WEEKLY EPIDEMIOLOGICAL REPORT

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Human Rabies – Part 1

This is the first article of three in a series on "Human Rabies"

Rabies, a zoonotic viral disease primarily transmitted through the bite of a rabid animal, is essentially fatal once the symptoms appear, and prevention is the sole means to avert death. The causative agent, Lyssavirus, (family Rhabdoviridae) is an RNA virus, with the potential to infect all mammals, including humans who are the accidental hosts causing acute encephalitis that inflames the brain, ultimately leading to fatality. Rabies is a neglected tropical disease, causing over 59,000 deaths globally and the majority of these deaths occur in Asia. Postexposure prophylaxis is pivotal in rabies control, as the disease is almost always fatal once symptoms emerge.

Current status of rabies in Sri Lanka

Human rabies is a notifiable disease in Sri Lanka, all cases suspicious of rabies should be immediately notified on suspicion.

Despite a consistent decline in human deaths due to rabies over the past few decades, the disease remains a persistent public health challenge in Sri Lanka. Over the last 5 years, an average of 25 individuals succumbed to human rabies annually. Most of the deaths occurring among relatively young, otherwise healthy individuals predominantly males. However, this seemingly low fatality rate belies the actual burden of the disease.

Of the animal heads tested at Medical Research Institute (MRI) Teaching Hospital Karapitiya and Veterinary Hospital Peradeniya in 2023 since March, 37% have tested positive for rabies. Nearly 80% of the positives were dogs, followed by cats (16%). Annually, an estimated 250,000 animal bites, predominantly from dogs occur in the country, leading to over 100,000 individuals receiving post-exposure prophylaxes (preventive treatment) from government hospitals. These prophylaxes include the administration of anti-rabies vaccine (ARV) and rabies immunoglobulins (RIG). Not seeking or completing PEP was observed in almost all cases of human rabies deaths.

Modes of Rabies Transmission:

1. ***Bites and Scratches:*** The primary mode of transmission observed in the vast majority of rabies cases occurs through bites or scratches from rabid animals, introducing the virus in the infective saliva into the human body.

2. ***Viral Contamination of Existing Wounds:*** Rabies virus can also enter the body through viral contamination of existing wounds or skin abrasions. The licking of a rabid animal may lead to this mode of transmission.

3. ***Exposure of Mucus Membranes:*** Intact mucus membranes, including those in the lips, nasal cavity, eyes or genitals, can serve as entry points for the rabies virus upon exposure to infected saliva.

4. ***Inhalation of Virus-Laden Aerosols:*** While being a rare occurrence yet to be reported in Sri Lanka, inhalation of virus-laden aerosols in laboratory settings or environments with bat infestations has been documented as a potential cause of rabies in humans.

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Viral Trajectory within the Host:

Following entry, the rabies virus exhibits a multiphased trajectory within the host. Initially, it undergoes multiplication in muscle cells at the site of introduction where it is believed to remain for most of the incubation period, subsequently travelling centripetally to the central nervous system (CNS) via nerves. Within the CNS, the virus further multiplies before disseminating centrifugally through nerves to various tissues and organs, including the heart, adrenal glands, and salivary glands.

Incubation Period:

In humans, the incubation period, representing the interval from viral entry to symptom manifestation, varies widely. While approximately 75% of cases exhibit an incubation period between 20 and 90 days, exceptions exist, with periods as short as 4 days and, remarkably, extending to several years. This variability emphasizes the need for prompt administration of PEP for all indicated cases even up to 3 months of the exposure.

What to do in the case of exposure to a potentially rabid animal:

Initial wound management is a crucial component in post-exposure prophylaxis (PEP). The wound should be thoroughly washed immediately under running water with soap for at least 3-5 minutes. Followed by cleaning with 70% alcohol or iodine solution.

Care should be sought with a qualified medical practitioner without delay. This is extremely important because the decision-making process regarding PEP could be very complex. Therefore, this decision should always be taken by a qualified medical practitioner.

Providing PEP for indicated patients is a medical emergency, and should therefore be provided as soon as possible and never be postponed. The first contact physician should obtain a detailed history of the incident for risk assessment. This includes inquiring into proper initial wound management, circumstances of bite exposure (provoked or otherwise) the animal's state of health at the time of exposure, immunization status of the animal, and history of previous rabies pre/post-exposure prophylaxis given to the person

Initial wound management should be promptly performed at the medical facility if proper wound cleaning has not already been done.

- In the event that PEP is indicated and PEP immunization services are not available at the first contact facility the patient should be immediately referred to the closest hospital providing rabies PEP after emphasising the importance of PEP preferably with a referral letter/ transfer form.

- If the compliance of the patient is doubtful, the patient may be transferred by an ambulance and followed up for compliance with the help of field health staff when necessary.

