducted by Tri forces and Police kennels 3. Number of PHVS media conferences 4. Number of media organizations providing public education on rabies 5. Number of programmes conducted by different media types 6. At least one section describing rabies and responsible dog ownership in school curriculum from grades 7 to 11	2. Percentage increase in PET seeking behavior 3. Percentage increase in owned dogs vaccinated 4. Percentage increase in owned dogs sterilized.	2. Results of KAP surveys and studies
	Educating public that deserve special attention through Director Non Formal Education			
	To include information on rabies in education programs for members and public and in dog shows conducted by tri forces and Police kennels			
	Triforces and Police kennels resource utilization on conducting research on development and persistence of immunity against vaccines			
	Liaise with DRU on teachings regarding proper and clean eating habits and responsible disposal of food waste			
	Media: liaise with PHVS for improved public education			
	National level health education programmes for public on the importance of dog rabies vaccination conducted through radio, television and papers			
	Educating children through the national education curriculum. Educating the educators since it is already in grade 8 and 10 science syllabus and include in grade 10 heath teachers guide			
	Use of midwife and gramaniladari for education purposes			
	Conducting different activities in fine arts liaising with district team			
	Periodically collect all research publications related to dogs specially behaviour, neurological conditions of rabies and sociological aspects			
3.2 Improve reach to the high-risk groups through	Identify high risk groups for animal bites (veterinarians, students, animal handlers, wildlife dept staff, private veterinary ancillary staff, pet groomers, animal welfare workers, triforces, police)	1. Number of persons identified in high risk categories	1. Percentage of high-risk personals received Pre-exposure prophylaxis	1. Number of deaths in high risk groups due to dog mediated human rabies

specialized interventions	and rabies and encourage administration of pre exposure prophylaxis		2. Percentage of high-risk bites evaded succumbing to rabies	
	Identify and educate public categories who are unlikely to search for medical assistance when an animal bites them such as poor, war victims, drug addicts, alcoholics			
	Educate veterinarians, professionals, NGOs and public on how pups dogs and other warm blooded animals from streets and jungles must be adopted safely			
3.3 Empower all stakeholders and partners to ensure participation in policy development service implementation, and provision of care	Local government: municipality, urban council, pradeshiyasabha: Encourage local governments to suggest remedial laws for all 7 ordinances related to dogs and rabies so that the current rabies control procedures can be strengthened and Liaise with DRU to assist in rabies control activities	1. Number of rabies control activities jointly conducted with local governments 2. Number of local governments conducting joint activities with DRU	1. Number and types of organizations registered with PHVS 2. Number of organizations reporting data on monthly basis 3. Number of rabies control activities jointly conducted 4. Number of veterinary clinics registered at VS RDHS/PD DAPH	1. Reduction in dog mediated human rabies
	Other stake holders can study the 7 ordinances and suggest possible contributions and changes to the authority			
	Advice department of Police to change Police ordinances to suit all 7 ordinances in the current administrative context New division on community police circular can include dogs and rabies as a requirement			
	Registration of Kennel clubs and dog breeders, for their potential contributions in this regard as experienced stake holders			
	Establish linkage with private practicing veterinary surgeons to prepare and implement rules and regulations on functioning of such veterinary clinics			
	Introduce evaluating and rewarding methods to schools on proper food waste disposal methods for children			
	Request all local and international NGOs, who have different extents of experience on aspects at the			

	field level to study ordinances and suggest appropriate changes			
3.4 Promote research and development to empower communities and promote Responsible pet-ownership	Ministry of Higher Education and Research: Liaise with PHVS, identify gaps in district activity & conduct focused field research	1. Number of research priority areas on dog mediated human rabies identified	1. Percentage of research conducted out of identified 2. Number of higher education organizations collaborating for research	Data and information generated to strengthen and plan next NSP
	Conduct Research to develop programs/ interventions and health messages that effectively reach to the high-risk groups			
	Conduct Research to promote Responsible Pet-ownership to Sri Lankan setup			
	Conduct Research to evaluate the effectiveness of conventional health educational programs and to introduce evidence based behavioral change communication strategies to promote health			
	Develop or Revise “Rabies Module” in the School curriculum and develop suitable IEC materials for children			

