



# Veterinary Epidemiological Bulletin Sri Lanka



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Department of Animal Production and Health, P.O.Box 13, Peradeniya, Sri Lanka. e-mail.editorvebsl@yahoo.com

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## Rabies : a major zoonosis

### 1.1 Introduction

Every ten minutes someone dies of rabies somewhere in the world. Rabies is reported to claim about 55,000 human lives per year<sup>1</sup>. It occurs in more than 150 countries and territories<sup>2</sup>. It is a highly fatal zoonotic disease which has a worldwide distribution. It affects the central nervous system of warm blooded animals including human.

The causative agent of rabies is a RNA virus in the genus *Lyssavirus* belongs to the family *Rhabdoviridae*. Rabies in Sri Lanka is associated with a single lineage of rabies virus, which shares only a distant common ancestry with rabies viruses from any other Asian country<sup>3</sup>. Phylogenetic analyses of the rabies N and G genes showed that the Sri Lankan rabies viruses are distinct and probably originated from a single clone<sup>4</sup>.

Rabies is mostly transmitted through an infected animal bite-wound or infected animal saliva entering an open cut or wound or mucous membrane such as the mouth, nasal cavity or eyes. In the meantime incidence of inhalation of the virus in the environment of a densely populated bat cave has also been documented. Once an animal is exposed to the virus, it remains at the entry point for a while and then it travels to the brain along the nerves, where it multiplies quickly, resulting clinical signs. Then the virus travel through nerves to the salivary glands. The time period for the onset of clinical signs vary depending on the virus strain and the entry point. It is important to realize the possibility of transmitting the virus via saliva to another animal or human, before the clinical signs appear in the infected animal. Man is the dead end host and dogs are the source of 99% of human rabies deaths<sup>5</sup>.

### 1.2 World Rabies situation

Canine rabies has been eliminated from Western Europe, Canada, the United States of America , Japan, Malaysia and few Latin American countries, while Australia is free from carnivore rabies. Bats are the source of most human deaths in USA, while in Australia and Western Europe it is an emerging public health threat. Asia reports the highest human rabies deaths exceeding 30,000 per annum due to endemic canine rabies. People living in rural areas are more threaten as human Post Exposure Prophylaxix (PEP) is not readily available and not accessible in rural areas. Average cost of rabies PEP is US\$ 40 in Africa and US\$ 49 in Asia<sup>5</sup>.

## 1.3 Rabies in Sri Lanka

Potential danger of rabies in Sri Lanka has been identified from very early times that the legislation on Rabies Control Ordinance was issued in 1894. Since then different phases of approaches have been applied to eliminate or control human and animal rabies.

An integrated approach had been attempted with the co-operation of different departments since late 1940s and the Veterinary public health unit was established under the Ministry of Health in 1953 upon the guidance of World Health Organization (WHO). First comprehensive rabies control program was carried out in 1975, (the human deaths reported was around 400) established a vaccine production centre by the Department of Veterinary Services in the Ministry of Agriculture. It produced live attenuated chick-embryo rabies vaccine (Flurry vaccine). However usage of flurry vaccine was banned later on by many countries and therefore the vaccine production was ceased. During 1981 to 1985 an accelerated intensive Rabies control program was implemented, with financial support provided by sources outside the country, and it declined the observed cases from 377 deaths in 1973 to less than 100 in 1989<sup>6</sup>.

According to WHO, control of Humans and canine rabies pilot project for South East Asia was implemented in Sri Lanka at 7 endemic Districts namely Kurunegala, Gampaha, Colombo, Kalutara, Galle, Matara & Hambanthota in 1984. Owned and community dog vaccination, population control, epidemiological surveillance, community participation and intersectoral collaboration were identified strategies for the eradication program<sup>7</sup>.

In 1990, the Provincial Councils and Local Governments were entrusted with the rabies control measures. Dog mass vaccination, elimination of stray dogs and enforcement of rabies control legislation, and dog ecology studies were carried out.

