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Enhancing Progress towards Rabies Elimination 'Zero by 30' in SAARC Region

Kathmandu, Nepal; 26-28 June 2019

Report of the workshop



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Acronyms and Abbreviations

| | |
|---------|---|
| ABC | Animal Birth Control |
| AMR | Anti-microbial Resistance |
| ARACON | Asian Rabies Control Network |
| ARV | Anti-rabies Vaccine |
| ASEAN | South East Asian Region |
| CDC | Center for Disease Control |
| CNVR | Capture, Neuter, Vaccinate, Release |
| DFA | Direct Fluorescent Antibody Assay |
| dRIT | direct Rapid Immunohistochemistry test |
| DPM | Dog Population Management |
| FAO | The Food and Agriculture Organisation of the United Nations |
| FAO RAP | FAO Regional representation for Asia and the Pacific |
| GARC | Global Alliance for Rabies Control |
| GDREP | Global Dog Rabies Elimination Pathway |
| HSI | Humane Society International |
| IBCM | Integrated Bite Case Management |
| IEC | Information., Education, Communication |
| IHR | International Health Regulation |
| JEE | Joint External Evaluation |
| LFA | Lateral Flow Assay |
| KAP | Knowledge, Attitude, Practices |
| MCDA | Multi-criteria Decision Analysis |
| MDV | Mas Dog Vaccination |
| OH | One Health |
| OIE | The World Organisation for Animal Health |
| PAHO | Pan-American Health Organisation |
| PARACON | Pan African Rabies Control Network |
| PEP | Post Exposure Prophylaxis |
| PRP | Partners for Rabies Prevention |
| PVS | OIE's Performance of Veterinary Services |
| PWARE | Practical Workplan towards Achieving Rabies Elimination |
| REB | Rabies Epidemiological Bulletin |
| RIG | Anti-rabies immunoglobulin |
| SAARC | South Asian Association for Regional Cooperation |
| SARE | Stepwise Approach towards Rabies Elimination |
| SDF | SAARC Development Fund |
| SEARO | WHO's South East Asian Nations Regional Office |
| SOP | Standard Operating Procedures |
| UN SDG | United Nation's Sustainable Development Goals |
| VS | Veterinary Services |
| WHO | World Health Organisation |
| WRD | World Rabies Day |

1. Executive Summary

The SAARC rabies workshop, jointly organized by the Tripartite (FAO-OIE-WHO) and Global Alliance for Rabies Control (GARC) in partnership with the SAARC Secretariat and World Animal Protection, was attended by over 72 participants including representatives of animal health, human health, and wildlife/municipal from the seven rabies endemic SAARC Member States (MSs), experts/resource persons from the region, partners/observers and organisers (Tripartite plus partners). The objectives of the workshop were to map the ground situation regarding rabies prevention and control, particularly in relation to the dog-mediated human rabies elimination in the SAARC MSs; share the tools, frame works, standards and guidelines; develop country and regional roadmaps to achieve the global elimination goals of “zero-by-30” by identifying gaps and support required for the implementation of the roadmaps.

The Tripartite and partners made presentations on updates on global strategic plan, standards, guidelines, activities, and the PAHO’s success in using regional approach for rabies control. This is the second Tripartite rabies workshop for SAARC following the first one conducted in Sri Lanka in 2015 organised by OIE and WHO with support from FAO and GARC.

However, this was the first truly collaborative effort by the United Against Rabies (UAR) (Tripartite and GARC) demonstrating the importance of combining the efforts and resources to achieve a common goal more effectively. This workshop was preceded by a series of in-country Stepwise Approach towards Rabies Elimination (SARE) workshops whereby the country situation and capacity was evaluated before developing a country-specific workplan based on the SARE outputs. These were facilitated and supported by GARC, OIE, FAO and WHO in five countries (Bangladesh, Bhutan, Nepal, India and Sri Lanka).

The workshop provided good opportunity for the participants to understand the current state of play for rabies control/elimination in the region including status of key drivers such as political commitment, resources, multisectoral coordination mechanisms, vaccine, diagnostic capacity, other gaps and challenges. The SAARC MSs were able to understand the various tools, standards, guidelines, approaches available in the public domain that countries could avail and implement depending on their needs.

Some notable progress observed since the last SAARC rabies workshop in 2015 included the adoption of intradermal regimen of post-exposure prophylaxis (PEP) in humans in all countries; benefits of OIE rabies vaccine bank; countries following up in making rabies a notifiable disease; enhanced mass dog vaccination; OIE laboratory twinning program in South Asia progressing to recognition as an OIE Reference laboratory for rabies in the region; enhanced awareness programs (especially observance of World Rabies Day - WRD every year); and progress in political commitment (Six SAARC MSs have undertaken in-country SARE workshops and Afghanistan had shown interest in having a SARE workshop conducted in the country soonest). The workshop was a truly multisectoral workshop with the Tripartite, GARC and other partners (SAARC Secretariat and World Animal Protection) taking lead in organizing the event and country participants being represented by officials from human and animal health and also representatives from either the environment/wildlife or Municipal or University depending on the country.

The main outcome of the workshop was developing country and regional roadmaps for progressing towards elimination of dog mediated human rabies by 2030, for some countries much ahead of the global timeline.

However, rabies continues to be a neglected disease in most countries of the region and with about 45% of the global rabies burden occurring in this region, much more needs to be done. The UAR initiative should continue to leverage countries through various platforms and mechanisms to make more investment in rabies control/elimination and also support the countries on this important public health endeavour.

Some key recommendations included development of national action plans with a common objective to make rabies notifiable in both the sectors all SAARC MSs by January 2021; scale up mass dog vaccination to achieve up to 70% coverage using quality vaccines; continue garnering political support for sustainability; utilise one health coordination mechanisms at national and sub-national levels for effective implementation; utilise the regional platforms to drive the agenda of rabies; and submit a regional rabies elimination project to the SAARC Development Fund for possible funding.

2. Introduction

The elimination of dog-mediated human rabies is a global public good and an excellent showcase to apply the “One Health” concept. Working together to bring an end to rabies will have multiple positive impacts including – above all - saving human lives, but also reducing the heavy economic burden imposed by the disease from lost income or livestock.

On September 2015, the MSs of the United Nations adopted the 2030 Agenda for Sustainable Development and the associated Sustainable Development Goals (SDGs) committing to work with MSs towards ending epidemics of neglected tropical diseases by 2030, including rabies. In 2015, the international community united in a call for action and established an ambitious but realistic goal of zero human dog-mediated rabies deaths by 2030 ‘Zero by 30’. For the first time in history, the following four organizations – the World Health Organization (WHO), the World Organisation for Animal Health (OIE), the Food and Agriculture Organization of the United Nations (FAO) and the Global Alliance for Rabies Control (GARC) – forged a strategic collaboration titled United Against Rabies (UAR). Together, this collaboration has developed and launched a Global Strategic Plan to Eliminate human deaths from Dog-mediated rabies by 2030.

In May 2016, the Member Countries of the World Organisation for Animal Health (OIE) adopted Resolution N.26, which recommended that the OIE, in partnership with WHO, FAO and other interested parties, sustain its commitment to the elimination of dog-mediated rabies given that it is a global public good. The resolution also recommends that the OIE and OIE Member Countries maintain and reinforce their efforts to foster political will and long-term commitment for the elimination of dog-mediated rabies.

Stemming from and building the global consensus ascertained from the adoption of the resolutions, the WHO, OIE, FAO and the Global Alliance for Rabies Control (GARC) joined forces and formed the United Against Rabies collaboration. This platform has pledged its commitment and technical support to assist and accompany rabies endemic country efforts to end human deaths from dog-mediated rabies by 2030.

Together, the United Against Rabies collaboration calls upon national governments to take an active and important step forward towards the achievement of UN SDG Goal 3.3, by endorsing the following statement and committing their country to take part in the fight against this important neglected disease.

The Tripartite and GARC confirmed a collaborative, global canine rabies elimination strategy by calling on countries to accelerate efforts to achieve that goal. The plan ‘Zero by 30: The Global Strategic Plan 2018’ centers on a One Health approach and addresses the disease in a holistic and cross-sectoral manner highlighting the important role of animal health, public health and other stakeholders in rabies prevention and control.

The FAO, OIE and WHO (the regional Tripartite partners) have come together to support rabies control activities in the region by organizing regional/sub-regional rabies workshops involving both human and animal health sectors. The Tripartite in collaboration with the SAARC Secretariat in the past also conducted few workshops to frame a regional strategy and funding mechanism towards rabies control/elimination. This included the Tripartite-led SAARC Rabies Workshop in 2015 in Sri Lanka to develop a SAARC Rabies Elimination Project to be considered for a funding support from the SAARC Development Fund. GARC also initiated

some regional networking activities such as the Pan-African Rabies Control Network (PARACON) for African countries and the Asian Rabies Control Network (ARACON) for Asian countries. The World Animal Protection has also been supporting rabies activities in the region.

2.1. Rationale

The SAARC Secretariat funding for the rabies elimination proposed in 2015 couldn't materialise. Many other meetings and training organised by the partners over the years are yet to make tangible progress towards achieving the stated goal of 'zero by 30'. In most MSs the ownership of the rabies control programmes are variable. There is huge variation in the progress achieved by MSs for rabies control in the SAARC sub-region. While some countries have made significant progress in reducing dog-mediated human rabies cases thus indicating possible achievement of the disease elimination even before 2030, there are others that still do not have a comprehensive national plan (policy and strategy) and inter-sectoral collaboration mechanisms to respond to rabies thereby posing significant challenges in achieving the global goal on time.

Phase 1 (2018-2020) approach of the global framework is to build a strong foundation including supporting countries to prepare robust, budgeted, effective and sustainable rabies elimination plans following the OH approach. In order to establish this foundation, it is essential to take stock of country's status, including political commitment, control policies and strategies, as well as progress made towards rabies control and subsequent elimination.

National programmes may now benefit from contemporary tools and technology such as the Stepwise Approach Towards Rabies Elimination (SARE) tool, Rabies Epidemiological Bulletin (REB), Global Dog Rabies Elimination Pathway (GDREP) and dog vaccination calculator (VAX Calculator) tools, OIE's standards and manuals and regional dog rabies vaccine bank, OIE PVS Pathway with specific content for Rabies and WHO's 'Stimulus package for eliminating dog-mediated human rabies: A concept', WHO's rabies vaccine stockpile for humans and cost-effective intra-dermal rabies vaccination (IDRV) regimens, etc that are available to support the elimination programmes.

A SAARC-Tripartite and GARC Workshop with the theme 'Enhancing Progress Towards Rabies Elimination Goal of Zero by 30 in the SAARC Region' was organised to provide a forum to review country progress, share success stories, good practices, discuss issues of mutual concern and identify concrete, national and regional roadmaps to achieve the elimination goal. In-country SARE workshops with accompanying practical workplans based on the SARE outputs using the tools developed by GARC and Tripartite prior to the proposed workshops were organised in six rabies endemic countries of the SAARC region to help identify country's current status, gaps and priority areas and develop core action plan to achieve the goal.

2.2. Objectives of the workshop

1. To map the ground realities regarding rabies prevention and control programmes in the MSs towards achieving 'Zero by 30' goal.
2. To share updates from Tripartite and partners on available tools, frameworks and success stories on their application.

3. To develop draft multisectoral national country plans and activities for Zero by 30 or rabies elimination goals based on SARE assessment or questionnaire survey further consolidated during the workshop.
4. To identify the gaps and support required for the implementation of the road map in rabies control/elimination developed during the workshop that could be sourced
5. from the national Government resources or for possible support from international/development partners.

2.3. Expected Outputs from the workshop

- Assessment of SAARC MSs' current status on the plans and strategies for Zero by 30 mapped through the pre-workshop in-country SARE workshops or questionnaire survey.
- Tangible plans and strategies towards the goal of 'Zero by 30' documented for each participating MS.
- Gaps, specific interventions or roads maps towards achieving the goal developed/documented
- Recommendations on key regional and country actions to achieve the goal and needed support and roles from the international/development partners identified.

Organisers: Regional Tripartite group (FAO-OIE-WHO) in collaboration with SAARC Secretariat, GARC and World Animal Protection.

3. Opening Session

Dr Surendra Yadav, the Minister of State for Health and Population, Nepal delivered the opening remarks. He formally welcomed the delegates from SAARC countries, Tripartite and SAARC Secretariat organisers and other participants to the workshop. He pointed out that rabies is 100% vaccine preventable yet neglected and that elimination of rabies is a public health problem. He said that it is demonstrated and feasible through the available tools, technical knowledge, and most importantly through regional cooperation and cross-sectoral collaboration to eliminate rabies. He highlighted on the strong political commitment and multi-sectoral efforts practicing one health approach needed to eliminate the disease and that human rabies cases can only effectively be prevented by targeting the control at its source, mainly through mass dog vaccinations and good access to post exposure prophylaxis for human beings.

Nepal experiences around one hundred human rabies cases annually and almost 50,000 seek post exposure prophylaxis every year. The government of Nepal provides free human anti-rabies vaccine throughout the country and rabies immunoglobulin to few rabies treatment centers. Nepal has also adopted the three dose intra-dermal rabies vaccine. He hoped that with these efforts from the human health sector combined with the collaborative efforts from animal health Nepal will be able to enhance the progress towards ending dog mediated human rabies death by 2030.

The WHO country representative of Nepal, Dr Jos Vandelaer spoke on the efforts the United Nations' Food and Agriculture Organization (FAO), the World Organization for Animal Health (OIE), the World Health Organization (WHO) and the Global Alliance for Rabies Control (GARC) called the United Against Rabies (UAR) are collaborating together to end human deaths from dog-mediated rabies by 2030. He said that the SAARC region contributes 45% of global burden of human rabies and it is estimated that more than 6 million patients in this region

receive at least one dose of rabies vaccine after being exposed to animals that are rabid or are suspected of rabies annually. Rabies has been identified by SAARC countries as a priority communicable disease of public health and economic importance and the SAARC Health Minister's Meeting held in Malé in 2012 has recognized rabies elimination as a regional priority. WHO SEARO has advocated and promoted adoption of cost-effective intradermal (I/D) rabies vaccination. It is helping Member States to improve accessibility, affordability and availability of modern rabies vaccine. Bhutan and Sri Lanka have registered a sharp decline in the number of human rabies deaths through mass dog vaccination campaign and improved accessibility to PEP and an effective vaccine delivery system and these countries are in better position to achieve zero human rabies death before 2030.

Nepal reported more than 28,000 animal bites in 2017/18 (> 90% were dog bites) and 32 human deaths. With support from WHO the cost saving and dose sparing alternative intra-dermal one week, two site regimen is implemented country wide. Rabies control and subsequent elimination required a multi-sectoral approach and considered as a priority model to apply the One Health (OH) concept. The success stories of achieving zero human death through implementation of a comprehensive rabies elimination mission in cities of Goa, Sikkim, Ranchi and Nilgiris of India demonstrated that zero-human death is feasible and doable in the Indian context provided that there is a strong political will and ownership by local authority and community. GAVI's inclusion of human rabies vaccine as part of its Vaccine Investment Strategy for next 5 years will act as a major catalyst for the global effort to eliminate rabies.

FAO country representative, Dr Somsak Pipoppinyo in his opening remarks stated that since 2010, the Regional Tripartite, with support from member countries and partners, has gone a long way in pursuing the One Health approach to enhance capacities to prevent and control zoonotic diseases at the animal-human-ecosystems interface and particularly efforts towards the global goal of no more human rabies cases transmitted by dogs by 2030 also called "Zero by 30."

Almost all of the countries in the SAARC region are developing countries and rabies is endemic in 7 of the 8 SAARC countries including Nepal, where more than 95% human cases occur due to the bites/contact with rabid dogs. About 200 people, most of them children die of rabies on an average annually in Nepal and about 32,000 people receives post and pre exposure prophylaxis treated for dog bites. Similarly, significant number of livestock especially cattle dies every year from rabies.

He emphasized that rabies is a typical One Health disease, and that dog-mediated human and livestock rabies can be progressively controlled and eliminated through mass dog vaccination and a One Health (OH) approach involving close cooperation between the animal and human health sectors together with wildlife and environment sectors at national as well as local levels. Cross-border transmission of rabies is often linked to human movements involving animals and required the need of collaboration between countries in a region.

Dr Gregorio Torres, Head of the Science Department at OIE HQ delivered remarks on behalf of OIE. He stated that tools and know how are available to eliminate rabies but needed the political commitment to do so. Rabies elimination is a priority for the OIE and in collaboration with FAO and WHO, the OIE is committed to support countries in their effort to eliminate rabies by elaborating evidence-based international standards, providing technical support through the OIE reference centers, facilitating access to high quality dog vaccines and by promoting regional coordination where our Member Countries can share best practices and experiences.

