First Meeting of the South Asia Rabies Laboratory Network (SA-RABNET)

06 April 2023, Tokyo Japan

MEETING REPORT

SUMMARY

The World Organisation for Animal Health (WOAH, founded as OIE) Regional Representation for Asia and the Pacific (RRAP) in collaboration with Karnataka Veterinary Animal and Fisheries Sciences University (KVAFSU), India, organized the First Virtual Meeting of the South Asia Rabies Laboratory Network (SA-RABNET) on 6 April. A total of 22 attendees, including 14 participants nominated by the WOAH Delegates from seven South Asian Association for Regional Cooperation (SAARC) Members (Afghanistan, Bangladesh, Bhutan, India, Nepal, Pakistan, and Sri Lanka) attended the meeting. During the meeting, a series of presentations were made on topics such as introduction of rabies laboratory network for South Asia; Terms of Reference (ToR) for South Asia Rabies Laboratory Network, and role WOAH Reference Laboratory for Rabies (KVAFSU) for regional synergies. There was an interactive question and answer session followed by the presentations. At the meeting, the Members unanimously selected Bhutan as the Chair and Nepal as the Co-Chair of the Network for a period of one year. The Chair and Co-Chair will lead the Network activities as per the TOR of the Network with support of WOAH and KVAFSU. The meeting recommended strengthening the diagnostic, surveillance including sample sharing and research capabilities of the National Lead Rabies Laboratories in South Asia through the Network activities. The participants agreed to strengthen the activities of the Network in South Asia for the benefit of countries and the sub-region as a whole.

BACKGROUND

To achieve the global goal of elimination of dog-mediated human rabies by 2030, an important component to focus on is the surveillance of animal rabies to provide accurate data in countries for timely and appropriate control measures. Although rabies poses significant public health concerns in South Asia, there is a general lack of ground-level surveillance owing primarily to insufficient or total lack of rabies diagnostic capacity across the region.

Since 2020, to support capacity building for rabies diagnosis and surveillance in animals in South Asia, WOAH RRAP jointly with the KVAFSU-WOAH Reference Laboratory for Rabies in India organised virtual training on brain sampling and diagnosis of rabies in animals in 2020, rabies serology in 2021 for the SAARC Member States.

As a follow up to the virtual trainings and as per the demands of the Members, WOAH and KVAFSU jointly organised a virtual workshop on "Proposed South Asia Rabies Laboratory Network" on 14 July 2022 to introduce the concept of establishing a sub-regional rabies laboratory Network for South Asia to strengthen rabies diagnosis, surveillance, and control. Further, as a follow up of the virtual workshop, WOAH RRAP asked the countries for nomination of two Members to initiate the activities of the Network in accordance with the proposed ToR. Afghanistan, Bangladesh, Bhutan, India, Nepal, Pakistan and Sri Lanka have nominated Members of the Network. The first meeting of the Network was held to formally launch the South Asia Rabies Laboratory Network and discuss the scope and activities to be implemented by the Network. The first meeting of the Network was organised in accordance with the following objectives;

- Launching of the South Asia Rabies Laboratory Network;
- Introduce the terms of reference (ToR) of the Network and seek feedback;
- Seek feedback on the implementation of the Network and possible support from the Members' in ensuring sustainability of the Network;
- Selection of the Chair and Co-Chair of the Network for further follow up of the activities.

OUTCOME OF THE MEETING

OPENING REMARKS

Dr Kinzang Dukpa, Regional Project Coordinator, WOAH RRAP, welcomed participants and introduced the meeting objectives and key topics to be covered. Dr C. S. Nagaraj, Dean, Veterinary College was present as the chief guest in the inaugural session. Dr Nagaraj in his opening remarks reiterated and appreciated the initiatives taken by WOAH to combat rabies in the region and reaffirmed KVAFSU's commitment to support Members in rabies surveillance and diagnosis by providing technical support. He recommended making this Network a functional and a vibrant sub-regional Network in South Asia for mutual benefit.