Sri Lanka used to cull stray dogs as a control measure of rabies elimination, until year 2006. Human rabies incidences were further declined, reported cases for three consecutive years of 2003, 2004 and 2005 were 76, 98 and 55 numbers respectively. By now Sri Lanka reports 40-50 human deaths annually. Sri Lankan government spends about LKR 34.04 million for dog vaccination, LKR 68.56 million for surgical sterilization and LKR 1.97 million on chemical sterilization annually. Today the dog owners in Sri Lanka are more cooperative with dog rabies control activities and strengthening the services would improve the community participation in rabies control in the country.

With the Cabinet Paper on “Spread of Rabies” dated July 13, 2012, Ministry of Livestock and Rural Community Development has been incooperated as a collaborative partner in control of rabies in the country. Sri Lanka also has been privileged to receive about 300,000 doses of Rabies vaccines from the World Animal Health Organization (OIE) Vaccine Bank. On the World Rabies Day the 28th of September, 2013, Dept. of Animal Production and Health (DAPH) launched Anti Rabies Campaign with Sri Lanka Veterinary Association (SLVA) carrying out vaccination, sterilization and awareness programs in various parts of the country.

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## Recommended Vaccination schedule of Dogs against Rabies

Dam immunity	1 <sup>st</sup> Inoculation	1 <sup>st</sup> Booster	Revaccination
<i>Pet Dogs</i>			
Immunized	06 <sup>th</sup> week	14 <sup>th</sup> week	1 year after last booster
Not immunized	At the time of presentation (after opening eyes)	14 <sup>th</sup> week	1 year after last booster
<i>Stray dogs</i>			
	At the time of presentation (after opening eyes)	After 10 weeks	1 year after last booster

### Anti rabies post exposure vaccination for dogs

- If victim properly immunized – one booster rabies vaccination
- If victim unvaccinated, to follow the WHO Recommendations- No rabies vaccine given. Observe dog for six months for rabies signs. If negative vaccinate at six months.

Source: Faculty of Veterinary Medicine and Animal Science, University of Peradeniya. 2013.

### Current Disease status

Rabies cases were reported among cattle, buffalo, caprine and swine during second quarter of this year. Out of the 40 animal cases reported in animals other than the dogs, 31 of them were in cattle, which were directly bitten by dogs. Dog is the major animal species affected by rabies in countries where the disease is present. In Sri Lanka since majority of these cases are handled by the private veterinary service the number of dog rabies cases are usually under-reported or not reported at all. However the samples received in the laboratory at MRI for rabies diagnosis indirectly indicate the rabies occurrence among dog population. During that first quarter of 2013, 424 samples have been received by the laboratory of which 271 are from dogs and 112 are from cats.

### Rabies diagnosis statistics : Jan-March 2013

Specimen	Total no. Received	D/Smear Positives	D/Smear Inconclusive	FAT Positives	FAT Negatives	Total Positives	Total Negatives	Sample Decomposed
Dog	271	74	185	106	79	180	79	12
Cat	112	8	103	19	84	27	84	1
Squirrel	19	0	18	0	18	0	18	1
Human	5	0	5	5	0	5	0	0
Cow	4	1	3	2	1	3	1	0
G/mongoose	4	0	4	2	2	2	2	0
Rat	2	0	2	0	2	0	2	0
Goat	2	0	2	1	1	1	1	0
Role cat	1	0	1	0	1	0	1	0
Bat	1	0	1	0	1	0	1	0
R/mongoose	1	0	1	0	1	0	1	0
Monkey	1	0	1	0	1	0	1	0
Ring Tail Lemour	1	0	1	0	1	0	1	0
<b>Total</b>	<b>424</b>	<b>83</b>	<b>327</b>	<b>135</b>	<b>192</b>	<b>218</b>	<b>192</b>	<b>14</b>

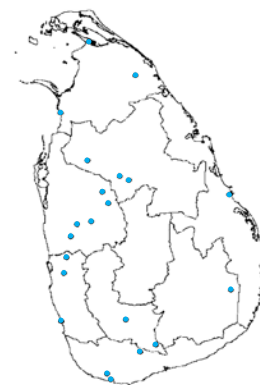
Source: Rabies Statistical Bulletin – Public Health Veterinary Service, Ministry of Health

Cases of rabies have been reported in significant numbers among other animal species such as cattle, goat, etc... by the government veterinary service too. During the period of second quarter 2013, 40 such cases have been reported as shown below.