In 2016, during the General Assembly of the OIE, the 182 Member Countries requested the OIE to work with our international partners under the One Health umbrella, to harmonise actions and provide adaptable guidance for country and regional strategies to eliminate rabies. For the first time, OIE, FAO and WHO, in collaboration with the Global Alliance for Rabies Control, are United under one Global Strategic Plan with the aim to eliminate dog-mediated human deaths by 2030. The Global Initiative shares responsibilities among key players also recognizes the countries' responsibility to define their own strategy that should include dog vaccination, public awareness and access to post exposure prophylaxis as critical components.

The fight against rabies should be sustainable part of the animal and human health national strategy and not only as stand-alone projects. The OIE encourages countries to design, implement and review their national rabies strategies following the One Health model. He also quoted what Louis Pasteur said more than 150 years ago that 'eliminating rabies from the world would be a blessing for humanity'. The wish remained valid today and wanted to believe that we are closer to achieving it. Rabies elimination is possible but we needed to work together collaboratively and the time to do it is now!.

Mr Prakash Mathema, Secretary, MOALD proposed the vote of thanks and also spoke on the key challenges for Nepal, which are, i) the increasing number of community dog population in urban and rural areas, ii) dogs playing vital role to protect rural Nepali people and their livestock from wild animals and thereby living very close to humans in those communities, iii) dogs could be responsible for transmission of rabies from wild animals. Nepal has been able to reduce rabies in the urban areas through vaccination of companion and community owned dogs. However, the need to expand the vaccination coverage of dogs, raise public awareness on post-exposure prophylaxis of dog bite victims, and adopting suitable measures of dog birth control in community dogs is found to be essential. Availability and easy access to human vaccine and immunoglobulins including at affordable price in all hospitals of the country is also a challenge.

Nepal has been producing rabies vaccine for animal use since 1969, switching to tissue-culture technology in 2004. It produces over 100,000 doses of vaccine annually but is short of the national demand. He expressed appreciation and also encouragement at the Tripartite's efforts to come together to tackle this public health problem towards achieving the goal of zero human death by 2030. Although some adhoc collaboration between the animal health and public health sectors have been happening in Nepal much is needed to be streamlined and expanded so that scarce resource could be utilized better for saving hundreds of human and animal lives.

He also highlighted on the in-country SARE workshop conducted in the country during which gaps were identified and measures to be taken by multiple sectors were developed. He stressed on the need for regional cooperation as there is lot of cross border socio-economic activities which increased the risk of cross border rabies transmission.

Dr Sunil Motiwal, CEO of the SAARC Development Fund (SDF) highlighted that the SDF was established by the Governments of eight SAARC Member States (MSs). The fund serves as the umbrella financial institutions for SAARC projects and programmes which are in fulfillment of the objectives of the SAARC Charter aimed to contribute to regional cooperation and integration through project financing and collaborations. SDF has three funding windows; Social ((zoonotic disease control falls under this funding window), Economic and Infrastructure.

SDF is governed by the Governing Council that comprised of Finance Minister of SAARC MSs. The Board of Directors of SDF comprised the senior officials representing Finance Ministries of MSs, Secretary General of SAARC Secretariat and Chief Executive Officer of SDF. SDF has an authorised capital of USD 1.5 billion and total capital of USD 511.52 million. It is implementing 12 projects under the Social window with a fund commitment of USD 74.40 million. The cumulative fund commitment under the three funding windows stood at USD 197.4 million. Social window funds the projects on poverty alleviation, social development focusing on education; health; human resources development; support to vulnerable/disadvantaged segments of the society; funding needs of communities, micro-enterprises, and rural infrastructure development.

He stated that partnership is key for this region to realise its full economic potential and that SDF solicited cross border regional projects to explore possibility of co-financing. SDF is looking forward to working closely with the Tripartite and committed to supporting fund for suitable regional projects in SAARC MSs. The projects have to be implemented in a minimum of 3 MSs indicating that a regional rabies elimination project is possible to be funded from the SDF. If the project is implemented through the SAARC Secretariat in Nepal then the issue of co-financing may not be also required.

Dr Pasang Tshering, Consultant to OIE RRAP then spoke on the background and rationale for the workshop and the objectives and expected outputs from the workshop. He stated that in spite of rabies being 100% vaccine preventable yet claimed tens of thousands of human lives every year, mostly among underprivileged and marginalized populations in Asia and Africa. Over 95% of human cases of rabies are due to dog bites and it has also been proven in several countries and regions that elimination of rabies as a public health problem is feasible through regional cooperation and multi-sectoral collaboration taking One Health approach. And that the best way to tackle rabies is at its source mainly through mass dog vaccinations using good quality vaccines.

The FAO, OIE, WHO and the Global Alliance for Rabies Control (GARC) called the United Against Rabies (UAR) collaboration launched the strategic framework in 2015 followed by Global Strategic Plan in June 2018 for the elimination of dog-mediated human rabies 'Zero by 30' a goal subsequently endorsed by the Member States and territories of the United Nations World Health Assembly and the General Session of the OIE.

In spite of various tools, standards and guidelines being made available by the Tripartite, GARC and other partners many of the SAARC MSs still do not have a comprehensive national policy and strategic plan and inter-sectoral collaboration mechanisms to respond to rabies, thereby posing significant challenges in achieving the global goal on time. He also highlighted that regionally, the UAR has either individually or collaboratively supported rabies control activities in the region by organizing regional/sub-regional workshops involving both human and animal health sectors. However, there wasn't a true collaborative effort, i.e. jointly sharing technical expertise and resources in supporting countries to make any tangible progress towards the goal of Zero by 30. Considering all these, OIE lead the effort for the Tripartite and GARC in collaboration with the SAARC Secretariat and other partners to organise a truly collaborative workshop with the theme 'Enhancing Progress Towards Rabies Elimination Goal of Zero by 30 in the SAARC Region'. The workshop was to provide a platform to review country status or progress including political commitments, share success stories, good practices and tools,

discuss issues of mutual concern and more importantly to identify concrete, national workplans/roadmaps and regional framework to achieve the elimination goal.

He mentioned that an in-country level SARE workshops prior to the proposed workshop was conducted in six MSs (Bangladesh, Bhutan, India, Nepal, Pakistan & Sri Lanka) to help assess country's current status and identify gaps and priority activities to develop a short term workplan for each assessed country. The workshop was expected to help develop tangible country rabies elimination workplans and regional roadmaps towards achieving the goal of 'Zero by 30' besides identifying needed support and roles from the international organisations and partners for the Member States.

4. Technical sessions briefs

4.1. Updates on Global Strategic Plan 'Zero by 30', International Standards and guidelines

This session was to provide the participants an update on the global strategic plan for rabies elimination goal of 2030 and international standards, guidelines and protocols developed/practiced by international agencies like WHO, OIE, FAO and other partners.

4.1.1 OIE's Standards and Activities to support global elimination of dog-mediated rabies by 2030

- Dr Kinzang Dukpa, Regional Project Coordinator, OIE Regional Representation for Asia and the Pacific, Tokyo, Japan

The OIE, as the global inter-governmental standard setting organisation, develops standards for animal health and animal welfare as mandated by the world assembly of OIE delegates (highest decision-making body of the OIE). This is done through publication of the OIE Codes and Manuals for both terrestrial and aquatic animals. The Code establishes animal health standards that countries can use to regulate animal trade and disease control. The Code contains specific chapters for rabies disease (Chapter 8.14) and on model veterinary certificate for movement of dogs (Chapter 5.11). The Code also contains chapters (Chapters 1.1 for animal disease notification; 1.4 for disease surveillance; and 7.7 for stray dog population control that has relevance to rabies. In May 2019, during the 87th general assembly of the OIE delegates, Chapter 8.14 was revised and updated with inclusion of new articles on case definition for dog-mediated rabies; self-declaration for rabies freedom by country or zone; OIE endorsement of official control programme for dog-mediated rabies; rabies surveillance; and multisectoral collaboration.

The Manual contains information on biological standards for diagnostic tests and vaccines that supports the implementation of the Code. Chapter 3.1.17 in the Manual was updated in 2018 with information on diagnostic tests including the direct rapid immunohistochemistry test (dRIT), molecular tests, and updates in the vaccine section.

The Tripartite (FAO-OIE-WHO) with its partners conducted several activities for rabies such as the rabies webinar during the 2018 World Rabies Day; ASEAN rabies meeting in Hanoi, Vietnam in December 2018; rapid assessment of rabies situation in Sarawak state of Malaysia in 2018; and rapid assessment of preparedness in Brunei Darussalam in April-May 2019. The OIE undertook several activities to support countries for rabies control including workshop on international standards for dog rabies in 2016; initiation of OIE laboratory twinning program

in India since 2016; hands-on laboratory diagnosis training in 2017 (China) and 2018 (Myanmar); specific support for rabies control in Bhutan, Philippines and Myanmar; provision of quality rabies vaccines through the OIE vaccine bank; and risk assessment study to elucidate the drivers and risk pathways for cross border spread of rabies in South East Asia. As rabies continues to be endemic in many countries in the Asia Pacific region, there is a need to maintain high-level political advocacy, enhance education and awareness, motivate and coordinate with different sectors/players, enhance disease reporting and surveillance; upscale mass dog vaccination; and use the available standards, guidelines, and tools for effective rabies prevention and control to achieve the global goal of “Zero-by-30”.

4.1.2 Dog rabies elimination in Europe and Latin America

- Dr. Katinka de Balogh, Senior Animal Production and Health Officer, FAO RAP, Bangkok

a) Rabies elimination in Europe

Already in the 4th century BC a disease resembling rabies was described and Greek and Roman authors mentioned rabies as present during the Roman Empire. Most of Europe was infected with rabies during the middle ages and cases occurred in various animal species including wolves, foxes, bears, dogs, bats, and livestock. The development of rabies vaccine by Louis Pasteur in 1885 opened a new area for the prevention and control of rabies in humans and animals (mainly dogs). After the world wars (1914 - 1918 and 1940-1945) an increase in rabies cases was described, mainly in dogs in urban areas and foxes in rural areas causing numerous deaths in cattle. Since 1950, intensive dog rabies vaccination and other measures enabled the control of dog rabies.

In the late 1970s oral rabies vaccination of foxes was first introduced in Switzerland and by 2000 most of Western Europe was dog and fox rabies free.

Some of the key ingredients for success in Europe related to the availability of and compliance with a legislative framework related to animal quarantine, compulsory vaccination and animal registration combined with the availability of quality vaccines (PEP, dog vaccine and oral fox vaccine). In addition, a regional strategy, cross-border collaboration and the commitment of the European Union and its countries enabled the elimination of rabies in humans and terrestrial animals.

b) Towards dog transmitted human rabies elimination in Latin-America

Although rabies was first present in New World bats, the dog rabies virus was introduced through dogs brought from Europe to the Americas, establishing dog-maintained rabies virus. The Pan-American Health Organization (PAHO) was instrumental in developing a Regional Program for the elimination of rabies with strong Member State commitment since 1983 led by the human health sector. The designated Directors of National Rabies Programs (REDIPRA) met regularly and their work was endorsed by the Ministerial Level meeting of Health and Agriculture Ministers (RIMSA). Furthermore, the PAHO revolving fund for animal rabies vaccine and human rabies biologicals can serve as an example also for the SAARC region.

Countries in Latin America sustain vaccination with quality vaccines supplied by governments. During 2008 and 2009 over 50 million dogs were vaccinated per year often during massive one day free rabies vaccination campaigns in the whole country (e.g. Brazil). The initial target was

to eliminate dog-transmitted human rabies by 2017. This goal has been almost reached with just a few countries remaining infected.

4.1.3 One Health approach for rabies control and subsequent elimination

- Gyanendra Gongal, WHO SEARO

Rabies has been identified by SAARC countries as a priority communicable disease of public health and economic importance. Approaches and options for rabies control and subsequent elimination were elaborated and rabies elimination may serve as a model for operationalization of One Health. The need of addressing rabies problem at source was highlighted and proof of concept has been generated by Pan American Health Organization which is focusing on regionally coordinated mass dog vaccination with active rabies surveillance. PAHO Revolving Fund is an example to ensure supply of quality rabies vaccine in cheaper and affordable price.

World Rabies Day has been celebrated since 2007 which is helping advocacy and awareness on rabies at policy, professional and public level. FAO in coordination with partners hosted technical webinar last year which generated lots of interest at professional level. Step-wise approach for rabies elimination (SARE), Integrated Bite Case Management (IBCM), Multi-criteria Decision Analysis (MCDA) model are tools to promote One Health approach for rational use of rabies vaccine and immunoglobulin, assessment and development of roadmap for rabies elimination including evaluation of programme for policy advocacy.

FAO, OIE, WHO and Global Alliance for Rabies Control (GARC) came up with a vision of encouraging rabies endemic countries to achieve zero human deaths from dog mediated rabies by 2030 worldwide which is in line with the Sustainable Development Goals' target date of 2030. Progress in overcoming rabies worldwide is guided by the 'Global strategic plan to end human deaths from dog-mediated rabies by 2030' (Zero by 30) prepared by WHO, FAO, OIE and the Global Alliance for Rabies Control (GARC).

Tripartite group advocates regionally coordinated rabies elimination programme to achieve zero by 30 goal in a short period of time in a sustainable way and Association for South East Asian Nations (ASEAN) and South Asian Association for Regional Cooperation (SAARC) will have to play a crucial role bringing all member countries together for regional public good.

4.1.4 Updates on WHO Position on Human Rabies Prophylaxis

- Gyanendra Gongal, WHO SEARO

Elimination of human rabies is technically feasible and providing access to post-bite treatment (post-exposure prophylaxis, or PEP) is crucial.

In April 2018, WHO published new guidelines on rabies prevention, control and elimination, which include updated recommendations on lifesaving immunization. There is no change in terms of WHO recommended post-exposure prophylaxis (PEP) according to type of exposure, i.e. category I, II and III. Introduction of one-week PEP, expedited pre-exposure immunization, cost effective and prudent use of rabies immunoglobulin are major recommendations based on evidence-based information generated in rabies endemic countries. Revision of National Guidelines on human rabies prophylaxis as per new WHO recommendations has been completed in India, Nepal, Sri Lanka and other SAARC countries are in process. Promotion of one-week ID vaccination schedule will improve compliance rate. Modelling cost-effectiveness

of different PEP regimens clearly demonstrated that One- week ID schedule will help to save large quantity of vaccine at national level.

Shortage of human rabies vaccine is a major concern. WHO SEARO has advocated and promoted adaption of cost-effective intradermal (I/D) rabies vaccination. It is helping Member States to improve accessibility, affordability and availability of modern rabies vaccine. Since there are many human rabies vaccines which are not WHO pre-qualified but procured for use in public hospitals due to government procurement system, it is advocated to record and report adverse events following immunization (AEFI) cases.

Worldwide, < 2% of category III exposed patients receive anti-rabies immunoglobulin (RIG), <1% of category III in developing countries. There are challenges to convince clinicians to use rabies immunoglobulins due to fear of untoward event. Monoclonal Antibody against rabies (mAb) licensed in 2017 and cocktail monoclonal antibodies are being evaluated in various stages of development. As per new WHO recommendation based on evidence-based information, the use of rabies immunoglobulin at the site of bite will improve accessibility of RIG for category III bites in resource poor settings.

4.1.5 GARC and the Partners for Rabies Prevention

- Prof LH Nel, GARC

In 2007 the Global Alliance for Rabies Control (GARC) founded World Rabies Day (WRD) to help raise awareness of rabies and the neglect of this terrible disease. There was a huge global appetite for this initiative and this prompted GARC to establish the Partners for Rabies Prevention (PRP) in 2008. The purpose of the PRP was to bring together all the potential players, public and private, in a global coalition to enable a coordinated and organized approach to the fight against rabies. Revolving around annual meetings, the PRP contributed a number of critical advancements to rabies control and elimination goals. Among these are the Rabies Blueprint and SARE. The SARE tool uses the concept of progressive stages within which every aspect of rabies control is carefully considered and addressed. The tool highlights completed and pending activities together with an automatic score. This interactive assessment enables objective planning and measurement of progress in the execution of a control plan. In-country SARE workshops were an important preparation for this SAARC meeting and was carried out in a number of member countries. During this SAARC meeting we will do a thorough analysis of this and future strategies for member countries and for the region will be guided by these SARE outputs.

Each of the 100s of actionable components of the SARE is hyperlinked to the Rabies Blueprint which provide guided access to all the relevant methods, tools, recommendations, position papers, standards etc. Therefore, to further augment the global uptake of the SARE towards the rabies elimination goal of 2030, the Rabies Blueprint will be further updated during the 2019 PRP meeting. Specifically, evaluation and consolidation of all the new rabies tools will be of great importance to move ahead with the rabies elimination plans for the SAARC region and beyond. These tools include new developments in the following areas of rabies control: Data analysis platforms, Educational tools, Dog Population Management, Vaccination Planning, Mass vaccination tools, Case detection tools, IBCM tools, Laboratory tools, Economic Analysis tools, Budgeting Tools.