4.6 Budget -National Strategic Plan for Elimination of Dog Mediated Human Rabies Sri Lanka (2022-2026)

Objective 1: To strengthen leadership, legislation, stewardship, and management functionsof the elimination of Human Rabies.					
Strategy	Activities	Budget			
		Item	Cost	No. of items	Total
1.1 Revise appropriate legislation to implement the national rabies policy	Amend legislations to suit currently existing context and work surroundings	No			
	Carry out relevant amendments in the Rabies control ordinance as suggested in section 3.5	No			
	Amend, implement and monitor the implementation of Dog Registration Ordinance	No			
	Amend, implement and monitor the implementation of Nuisance ordinance	No			
	Add necessary provisions in Animal Diseases Act to include PHVS as the focal point of both in human and animal rabies control	No			
	Amend Prevention of Cruelty to Animals Ordinance including veterinarians in identifying the offense objectively and increase the punishment as appropriate to current days	No			
	Amend Local government ordinance appropriately enabling island wide dog rabies control, including euthanasia protocols	No			
	Strengthen and implement laws on waste food disposal methods by commercial entities and public institutions	No			

	Use of legal powers vested with DAPH in rabies status declaration	No			
	Advice police to implement ordinances in its current format	No			
	Change police ordinance accordingly and appropriately to suit other ordinances	No			
1.2 Strengthen the governance and stewardship for Rabies elimination	Formulation of National Steering Committee *(Consider National steering committee Reference NSP 2013)*	No			
	Establish National Rabies Task Force (NRTF) with all identified stake holders	No			
	Formulation of Provincial/ District Rabies Coordination Committee (DRCC)	No			
	Delegate required powers vested with DG of DAPH to D/PHVS for PHVS of the Ministry of health as the focal point of dog rabies control programme	No			
	Identify central and provincial team leaders in Ministry of Health, empower them and give targets	No			
	Identify centrally PHVS as the team leader with a mechanism for objectively monitoring the program	No			
	Identify district leaders in respective stake holders, empower, appreciate and give targets	No			
	Use communication as a tool of energizing, activating, motivation, appreciation, time and task management	No			
1.3 Establish, and strengthen the OneHealth approach amongmulti-	Conduct quarterly Progress review meetings with the participation of Director Public Health Veterinary Services, Director Animal Health (Public Health Division) of DAPH	No			
	Collect and study all available relevant information to identify potential stake holders and contributions by each of them	No			

stakeholders to promote coordinated actions	Identify measurable tasks and contributions by each stake holder at national and provincial levels	No			
	Participation for workshops, conferences, meetings of other institutions to share knowledge and to strengthen links	No			
	Coordinate activity with district teams with other ONEHEALTH centers in the country and outside on rabies and other relevant zoonoses	No			
	Conduct combined Rabies controlling programs (e.g.: Mass Dog Vaccination) with the involvement of multi-stakeholders	No			
	Conduct Annual Progress reviews of Rabies Controlling activities with the participation of relevant key stakeholders	No			
	Research to strengthen One-Health approach	5,000,000			5,000,000
	Develop a mechanism to ensure data sharing among stakeholders	No			
1.4 Advocacy to relevant higher authorities to ensure commitment toward Rabies elimination	Conduct district level advocacy meeting for the leaders of relevant stake holder groups	No			
	Identify the lead role by Ministry of Health centrally and provincially and importance of maintaining diplomatic and professional relationships with all stake holders to meet national targets	No			
	Objectively monitor data collection, storage, data flow and analysis and their contributions to prompt decision making and communicate with stake holders	No			
	Objectively monitoring contributions by each stake holder at provincial level and communicate with stake holders	No			

	Advocate Relevant bodies to ensure Political commitment	No			
	Advocate higher government authorities to ensure smooth functioning of Rabies control activities	No			
	Advocate local International technical and donor agencies to ensure continues support	No			
Subtotal					5,000,000

Objective 2: To ensure the delivery of comprehensive services, to eliminate the burden of human rabies