### Reported cases of Rabies in other animal species (Second Quarter 2013)

Species	Cases
Bovine	31
Buffalo	03
Caprine	05
Swine	01
<b>Total</b>	<b>40</b>

Month	Cases	Deaths
April	12	12
May	16	16
June	12	12
<b>Total</b>	<b>40</b>	<b>40</b>



## 2. Status of Livestock Diseases

### 2.1 Bovine Diseases

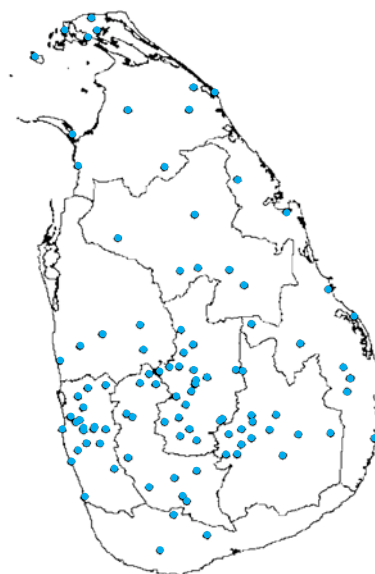
#### 2.1.1 Bovine Babesiosis

In total 736 cases of Bovine Babesiosis with 7.07% case fatality rate (CFR), were reported during second quarter of 2013. These cases were reported in all the provinces in the country. Pre-immunization introduced into the field in 2012 was continued and 398 calves were pre-immunized in 5 districts.

#### Pre-immunization and reported cases April-June 2013

District	No. of Animals pre-immunized	No. of Cases
Badulla	120	123
Ratnapura	100	19
Kandy	78	73
Colombo	60	56
Kegalle	40	28
<b>Total</b>	<b>398</b>	<b>299</b>

#### Spatial Distribution of Clinical cases



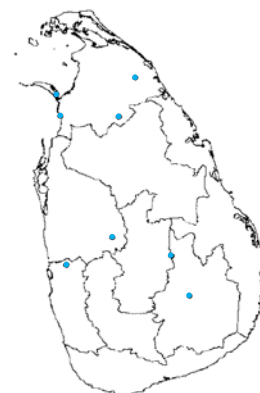
#### 2.1.2 Bovine Brucellosis :

Bovine brucellosis cases were reported from Eastern, Northern, Western, Uva and North-Western Provinces during second quarter of this year. The highest number of cases were reported in the Eastern province followed by Northern Province.

Brucellosis has been reported in Morawewa, Kinniya, Mannar, Mantai west, Musali, Oddusuddan, Vavuniya, Vavuniya south, Passara, Marandagahamula Veterinary ranges.

#### Reported cases April-June 2013

Province	Cases
Eastern	24
Northern	12
Western	6
Uva	4
North Western	1
<b>Total</b>	<b>38</b>

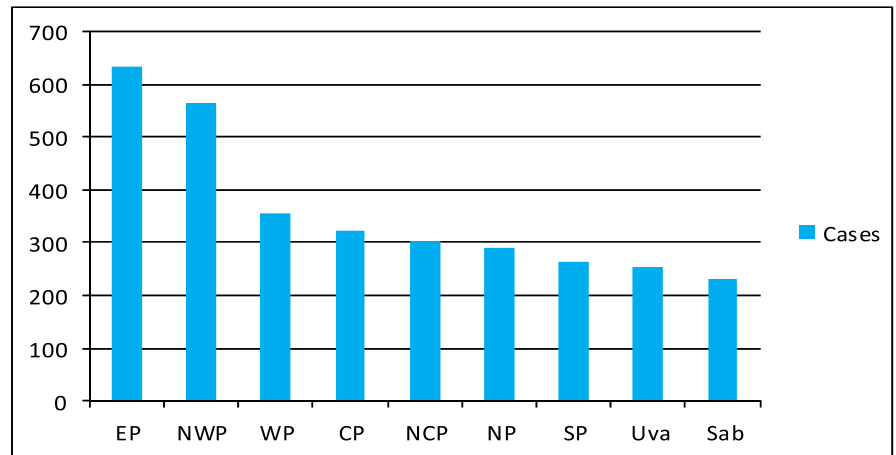


## 2.1.3 Mastitis :

A total of 3189 cases were reported in the country spread to all Provinces during this quarter, compared to 2969 cases during first quarter of this year.