4.2. Setting the scene: Current rabies situation and elimination programmes in the SAARC region

This session is intended for countries to share information regarding the rabies situation in the country, country's situation in terms of rabies elimination goal of zero by 30 and various activities implemented to control or eliminate rabies.

4.2.1 Rabies Situation and its Control/Elimination in the SAARC Countries: Extracted from the country posters and presentations and also from the Knowing your Neighbour interview session.

This session focussed on understanding the current situation, issues and challenges, and way forward on rabies control in the seven SAARC MSs based on the country posters and flash talks and 'knowing your neighbour' session. Countries were provided a template with major contents to be covered for both the poster and flash talk country presentation.

Knowing your neighbour session, a face to face discussion was primarily set up for the neighbouring countries to know each other mainly on aspects such as the policies and strategies on rabies control or elimination plan; their implementation status; cross border issues of rabies transmission and challenges; and discussion on working together to address the problem. In the first round one group of country teams interviewed while the other country team answered. After 20 minutes, the sides switched, and the other country group team would interview. Since seven countries participated and also being an island country, some resource persons were allotted to interview Sri Lanka.

A set of lead questions was prepared and shared with the facilitators and country participants. The country could ask further follow on questions as to get a clearer picture which otherwise couldn't be captured from the poster or flash talks. Countries were asked to treat it purely as a technical session to understand each other's current scenario and how they could help each other to achieve the common goal of eliminating rabies from South Asia. It was explained that this session was designed not to challenge/offend, not to find faults with the other country, and not to question each other's deficiencies or weaknesses but rather a means to learn from other countries and potentially identify unique means to achieve progress based on each country's situation.

| Country grouping | Facilitator - Pasang overall |
|---|------------------------------|
| Nepal and Bangladesh | Gongal/ |
| Bhutan and India | Kinzang |
| Afghanistan and Pakistan | Katinka/Yoenten |
| Sri Lanka was interviewed by expert/resource persons - Prof Benazir Ahmed, Dr Isloor, Dr Amit Chaudari) | Andre/Terence |

Below is a summary of the key points for each country and details are given in annexure 3.

Afghanistan

Rabies is endemic and a significant public health issue in Afghanistan. Dogs are the main reservoir of the rabies virus. Although data on human and animal cases are highly under

reported, from 2017 to 2019, a total of 36959 animal cases and 29 human deaths were reported. Rabies is a notifiable disease in both humans and animal sectors. The Ministry of Agriculture, Irrigation and Livestock has developed the national rabies control strategy but this has not been implemented yet. The Ministry of Health has drafted the rabies guideline and SOPs. Anti-rabies vaccines and immunoglobulins are supplied to all provinces for PEP to humans. Illiteracy in rural areas, large numbers of free roaming dogs, negative cultural attitudes towards dogs, lack of routine vaccination, lack of technical capacity and inadequate funds all contribute towards significant challenges in rabies control and dog population management in Afghanistan.

Bangladesh

Bangladesh is a rabies endemic country with an annual human cases of more than 2000 (pre-2010 data) and an annual average of 25000 reported animal cases. With more than 85% of the disease burden seen in rural areas and more than 45% deaths occurring in children, rabies continues to have huge socio-economic impacts in Bangladesh. With an estimated dog population of 1.7 million, the high dog density and majority of the dogs being free-roaming, there is an annual dog bite incidences of nearly 0.5 million cases. Rabies is notifiable in both sectors and a national control strategy and nation-wide control program exists with financial support from the government. The human health sector is taking lead in rabies control programs including the mass dog vaccination campaigns.

Bangladesh has set an ambitious target of elimination of dog-mediated human rabies by 2022 and this is planned to be achieved by upscaling the mass dog vaccination, animal bite management, and enhanced surveillance. Using one health approach involving all relevant stakeholders, and with significant national funding, Bangladesh has been able to train more than 1000 dog catchers/vaccinators and have vaccinated more than 1.3 million dogs in one year. However, challenges still persist in terms of huge stray dog population, availability of quality vaccines (both for human and animal) and poor laboratory diagnostic capacity at field level. Bangladesh focuses on control and elimination of rabies inside the country and do not consider cross border spread of rabies as an issue for now.

Bhutan

Rabies is endemic mostly in the southern bordering districts of Bhutan and dogs are the main reservoir of the rabies virus. The overall dog to human ratio in Bhutan is about 1:8. Nation-wide dog population surveys are undertaken routinely and forms the basis for strategic planning including mass dog vaccination and other interventions.

Strategic risk-based mass dog vaccination is undertaken in the high-risk areas including the Indo-Bhutan border areas every year. More than 70% coverage is ensured through monitoring and evaluation using surveys after marking vaccinated dogs with dyes. From 1996 till 2017, a total of 442 dogs and 551 cattle have died of rabies and since 2018 the number of outbreaks has decreased to around 12 outbreaks annually. Use of rapid tests (lateral flow assays) has strengthened rabies surveillance and rapid response for effective containment of outbreaks

From 2006 until 2016, a total of 17 humans died of rabies and since 2016 no human rabies cases have been reported in the country. Rabies is a notifiable disease in both human and animal sector and there are national action plans in both humans and animals to address rabies. The national dog population management guideline 2019 provides the strategies on responsible dog ownership, community animal birth control, community engagement and management of feral dogs.

Bhutan has set an ambitious target of eliminating dog-mediated human rabies cases by 2023 (even ahead of global target) which they plan to achieve by focusing on risk-based mass dog vaccination (creation of immune belt in the southern border), risk-based surveillance, dog population management, provision of free post-exposure prophylaxis, enhanced awareness, rapid detection and rapid response mechanisms using one health approach. However, constraints such as long and open border allowing unchecked movement of dogs, resource constraints, and competing priorities continue to act as stumbling blocks. Rabies is a cross border issue that needs to be tackled jointly.

India

Rabies is endemic in India and dogs are the main reservoir of the rabies virus. Since rabies is still not a notifiable disease in both sectors in India, the number of animal and human cases are largely underreported. About 36% of world's human rabies deaths occur in India. India has a huge dog population of nearly 30 million dogs, the majority of which are free roaming dogs and in 2018, nearly 8 million dog bite cases were recorded. Rabies control in India is led by the National Centre for Disease Control (NCDC), Ministry of Health and Family Welfare and the Department of Animal Husbandry Dairying and Fisheries (DAHDF) is the counterpart organization for animal rabies control. The NCDC has developed the national rabies control program that focusses on disease surveillance, capacity development for rabies diagnosis and awareness. Under the Assistance to States for Control of Animal Diseases (ASCAD), the DAHDF provides financial and technical assistance for rabies control although priorities are given to other diseases such as FMD, PPR, etc. for the moment. Some states such as Kerala and Goa are undertaking aggressive rabies elimination program and there has been a significant reduction in the number of cases over the last few years.

However, the key challenges faced for rabies control in India include;

- Rabies still not a notifiable disease in both sectors and no nationally coordinated rabies control program
- lack of a national rabies control program, huge number of free roaming dogs, financial constraint to achieve mass dog vaccination, lack of surveillance and reporting of animal rabies
- Ministry of health is leading the rabies control program but focus has been more on post exposure prophylaxis
- Dog vaccination is not done nation-wide due to financial and logistics issues. Mass dog vaccination done in Sikkim, Goa and Kerala only primarily lead by international NGOs such as Mission Rabies.
- Disease reporting not systematic and largely under reported.

India is planning to make rabies a nationally coordinated program after which all States are then mandated to follow the program. Plan to sign MoUs with States on TADs including rabies.

Nepal

Rabies is endemic in Nepal and although 90% of the human cases are dog mediated, the disease is also maintained in sylvatic cycle in the wild animals. Dog: human ratio is 1:12. On an average, around 100 humans die of rabies every year. Although a national guideline for human rabies prophylaxis has been developed in 2019, there is no overarching national action plan in both sectors for rabies control in Nepal. Since rabies is not a notifiable disease in both sectors, underreporting is common and consequently the actual burden of rabies is unknown. Some of the key priority activities identified to accelerate rabies prevention and control include

development of a national rabies control strategy, strategic mass dog vaccination, expansion of free PEPs in all provinces, enhancing intersectoral coordination at all levels, and capacity building for surveillance and response (Annexure).

The country is in the process of developing national action plan and has plans to undertake mass dog vaccination from 2023 onwards. Current program very much human health focused with emphasis on PEP. In human intradermal regimen was started from May 2019. Weak intersectoral coordination and weak governance structure is a key issue. Priority to first control rabies inside the country is the priority although cross border issues are prevalent.

Pakistan

Rabies is endemic in Pakistan and 99% of the human cases (annual deaths between 2000 and 5000 cases) are due to dog-mediated rabies. As per SARE assessment conducted in 2017, Pakistan is currently at stage 1.5 on their way to stage 2. Pakistan identified rabies as a priority zoonosis in 2017 and in some parts of the country such as Islamabad and Punjab, there is online reporting of dog bite cases. However, there is variation across the different provinces in Pakistan in terms of resources and attention given for the prevention and control of rabies. Significant challenges still exist such as lack of epidemiological information, weak multisectoral coordination mechanisms, unclear national policy, low awareness, and lack of resources.

Sri Lanka

Rabies is considered as the priority zoonotic disease in terms of socio-economic impact and currently on an average between 20 and 30 humans succumb to the disease annually. A significant proportion (95%) of the human cases are due to dog bites and the remaining 5% are due to bites by cats and wild animals. The sylvatic cycle is found maintained in civets and bats. Recently, a novel lyssa virus designated as Gannoruwa Bat Lyssavirus was found in the Indian flying foxes (*Pteropus medius*). Rabies is notifiable in both sectors and a national plan exists for rabies control and prevention that includes free PEP for animal bites, free dog vaccination, dog population management, and awareness campaigns. Some of the challenges include weak intersectoral coordination, lack of laboratory diagnostic facilities in the field, lack of awareness amongst the vulnerable communities, irresponsible pet keeping practices etc. Sri Lanka intends to upscale its mass dog vaccination campaigns and enhance awareness especially amongst children and underprivileged communities. The need for modernizing/updating the existing laws to suit the current situation has been felt. Intersectoral coordination amongst the key stakeholders particularly with the Department of Production and Animal Health is a big challenge although animal rabies surveillance to achieve the elimination goal is key.

The country is targeting to eliminate dog-mediated human rabies by 2025, five years ahead of the global plan. The Public Health Veterinary Services (PHVS) under the Ministry of Health, Nutrition and Indigenous Medicine is the institute responsible for taking lead in national rabies control activities. The PHVS consists of one health team comprising of veterinarians and medical officers working together.

4.2.2 Rabies control/elimination in the SAARC Countries: Some success stories from the region

This session was included to share some success stories from the region or elsewhere in rabies elimination program so that other countries can learn and perhaps emulate the same in their respective countries.

4.2.2.1 OH Secretariat/approach and rabies control in Bhutan

- Dr Sonam Wangchuk, Royal Centre for Disease Control (RCDC)

One Health approach has been in practice informally between public health and animal health sectors for rabies control even before One Health approach concept was known to Bhutan. The formal work to institutionalize One Health approach began in 2011 and further strengthened after the South Asia One Health conference was convened in Bhutan in 2013.

Bhutan developed one health strategic plan in 2014-15. The strategic plan has four objectives and seven strategies. The government in 2016 approved the plan and a Memorandum of Understanding (MoU) among relevant stakeholders was signed in 2017. The strategic plan was revised in 2018 to align with government's 12th five-year plan (2018-2023). With 1st Inter-ministerial committee for one health (IMCOH) convened in May 2019, the one health secretariat was formally established in Bhutan. Once technical lead persons are seconded from the two key Ministries the Secretariat will be operationalised.

Rabies control is one of the successful national zoonotic programme using one health approach in Bhutan which is led by the Livestock sector. Among many collaborative activities undertaken for rabies control, the key areas that relevant stakeholders worked together were conducting advocacy, education and awareness programs, development of guidelines, strategic plans and projects documents, sharing of information on rabies outbreaks, conducting joint outbreak investigation, conducting collaborative research studies and conducting trainings for health and animal professionals on rabies control activities.

With formalization of one health secretariat and strong support from the government on rabies elimination, Bhutan is on track to achieve zero human death and freedom of rabies before the regional target of 2030.

4.2.2.2 Ways and means for scaling up mass dog vaccination (MDV) for elimination of rabies based on experience of Bangladesh

– Prof Be-Nazir Ahmed, Rabies Expert, Former Director, Disease Control (Rabies Elimination), Bangladesh

Mass Dog Vaccination (MDV) has been proven to be the single most effective intervention for elimination of dog mediated rabies. Three rounds of MDV with minimum coverage of 70% at the smallest campaign unit should achieve transmission interruption. Initiating and scaling up MDV in most of the SAARC member countries is yet to materialise. Only Bangladesh has the long experience of initiation and scaling up MDV on a major scale for covering the whole country. Initiating MDV in a small municipality in 2011, Bangladesh has scaled it up to all the district municipalities - 39 of 64 districts of the country with on average 80% coverage. The country has the plan to conduct three rounds of MDV within 2021 having the adequate funds and expert and experienced animal rabies control staff.

For three rounds of MDV covering the whole country needs a national strategy, national budgeted action plan, inter ministerial steering committee, national technical committee with

high level political commitment and social mobilisation, gradual increase in capacity building for MDV campaign and all out multisectoral collaboration from planning to implementation.

Most of the dogs in South Asia are roaming and catching and vaccinating them is a daunting task for MDV campaign. There are no professional dog catcher in SAARC countries and they need to be selected and trained. For scaling up MDV on national level, countries like India may need millions of dog catcher and vaccinator. It is not possible to get large number of them overnight; and that can be done through snowball technique as has been done successfully in Bangladesh. Starting with around 40 dog catchers in the small scale MDV in a municipality, the country has been able to create over three thousand who have developed different level expertise and experience, who can be engaged to carry out MDV on a large scale covering the whole country. If the other countries of South Asia want to conduct MDV on national scale, they need to follow the snowball technique of capacity building. Bangladesh can support member countries of South Asia through technology transfer in capacity building in MDV with small scale campaign in their own countries with the expert MDV consultant, dog catcher and vaccinator. For quality and successful MDV campaign, we also need dedicated MDV consultant for advocacy, training of animal control staff, micro planning, supervision & monitoring. There will be need of good dog counter for assessing the vaccination coverage and dog survey. Making a small scale MDV campaign successful, then to use this as showcase for high level political commitment for getting incremental funding and sustainability of the program.

The South Asia bears 45% global burden of rabies. To attain at the target of global road map 2030, it the high time to initiate the MDV in large countries like India, Pakistan, Nepal and Afghanistan on a small scale following the Bangladesh Model of MDV campaign.

4.2.2.3 National Dog Population Management and Rabies Control project Bhutan: A case study.

– Dr. Amit Chaudhari, Humane Society International (HSI), achaudhari@hsi.org

In 2009, Humane Society International entered into an agreement with the Royal Government of Bhutan to implement a nationwide CNVR program in different phases by replacing their old inhumane methods of controlling the dog population.

Introduction:

Bhutan has a large population of the free roaming dogs and those mainly live in big packs that create human-dog conflicts as well as several public health risks. Trying to control the number of dogs and mitigate the conflict, many inhumane methods were experimented with by Bhutanese Government including poisoning, translocating and impounding. Humane Society International brought a scientific, humane and sustainable CNVR model for Bhutan on the country level partnering with the Department of Livestock, Royal Government of Bhutan in 2009. It also included training of all in country veterinarians in high quality sterilization methods, a dog registry and a restructuring of the veterinary facilities (e.g. introduction of sterile methods) and veterinary service accessibility across the country

CNVR implemented across the country (Sterilized a total of 84,780 dogs)

The CNVR program was implemented in the capital City Thimphu City as a pilot program in February 2009 for four months, during which 2846 dogs were sterilized and vaccinated.

Phase – 1 (September 2009 to June 2012) was implemented across the country prioritising major cities and places which are important for the tourism industry. During the first phase of the program a total of 34,141 dogs were sterilized and vaccinated across the country. To achieve this three teams worked in different parts of the country equipped with dog catching vehicles and all the necessary equipment.

Phase – 2 (July 2012 to June 2015) was launched to continue the national sterilization efforts and during this phase a total of 24,006 dogs were sterilized and vaccinated against rabies.

Phase – 3 (July 2015 to June 2018) 26,583 dogs were sterilized in this phase by the government veterinary officer of district veterinary hospitals all over the country.