Strategy	Activities	Budget			
		Item	Cost	No. of items	Total
2.1 Ensure early Post-Exposure Treatment, through comprehensive service delivery	Update National Post Exposure Treatment (PET) guidelines including animal bite classification to suit WHO Recommendations	No			
	Identify hospitals that need basic requirements to provide PET, and hospitals that need to upgrade with basic facilities to provide PET base on demand	No			
	Provision of human rabies vaccines as pre-exposure prophylaxis to high risk groups	ARV (pre exposure) for 5 years	1800 LKR per vial	30,000 per year	54,000,000
	Ensure Well established system with wide coverage of human ARV distribution and administration with minimum vaccine wastage	ARV (PET) for 5 years	1800 LKR per vial	300,000 vials per year	540,000,000
	Ensure adequate supply of good quality human ARV and RIG across the country	No			
	Administration of human ARV and RIG is free of charge to the public	No			
	All patients requiring PET is registered in the animal bite registry and provided with a vaccination card	No			
	Ensure availability of RIG in all hospitals providing ARV	RIG for 5 years	1000 LKR per vial	50,000 vials per year	50,000,000

	Ensure provision of RIG in outpatient/emergency care setting of hospitals	No			
	Ensure provision of PET in casualty wards of all hospitals providing ARV	No			
	Store and distribute human rabies vaccines coupled with EPI (Expanded Program of Immunization) vaccines to ensure cold chain maintenance	No			
	Provide digital temperature monitoring devices to all relevant institutions for cold chain monitoring of human Rabies vaccines	Digital thermometers	2000 LKR	280 hospitals x 3 refrigerators	1,680,000
	Develop and implement a real-time information system to replace existing hospital animal bite register	No cost			
	Conduct periodic refresher course and training for Nursing Officers and Medical Officers on animal bite management and PET guidelines	Training cost	1,000,000 per year	5 yeras	5,000,000
	Trained human resources	Vaccinators included in Section 2.2 Dog catchers included in Section 2.8 PHVS Veterinary surgeon at RDHS included in Section 2.8			
	Providing bite data daily to RDHS in order to respond to rabies suspected animals immediately	Smart phones	32,000 LKR per phone	26 x 2 per team and need to replace every 2 years.	3,328,000
		Phone bill	750 LKR/ month	52 phones for 5 years	2,340,000
2.2 Achieve herd immunity in dog reservoirs by achieving	Conduct national dog population survey every 5 years and assess dog vaccination coverage	Post vaccination surveyor Salary	32,000 LKR /month for 3 months	26	2,496,000

over 70% of vaccination coverage against rabies		Three wheeler	8,00000	26	20,800,000
		Fuel for 26 surveyors (3 wheeler)	184LKR/liter petrol (30km/L)	30kms per day for 90 days for 26 staff	430,560
	GPS Mapping of mass dog rabies vaccination centers	Smart phone application – no cost	-	-	-
	Timely procurement of good quality dog rabies vaccines for MDV.	Listed earlier in Section 2.2	-	-	-
	Cold chain maintenance of dog rabies vaccines.	4 Digital thermometers for every RDHS	2000 LKR	4 x 26	208,000
	Trained human resource.	Vaccinator salary	40,000/month for 5 years	120 vaccinators	288,000,000
	Conduct timely routine biannual free mass dog vaccination programmes (both static vaccination centers and free roaming dogs)	Dog vaccines for 5 years	495 LKR/vial	250,000	1,237,500,000
		Auto vaccinators	20,000 LKR	3 per district (26)	1,560,000
	Provide dog rabies vaccination (both static centers and free roaming dogs) free of charge to the public	Double cab	8,000,000	26	200,800,000
		10 seater van	10,000,000	26	206,000,000
		Three wheelers, 2 per dist.	800,000	26 x 2	41,600,000
		Fuel diesel (double cab & 10 seater van)	144 LKR (8km/L)	200 kms x 250days x 26 x 5 years	117,000,000
		Fuel petrol (3 wheeler)	184 LKR (30km/L)	200 kms x 250 days X 26 x 5 years	41,860,000
	Sufficient publicity on dog rabies vaccination program.	Listed in Section 3.1			