### Cases reported at Provincial level

Province	Cases
Eastern	631
North western	543
Western	351
Central	322
North Central	302
Northern	290
Southern	265
Uva	253
Sabaragamuwa	232
<b>Total</b>	<b>3189</b>



## 2.2 Caprine Diseases

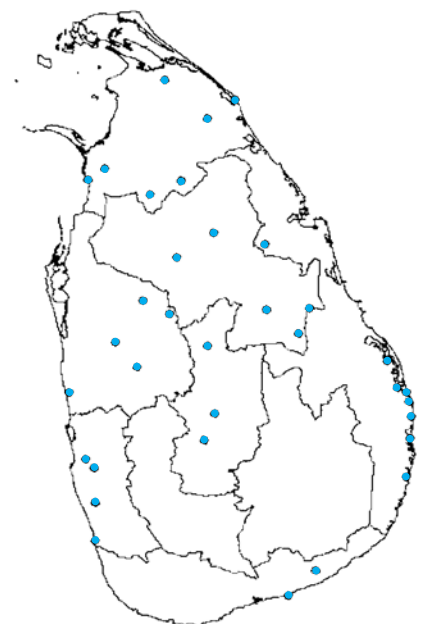
### 2.2.1 Contagious Pustular Dermatitis (CPD):

There were 507 cases of Contagious Pustular Dermatitis reported during this period compared to 467 cases during first quarter.

#### Reported cases of CPD during the Second Quarter 2013

Province	VS Range
Eastern	Potuvil, Attalachena, Kalmunai, Thirukkivil, Damana, Irakkamam, Nindhavur, Navithanveli, Kokkadicholai Trincomalee, Thampalagamam, Morawewa, Kantale, Kinniya
North Central	Nachchaduwa, Kahatagasdigiliya, Anuradhapura ENP, Aralaganwila, Welikanda, Polonnaruwa
Western	Kaduwela, Mahara, Bandaragama, Beruwela
Southern	Thissamaharama, Hambantota
Central	Kundasale, Pussellawa, Naula
Northern	Kilinochchi, Murunkan, Musali, Mantai West, Mullaitivu, Oddusuddan, Vavuniya, Cheddikulam
North Western	Kobeigane, Nikaweratiya, Giribawa, Bamunakotuwa, Galgamuwa, Ambanpola, Marawila
Sabaragamuwa	Embilipitiya
Uva	Thanamalwila

Month	Cases	Deaths
April	208	4
May	184	1
June	115	4
<b>Total</b>	<b>507</b>	<b>9</b>



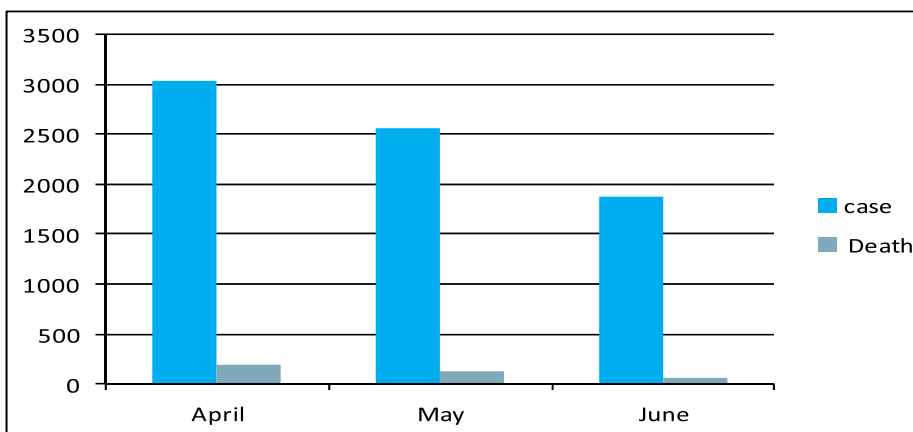
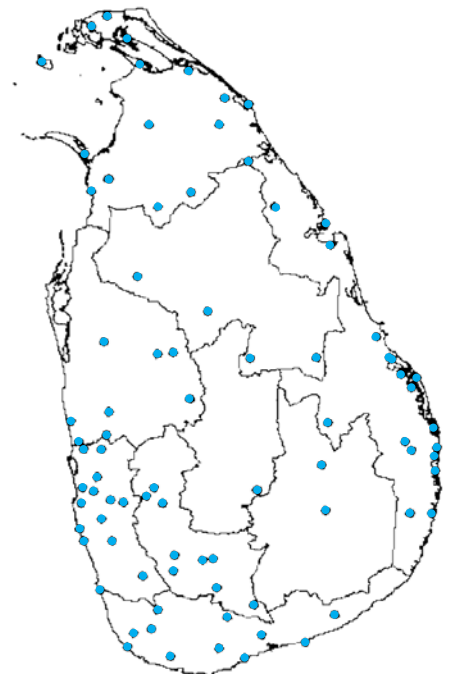
## 2.3 Poultry Diseases