Sustainable model:

Since July 2018 (after completion of the 3rd phase) Department of Livestock is continuing sterilization efforts in the 20 district veterinary hospitals using own local resource. Each district veterinary hospital has different approach for ongoing sterilization efforts. Example- Paro district veterinary hospital organises a sterilization camp few days every month to maintain high rate of sterilization while Thimphu Veterinary hospital and Municipal corporation organise a full month sterilization camp annually. Since local capacity is built up within the country and they have annual targets to achieve, this model is truly one of the rare and sustainable one.

Monitoring and Evaluation

In June 2015 (at the end of the 2nd Phase), a national dog population survey was conducted to evaluate the program coverage and to establish a monitoring system for the free roaming dog density. Bhutan as a whole country had an average sterilization coverage of 64.1% in urban areas and 44.7% in rural areas. In July 2018 (at the end of 3rd Phase), another monitoring survey and a KAP (Knowledge, Attitude and Practices) survey was conducted in selected cities and rural areas. Very high sterilization rates were recorded in the two main cities of the country (Thimphu 70.9 % and Paro 79.9 %) whereas the average national sterilization coverage for urban area was 65.8 % and 52.6 % sterilization coverage in rural areas. Similar to more recent program experiences HSI made in India, the KAP survey revealed that dog ownership patterns are similarly varied and abandonment similarly common in Bhutan. Something that will be addressed in the next phase of the program with an extensive community engagement, legislation for pet dog sterilization and veterinary access campaign.

4.2.2.4 Dog population surveys changing implementation strategy for Rabies control programs in Philippines

- Dr. Amit Chaudhari, Humane Society International (HSI), achaudhari@hsi.org

The Philippines has consistently been included among the top 10 countries with the highest number of human rabies deaths. A total of 1176 human rabies cases have been reported from January 2014 to June 2018 with an average of 258 cases each year. Negligence towards dog bite and post bite vaccination are major reason for rabies in Philippines (DOH,2018). Vaccinating pets (dogs and cats) against rabies is not common in Philippines due to several reasons like access to vaccination clinics, economic condition, ignorance and lack of knowledge.

Cebu City Rabies Vaccination Program:

Cebu city provide free anti-rabies vaccine during the annual rabies vaccination program to owned dogs. Despite of annual vaccination programs in Cebu city there were 89 animal rabies cases and 5 human rabies cases reported between 2013 to May-2018 (Chart-1). The main reason was poor vaccination coverage due to not having scientific dog population estimates and 10 dogs per 100 humans was the ratio taken in count to plan and implement annual anti-rabies vaccination program (Chat-2, Cebu city annual vaccination numbers). In June 2017, Humane Society International with Bureau of Animal Industry (BAI), Philippines organised a workshop on how to design and conduct dog population survey for a city and with that we conducted the first dog population survey for Cebu city. The survey suggested that there are 17.7 dogs per 100 humans in Urban area and 20.35 dogs per 100 humans in rural area of Cebu city. Based on the finding of the survey a joint project between HSI and Cebu city government was run from March 2018 till September 2018. Under the effective mass vaccination program teams were able to vaccinate 87,392 dogs and 10,000 cats. The vaccination program was an eye opening for city administration and veterinary department that how much under vaccination was ongoing since many years and that was the reason for not achieving any results from it.

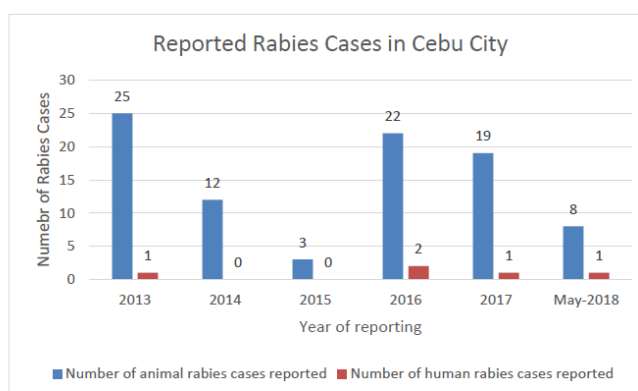


Chart- 1, Year wise number of rabies cases reported in animal and humans in Cebu city

Technology helped effective vaccination:

In a joint vaccination program, HSI's state of the art rabies vaccination application was used which proved to be a game changer for implementation of the program. It allowed us to monitor daily activities and create a georeferencing to restrict the vaccination effort in desired areas, it also generates geo locations to see vaccination coverage visually on a Google map and plan better co-ordination among the vaccination teams.

Way forward and sustainability:

Most resources were provided by the city veterinary department and administrative department like anti-rabies vaccine, vehicles, vaccinators and other necessary tools, HSI brought in technology and additional support for design and implementation. To realize that there is such a big dog population in the city and achieve high vaccination coverage first time ever, it has changed the future strategy for local government.

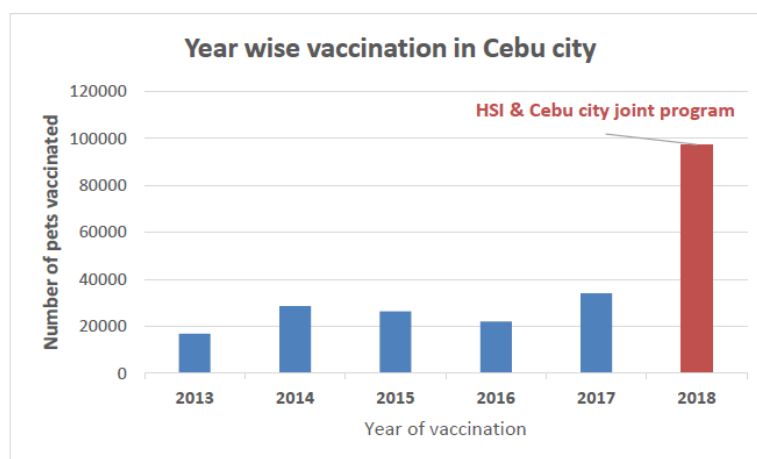


Chart - 2, Year wise anti-rabies vaccination in Cebu city

4.2.2.5 Rabies free Goa – an Indian success story in rabies elimination

- Lohr, F; Corfmat, J; Yale, G; Naik, V; Gamble, L + Gibson, A

With an estimated 36% of all dog bite mediated human rabies deaths, India is considered a global hotspot for rabies. Mission Rabies, in collaboration with the Government of Goa, have been working in the state of Goa to enhance rabies control in the State and develop a blueprint for rabies control in India and the wider SAARC region.

Starting in 2013 with a 5,000 dog proof-of-concept campaign, the project has been supported through a short scheme by the Department for Animal Husbandry and Veterinary Services in Goa since 2015. Through the introduction of smart phone technology, data on dog population ecology and the work of the vaccination teams is recorded on a daily basis to ensure an efficient and economical approach to rabies control. International collaboration with the US Centers of Disease Control and Prevention have led to the inception of Integrated Bite Case Management and the establishment of adequate laboratory facilities.

The combined use of catch-vaccinate-release (CVR) and door-to-door (DD) vaccination methods enabled the vaccination of over 100,000 dogs annually and have led to a significant reduction in dog rabies numbers and zero human rabies cases since 2018.

The potential use of oral rabies vaccination is currently being explored to facilitate the scaled implementation of dog vaccination to larger regions of India.

4.3. Practical approaches in addressing sector specific issues and challenges

Realising that approaches and certain activities are very specific to each sector the session was designed for each sector (human and animal health) to deliberate on specific current issues of importance among the participants from the respective sectors. Apart from sharing latest updates on guidelines, approaches and tools the groups are expected to come up with some actionable recommendations.

4.3.1 Human Health Sector

WHO position on human rabies prophylaxis, surveillance and reporting of human rabies, PEP - Summary of discussion

- If we are planning for elimination, Rabies should be notifiable in every country (it is notifiable in all countries except India & Nepal. Nepal & India has plan to include it within 2-3 months)
- Not only inclusion in notifiable list, but enforcement is equally important.
- Arrangement of Hotline or helpline to seek advice on animal bites is important but challenges needs to be addressed as per local conditions. Some challenges require highly skilled persons, every local level or city specific helps need, geographical, literacy and other technical problems etc.
- National guidelines need to be updated as per new WHO recommendations on human rabies prophylaxis:
 - All countries are using Intra dermal vaccination schedule, Nepal recently updated its national guideline as per WHO recommendations. India & Sri Lanka have also revised national guidelines on human rabies prophylaxis, but they need more data to adapt one-week ID schedule and they will continue to use-one month ID schedule. Bhutan & Bangladesh are planning to revise guideline by 2019.

- Active surveillance is critical to guide rabies elimination drive and to declare rabies free areas:
 - Focus should be given to eliminating rabies (human and dog rabies) in a specific area so that human post-exposure prophylaxis could be stopped. Then, expansion to other and larger areas in a phased manner.
 - Sample collection from suspected rabid animals & transfer to reference laboratory through networking should be initiated as sample collection from humans are not practical due to sociocultural reason except in Sri Lanka where PM is mandatory and death certificate issued for any funeral functions.
 - Active surveillance should be promoted by both human and animal health sectors for animals whereas capacity for human antibody titration needs to be developed at country level.
- Recording and Reporting:
 - It was highlighted that recording and reporting system should be developed and/or strengthened to guide national rabies elimination programme and make justification for investment for rabies elimination. WHO shared rabies data and information format and all countries provided comments for finalization and each country will report annually in future as per agreed reporting form.
- Capacity building: Countries agreed to share the experiences to build capacities in different areas of neighbours as well help from qualified institutions. The WHO Collaborating Centers will provide support for strengthening laboratory diagnostic capacity.
- Education Platforms:
 - CME is a continuous process and it is advocated to use available international online courses. Countries are encouraged to use different free online courses for doctors & nurses on rabies prepared by GARC which is in line with the latest WHO guidelines.
- All countries emphasized the need of high level political commitments and WHO and other partners are requested to promote high level advocacy at country level.

Overview of progress made since last SAARC Rabies Workshop (2015)

Dr Gyanendra Gongal shared progress made after last SAARC Rabies Workshop in Colombo and elaborated regional context, recommendations, key achievements and international partnership for capacity building and collaborative activities at regional and country levels. WHO hosted a high-level meeting on “Driving progress towards rabies elimination” to share the findings of a recent multi-country study sponsored by GAVI, the Vaccine Alliance last year and SAARC countries requested Tripartite group to facilitate SAARC Rabies Workshop.

Significant progress has been made towards rabies control over last one decade but much needs to be done to achieve zero human death by 2030. Human post exposure prophylaxis remains important while rabies remains to be endemic. Cost-effective intra-dermal vaccination was introduced in all SAARC rabies endemic countries. GAVI has now considered inclusion of human rabies vaccine as part of its vaccine investment strategy from 2021 which it will act as a major catalyst for the global effort to eliminate rabies.

It was highlighted that rabies elimination requires a focus on mass dog vaccination covering at least 70% of the total dog population within a short time using high quality, dog rabies vaccine

that confers long lasting immunity. With the initiation of OIE laboratory twinning project between Karnataka Veterinary, Animal and Fishery Sciences University (KVAFSU) and Animal and Plant Health Agency (APHA) of UK and CDC Atlanta USA in 2016 it is hoped that it may be designated as an OIE Reference laboratory for animal rabies in the near future.

A number of international animal welfare organizations are involved in supporting capacity building and executing pilot projects in a number of SAARC countries in collaboration with local NGOs. There are success stories of achieving zero human death through implementation of a comprehensive rabies elimination mission in cities of Goa, Sikkim, Ranchi and Nilgiris of India. It clearly illustrates that zero-human death is feasible and doable in the Indian context provided that there is a strong political will and ownership by local authority and community.

The SARE assessments have been completed in 6 rabies endemic SAARC countries which will guide them to develop a roadmap for rabies elimination. This exercise will provide opportunities for mapping country resources and expertise and building national capacity for planning and executing a comprehensive rabies elimination programme through training and sharing expertise and best practices.

4.3.2 Animal Health Sector

The key points discussed during this session were:

- The use of rapid kits (lateral flow assay) for rapid diagnosis of rabies in the field has enhanced dog rabies surveillance in some countries and this could be replicated in other countries to enhance surveillance and rapid containment of outbreak
- The use of straw method of brain sampling using the occipital foramen (non-invasive) approach is found to be safe and easy for sample transportation that has enhanced dog rabies surveillance in Bengaluru, India. This technique needs to be replicated in the SAARC countries to enhance brain sampling and submission for laboratory surveillance. The group recommended that a regional laboratory training focusing on straw method sampling using the occipital foramen approach and rabies diagnostic techniques need to be undertaken by the proposed OIE reference laboratory in Bengaluru, India through support of Tripartite.
- The Commonwealth Veterinary Association and SAARC Agriculture Center also voiced their support for the laboratory training.
- The group recommended that MDV and DPM should target both owned and free roaming dogs and that population estimation of free roaming dogs should also be accounted for in the MDV.

4.4. Updates from rabies collaborating centres/reference laboratories

This session covered some of the WHO, FAO and OIE Reference or collaborating centres' expert works and activities to support rabies control or elimination activities in/from the region.

4.4.1 Laboratory diagnosis of human rabies

- Reeta S. Mani, Additional Professor, Department of Neurovirology, WHO Collaborating Centre for Reference and Research in Rabies, NIMHANS, Bangalore

The 5th Edition of the WHO Manual on Laboratory Techniques in Rabies was published in 2018 and is available free for use online. Edited by Charles Rupprecht, Anthony Fooks and

Bernadette Abela-Ridder, the manual is the culmination of contributions of several experts across the world. It is published in 2 volumes with a total of 44 chapters and 521 pages.

An overview of the laboratory diagnostic techniques for ante-mortem and post-mortem diagnosis of human rabies was discussed. The testing algorithm was illustrated using a simplified flow-chart. An online manual for updated details of all individual laboratory tests is available for reference. <https://www.who.int/rabies/resources/9789241515153/en/>.

4.4.2 Status of OIE Twinning Programme on strengthening rabies diagnosis in India.

- Shrikrishna Isloor, Rabies Diagnostic Laboratory, Department of Veterinary Microbiology, Veterinary College, KVAFSU, Bengaluru, India

India is endemic for rabies except Andaman and Nicobar and Lakshadweep islands. Most cases are reported in the rural areas where awareness about the disease is less. The confirmation of the disease requires collection of brain sample from suspected animals, proper packing, shipping and testing at the laboratory level. Most of the countries have shifted to Direct Fluorescent Antibody Assay (DFA) from Seller's staining as a choice for diagnosis. With a view to provide a confirmatory diagnosis of rabies in animals and also develop the human resource in India, the Rabies Diagnostic Laboratory at Veterinary College, Dept. of Microbiology, Karnataka Veterinary, Animal & Fisheries Sciences University (KVAFSU), Bengaluru has initiated the OIE laboratory twinning project from 2016 supported by the Animal and Plant Health Agency (APHA), UK and Centers for Disease Control and Prevention (CDC), Atlanta, USA.

In order to develop a network of animal rabies diagnostic laboratories in India and strengthen the diagnostic capabilities across the country, various workshops were organized under the twinning programme. The First workshop involved participants from various constituent institutions of the KVAFSU spread across the State. Hands-on training was provided on various aspects of sample collection, packing, transportation and testing for Rabies by Lateral Flow Assay (LFA), direct Rapid Immunohistochemistry (dRIT) and DFA. Veterinarians from various parts of the country were trained in further workshops with respect to Rabies diagnosis with the motto of capacity building of local Veterinarians and also laboratory strengthening. These workshops and trainings enabled the development of a network of regional rabies diagnostic laboratories across Karnataka, Kerala, Tamil Nadu, Gujarat, Manipur, Andhra Pradesh, Telangana, Maharashtra, Madhya Pradesh, Himachal Pradesh, Assam, Punjab, Rajasthan.

Training were also conducted for veterinarians from the Animal Husbandry Department of the State with the support of the Karnataka Veterinary Council under the Continued Veterinary Education to strengthen diagnostic abilities of veterinarians in field. Hands on training was provided to the veterinarians on brain sample collection from the foramen magnum approach which overcomes the apprehensions and disadvantages of the conventional method, sample transportation, submission, reporting and diagnosis of rabies. This resulted in an increase in the number of samples being received at the Rabies Diagnostic Laboratory and also the reporting of the disease. Many countries have eliminated dog-mediated rabies by mass vaccination and sero-monitoring which needs to be adopted in the country.

4.5. Tools, innovative approaches on rabies elimination and multi-sectoral collaboration for supporting rabies control/elimination

There are many tools, guidelines and approaches developed by international organisations and other partners supporting rabies elimination/control. Some of the relevant ones were selected to be shared with the country participants so that they could use it to enhance their efforts in rabies elimination activities.

4.5.1. Integrated Bite Case Management: Community Based Rabies Surveillance (CBRS) in the Philippines

- Sarah Jayme, DVM, MVPHM on behalf of the Global Alliance for Rabies Control

Poor reporting of rabies contributes to poor control efforts and inadequate access to vaccine continues the vicious cycle of neglect. A lack of accurate and timely rabies data leads to a lack of emphasis on its control. Incomplete reporting of data based on paper records of bite victims and cases collated on an annual basis is not sufficient to design a responsive control strategy that ensures vaccine is always available to treat patients and ensure that dogs in the most high-risk areas are vaccinated.