- Patient should be adequately counselled with due emphasis on observing the animal involved in the exposure for any behavioural changes or signs of ill health for 14 days from the date of exposure. Advise the patient to immediately report to a hospital with PEP facilities if the animal develops any such behavioural change or signs of ill health, dies, or goes missing within the 14-day observation period.

- If the animal dies or is killed within 14 days, it should be decapitated (the whole animal if it is small) and sent to the nearest rabies testing laboratory immediately. Please refer to the next issue for details on collecting and sending animal samples for testing for rabies.

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1. Sterner, R. T., & Smith, G. C. (2006). Modelling wildlife rabies: transmission, economics, and conservation. *Biological conservation*, *131*(2), 163-179.

2. Petersen, B. W., & Rupprecht, C. E. (2011). Human rabies epidemiology and diagnosis. *Non-flavivirus encephalitis. Rjeka, Croatia: InTech*, 247-278.

3. National guidelines on rabies post-exposure prophylaxis :

(http://www.mri.gov.lk/units/rabies-vaccine-qc/protocol-on-anti-rabies-therapy/)

 To be Continued….

Table 1: Selected notifiable diseases reported by Medical Officers of Health 18th – 24th May 2024 (21st Week)

RDHS	Dengue Fever		Dysentery		Encephalitis		En. Fever		F. Poisoning		Leptospirosis		Typhus F.		Viral Hep.		H. Rabiies		Chickenpox		Meningitis		Leishmania-		Tuberculosis		WRCD	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	T*	C**
Colombo	119	4878	0	9	0	5	1	37	0	5	8	193	0	8	0	7	0	0	6	214	0	13	0	0	26	870	**95**	**100**
Gampaha	40	2136	0	13	0	6	1	8	0	4	9	286	0	3	0	2	0	0	4	148	2	54	0	10	12	491	**86**	**98**
Kalutara	32	1423	0	16	0	1	1	26	0	15	6	296	0	5	0	7	0	0	8	300	1	32	0	0	4	223	**93**	**100**
Kandy	62	2042	0	14	1	1	0	6	0	19	12	121	3	16	0	4	0	1	11	246	0	11	0	19	0	263	**100**	**100**
Matale	5	369	0	2	0	0	0	2	0	17	1	51	0	1	0	4	0	0	5	64	0	6	5	115	3	59	**100**	**100**
Nuwara Eliya	1	193	10	54	0	4	1	6	22	171	3	95	0	26	0	3	0	0	5	114	0	6	0	0	3	123	**92**	**100**
Galle	13	1135	0	24	1	10	0	7	2	37	11	339	0	52	0	6	0	1	10	313	0	36	0	3	4	177	**95**	**100**
Hambantota	6	520	0	20	1	2	0	3	0	36	10	278	2	20	0	3	0	0	0	142	0	15	12	227	6	51	**83**	**100**
Matara	7	434	0	4	0	3	0	2	0	4	11	166	0	9	0	2	0	0	5	172	0	42	6	47	1	55	**100**	**100**
Jaffna	5	4989	1	36	0	2	0	3	1	23	0	12	2	361	0	3	0	1	2	132	0	7	0	0	1	130	**93**	**93**
Kilinochchi	0	269	0	5	0	0	0	2	0	2	0	15	0	7	0	0	0	0	0	5	0	4	0	0	0	9	**100**	**100**
Mannar	0	184	1	3	0	0	0	1	0	0	0	17	0	7	0	1	0	0	0	4	0	3	0	1	2	31	**100**	**100**
Vavuniya	0	131	0	3	0	1	0	1	0	7	1	58	0	2	0	4	0	0	0	20	0	7	0	6	2	14	**75**	**100**
Mullaitivu	0	181	0	4	0	0	0	0	0	2	0	53	0	10	0	0	0	0	0	2	0	0	0	6	0	14	**100**	**100**
Batticaloa	18	1110	2	70	2	9	0	5	0	16	1	35	0	1	0	9	0	0	1	60	0	24	0	1	0	57	**100**	**100**
Ampara	2	152	2	16	0	2	0	0	0	12	0	130	0	1	0	4	0	0	2	60	1	24	0	7	0	74	**86**	**100**
Trincomalee	6	486	1	11	0	0	0	2	0	2	2	112	0	10	0	0	0	0	2	32	1	9	0	8	1	36	**100**	**100**
Kurunegala	39	1379	2	20	1	18	0	1	0	343	2	291	0	16	0	2	0	2	5	218	3	134	7	263	9	224	**90**	**100**
Puttalam	11	665	0	1	0	1	0	3	0	0	1	135	0	5	0	1	0	0	3	71	0	28	0	15	9	83	**85**	**100**
Anuradhapura	4	497	1	8	0	2	0	1	1	10	3	230	0	25	0	7	1	1	5	114	0	22	7	386	6	120	**91**	**100**
Polonnaruwa	6	212	0	13	0	0	0	1	0	2	7	146	0	1	1	3	0	0	2	76	0	18	9	217	0	45	**100**	**100**
Badulla	7	521	0	11	0	4	0	2	1	24	6	266	2	16	0	10	0	0	10	157	0	13	0	12	3	92	**93**	**100**
Monaragala	5	425	0	7	0	2	0	2	0	69	4	470	0	18	0	13	1	1	2	56	0	51	7	108	0	36	**91**	**100**
Ratnapura	76	1317	2	51	0	3	2	6	0	8	34	786	0	12	1	15	0	2	8	151	1	61	0	75	4	140	**90**	**100**
Kegalle	28	1166	0	7	1	5	0	5	0	6	10	279	1	11	0	6	0	1	13	394	3	34	0	16	0	135	**100**	**100**
Kalmunai	1	530	0	13	0	0	0	0	0	5	0	44	0	1	0	1	0	0	8	117	1	9	0	0	5	61	**100**	**100**
SRILANKA	**493**	**27344**	**22**	**435**	**7**	**81**	**6**	**132**	**27**	**839**	**142**	**4904**	**10**	**644**	**2**	**117**	**2**	**10**	**117**	**3382**	**13**	**663**	**53**	**1542**	**101**	**3613**	**94**	**99**