TECHNICAL SESSION

Logistics and background of the Network

Four presentations were made by the speakers from KVAFSU and WOAH RRAP. A presentation on the "Logistics and background of the Network" was made by Dr Kinzang Dukpa in which he introduced the agenda including key topics to be discussed in the meeting. He highlighted the importance of such a Network in South Asia and provided background of the evolution of this concept. He reiterated that South Asia is home to 45% of global human rabies burden with weak animal disease surveillance, limited field level rabies diagnostic capacity, and inadequate skilled workforce.

Introduction of rabies laboratory network

Dr Shrikrishna Isloor, Director of the WOAH Rabies Reference Laboratory at KVAFSU, gave a presentation on "Introduction of rabies laboratory network for South Asia: A concept". Dr Isloor informed that there 285 Reference Laboratories operational in 37 countries on 117 diseases/ topics around the world under the WOAH platform. Currentlly, there are 12 WOAH Rabies Reference Laboratories across the world of which the one in KVAFSU is the latest addition located in India, South Asia. Dr Isloor highlighted how KVAFSU has been designated as a WOAH Reference Laboratory under the WOAH twinning programme. He informed the recent initiatives of WOAH for the formation of WOAH RABLAB network. He reiterated the commitments of the RABLAB

network based on recent consultations held at WOAH HQ. RABLAB network agreed to provide services such as technical assistance & expertise; laboratory based surveillance; laboratory data management; harmonisation of laboratory techniques; research priority settings; exchange of biologicals and improving capacity of national laboratories. Dr Isloor stated the benefits of the South Asia Rabies Laboratory Network including laboratory referral services, improving surveillance of rabies in animals, training in all quality assurance systems, proficiency testing and knowledge and information sharing.

Terms of reference (ToR) of the proposed South Asia rabies laboratory Network

The presentation on "ToR of the proposed South Asia rabies laboratory Network" was made by Dr Md Nure Alam Siddiky, Consultant, WOAH RRAP. Dr Siddiky outlined the background for the development of a Network in South Asia, along with a proposed vision, goal, and objectives of the Network. He presented the proposed governance structures, including potential expected members, observers, secretariat, sustainability, and modalities for the operation of the network. Dr Siddiky also proposed criteria for the selection of Chair and Co-Chair of the Network with their roles and responsibilities. As per the ToR, WOAH and KVAFSU will initially take lead and provide necessary support to make the Network operational, but within 1-3 years, Members in South Asia are expected to take ownership and leadership of the Network and manage it with their own resources. The selected Chair and Co-Chair will lead the Network for a year with the support of Members, WOAH and KVAFSU.

Role of Rabies Regional Reference Laboratory (KVAFSU) for regional synergies

The third presentation was delivered by Dr Sharada Ramakrishnaiah of KVAFSU, on "Role of Rabies Regional Reference Laboratory (KVAFSU) for regional synergies". Dr Sharada highlighted the specific mandate of KVAFSU for strengthening diagnosis of rabies in India. Dr Sharada reiterated the scope of KVAFSU as a state of art rabies reference laboratory for supporting diagnosis, seromonitoring, human resource development and post graduate research. She also highlighted how KVAFSU was designated as a WOAH reference laboratory in 2020. She proposed

possible role of WOAH rabies regional reference laboratory, (i) providing consultancy services (test and disease consultancy, disease surveillance on rabies and non-rabies lyssa viruses, diagnosis and control strategies), improving surveillance of rabies in animals (systematic surveillance, real time reporting and dog vaccination) and building laboratory capacities (health and safety procedures, biosafety & biosecurity measures, sample collection, submission and processing, antigen/ antibody detection, molecular diagnostic methods, and proficiency testing, etc.). Dr Sharada highlighted the recent initiatives taken by KVAFSU in collaboration with WOAH RRAP to organize virtual and physical training and workshops on rabies surveillance and diagnosis. Finally, she emphasized strong collaboration and networking amongst the National Lead Rabies Laboratories in the South Asia for harmonisation and standardisation of rabies surveillance and diagnosis.