In the Philippines, there is a national rabies control strategy which invested heavily in over 500 Animal Bite Treatment Centers (ABTCs) to provide Post Exposure Prophylaxis (PEP) to bite victims, yet over 200 deaths per year continue to occur. Dog vaccination campaigns have not stopped rabies transmission and these, along with surveillance of animals, still need to be strengthened.

A study conducted in 2017 to evaluate operations of ABTCs in the Philippines showed that only half of bite victims in the community go to the ABTC. It was also found out that only 15% of the bite victims that go to the ABTC are considered as high risk bite victims (biting animal is dead after 14 days observation or unknown status). Of these high-risk bite victims that seek treatment in the ABTCs, only half completed the PEP course (Amparo et al, 2018). These results prompted for the need to develop a more expanded rabies surveillance with One Health approach that will start at the community level.

The Community Based Rabies Surveillance (CBRS) Project is being piloted in Muntinlupa City, Metro Manila from June 2018 to November 2019 in collaboration with the City Government of Muntinlupa and Research Institute for Tropical Medicine (RITM) of the Department of Health. The project aims to capitalize on a more extensive health worker networks to support and direct resource limited veterinary services by enabling a vital intersectoral link and transform the development of cost-effective veterinary control of this public health threat. The project is adapting the District Health Information System 2 (DHIS2) platform for disease reporting within a community to provide a powerful means to establish an early warning and response system between the medical and animal health sector which can be replicated in other parts of the country as well as in other countries.

4.5.2. The Rabies Epidemiological Bulletin (REB)

- Terence Scott, GARC

Accurate and timely surveillance data is critical to the understanding and monitoring of any programmatic activity, be it for disease control or for animal welfare. Health and health-related issues of low priority suffer from the cycle of neglect, whereby poor surveillance results in a poor situational understanding, leading to low prioritisation and an absence of funding to

address the issue. Improved surveillance is the most feasible means to break the cycle of neglect, as with accurate data the issue can be objectively evaluated, and the best means to address the challenge determined. Decisions can, and should, be based on data and not estimates or unsubstantiated claims, while the impact of intervention is demonstrated, and the use of financial resources justified through positive outputs.

For rabies, most endemic countries have surveillance systems, but these systems are typically incapable of providing timely, accurate and high-resolution data that can help stakeholders make informed decisions. Therefore, the Global Alliance for Rabies Control (GARC) has developed a toolbox of digital surveillance solutions for governments and non-governmental partners to use to address rabies surveillance challenges.

The Rabies Epidemiological Bulletin (REB) is a comprehensive rabies surveillance solution that addresses all aspects of rabies data collection and analysis. The REB has several specialised components that address critical surveillance aspects *viz.* the Rabies Case Surveillance component – that focuses on tracking and mapping laboratory diagnosed and suspect cases; the Community-Based Rabies Surveillance component – a detailed integrated bite case management system that includes human and animal case reporting, feedback and automated SMS notifications and; the Rabies Vaccination Tracker component that tracks and analyses dog vaccination campaigns in near real-time through a mobile phone application or in conjunction with the GARC Data Logger (*vide infra*).

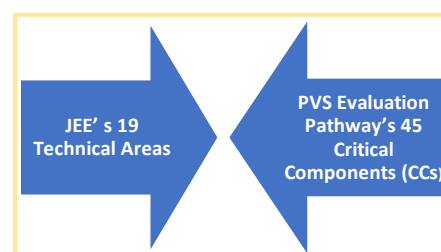
Other modules include those designed to track individual patients attending health facilities using the Rabies Treatment Tracker (RTT) component of the REB – enabling health professionals to track patient visits, PEP usage and undertake risk-assessments. The system has a referral function catering for the same patient attending multiple facilities throughout their treatment course.

Overall, the REB is a multi-functional, dedicated, One Health surveillance system for rabies designed to assist governments in their need for improved rabies surveillance. The system is compatible on any computer or web-browser and also has a mobile phone application for in-field usage.

4.5.3. National IHR – PVS Bridging Workshops

- Pasang Tshering, Consultant, OIE RRAP, Tokyo

International Health Regulation (IHR) – Performance of Veterinary Services (PVS) NBW is a three-day interactive workshop to bring human health, animal health and other key actors to work together. This has been designed based on the WHO-OIE operational framework for Good Governance at human-animal-environment interface. Its primary objective is to identify the results of the OIE's Performance of Veterinary Services Evaluation & Gap Analysis and WHO's IHR Monitoring and Evaluation Framework (JEE, AAR) and find synergies and complementarities to develop priority joint activities.



The key expected outputs of the bridging workshops are to i) the current strengths & weaknesses in the collaboration between the animal & human are diagnosed, ii) health services for 16 technical areas that are key for prevention, detection, & response to health

events at the human-animal interface (zoonoses, food safety & AMR) are mapped, iii) a harmonized, detailed & realistic joint roadmap of activities that the country will implement to improve the collaboration between the two sectors is developed.

The workshop brings together 60 to 90 stakeholders primarily from the two key sectors of the country but also representatives from other relevant sectors (environment, wildlife, media, police etc.) are also engaged depending on country's structure.

The approach itself follows a very interactive methodology through use of various materials, case studies and group works or world cafe sessions. A logical step by step process is followed in the conduct of the workshop which is divided into seven sessions. The results of session feeds into the next session. The session details are;

Session 1: Setting the scene → Session 2: Identification of strengths & weaknesses in the collaboration → Session 3: IHR & PVS tools and their bridging → Session 4: Extraction of PVS and JEE results → Session 5: Building a road-map → Session 6: Fine-tuning the road-map → vii) Session 7: The way forward.

4.5.4. Estimating costs of rabies control: the Global Dog Rabies Elimination Pathway and the Vaccination Planning Tool

- Julie Cleaton, National Center for Emerging and Zoonotic Infectious Diseases, Centers for Disease Control and Prevention, Atlanta, GA, USA

Background:

Countries' rabies elimination resource needs vary depending on multiple factors, including phase in elimination pathway, existing infrastructure, dog population size, vaccine availability, and vaccinator capacity. When it comes to planning campaigns on a smaller scale, it is important to know local dog ownership and confinement practices, local costs, and appropriate the vaccination method given those variables. The Global Dog Rabies Elimination Pathway (GDREP) was designed to help estimate country costs and resource needs over time, and the Vaccination Planning Tool was made to help campaign planners allocate limited vaccine resources most efficiently and effectively for campaigns.

Methods:

The GDREP assumes countries go through 3 phases spanning 13 years: preparation, scaling up dog vaccination, and sustaining 70% vaccination coverage; freedom is achieved by year 11 with two years after to validate. This timeline depends on a committed workforce and government with no regression to lower phases. Data sources include the 2015 human population estimates, human development index, Knobel 2005 and Vigilato 2013 regional human: dog ratios, Hampson 2015 dog vaccination coverages, and OIE veterinary capacity database. Cost estimates are based on an average of \$ 2.18 per dog vaccinated.

To make the Vaccination Planning Tool, a dynamic model was developed in Excel to estimate vaccination coverage and cost-per-dog vaccinated based on local inputs of dog demographics, effectiveness of strategies, efficacy of interventions, and costs. It was evaluated by comparing to 13 real campaigns from 8 countries (located in North and Central America, East and North Africa, and Asia). Sensitivity analyses were performed for varying dog confinement and vaccination strategies.

Results:

An Rshiny web tool was created for countries to estimate their individual elimination by 2030 costs and resource gaps using the GDREP. Globally, the elimination pathway expects large funding and vaccinator gaps if all countries begin immediately. Increasing vaccinator capacity was one of the few ways to decrease costs significantly.

For the Vaccination Planning Tool, the average difference between modelled and observed vaccination coverage was only 3.8% (95 CI 2.3% – 5.3%). The average respondent-provided dog confinement values were 28% confined, 48% semi-confined, and 24% never confined. Central point campaigns were most cost-effective to reach 70% of free roaming dogs only when >88% of the dog population was confined, so alternative vaccination strategies such as capture-vaccinate-release must be considered for most places. When veterinary capacity is low, oral vaccination is a more cost-effective supplement than capture-vaccinate-release.

Conclusions:

There is a large global funding gap to fill in order to eliminate dog rabies, but elimination is estimated to prevent over 1 million deaths by 2045 at under \$3000 per death averted. Countries can use the GDREP to estimate their own financial burdens over the course of elimination. This can be used to advocate for long-term funds and establish a strong foundation for multi-year government commitment.

The Vaccination Planning Tool was found to be highly accurate from estimated to observed vaccination coverages. It can be used to allocate vaccine in local campaigns, and it indicates that dog population confinement must be considered when planning campaign strategies. Central point alone is highly unlikely to reach 70% of free roaming dogs, so campaign managers should consider capture-vaccinate-release and oral vaccination to reach free roaming dogs.

4.5.5. Establishing Rabies Action Centre of Excellence - RACE: A new proposal from FAO.

- Dr Eric Brum, Team Leader, FAO ECTAD Bangladesh

Canine-mediated human rabies can be progressively controlled and eliminated through mass dog vaccination and a One Health approach involving close cooperation between the animal and human health sectors at all levels. The establishment of a ***“Rabies Action Centre of Excellence” (RACE)*** is proposed and intended to serve as a resource to build capacity in the region to develop and implement effective dog vaccination programmes. In addition strategic development, work plan design assistance, and deployment of monitoring and surveillance tools, including IBCM, particular emphasis will be given to strengthening capacity to vaccinate roaming dogs as this is the most common competency limiting rate of progress in mass dog vaccination programmes.

The RACE will be a place where MSs in the region can go to work together and help each other to learn how to best eliminate rabies as efficiently as possible. The country selected to host the RACE will have the privilege of holding rabies control and dog vaccination trainings at the centre of excellence for international visiting teams from other countries/agencies/NGOs, will increase its regional vaccination capacity with expert support, be the host of a universal monitoring and surveillance system (MOSS) and initiate Rapid Street dog Vaccination Protocol (RSVP). Capacity will be built for different levels of participants who will be trained in the key competencies needed for achieving progressive rabies control. Skills and knowledge

areas developed will include the rabies epidemiology, programme design and management, data analysis, cross-sectoral bite case investigation and surveillance, canine rabies diagnosis and risk levels, dog catching and vaccination, treatment of human bite cases, and communication. Participants from partner countries will be trained in dog catching and vaccination and on a scientifically sound approach to canine rabies control. Both animal health and human health participants will be trained in a One Health approach to bite case investigation through integrated bite case management (IBCM). Many of these skills, including the One Health approach, can be used in the control of other zoonoses in Asia.

Criteria: A set of criteria for the Member States have been developed in consultation with key stakeholders to be eligible to host the RACE:

4.6. In-country SARE assessment and workplan results

In-country SARE workshops conducted in six of the seven rabies endemic countries in SAARC countries (except Afghanistan) preceding the regional workshop. For Pakistan the results of the in-country workshop conducted in 2018 was used. The workshop assessed the respective countries status on their efforts towards rabies elimination goal of 2030 followed by development of a workplan to achieve the goal in the stipulated schedule.

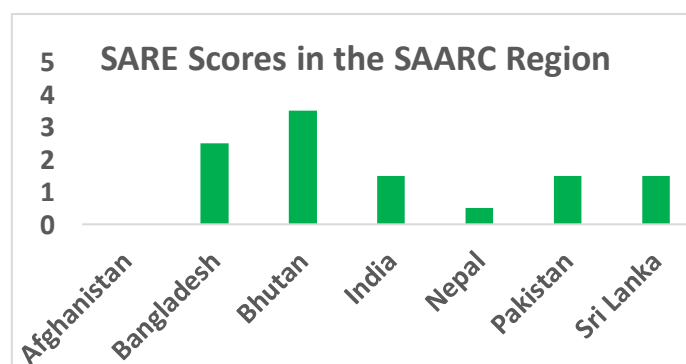
4.6.1. Analysis of the country plans towards development a regional strategy for rabies elimination: Analytical presentation on in-country SARE assessment outputs

- Coetzer, A; Scott, T; and Nel, L, GARC

The SARE tool is a practical planning, monitoring and evaluation tool to guide, develop and refine rabies control programmes. The SARE provides measurable steps that have been designed as a logical flow of activities in efforts towards freedom from dog-transmitted rabies. The SARE tool has two components 1) the *assessment* component that facilitates the self-assessment of a country's current rabies control situation and; 2) the *workplan* component that facilitates the development of a clear practical workplan with actionable outputs, deliverables, responsible authorities and timelines.

The SARE assessment identifies the SARE scores which is an indication of the country's current situation in terms of thier actions towards rabies elimination. The SARE score provides a guide as to the prevailing situation within the MS and the Score should not be used as a comparison between MS, but rather an indication for progress. The SARE score allows MS to monitor progress over time (after future re-assessment). The SARE summary page provides a detailed overview of accomplished and pending activities broken down by component.

Each of the SAARC member states (MS) except Afghanistan had undertaken an in-country SARE assessment prior to the SAARC regional meeting. This enabled each country to identify their own strengths and challenges, while also allowing them to develop their own practical workplan for rabies elimination – complete with KPI's and Gantt charts. Upon careful consideration of all the SARE-derived unaccomplished activities from across the region, 14 common “foundational activities” were identified as critical activities for the advancement of the region towards rabies elimination.



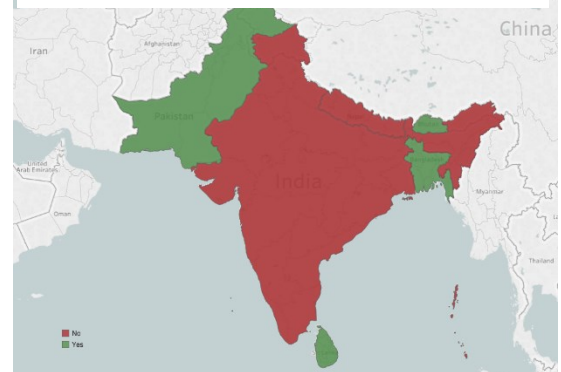
Commonalities across SAARC region

- Common activities across the region were identified
- 14 activities were selected that could be addressed/assisted through regional collaboration
- These are foundational activities needed to accomplish all other activities – especially programmatic activities (e.g. vaccination, etc.)