### 2.3.1 Fowl Pox :

A total of 7474 cases and 382 deaths of Fowl Pox disease were reported and the highest number of cases was reported in Batticaloa District followed by Colombo and Ratnapura Districts during second quarter of this year.

Province	Cases	Deaths
Central	77	-
Eastern	2962	185
North Central	122	2
North Western	597	37
Northern	975	92
Sabaragamuwa	1096	24
Southern	429	23
Uva	211	2
Western	1106	20
<b>Total</b>	<b>7575</b>	<b>383</b>

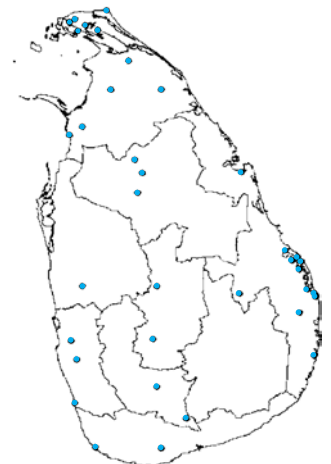
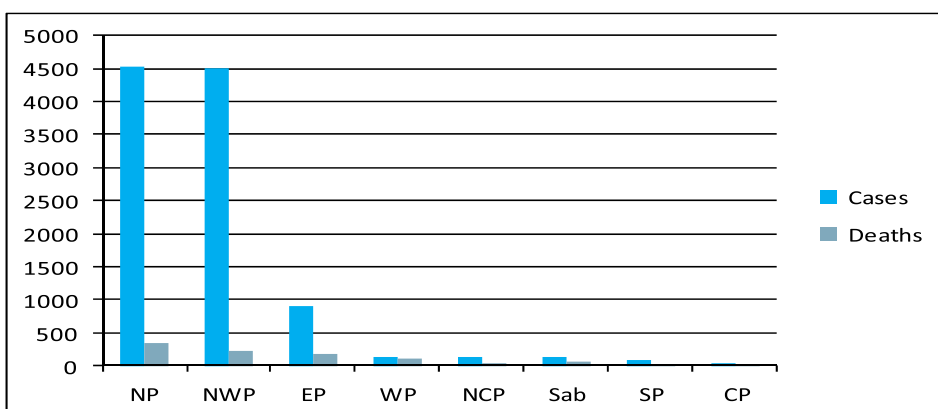
Occurrence of Fowl Pox in the Second Quarter 2013



### 2.3.2 Newcastle disease :-

Sixteen Districts in 8 Provinces except Uva province have reported the occurrence of Newcastle disease during the period under review. Total number of 10437 cases with 1004 deaths was reported during this period in the country. The highest number of cases were reported in Northern Province with 7.75% case fatality rate followed by North Western Province with 4.96% case fatality rate.

Occurrence of NCD at Provincial Level



### 2.3.3 Infectious Bursal Disease / Gumboro (IBD) :

Gumboro remains as the major disease of concern in poultry in the country. In spite of preventive vaccination programs practised in poultry farms even with IBD vaccines of intermediate strain, there have been 90,533 cases reported with 5.5% case fatality rate during the second quarter of 2013. This shows that vaccination should be followed with better bio-security measures in the farms in order to control this disease.