	Adequate geographic coverage of MDV centers for satisfactory accessibility to public.	No			
	Refer those who missed dog vaccination to DAPH veterinary offices and private practicing vets for vaccination	No cost. only directing them to DAPH veterinarian.			
	Conduct post vaccination surveys in each district	Recruitment of surveyor in Section 2.4			
	Conduct Mop up vaccinations on need after mass dog vaccinations	Contingency amount	5,00,000/year	5 years	2,500,000
	Conduct ring vaccinations rapidly when the need arises	Fill existing cadre Recruit veterinary surgeon in Section 2.8 Recruit vaccinators as in Section 2.2			
	Identify areas which requires special attention, around jungle patches, public markets, places of worship, schools	No			
	Develop and implement a real-time information system for mass dog vaccination	A smart phone app – no cost			
	Provide digital temperature monitoring devices to all relevant centers for cold chain monitoring of animal Rabies vaccines				
	Liaise with veterinary surgeons of DAPH to obtain their dog vaccination numbers	No			
	Liaise with private sector veterinary surgeons to obtain their dog vaccination numbers	No			
	Liaise with existing NGOs working on mass dog rabies vaccination at national and district level	No			
2.3 Investigate rabies burden among other animal reservoirs (other than dogs) and	Develop and implement animal rabies digital surveillance incorporating relevant sectors including DAPH, wildlife, private practicing veterinary surgeons and local governments.	A smart phone app – no cost			
	Monitoring wild animal deaths, submitting carcasses to labs for rabies diagnosis	Equip district teams in Section 2.8 Enhance coordination in Section 2.8			

take necessary rabies control measures		Improve communication in Section Sections 2.1, 2.2, 2.5 and 2.6 Establish 5 additional labs in Section 2.7 Rapid tests in 5 DAPH labs in Section 2.7			
	Refer road kills of wild animals to laboratories for rabies detection	No			
	PHVS to communicate with animal health division of DWC for coordinated action in an emergency	No			
	Initiate Rabies virus strain identification through molecular sequencing	Sequencing cost	LKR 12000 per sample	100 samples per year	6,000,000
	Conduct on effective dog vaccination and population control around patches of jungles	Equip district teams in Section 2.8			
	Safety Guidelines for currently observed shift in type of pets (eg :from dog and cat to reptiles and other mammals)	No			
	Restrictions to be imposed on other mammals used for various activities such as amusement, work (mongoose), increasing human welfare (animals for prisoners)	No			
	Analyze the feasibility on possibility & potential for the use of oral bait vaccine on wild animals	No			
2.4 Manage the population of animal reservoirs with special emphasis on dogs, through appropriate humane methods	Conducting a national programme on surgical sterilization of female dogs	Female dog sterilization	3000 per dog	1000 dogs per year x 26 x 5 years	390,000,000
	Quantitatively evaluate and report the impact of dog population management programmes using software	No			
	Liaise with stakeholders conducting dog population management after dog survey in the area for better publicity, assistance & to	No			

	implement a focused program with greater impact				
	Consider chemical sterilization of female and male dogs if required based on evidence generated	Not estimated			
	Develop and implement a registration system to register all dogs at the time of mass dog rabies vaccination programme using a digital electronic system	No			
	Introduce a real-time digital information system to capture the data from female dog sterilization program	Smart phone app – no charge			
	Need proper garbage collection and dumping systems minimizing access of dogs to waste food	No			
	Teaching on importance of clean and balanced environment with proper eating and food waste disposal habits in schools in several grades	No			
	Providing dog proof fencing of garbage collection, dumping & processing sites	Fencing	1000000	26	26,000,000
	Establish Puppy re-homing programmes, and develop and maintain facilities to observe suspected rabid animals	No			
	Quarterly meetings with NGOs, Kennel Clubs on achievement of objectives and strategies	No			
2.5 Strengthen and reorient the rabies surveillance towards elimination of human deaths due to rabies	The notification of suspected human rabies from hospitals	Improved communication in Sections 2.1, 2.2, 2.5, 2.6			
	Establish SMS alert system and a monitoring mechanism to ensure follow up PET	Smart phone in every hospital (replace every 2 years)	32,000	280 x 2	17,920,000
		Phone bill	750/month for 5 years	280	12,600,000
	Implement Animal rabies Notification mechanism and systematic data reporting to a centralized database	Improved communication in Sections 2.1, 2.2, 2.5 and 2.6			