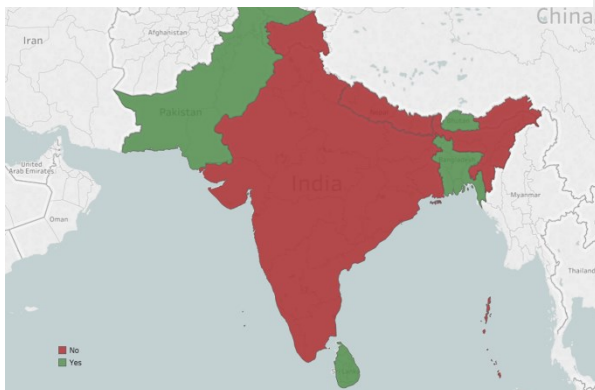
Core legislative activities

- Legislation provides legal support for rabies control initiatives
- Notifiability ensures improved:
 - ✓ sample collection
 - ✓ awareness
 - ✓ timely intervention
- Disease reporting should be subject to well-developed case definitions

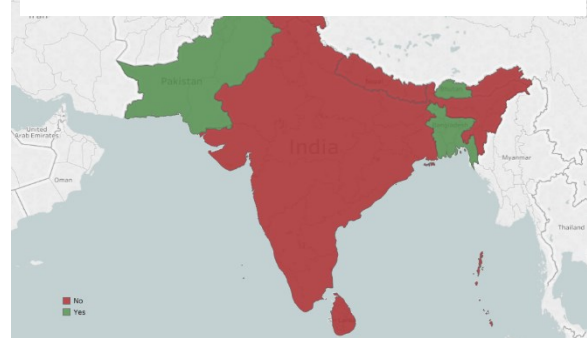
Rabies considered a priority disease



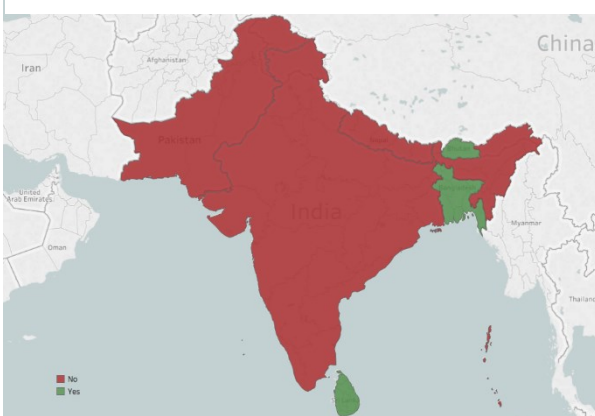
Animal Rabies is notifiable



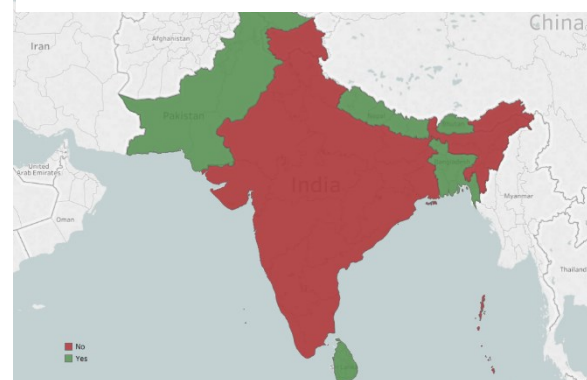
Animal rabies case definition is in line the OIE recommendation



Human rabies is notifiable



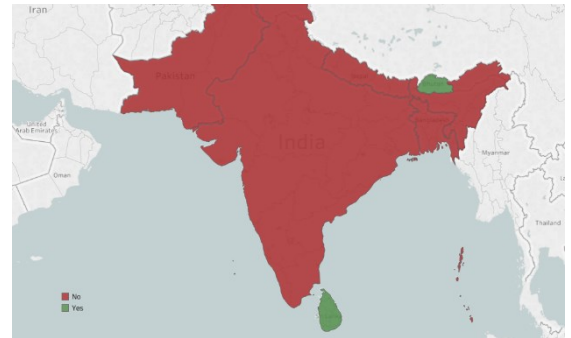
Human rabies case definition is in line the WHO standards



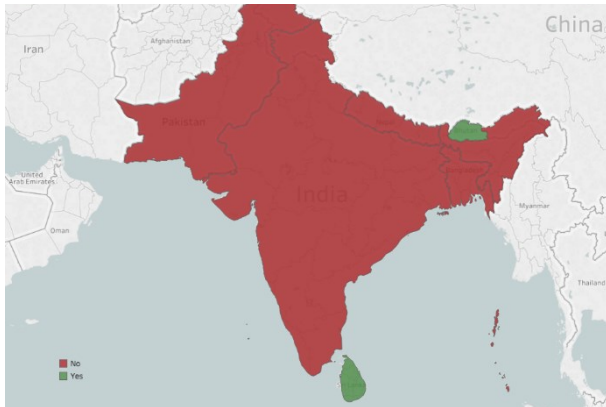
Surveillance activities

- Surveillance is critical to all rabies activities
 - ✓ It is required for identifying hotspots
 - ✓ Understanding disease dynamics
- Surveillance data facilitates:
 - ✓ Advocating for political will and support
 - ✓ Showcasing success through decline in cases
 - ✓ Providing evidence for declaration of freedom

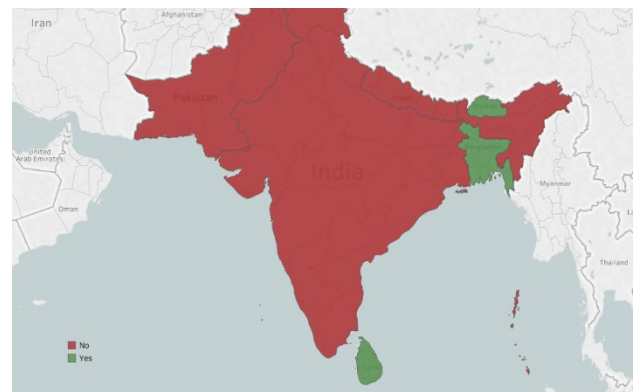
Surveillance systems are linked between the relevant sectors



Animal rabies surveillance system is fully operational & feedback mechanism are in place



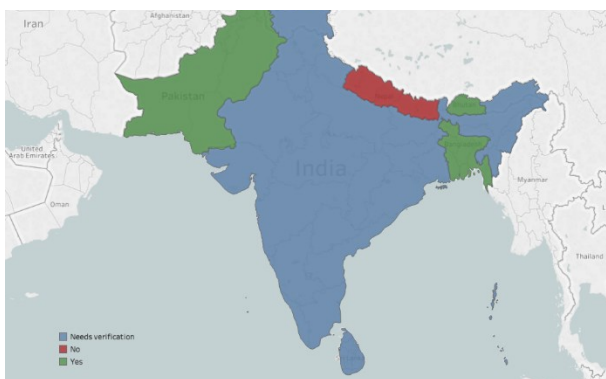
Human rabies surveillance system is fully operational & feedback mechanism are in place



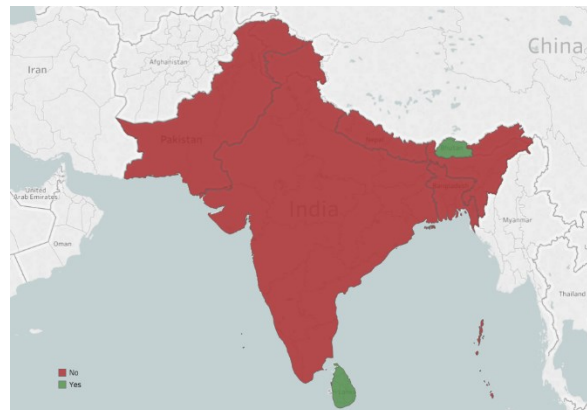
Vaccines

- High-quality rabies vaccines (animal and human), that **meet OIE standards or WHO PQ**, are essential to rabies elimination
- A shortage of WHO PQ human rabies vaccines was evident in most MS
 - ✓ Could this be resolved through improved forecasting?

Only animal vaccines that are in line with OIE standards are being used



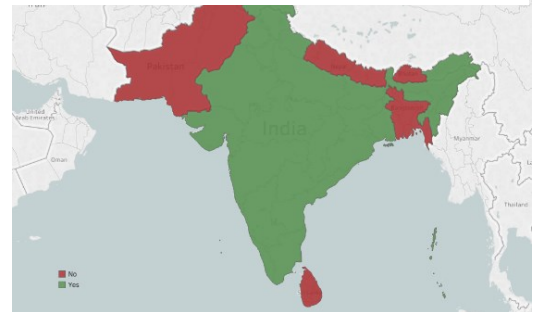
Only WHO prequalified vaccine is being used



Integrated Bite Case Management

- IBCM relies on individuals within communities who report suspect animals and bite incidents using a **linked surveillance system**
- These reports ideally trigger a cascade of responses
 - ✓ Every bite patient is identified
 - Risk assessment determines risk of rabies and need for PEP
 - ✓ Every suspect animal is identified
 - Rapid vaccination responses and interventions
 - Samples obtained for laboratory confirmation
 - ✓ Decreased usage of PEP

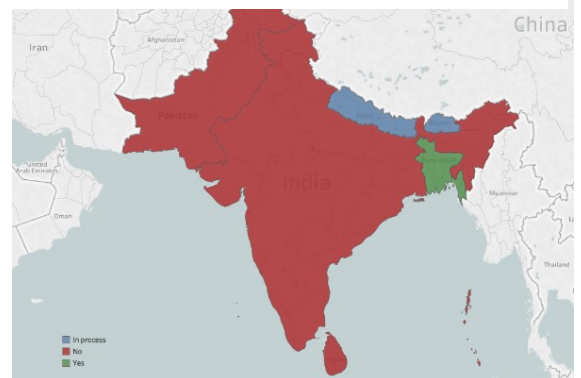
Integrated Bite Case Management (IBCM) implemented at local levels



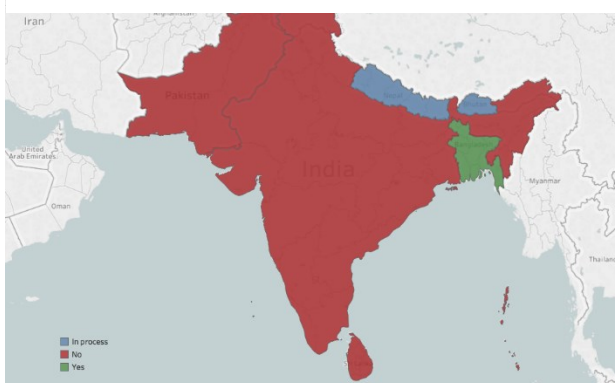
Intersectoral collaboration

- Rabies = humans and animals!!
- Requires a unified approach at the national and regional level
 - ✓ Different disciplines combine skills and resources towards a common goal
- Requires rabies-focussed technical working groups!
- Rabies = transboundary
 - ✓ International coordination and collaboration essential to success

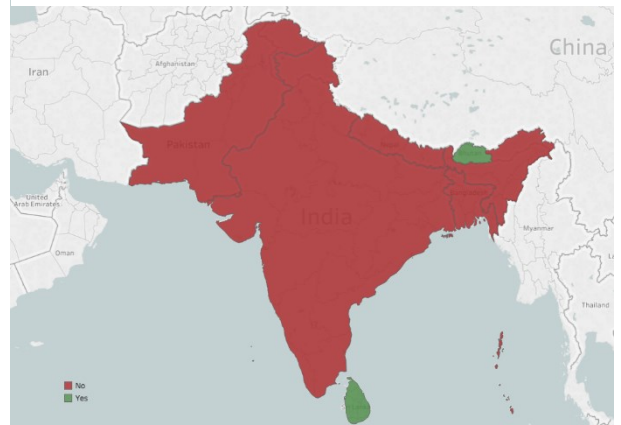
A national strategy is being implemented



A rabies Technical Working Group has been established and is operational



Dialogue has been initiated with neighbouring



Recommendations for Way forward

- Make rabies **elimination** a priority in every MS
- Improved communications and coordination between MS critical
 - ✓ The dedicated regional rabies network (ARACON) can provide a platform for this

- National Rabies Working Groups essential to drive the regional rabies agenda (e.g. Bangladesh and Bhutan)
- Surveillance = critical to ALL activities
 - ✓ Monitoring progress
 - ✓ Making a case for rabies (prioritization of elimination)
 - ✓ Implementation decisions
- Advocate use of high-quality animal vaccines
 - ✓ Promote vaccine forecasting
- Forecast WHO PQ human vaccine orders to ensure sufficient and timely supply
- Notifiability = foundation of good surveillance
 - ✓ Formal legislation required - SAARC could facilitate/play a role
- Workplan (based on SARE outputs) = progressive Action
- The routine use of the SARE tool is valuable in tracking the progress of each MS and the region
- All MS should advocate for the sole use of high-quality animal vaccines
- MS need to adequately forecast vaccine requirements to ensure that their demand for high-quality animal vaccine and WHO pre-qualified vaccine can be met at all times

4.7. Developing Country plans & regional strategy for rabies elimination goal of 2030.

4.7.1. Country roadmaps and regional plan for supporting elimination goal of ‘Zero by 30’: Commonalities and recommendations from the World Café Session

For the World Café session seven stations were identified to deliberate on key components of the STOP-R framework. Based on the experience from the SARE workshops a lead country was identified for each station that correlated with each component of the SARE. Following were the lead countries for each of the station and the facilitators are listed in brackets;

- Pakistan - Prevention and control (Eric Brum and Pasang Tshering)
- India - Laboratory Diagnosis (Andre Coetzer)
- Afghanistan - Cross-cutting issues (Katinka de Balogh)
- Sri Lanka - Dog population management (Pankaj KC and Amit)
- Bangladesh - Information, education, communication (Valentina Picot and Sarah Jayme)
- Bhutan - Legislation (Gregoria Torres and Gyanendra Gongal)
- Nepal - Data collection and analysis (Terence Scott and Chari Amparo)

In round one all MS delegates sat in their respective nominated station to discuss the designated component assigned to each MS. Each station nominated a ‘Station Lead’ that remained at their designated station along with the station’s facilitator/s to record the discussion points and prepare a summary presentation for the next day.

From round two onwards all delegates except ‘Station Lead’ and Facilitator moved clockwise to the next station with station Lead and Facilitator driving the discussions with the new groups after each rotation.

The outputs from the session are appended as annex 3.

4.7.2. Country workplan compiled from the outputs of the SARE workshops conducted in each of the rabies endemic countries (except Afghanistan)

Workplan outputs were developed using the SARE tool by the participants during the in-country SARE workshops. Clear practical workplans with actionable activities were generated based on the SARE assessment, with only the 'Pending' SARE activities being filtered by the tool into a Workplan format. For each activity in the Workplan, deliverables, expected outcomes, responsible authorities and timelines to accomplish these activities were included for a comprehensive and actionable plan. During the SARE workshops, the country focal persons worked together to customise the information automatically generated in the Workplan to create a country-specific Workplan specific to their particular needs.

The main components of the workplan correlate directly with those of the SARE assessment, namely: i) Data collection and analysis, ii) Prevention and control, iii) Laboratory diagnosis, iv) Dog population management, v) Information, Education and Communication, vi) Cross-cutting issues and, vii) Legislation.

Prior to the regional SAARC meeting, the Workplans from each country were analysed to identify prioritised activities from each country. These activities were compared across the region to identify common challenges and pending activities to be prioritised at a regional level (see workshop outcomes). Furthermore, the SARE assessments and accompanying Workplans will be used for follow-up to assess a country's progress towards achieving those prioritised activities in-line with their Workplan.

Further analyses of the workplans were done to map out timelines for each country and colour-coded charts were prepared to demonstrate the planned progress over time. The timeline are:

- Short term = end 2020
- Medium term = 2021-2024
- Long term 2025 – 2030

The progress chart depicting the number of activities to be accomplished over the years for all countries is presented below (Figure 1). The detailed activities either accomplished or pending broken down into the seven components is shown below (Figure 2). These comprehensive visual depictions could be used for advocacy to stakeholders for easy comprehension. The same could be also used for national strategy refinement. However, the same may not be used to compare between MSs.

The compiled workplan for each country assessed detailing the lists of objectives/activities along with responsible authority/ies and timelines to achieve each of them is appended separately as Annex 6. Any one country will be provided only their portion of the compiled workplan for their needful follow up.

Figure 1: Progress of the countries towards dog-mediated human rabies elimination in South Asia: The number of objectives/activities to be accomplished over the years to achieve the elimination goal by 2030.

| Overall | | | | | | 1. Cross-cutting issues | | | | | |
|------------|---------|------------|-------------|-----------|---------|-------------------------|----------|-------------|-------------|-----------|----|
| | | End 2020 | 2021 - 2024 | 2025-2030 | | | End 2020 | 2021 - 2024 | 2025-2030 | | |
| | Current | Short term | Medium term | Long term | | | Current | Short term | Medium term | Long term | |
| Sri Lanka | 65 | 74 | 91 | 115 | | Sri Lanka | 6 | 7 | 10 | 11 | |
| Pakistan | 27 | 34 | 54 | 115 | | Pakistan | 1 | 3 | 9 | 11 | |
| Nepal | 34 | 54 | 82 | 115 | | Nepal | 4 | 8 | 10 | 11 | |
| India | 51 | 65 | 84 | 115 | | India | 3 | 7 | 9 | 11 | |
| Bangladesh | 74 | 82 | 102 | 115 | | Bangladesh | 9 | 9 | 10 | 11 | |
| Bhutan | 91 | 93 | 103 | 115 | | Bhutan | 9 | 9 | 9 | 11 | |
| >30 | 31 - 50 | 51 - 60 | 61-80 | 81 -100 | 101-115 | 1+2 | 3+4 | 5+6 | 7+8 | 9+10 | 11 |
| | | | | | | | | | | | |