#### Gumboro Vaccines Registered in Sri Lanka

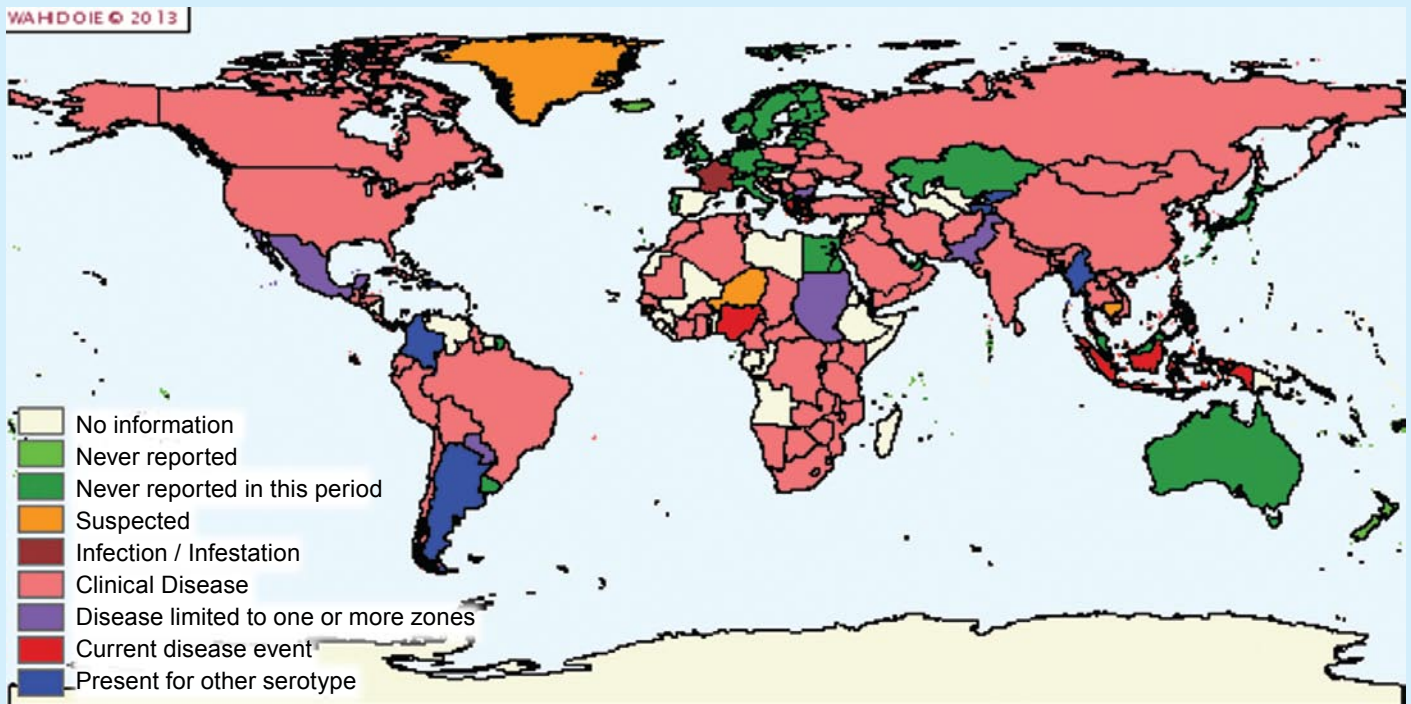
No.	VDCA Code	Product Name	Generic Name
1	185.4.9	GEORGIA STRAIN IBD VACCINE, INTERMEDIATE STRAIN, LIVE B.P. VET	IBD (Gumboro) Vaccine, Intermediate strain (Georgia Strain), Live B.P. Vet
2	189.4.7	PROVAC IBD-VAC	IBD Intermediate Live Vaccine (Attenuated IBD Virus Komi Strain)
3	200.4.8	CEVAC TRANSMUNE	Live freeze -dried complex vaccine against IBD Strain Winter field 2512 G-61
4	184.5.6	CEVAC GUMBO L	Live Freeze-dried Vaccine for IBDVirus (Strain LIBDV)
5	187.5.10	AVIPRO PRECISE	IBD (Strain LC 75), Live Vaccine
6	187.5.15	AVIPRO GUMBORO VAC	IBD, Strain Cu-IM, Live Vaccine
7	187.5.18	INMUGAL I.B.A.GUMBORO	IBD, Live Virus, Strain 2512 of Winterfield
8	188.5.19	IBD VACCINE INACTIVATED BP(VET)	IBDIntermediate Strain Virus
9	193.5.2	BURSINE-2	Bursal disease Vaccine (Lukert Strain) -Live
10	195.5.1	VOLVAC IBD MLV	Gumboro Intermediate, Lukert Strain, Live Vaccine
11	195.5.25	NOBILIS GUMBORO D78	Live attenuated vaccine for Infectious Bursal disease
12	188.5.20	IBD VACCINE LIVE INTERMEDIATE STRAIN	IBD, Live Intermediate Strain Virus
13	190.5.23	NOBILIS D78	Live attenuated vaccine for IBD
14	191.5.11	HIPRAGUMBORO-CH/80	Live cloned vaccine against Gumboro Disease
15	191.5.21	GUMBORIFFA	Inactivated Vaccine in oily adjuvant against Gumboro Disease
16	191.5.23	GALLIVAC IBD	Freeze-dried live attenuated IBD virus against IBD S706 strain
17	191.5.27	BUR 706	Attenuated IBDvirus against IBD S706 strain
18	193.5.6	PROVAC 3	Bursal Disease, Newcastle Disease, Bronchitis Vaccine-Killed
19	191.4.1	REPROMUNE 4	Inactivated oil emulsion vaccine for immunization against IBD, ND (B1 Type), IB (Strain M41 & 52) and Reo Virus (Strain S 1133 & S2408)
20	198.4.9	CEVAC ND-IB-IBD-EDS K	Inactivated oil adjuvant vaccine for immunization against ND (strain NDV-SZ Lasota), IB (strain M-41), IBD (strain GP/82), EDS (strain B8/78)