	Develop an active surveillance system for both domestic and wild animals to support declaration of rabies free status	Equip district team in Section 2.8			
	Investigate and review of human rabies deaths	No			
	Implement a real-time digital system (for dog rabies vaccination, dog sterilization, dog registration, laboratory surveillance and hospital animal bite register) with GPS facilities for surveillance linking hospitals and laboratories with district rabies units	No			
	Establish a system in which provincial DAPH receives a copy, in addition to the submitted person, of daily reports from labs on rabies positive animals, for information and possible action	Improved communication from laboratories using free of charge mobile application provided as in Section 2.7			
	Decision making using studies on population dynamics (specially breeding and deaths) of free roaming dogs with emphasis on identifying potentials of diluting herd immunity level	No			
	Rapid action taken when increased numbers of daily dog bitten victims are reported to hospital	Strengthen district team Available software use by Regional epidemiologist			
	Decision making on dog vaccination frequency depending on longevity of immunity in free roaming dogs and factors affecting	No			
2.6 Implement integrated bite case management (IBCM) and rapid response	Develop SOPs and guidelines on integrated bite case management	No			
	Establish and function a 24/7 National Rabies Hotline for public to report rabies suspected animals	Phone handlers (2) salary	LKR 40,000	2	2,400,000
		Smart phone (replace every 2 years)	32000 LKR	26	1,664,000

		Phone bill 750/m x 2/dist	750/month for 5 years	26 (x2)	2,340,000
	Increase in daily ARV and bite objectively monitored by VS RDHS, informing accordingly to rapid response team	No			
	Deploy rapid response teams to identify GPS location, identify rabid suspected dog, catch for observation (or euthnise if rabid), collect brain tissue, transport sample to laboratories for testing.	Strengthen district team in Section 2.8			
	Conduct human and dog contact tracing using current formats	Strengthen district team in Section 2.8			
	Identify suspected rabid dogs, capture, and transport, for detention & observation	Strengthen district team in Section 2.8			
	Conduct ring vaccinations for suspected dog rabies reported from hospitals	Strengthen district team in Section 2.8			
	Develop a real-time information system linking the hospitals with DRU	Strengthen communication in district team in Section 2.8			
	Collect & transmit data rapidly to PHVS, PD of DAPH & local government by veterinary surgeon of RDHS	Improved communication in Sections 2.1, 2.2, 2.5 and 2.6			
2.7 Enhance the rabies diagnostic capacity and improve networking of rabies laboratories	MRI to be reference/validation laboratory				
	Expand rabies diagnostic capacities on animal and human rabies diagnosis to five additional laboratories covering the entire country Suggested hospitals to develop are: 11. Teaching Hospital Jaffna 12. Teaching Hospital Batticaloa 13. Teaching Hospital Anuradhapura 14. Teaching Hospital Rathnapura 15. Teaching Hospital Karapitiya	RT PCR machine	4,500,000	1	4,500,000
		RT reagents for 5 years	9000 per sample	100 per year	4,500,000
		UV microscope X 6=2,10,00,000	3,500,000	6	21,000,000
		FITC conjugate (shelf life 2 years)	300000	6	3,600,000
	Select five DAPH laboratories to provide rapid rabies diagnosis using lateral flow assays.	Rapid diagnostic kits for 5 years for 5 laboratories	1500 LKR per kit	100 samples per month lab	45,000,000

	Develop guidelines and protocols for five new DAPH laboratories and validation and plan utilization of 25 existing Veterinary Investigation centers (VIC) of DAPH	5 labs to be developed for test validation included above			
	VIC s of DAPH to assist in brain sample collection and transportation to nearest laboratory.	5 labs to be developed for test validation included above			
	Establish molecular sequencing facilities at Medical Research Institution	Sequencer	1,100,000,000,000	1	1,100,000,000,000
	Establish mechanism for MRI to lead all diagnostic laboratories, collect data, analyse, interpret, coordinate and upgrade labs	No			
	Develop real-time digital reporting system to create rapport among laboratories, District teams and Public so that lab will CC daily reports to district team and DAPH provincial director	Smart phone app – no cost			
	Develop a join mechanism with potential stakeholders to ensure sending all suspected animal samples to Rabies laboratories.	No			
	Identify gaps and deficiencies in sample receipt, communication network, data collection and storage and response to victims for lessons to be learnt for improvements	No			
2.8 Build the capacity in terms of human resources and logistics to ensure comprehensive service delivery	Revise vaccinator cadre as 1 per 50,000 population and recruit relevant cadre for Rabies Control Unit	No. within Health Ministry			
	Provision of transport facilities for District Rabies Units Required transport facilities are: 1 double cab, a 10 seater van and two three wheelers	Included in Section 2.2 Required transport facilities are: 1 double cab, a 10 seater van and two three wheelers			
	Provide required equipment for District Rabies Units to implement vaccination programme	Included in Section 2.2 Vaccine, transport, recruitments, auto vaccinator			