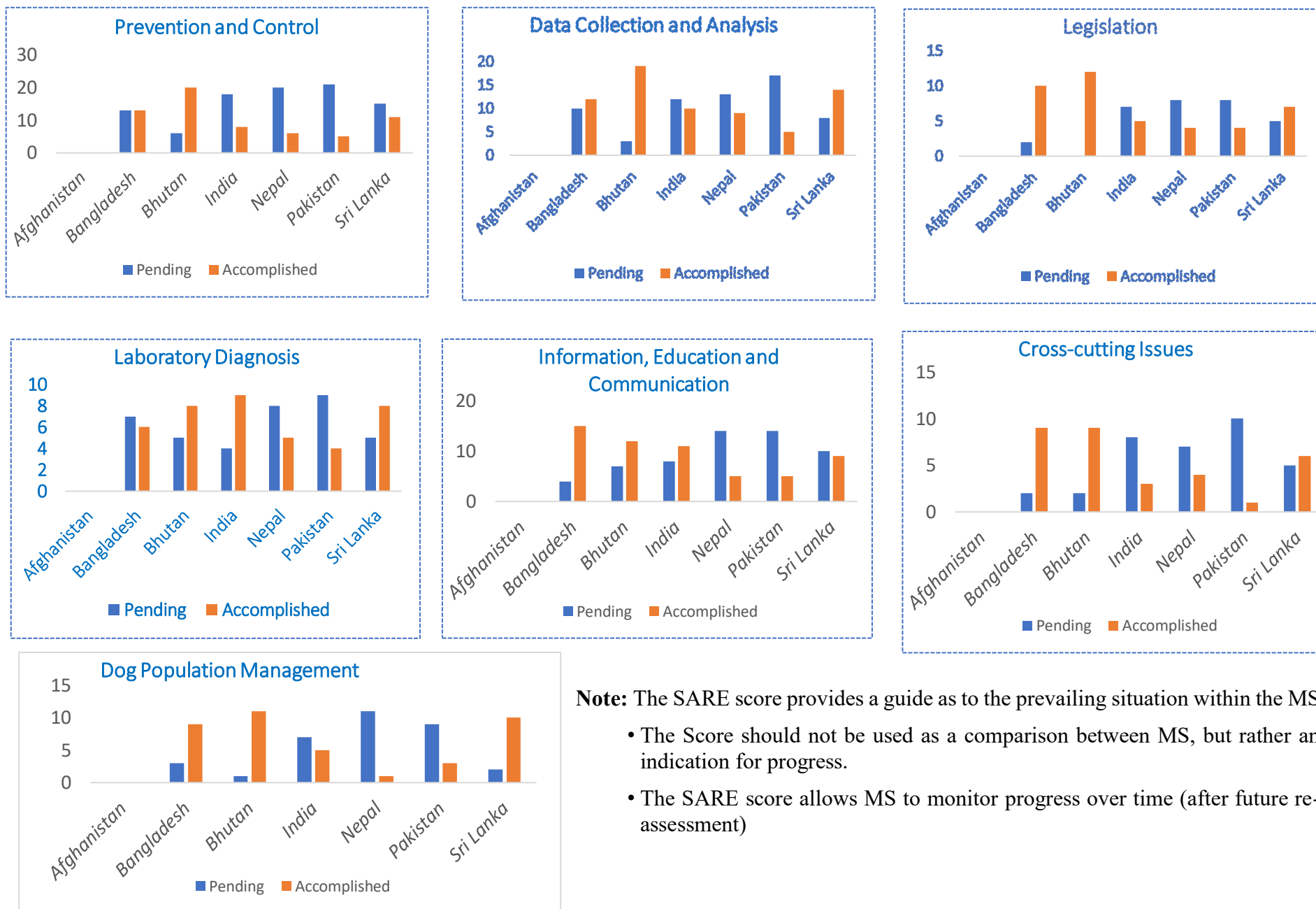
| 2. Data Collection and Analysis | | | | | | 3. Dog Population Management | | | | | |
|---------------------------------|---------|------------|-------------|-----------|-------|------------------------------|----------|-------------|-------------|-----------|----|
| | | End 2020 | 2021 - 2024 | 2025-2030 | | | End 2020 | 2021 - 2024 | 2025-2030 | | |
| | Current | Short term | Medium term | Long term | | | Current | Short term | Medium term | Long term | |
| Sri Lanka | 14 | 15 | 17 | 22 | | Sri Lanka | 10 | 11 | 11 | 12 | |
| Pakistan | 5 | 11 | 16 | 22 | | Pakistan | 3 | 6 | 9 | 12 | |
| Nepal | 9 | 12 | 16 | 22 | | Nepal | 1 | 3 | 7 | 12 | |
| India | 10 | 10 | 15 | 22 | | India | 5 | 6 | 8 | 12 | |
| Bangladesh | 12 | 15 | 19 | 22 | | Bangladesh | 9 | 9 | 10 | 12 | |
| Bhutan | 19 | 20 | 21 | 22 | | Bhutan | 11 | 11 | 12 | 12 | |
| 1 - 3' | 4 - 7' | 8 - 11' | 12 - 15' | 16 - 19' | 20-22 | 1 - 3' | 4+5 | 6+7 | 8+9 | 10+11 | 12 |
| | | | | | | | | | | | |

| 4. Information, Education, Communication | | | | | | 5. Laboratory diagnosis | | | | | |
|--|---------|------------|-------------|-----------|--------|-------------------------|---------|------------|-------------|-----------|-------|
| | | End 2020 | 2021 - 2024 | 2025-2030 | | | | End 2020 | 2021 - 2024 | 2025-2030 | |
| | Current | Short term | Medium term | Long term | | | Current | Short term | Medium term | Long term | |
| Afghanistan | | | | 19 | 17 -19 | Afghanistan | | | | 13 | 12+13 |
| Sri Lanka | 9 | 12 | 14 | 19 | | Sri Lanka | 8 | 8 | 9 | 13 | |
| Pakistan | 5 | 13 | 18 | 19 | | Pakistan | 4 | 6 | 10 | 13 | |
| Nepal | 5 | 10 | 14 | 19 | | Nepal | 5 | 6 | 7 | 13 | |
| India | 11 | 12 | 15 | 19 | | India | 9 | 9 | 9 | 13 | |
| Bangladesh | 15 | 15 | 16 | 19 | | Bangladesh | 6 | 9 | 11 | 13 | |
| Bhutan | 12 | 12 | 12 | 19 | | Bhutan | 8 | 10 | 12 | 13 | |
| 1 - 4' | 5 - 7' | 8 - 10' | 11 - 13' | 14 - 16' | | 1-3' | 4+5 | 6+7 | 8+9 | 10+11 | |
| | | | | | | | | | | | |

| Legislation | | | | | | Prevention and control | | | | | |
|-------------|---------|------------|-------------|-----------|-------|------------------------|---------|------------|-------------|-----------|----|
| | | End 2020 | 2021 - 2024 | 2025-2030 | | | | End 2020 | 2021 - 2024 | 2025-2030 | |
| | Current | Short term | Medium term | Long term | | | Current | Short term | Medium term | Long term | |
| Afghanistan | | | | 12 | 11+12 | Afghanistan | | | | 26 | 26 |
| Sri Lanka | 7 | 9 | 11 | 12 | | Sri Lanka | 11 | 12 | 17 | 26 | |
| Pakistan** | 4 | 6 | 11 | 12 | | Pakistan | 5 | 8 | 14 | 26 | |
| Nepal | 4 | 8 | 11 | 12 | | Nepal | 6 | 7 | 14 | 26 | |
| India | 5 | 9 | 11 | 12 | | India | 8 | 12 | 14 | 26 | |
| Bangladesh | 10 | 11 | 12 | 12 | | Bangladesh | 13 | 15 | 22 | 26 | |
| Bhutan | 12 | 12 | 12 | 12 | | Bhutan | 20 | 21 | 26 | 26 | |
| 1+2 | 3+4 | 5+6 | 7+8 | 9+10 | | 1-5' | 6-10' | 11-16' | 17-22' | 22-25' | |
| | | | | | | | | | | | |

SARE/PWARE exercise couldn't be done for Afghanistan. **Pakistan's assessment was done in 2018 while others were done in May-June 2019.

Figure 2: Detailed overview of accomplished and pending activities broken down by component



Note: The SARE score provides a guide as to the prevailing situation within the MS

- The Score should not be used as a comparison between MS, but rather an indication for progress.
- The SARE score allows MS to monitor progress over time (after future re-assessment)

4.8. Garnering support and proposals

A panel session was organized among the partners involved in rabies control and/or dog population management and rabies control. A representative each from Fondation Merieux, World Animal Protection, Humane Society International (HSI), SAARC Development Fund (SDF), SAARC Agriculture Centre (SAC), US CDC, Commonwealth Veterinary Association, and Mission Rabies were the panellists.

Rabies is a priority disease for the partners and donors present at the workshop and particularly to achieve the global goal of Zero by 30. All agreed that rabies should not be a neglected tropical disease anymore and we should all work together for addressing the problem collaboratively. Most of the global funds do not cover rabies and we need to advocate more proactively to put rabies on the donors' map.

Organizations like Fondation Merieux, HSI, Mission rabies have been working in the field in the control and prevention of rabies for many years in many parts of the world. The tools for economic analysis, vaccination monitoring and coverage and data management are available for countries to adapt and use. Regional organizations like the SAARC Agriculture Centre (SAC) in collaboration with Commonwealth Veterinary Associations can support capacity building like hands on training on rabies diagnosis and other courses while SAARC regional or cross border projects (of at least 3 countries) on elimination of dog mediated human rabies in the region can possibly be supported by the SDF.

We have the tools and know-how such as for mass dog vaccination (MDV) and dog population management (DPM) from HIS, GARC and Mission Rabies. These tools and methods have previously proven that elimination of dog-mediated human rabies is possible. We should make rabies a priority and advocate for its elimination strongly to realize the united against rabies goal of Zero by 30. US CDC will be willing to share technical expertise and tools such as GDREP, disease prioritization tool, economic analysis tool and capacities for developing national plans and strategies.

Rabies Diagnostic Laboratory, Dept. of Microbiology, Veterinary College, KVAFSU, Hebal, Bangalore with the support from the Commonwealth Veterinary Association have developed the capacity for rabies diagnosis. It is currently undergoing a Twinning programme with APHA UK and US CDC and is in the process of getting accreditation by ISO/IEC 17025 by the NABL India. Once this accreditation is achieved it could be recognized as an OIE reference laboratory for the region and can offer training and training of trainers to the SAARC MSs.

5. Conclusion and Recommendation

Considering that:

1. Seven out of eight SAARC Member States are considered rabies endemic contributing to about 45% of global burden of human rabies.
2. Rabies has been identified as priority model disease for the operationalization of One Health approach in SAARC Member States.
3. Elimination of dog-mediated human rabies is a regional public good that will require strong regional coordination.
4. Dog-mediated human rabies elimination is achievable through sustained mass dog vaccination, access to post-exposure prophylaxis, public awareness, and strong surveillance as shown from experiences in Latin America and Europe among others.
5. Dog-mediated human rabies elimination is a shared responsibility that requires ownership, leadership and One Health approach at regional, national and sub-national levels.
6. Dog-mediated human rabies elimination is a priority for the Tripartite (WHO, OIE, FAO) that in collaboration with GARC and other international partners are committed to support some Member States towards achieving zero human death by 2030 through various activities.
7. There has been good progress made by some of the SAARC Member States since the last SAARC Rabies Workshop held in Colombo in 2015 in terms of accessibility to PEP, enhanced mass dog vaccination, laboratory diagnostic capacity and education and awareness programmes including dog bite prevention and responsible dog ownership (e. g. on World Rabies Day).
8. The Stepwise Approach Towards Rabies Elimination (SARE) in-country workshops have been carried out in 6 SAARC Member States preceding this workshop which helped to identify strengths and gaps and develop a tailored work plan for each country.
9. All rabies endemic SAARC Member States have introduced and expanded cost-effective intradermal rabies vaccination to improve availability, accessibility and affordability of human rabies vaccine.
10. Expansion of rabies diagnostic laboratory network and introduction of integrated bite case management are critical to make appropriate decisions on PEP and rational use of human rabies vaccines.
11. Availability of high-quality dog rabies vaccines is a critical factor for successful dog rabies control and SAARC Member States are concerned about procurement procedures that allow for the purchase of substandard dog rabies vaccines.
12. The cost and availability of WHO pre-qualified human rabies vaccine is a concern.
13. OIE laboratory twinning project initiated in 2016 in Karnataka Veterinary, Animal and Fishery Sciences University, is a step forward for designating it as an OIE Reference Laboratory in South Asia.
14. Three SAARC Member States have already revised national guidelines for human rabies prophylaxis as per new WHO Guidelines (2018) while others are in the process of revision.

15. There are strategies, frameworks, tools, guidelines, technical publications, etc. available in the public domain for use by SAARC Member States for technical guidance and capacity building towards rabies elimination (e. g. SARE/Rabies blueprint).
16. Sufficient resource availability will be critical for rabies elimination and global partnership between donors, rabies endemic countries and relevant corporate entities will be instrumental to secure resources for achieving the zero by 30 goal.

The workshop recommends that the SAARC Member States:

1. Finalize and endorse National Action Plan for rabies elimination with the involvement of national stakeholders based on SARE assessment and associated Workplans results in alignment with existing policy and strategy no later than December 31, 2020.
2. Make Rabies a notifiable disease in both human and animal sectors in all member states including harmonization of rabies case definition in line with OIE/WHO guidelines no later than December 31, 2020.
3. Pursue high level advocacy at national level to garner political commitment to achieve rabies elimination by 2030.
4. Scale up mass dog vaccination using high quality vaccines in a strategic and phased manner to achieve at least 70% dog vaccination coverage.
5. Establish and/or utilize One Health coordination mechanisms at national and sub-national levels to ensure effective and sustainable coordination for implementation of rabies elimination programme.
6. Use available regional/ sub-regional platforms to garner support from SAARC Development Fund (SDF) and SAARC Agriculture Center (SAC) towards rabies elimination.
7. Make best use of FAO/OIE/WHO Reference Laboratories for building/strengthening national laboratory diagnostic capacity including participation in proficiency testing and external quality assurance (EQA) assessments/evaluations.
8. Access and utilize global strategies, tools, guidelines and technical support made available by organizations such as WHO, OIE, FAO, GARC, World Animal Protection and other partners (e.g. the SARE/Rabies Blueprint).

The Workshop recommends the Tripartite and partners:

1. Support the development of a project proposal for the SAARC Rabies Elimination Project in consultation with the SAARC Secretariat and SAARC Member States for funding by the SDF.
2. Support the development and implementation of the National Action Plan and regional road maps for elimination of dog mediated rabies in the SAARC region.
3. Support One Health laboratory-based rabies surveillance training program including harmonization of standards, networking and EQA.
4. The OIE to maintain dog rabies vaccine bank and facilitate access to SAARC Member States.
5. Organize a rabies elimination regional coordination meeting in 2021 with the objective to assess progress and planning using the SARE tool.

6. Continue to develop, as the United Against Rabies collaboration, ZEROBY30, the Global Strategic Plan for the elimination of dog mediated human rabies by 2030. In particular, this strategy should support mechanisms to channel the necessary resources for rabies elimination

The Workshop recommends the SAARC Secretariat/SAARC Development Fund (SDF)/SAARC Agriculture Centre (SAC) that:

1. The SAARC Secretariat to organize high-level advocacy meetings at ministerial level (Health and Agriculture/Livestock) to seek political commitment for rabies elimination.
2. Prioritize Rabies elimination in SAARC under the One Health approach and establish a technical committee / working group / task force.
3. The SAARC Secretariat/SDF to encourage SAARC Member States to utilize social window funding from SDF by submitting a project proposal on regionally coordinated rabies elimination and SDF and SAARC Secretariat to explore possibility of funding the rabies elimination project for the region.