Selection of Chair and Co-Chair of SA-RABNET

The Members of the Network took part in the open discussion for the selection of Chair and Co-Chair of the Network. Based on the criteria set, the Members unanimously selected Bhutan as the Chair and Nepal as the Co-Chair to lead the Network activities for the next one year. They will lead the activities of Network in consultation with Members, KVAFSU and WOAH. The details of the Chair and Co-Chair of the Network are given below:

Chair, SA-RABNET	Co-Chair, SA-RABNET
Dr Sangay Rinchen Head Disease Prevention and Control Unit National Centre for Animal Health Department of Livestock Ministry of Agriculture and Livestock Thimphu, Bhutan Email: srinchen@moaf.gov.bt	Dr Sharmila Chapagain Chief Veterinary Officer Central Veterinary Laboratory Department of Livestock Services Ministry of Agriculture and Livestock Development Kathmandu, Nepal Email: harmilakafle2@gmail.com

Network activities

Following the selection of Chair and Co-Chair, the following topics/issues were then discussed at the meeting led by the Chair/Co-Chair.

Adoption of Terms of Reference (ToR) of the Network

The Chair of the Network facilitated the discussion for the adoption of ToR of the Network which was presented in the meeting. It was suggested to incorporate the selection criteria including roles and responsibilities of the Chair and Co-Chair to the ToR of the Network. Further, the revised ToR will be circulated to the Members again for their feedback and suggestions. The ToR will be automatically endorsed if no further comments received from the Members within a week. But, if any comments made by the Members, the ToR will be revised accordingly before its endorsement. Note: at the time of writing this report, the ToR of the Network was already endorsed by the Chair following no more comments from Members.

Country Experiences on Rabies surveillance, Diagnosis and Sample Shipment

The Co-chair took the lead of the discussion in the absence of Chair. The Co-chair invited the Members of the Network to share their experiences on surveillance, diagnosis and sample shipment. At the beginning, Dr Shrikrishna Isloor, Director, WOAH Rabies Reference Laboratory of KVAFSU shared a very great news that recently his laboratory got permission from the Government of India to receive rabies suspected animal brain samples from the neighbouring countries, including South Asia.

Afghanistan

The central veterinary laboratory undertakes rabies surveillance in collaboration with laboratories in the provinces. However, in recent times, surveillance is very weak due to lack of resources, especially diagnostic kits. Afghanistan used to use direct fluorescent antibody (DFA) test in the past for animal rabies diagnosis. However, recently, they have run out of the test kits especially the conjugates for the DFA. Therefore, although samples are being collected and preserved, testing could not be done due to lack of DFA conjugates They requested WOAH and KVAFSU to support supply of chemicals and reagents for functioning of their laboratories.

Afghanistan also agreed for shipment of rabies suspected brain samples to KVAFSU. NGOs are working on rabies control.

Bangladesh

The Central Disease Investigation Laboratory (CDIL) has been collecting rabies suspected samples from both animal and humans. Normally, the local veterinary offices send rabies suspected samples (whole head) to the CDIL for further diagnosis and confirmation. In 2022, CDIL collected 25 rabies suspected human samples, of them 3 were confirmed for rabies using PCR. Similarly, last year 355 rabies suspected animal brain samples were collected from the different parts of the country, among them 227 were rabies confirmed cases. The rabies diagnosis was confirmed by using DFA and RT-PCR method. Bangladesh has been implementing mass dog vaccination programme under the leadership of Directorate General of Health Services. Currently, Department of Livestock Services has been implementing a rabies surveillance project with the provision of compensation to the farmers if animal deaths are confirmed to be due to rabies infection.

Bhutan

It was informed that Bhutan is moving very well towards rabies prevention and control through implementing mass dog vaccination and dog population management targeting zero death of dog mediated human rabies by 2030. Bhutan has established very comprehensive surveillance system with strong well equipped laboratory network at the national and sub-national settings. Only a single animal rabies outbreak was detected in 2023.