21	201.4.2	AVIPRO 206 BD3-REO	Bursal Disease, Reo Virus standard and variant, Mass, Killed Virus
22	196.5.8	GALLIMUNE 403 ND+IB+IBD+REO	Inactivated vaccine against NCD, IB , IBD & Avian Reo Viral Arthritis
23	184.5.11	CEVAC ND-IB-IBD K	Inactivated, Oil Adjuvant, NCD Virus Strain-SZ Lasota; Inactivated Avian IB Virus Strain-M-41; Inactivated IBD Virus Strain-GP/82
24	190.5.17	NOBILIS REO+IB+G+ND	Combined inactivated vaccine against Reo virus infection, Infectious Bronchitis (Massachusetts type), IBD & NCD.
25	191.5.1	PROVAC 4	Bursal disease-Lukert strain, Newcastle Disease-kimber strain, Infectious bronchitis, Reo Virus Vaccine -Killed.
26	193.5.17	AVIPRO 401 ND-IB-IBD-REO	Bursal Disease-NCD-Bronchitis-Reo Virus Vaccine, Mass Type, Killed Virus

Source: Veterinary Drug Control Authority of Sri Lanka

## OIE Recommendations for rabies prevention and control

- Surveillance and reporting of suspected cases of rabies in animals
- Vaccination programs for dogs and cats
- Research into disease dynamics, vaccines and effective delivery mechanisms for target population
- Wildlife rabies control programs including vaccination (trap/vaccinate/release or delivery of oral vaccines)
- Population control and vaccination programs for stray animal population

## Global Distribution of Rabies Occurrence - 2012



### Compiled by:

Dr. (Mrs.) Ranjani Hettiarachchi  
Dr. (Ms.) Bhagya Wickramasooriya  
Ms. (Mrs.) Ranjani Weerasinghe

Division of Animal Health  
Department of Animal Production & Health  
Tel : 081-2388317

### Editor:

Dr. Ranjani Hettiarachchi  
Deputy Director Animal Health  
Department of Animal Production & Health  
P.O. Box 13, Peradeniya.  
email: ranjanihtt@yahoo.com

Tel : 081-2384551  
Mobile : 071-4528628  
Fax : 081-2384551  
E mail : ranjanihtt@yahoo.com