	Recruit class 1 PHII for each District Rabies Unit as the designated rabies PHI	No			
	Establish Rabies Rapid response team (equipped with trained HR and infrastructure) under each RDHS	Included in Section 2.2			
	Recruit a veterinary surgeon on contract basis for District Rabies Units of each RDHS Office.	Veterinary Surgeon Salary for 5 years	100,000	26	13,000,000
	Prepare the duty list for the proposed RDHS veterinary surgeons	No			
	Revisit identified roles by RE and CP in this regard and modify if and when required and introduce measurable targets	No			
	Provide required resources (logistics) to the RDHS veterinary surgeon	Double cab	80,00,000	26	208,000,000
		Fuel diesel (8km/L)	144 LKR per litre	200 kms x 250 days x 26 x 5 yrs	117,000,000
		Smart phone (replace after 2 years)	32,000 LKR	26	1,664,000
		Phone bill	750	26	1,170,000
	Provide required IT equipment and connectivity support for DRUs, laboratories and hospitals after a gap analysis to facilitate implementation of digital information system	No			
	Establish network with district and national levels stake holders for better program implementation	No			
	Train, empower, assign person and provide equipment for brain sample collection,	Necropsy supplies	50,000	26	1,300,000
		Kennels	100,000	26	2,600,000

	sample packaging and transportation to the district team	Large Deep Freezer	100,000	26	2,600,000
		Catching staff - 5 per team for 5 years	40,000	26	312,000,000
		Catching equipment	50,000	26	1,300,000
		Catching vehicle	32,00,000	26	83,200,000
		Fuel	184 LKR	20 kms x 250 days x 26	119,600,000
	Identify gaps and deficiencies in procedures in district using provincial and national higher education and research institutions	No			
2.9 Promote research and development to generate evidence for quality service delivery	Conduct Training Need Assessments for different levels/ categories of employees involved in Rabies prevention and control activities	Training costs annually for 5 years	1,000,000	26	26,000,000
	Review the progress of NSP and Rabies control activities and conduct SARE assessment in Sri Lanka	No			
	Conduct research to generate evidence /Identify Best practices for Rabies elimination including new strategies such as efficient dog handling techniques (hand catching vs auto plunger) and oral rabies vaccination.	Included in 2.9 above			
	Conduct periodic surveys to test antibody titers of rabies in random sampled dogs at district level	Dog population surveyor with requirements in Section 2.4			
	Identify gaps specially district related in procedures, IBCM and improved vaccination coverage	No			
	Evaluating school children periodically and public to see whether knowledge imparted has been of value (KAP studies)	Local research institutes can assist District team			

	Using school children on their Scientific method lesson in GCE (A/L) for research	No, Both parties benefit			
	Measuring changes in society periodically regarding food waste disposal after education programs	No. schools and local research institutes can manage, Budget in Section 1.3			
	Allocating funds for research activities for surveys, data analysis, transport and publications at district levels	Included in Section 1.3			
	Conducting surveys to determine reason for dogs to bite (such as provocation)	Local research institutes using Section 1.3			
	Conducting surveys to determine actual numbers of dogs in district	Local research institutes using Section 1.3			
Subtotal:					**1,104,244,060,560**
Objective 3: To empower communities towards active participation in the elimination of human rabies.					
Strategy	Activities	Budget			
3.1 Empower communities through health education	Liaise with RDU to educate teachers in Montessori, Grade 8 & 10 science syllabus and Grade 10 teachers guide, private tuition teachers	Educational videos	5,00,000	5 years	2,500,000
		Messages in radio	5,00,000	5 years	2,500,000
		Awareness in school	5,00,000	5 years	2,500,000
		Print media	5,00,000	5 years	2,500,000
	Identify potential teachers/educators on dogs and rabies as resource persons	No			
	Educating public that deserve special attention through Director Non formal education	No, teaching material in Section 3.1 above			
	To include information on rabies in education programs for members and public and in dog shows conducted by tri forces and Police kennels	No. Teaching material in Section 3.1 and their on the own			