Nepal

Currently, there is no systematic animal rabies surveillance activities being carried out in Nepal as it is mostly based on passive surveillance system following information of dog bites by local authorities. Following the WOAH training in January 2023, the two trainees are confidently conducting brain sampling and therefore enhancing rabies surveillance. In the past whole animal

head used to be sent to the laboratories. Nepal is trying to expand laboratory networks to broaden its horizon of rabies diagnostic capacities at the sub-national level. Nepal is interested to refer samples to KVAFSU, but they are facing difficulties for the shipment of brain samples through world courier services due to longer period of shipment time (>7 days) and higher shipment charges. Nepal requested to explore the possibilities how they can send samples smoothly to KVAFSU. Nepal is also interested to undertake laboratory twinning program for rabies diagnosis.

India

In the Kerala State of India, there are seven network laboratories that are closely engaged with animal rabies surveillance and diagnostic activities. KVAFSU is providing technical support to the state laboratories for rabies surveillance and diagnosis. KVAFSU is working as a central repository for preserving brain samples. This preservation is essential to identify the evolution of the viruses in a spatiotemporal context.

Pakistan

Pakistan has been working sporadically for rabies surveillance and diagnosis. No nationwide rabies surveillance campaigns exist. There is no designated national rabies reference laboratory. There are some laboratories at the provincial settings engaged with rabies surveillance and diagnosis in a small scale and also producing vaccines. Currently, there are some rabies awareness activities across the country. Pakistan is in the process of identifying a National Rabies Reference Laboratory by improving its diagnostic capacity. Currently university laboratories provide rabies diagnosis. They are working on rabies-free city campaigns in few cities.

Sri Lanka

It was informed that Sri Lanka recently sent rabies suspected brain samples from animals such as jackal, cattle, goat and dog to the WOAH Reference Laboratory at KVAFSU. The KVAFSU has already shared the test results with the government authorities and currently works are underway to do molecular characterization followed by phylogenetic analysis to understand the epidemiology of the viruses circulating in Sri Lanka.

Recommendations of the Meeting/ Proposed Future Activities for the Network

Members

- Members are encouraged to make use of the recently trained personnels who attended the SAARC rabies training in India to undertake rabies sampling, field diagnosis and surveillance. Already, Bangladesh and Nepal have initiated rabies surveillance.
- Members are encouraged to send brain samples to the KVAFSU for disease confirmation and molecular phylogenetic studies to understand the rabies virus epidemiology in South Asia
- Members are encouraged to explore the use of international cargo companies that are members of the IATA (International Air Transport Association) for smooth shipment of biological substances. The cargo companies should have registration and obtained license from the Directorate General of Foreign Trade in India.
- Members are suggested to obtain sample shipment permission from the competent authority of the respective country.
- Members who are interested in undertaking Laboratory Twinning projects may send their request with good rationale through their WOAH Delegates to WOAH HQ. Technical guidance may be sought from KVAFSU and WOAH RRAP.
- Afghanistan may send a formal request from the WOAH delegate to WOAH if it needs support for procurement of DFA conjugates and diagnostic kits. To explore shipment of samples to KVAFSU.

For KVAFSU and WOAH

- KVAFSU to develop SOPs for process/procedure of shipment of rabies suspected samples from Members to KVAFSU.
- KVAFSU/WOAH to explore the possibility of providing FAT conjugates to Afghanistan and provide virtual technical support on the end point titration for the FITC conjugates to optimise the use of the FITC conjugates.

- KVAFSU to explore possibility of transfer of technology for the in-house direct rapid immunohistochemistry test (dRIT) to countries given the field-use of dRIT using ordinary microscope for rabies diagnosis once it is validated.
- KVAFSU to maintain repository of rabies virus in the region and in that line KVAFSU should follow up with Members for submission of samples.
- WOAH and KVAFSU should continue to provide technical and financial support to the Network until Members can take lead for the operation of the Network with their own resources.
- It was decided to form a WhatsApp group amongst the Members for ease of communication and sharing of information.
- Members requested for more hands-on training on rabies diagnosis to increase the pool of well qualified field veterinarians to accelerate rabies surveillance on the ground.

Next Meeting of the SA-RABNET

- The Network meeting will be held twice in a year, i.e. at every six month of intervals;
- At least one virtual and another physical meeting in a year;
- The topic of the next meeting will be decided in consultation with all Members, WOAH and KVAFSU.