Source: Weekly Returns of Communicable Diseases (esurvillance.epid.gov.lk). T=Timeliness refers to returns received on or before 24th May, 2024 Total number of reporting units 358 Number of reporting units data provided for the current week: 356 **C****-Completeness

A = Cases reported during the current week. B = Cumulative cases for the year.

Table 2: Vaccine-Preventable Diseases & AFP

Disease	No. of Cases by Province									Number of cases during current week in 2024	Number of cases during same week in 2023	Total number of cases to date in 2024	Total number of cases to date in 2023	Difference between the number of cases to date in 2024 & 2023
	W	C	S	N	E	NW	NC	U	Sab					
AFP*	00	00	00	00	00	00	00	00	00	00	09	33	40	17.5 %
Diphtheria	00	00	00	00	00	00	00	00	00	00	00	00	00	0 %
Mumps	00	00	01	00	00	02	02	00	00	05	03	124	91	36.2 %
Measles	00	00	00	00	00	00	00	00	00	00	01	210	01	20900 %
Rubella	00	00	00	00	00	00	00	00	00	00	00	02	01	100 %
CRS**	00	00	00	00	00	00	00	00	00	00	00	00	00	0 %
Tetanus	00	00	00	00	00	00	00	00	00	00	00	02	03	-33.3 %
Neonatal Tetanus	00	00	00	00	00	00	00	00	00	00	00	00	00	0 %
Japanese Enceph-alitis	00	00	00	00	00	00	00	00	00	00	00	01	02	-50 %
Whooping Cough	00	01	00	00	00	01	00	00	00	02	00	11	04	175 %

Key to Table 1 & 2

Provinces: **W**: Western, **C**: Central, **S**: Southern, **N**: North, **E**: East, **NC**: North Central, **NW**: North Western, **U**: Uva, **Sab**: Sabaragamuwa.

RDHS Divisions: **CB**: Colombo, **GM**: Gampaha, **KL**: Kalutara, **KD**: Kandy, **ML**: Matale, **NE**: Nuwara Eliya, **GL**: Galle, **HB**: Hambantota, **MT**: Matara, **JF**: Jaffna, **KN**: Killinochchi, **MN**: Mannar, **VA**: Vavuniya, **MU**: Mullaitivu, **BT**: Batticaloa, **AM**: Ampara, **TR**: Trincomalee, **KM**: Kalmunai, **KR**: Kurunegala, **PU**: Puttalam, **AP**: Anuradhapura, **PO**: Polonnaruwa, **BD**: Badulla, **MO**: Moneragala, **RP**: Ratnapura, **KG**: Kegalle.

Data Sources:

Weekly Return of Communicable Diseases: Diphtheria, Measles, Tetanus, Neonatal Tetanus, Whooping Cough, Chickenpox, Meningitis, Mumps., Rubella, CRS,

Special Surveillance: AFP* (Acute Flaccid Paralysis), Japanese Encephalitis

CRS =**Congenital Rubella Syndrome

NA = Not Available

Number of Malaria Cases Up to End of May 2024,

02

All are Imported!!!

Comments and contributions for publication in the WER Sri Lanka are welcome. However, the editor reserves the right to accept or reject items for publication. All correspondence should be mailed to The Editor, WER Sri Lanka, Epidemiological Unit, P.O. Box 1567, Colombo or sent by E-mail to **chepid@sltnet.lk. Prior approval should be obtained from the Epidemiology Unit before publishing data in this publication**

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