	Triforces and Police kennels resource utilization on conducting research on development and persistence of immunity against vaccines	No			
	Liaise with DRU on teachings regarding proper and clean eating habits and responsible disposal of food waste	No			
	Media: liaise with PHVS for improved public education	No, National need			
	National level health education programmes for public on the importance of dog rabies vaccination conducted through radio, television and papers	No, National need			
	Educating children through the national education curriculum. Educating the educators since it is already in grade 8 and 10 science syllabus and include in grade 10 heath teachers guide	No. Coordinating with district team with local schools and PHVS with teacher training institutes			
	Use of midwife and gramaniladari for education purposes	No			
	Conducting different activities in fine arts liaising with district team	Creative activities	1000000	5 years	5,000,000
	Periodically collect all research publications related to dogs specially behaviour, neurological conditions of rabies and sociological aspects	No. District team and local research institutes can attend			
3.2 Improve reach to the high-risk groups through specialized interventions	Identify high risk groups for animal bites (veterinarians, students, animal handlers, wildlife dept staff, private veterinary ancillary staff, pet groomers, animal welfare workers, triforces, police) and rabies and encourage administration of pre exposure prophylaxis	No, system already in place			
	Identify and educate public categories who are unlikely to search for medical assistance	No. systems already in place			

	when an animal bites them such as poor, war victims, drug addicts, alcoholics				
	Educate veterinarians, professionals, NGOs and public on how pups dogs and other warm blooded animals from streets and jungles must be adopted safely	No. system already in place			
3.3 Empower all stakeholders and partners to ensure participation in policy development service implementation, and provision of care	Local government: municipality, urban council, pradeshiyasabha: Encourage local governments to suggest remedial laws for all 7 ordinances related to dogs and rabies so that the current rabies control procedures can be strengthened and Liaise with DRU to assist in rabies control activities	No			
	Other stake holders can study the 7 ordinances and suggest possible contributions and changes to the authority	No			
	Advice department of Police to change Police ordinances to suit all 7 ordinances in the current administrative context New division on community police circular can include dogs and rabies as a requirement	No			
	Registration of Kennel clubs and dog breeders, for their potential contributions in this regard as experienced stake holders	No, infrastructure already in place			
	Establish linkage with private practicing veterinary surgeons to prepare and implement rules and regulations on functioning of such veterinary clinics	No, Infrastructure in place			
	Introduce evaluating and rewarding methods to schools on proper food waste disposal methods for children	Waste management educational programs for 5 years	500000	26	13,000,000
	Request all local and international NGOs, who have different extents of experience on	No			

	aspects at the field level to study ordinances and suggest appropriate changes				
3.4 Promote research and development to empower communities and promote Responsible pet-ownership	Ministry of Higher Education and Research: Liaise with PHVS, identify gaps in district activity & conduct focused field research	No			
	Conduct Research to develop programs/ interventions and health messages that effectively reach to the high-risk groups	Included in Section 1.3			
	Conduct Research to promote Responsible Pet-ownership to Sri Lankan setup	Included in Section 1.3			
	Conduct Research to evaluate the effectiveness of conventional health educational programs and to introduce evidence based behavioral change communication strategies to promote health	Included in Section 1.3			
	Develop or Revise "Rabies Module" in the School curriculum and develop suitable IEC materials for children	No			
Subtotal:					28,000,000
Grand total:					**1,104,272,060,560**

5. List of Tables

6. List of Figures

7. List of Acronyms

ARV	Anti-rabies vaccine
DAPH	Department of Animal Production & Health
FAO	United Nations - Food and Agriculture Organization
FAT	Fluorescent antibody test
HRIG	Human Rabies Immunoglobulin
IEC	Information, education and communication
MOH	Medical Officer of Health
MRI	Medical Research Institute
NGO	Non-governmental organization
OIE	World Organization for Animal Health
PEP	Post-exposure prophylaxis
PET	Post-exposure treatment
PHC	Primary health care
PHI	Public Health Inspector
PHVS	Public Health Veterinary Services
PrEP	Pre-exposure prophylaxis
RDHS	Regional Director of Health Services
RFFIT	Rapid Focus Fluorescence Antibody test
RIG	(Equine) Rabies immunoglobulin
WHO	World Health Organization

National Stakeholder meeting for the presentation of the draft National Strategic Plan (NSP) for elimination of dog mediated human Rabies- Sri Lanka 2022 – 2026,
held at Waters Edge Hotel, Baththaramulla on 26th October 2021