Closing of the SA-RABNET Meeting

The Co-Chair, Dr Sharmila Chapagain closed the discussion of the meeting with extending thanks to the Members of the Network for their active participation. Dr Rathnamma Doddamane, Head of the Department of Microbiology, KVAFSU, made a vote of thanks on behalf of the organizers at the closing of the meeting. Dr Rathnamma extended her heartfelt gratitude to the participants for their active engagement in the meeting. She thanked WOAH RRAP and KVAFSU for successfully organizing the first meeting of SA-RABNET.

MEETING MATERIALS

The agenda and resentations are available at the WOAH Regional Representation website at https://rr-asia.woah.org/en/events/the-launching-of-south-asia-rabies-laboratory-network-sa-rabnet/

Table 1: List of meeting participants

Members	Name	Designation and Affiliation	Remarks
Participants from the countries of South Asia			
Afghanistan	Dr Sayed Abol Hussain Qanee	Head of Epidemiology Department of Animal Health Directorate	Attended
	Dr Hamidullah Tawfiqe	Head, Diagnosis Laboratory, General Directorate of Animal Health and Production	Attended
Bangladesh	Dr Amalendu Ghosh	Director, Livestock Research Institute, Department of Livestock Services	Attended
	Dr Md Golam Azam Chowdhury	Principal Scientific Officer Central Disease Investigation Laboratory Department of Livestock Services	Attended
Bhutan	Dr Sangay Rinchen	Deputy Chief Veterinary Officer National Centre for Animal Health Department of Livestock	Attended
	Dr Nirmal Kumar Thapa	Head, Laboratory Services Unit National Centre for Animal Health Department of Livestock	Apologies
India	Dr Jyoti Misri	Principal Scientist Indian Council of Agricultural Research (ICAR) Ministry of Agriculture and Farmers Welfare	Attended
	Dr Swapna Susan Abraham	Disease Investigation Officer State Institute for Animal Diseases Kerala	Attended
	Dr Durlav Prasad Bora	Department of Microbiology Assam Agriculture University	Attended
Nepal	Dr Sharmila Chapagain	Chief Veterinary Officer (Joint Secretary), Central Veterinary Laboratory	Attended
	Dr Pragya Koirala	Senior Veterinary Officer, Central Veterinary Laboratory	Attended
Pakistan	Dr Khurshid Ahmad	Director General National Veterinary Laboratory	Apologies
	Dr Ali Raza Nizamani	Senior Research Officer (Virology) Central Veterinary Diagnostic Laboratory, Sindh Province	Attended
	Dr Muhammad Abubakar	Senior scientific officer National Veterinary Laboratory, NARC Gate 2, Park Road Islamabad, Pakistan	Attended
Sri Lanka	Dr E. R. R. Wimalasinghe	Veterinary Investigation Officer Department of Animal Production and Health	Attended

Members	Name	Designation and Affiliation	Remarks
	Dr W. M. A. D. Wanninayake	Veterinary Research Officer Department of Animal Production and Health	Attended
Organisers			
Karnataka Veterinary Animal & Fisheries Sciences University	Dr Shrikrishna Isloor	Professor and Laboratory Director, WOAH Reference Laboratory for Rabies Veterinary College, KVAFSU	
	Dr Sharada Ramakrishnaiah	Associate Professor and Quality Manager, WOAH Reference Laboratory for Rabies, Veterinary College, KVAFSU	
	Dr Rathnamma Doddamane	Professor and Head, Department of Microbiology, Veterinary College, KVAFSU, Bengaluru	
	Dr C. S. Nagaraja	Dean, Veterinary College, KVAFSU, Bengaluru	
WOAH	Dr Kinzang Dukpa	Regional Project Coordinator, WOAH RRAP	
	Dr Md Nure Alam Siddiky	Consultant, WOAH RRAP	
	Mr Basilio Valdehuesa	Regional Communication Officer, WOAH RRAP	
Observers			
Japan	Pondpan Suwanthada	Student Hokkaido University	

Figure 1: Participants attending the virtual meeting