6. Annexes:

Annex 1: Rabies Situation and its Control/Elimination in the SAARC Countries

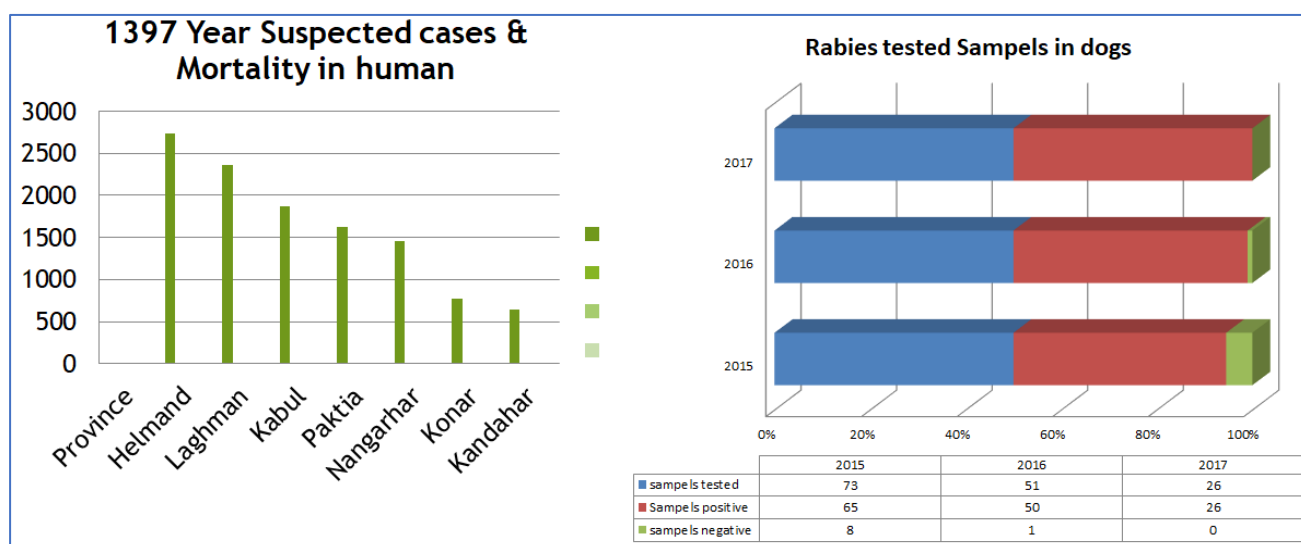
(Extracted from the country posters and presentations and from the Knowing your Neighbour interview session)

a) Country poster and presentation

Afghanistan

Rabies situation in animals and human

- Rabies is an endemic disease in Afghanistan and still a significant public health problem.
- Present situation of rabies in Afghanistan indicatecases and deaths
- Feral dogs are the primary vector for rabies in Afghanistan with documented rabies deaths occurring in people, livestock and dogs.
- Dog bites affecting people, with associated high morbidity and mortality, are also a major public health problem.
- High levels of illiteracy in rural areas, large numbers of free roaming dogs, negative cultural attitudes towards dogs, and lack of routine vaccination all contribute to the challenges of dog population management and rabies disease control.
- Sufficient prevention and control case management with awareness campaign and community based on CDCD activities
- The death rate has been decreased drastically



Existing policies and strategies for rabies control/elimination

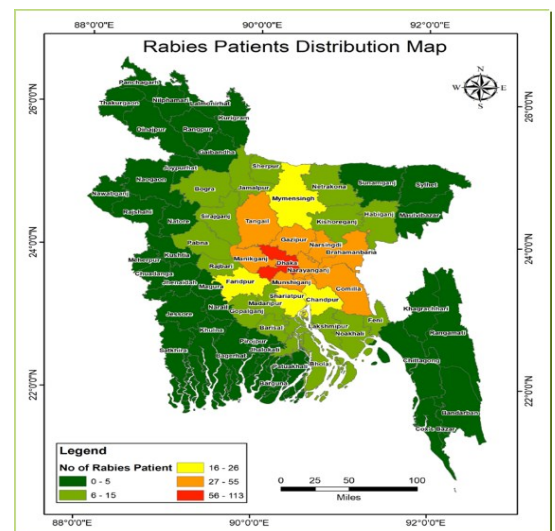
- Dog population control
- Vaccination
- Awareness of public
- Strengthening the passive surveillance for Rabies
- Existing legislations for rabies control (it is in the draft stage)

- Rabies is a notifiable diseases in both sectors
- Rabies national control strategy developed by MAIL but not implemented
- Rabies Guideline and SOP developed by MOPH
- One health approach for the control of rabies implemented through the zoonotic committee meetings which include MOPH (Human health) MAIL (Animal health) , National Environment Protection Agency (NEPA), UN agencies (WHO , FAO) and INGOs
- Multi-sectoral Coordination meetings conducted on regular and emergency situation
- Built diagnostic, prevention and control capacity of the professional staff
- Identifying requirements for case management in national and provincial hospitals across the country
- Government support for approval and extension of rabies project through the government fund

Bangladesh

Rabies Scenario in Bangladesh

- Rabies endemic country
- Annual human rabies cases > 2000 (2010); ~1447 (NRS, 2012)
- Annual animal rabies ~ 25,000
 - 85% rural burden, > 45% in children
 - 0.4 – 0.5 million dog bites cases
- High dog density & > 83% are stray dogs



Rabies Elimination Strategy

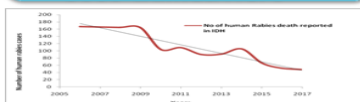
Goal

- ▶ **Elimination of dog mediated rabies by 2022**

Key Activities

Animal Bite Management

- 67 RPCCs
- Provision Inj. IDRV for free
- > 3000 trained HCPs

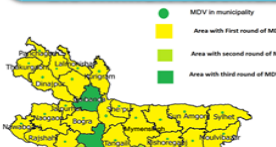


Advocacy, Communication



MDV: A Paradigm Shift

- One week campaign
- 39 Districts & 8 CCs
- 1.3 million vaccinated dogs



Surveillance

- Strengthening of lab diagnosis
- **Notification of Rabies: Communicable Disease Control Act, 2018**

MDV summary in Bangladesh 2011-2019

Multi-sectoral Collaboration/Partnership - Pursuing a OH approach

Partners

- **Governments** - CDC, DGHS, MoH; DLS; Local Govt.
- **Development partners** - WHO, FAO, OIE, US-CDC
- **Civil society** - Local leader, School teachers
- **NGOs/Private sector** - Animal Welfare Org, Avoyaronno, Platform

Functioning National Committee:

- National Steering Committee (NSC)
- Joint Coordination Committee (JCC)

Challenges

- Large number of stray dogs
- High quality vaccine (human and animal)
- Laboratory Facility for rabies diagnosis

Way Forward

- Country level: Strong program implementation
- Development partners
- Quality vaccine (vaccine bank)
- Mechanism of sharing Experiences and Expertise

Key activities

- 1) Three rounds of Mass Dog Vaccination in all 64 districts of the country
 - Good Strategic Plan
 - Strong collaboration (National and Field level)
 - Capacity
 - Human resource
 - Fund
 - Logistics
- 2) Strengthening of Lab. Diagnosis capacity (animal & human)
 - Strengthening of Lab
 - SOPs
 - Capacity
 - Human resource
 - Logistics
- 3) Animal Exposure and Human Rabies Reporting and Surveillance
 - National Human Rabies Surveillance Protocol /IBCM protocol
 - Capacity building
 - Human resource
 - Logistics
 - Budget
 - Implementation
 - Ensuring Data Flow and Data Sharing and Networking
- 4) Animal Rabies Reporting and Surveillance
 - National Animal Rabies Surveillance Protocol /IBCM protocol
 - Capacity building

- Human resource
- Logistics
- Budget
- Implementation
- Ensuring Data Flow and Data Sharing and Networking

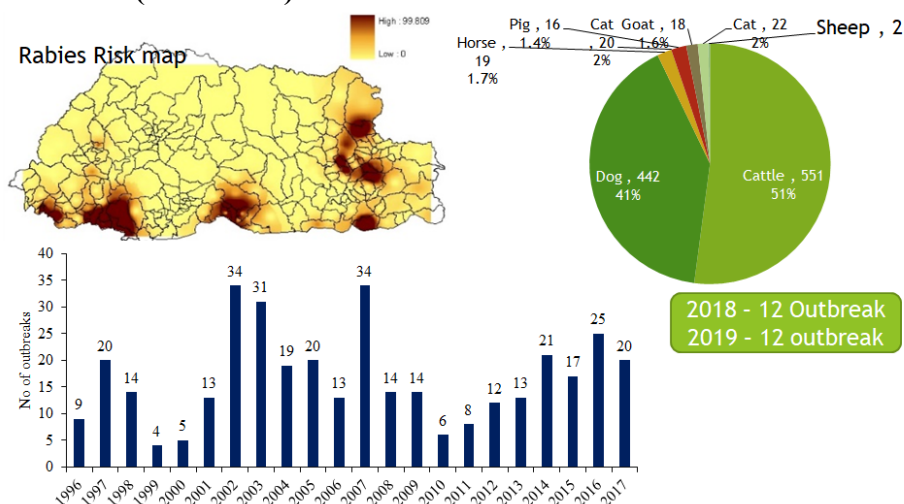
5) Increase Coverage of PEP

- ACSM
- Standard PEP
 - Washing
 - Vaccine
 - RIG
- Capacity building
 - Trained HCPs
 - Uninterrupted supply of logistics
- Implementation
- Ensuring Data Flow and Data Sharing and Networking

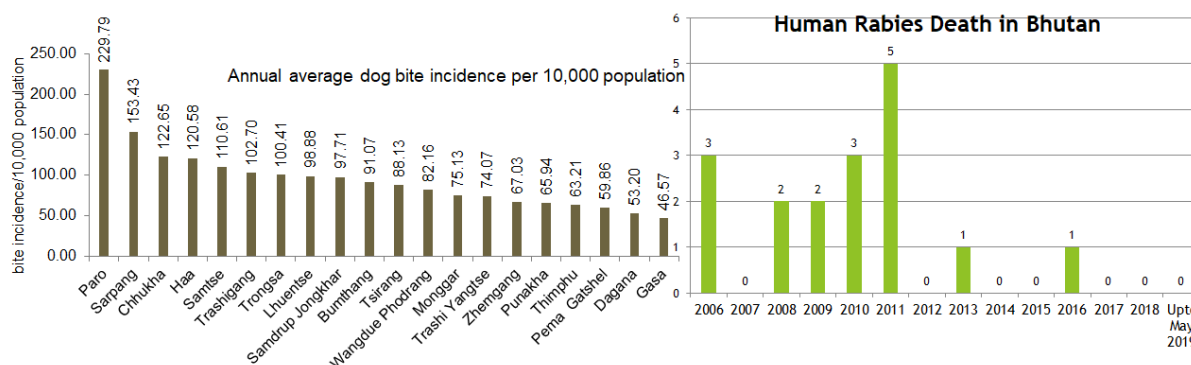
Bhutan

Epidemiology of rabies in Bhutan (1996-2017)

- Bhutan targets for zero human rabies deaths by 2023
- Rabies is cross-border transmission problem in Bhutan
- Only 5 of the 20 districts in Bhutan reports rabies in dogs/animals



Pattern of rabies occurrence in animals between 1996 and 2009. Zoonoses and Public Health, 58: 463–471 Tenzin et al., 2011:

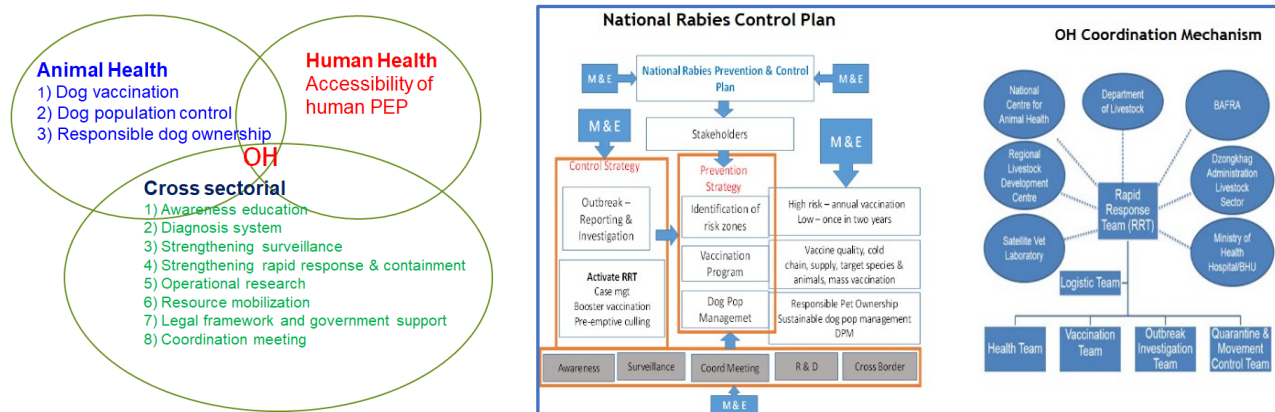


Existing policies and strategies for rabies control/elimination

- Rabies is a notifiable disease - Livestock Rules and Regulations 2017 and Livestock Act of Bhutan 2001
- Chapter IX – Zoonoses Management of the Livestock Rules and Regulations of Bhutan covers responsible pet ownership - registration and vaccination of dogs; dog population management; rabies vaccination of all dogs; prevention and control of rabies
- National Rabies Prevention and Control plan 2017 - Roles and responsibilities of various stakeholders for the prevention and control of rabies in Bhutan; outlines the strategies for prevention and rapid containment of the disease outbreak
- Human Rabies management guideline 2014 - dog bite management and rabies case management; reporting, surveillance; and standard recommendations for rabies PEP in human.
- Dog population and management guideline 2019 – responsible dog ownership; CABC-CNVR; community engagement; management of animal shelter feral dog population management etc.
- In addition, Bhutan One Health Strategic Plan 2018-2023 also focuses on rabies prevention and control in the country.

One Health approaches to Rabies control in Bhutan

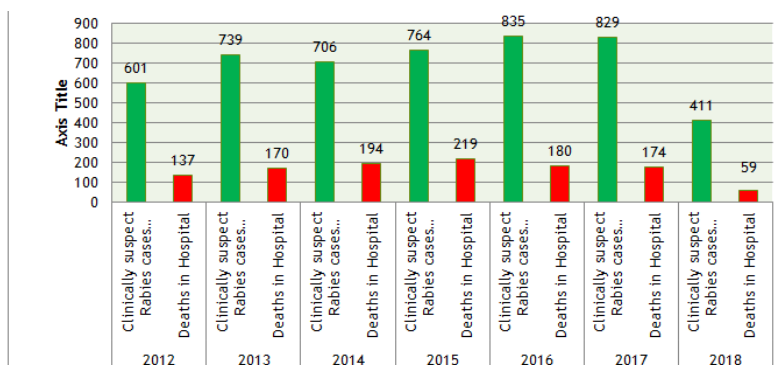
One Health approaches to Rabies control in Bhutan



India

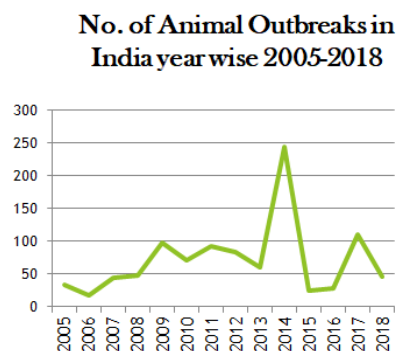
Rabies Situation in India

- About 36% of world's human rabies death occurs in India only.
- In 95% cases it is dog bite mediated.
- India has a huge dog population of 30 million (18 million stray dogs and 12 million pet &/or community owned dogs)



Status of suspected Rabies cases, LAMA cases and reported Rabies Deaths in Hospital (India 2012-18)

N= 31 State of Uttarakhand , Haryana, Rajasth , Lakshadweep have yet to submit the data



Existing policies and strategies for rabies control/elimination in the human health Sector

National Rabies Control Program (NRCPP): Strategies

i) Strengthening of Surveillance & Monitoring:

- Surveillance of animal bite cases
- Surveillance of suspected Human Rabies Cases
 - Standard case definitions of human rabies (suspected, probable & lab confirmed) are in place.
 - Human Rabies included as a reporting variable in Integrated Disease Surveillance Platform (IHIP)
 - Monitoring of ARV & ARS coverage among animal bite cases

ii) Strengthening of laboratory Facilities for Rabies Diagnosis

- 4 Regional laboratories Strengthened for Diagnosis of Rabies (2 Human & 2 in Animal Sector- NIMHANS, AIIMS (Jodhpur), Vety Disease Complex, Goa and NCDC, Delhi)
- Laboratory personnel's from 10 Different institutes trained for diagnosis of Human Rabies

iii) Capacity Building:

- Training of Health Care workers for Animal Bite Management

iv) IEC

- Media campaign to increase awareness among general population about post Exposure prophylaxis through audiovisuals
- Guidelines: National Guidelines for rabies PEP, operational guidelines for programme management

v) Operational Research

- Human Health sector is trying to announce Human Rabies as a notifiable disease (under process)

Existing policies and strategies for rabies control/elimination in animal health sector

i) Assistance to States for Control of Animal Diseases (ASCAD)

- Immunization against important livestock diseases including Rabies

- Strengthening of State Biological Production Centers
- Strengthening of State Disease Diagnostic Labs.
- Training of Vets & Para-vets and workshops
- Control of Emergent & Exotic Diseases Surveillance and Monitoring of animal diseases
- Mass awareness programmes
- Maintaining the cold chain system

ii) Scheme for Birth Control and Immunization of Stray Dogs of Animal Welfare Board of India

- Initiatives are being taken for mass dog anti- rabies vaccination, awareness generation, sero-surveillance, strengthening of rabies diagnostic facility, sterilisation to control stray dog population
- Different State & UT Governments like Kerala and Goa taking up schemes/ initiatives for rabies elimination from their respective areas in collaboration with notable NGOs like Mission Rabies etc

iii) Laboratory Diagnosis Facilities:

- Department of Veterinary Microbiology, Karnataka Veterinary, Animal & Fisheries Science University is an OIE twinning lab for Rabies
- One CDDL, 5 RDDDL and 256 State laboratories for disease diagnosis

iv) Disease Reporting System:

- National Animal Disease Reporting System/ NARDS 2.0 : An android based mobile application for disease reporting with 7032 nodes
- For disease epidemiology and forecasting , ICAR- NIVEDI has developed NADRES (National Animal Disease Referral Expert System)

v) Legislative Back Up:

The Prevention & Control of Infectious and Contagious Diseases in Animals Act, 2009'

- To prevent spread of economically important infectious and contagious diseases from one part of the country to another.
- To control animal diseases of public health significance on a national basis and promote import and export of animals and animal products by meeting India's international obligations.

One Health Approach for Rabies Control in India

- Institutionalization of One health approach for Prevention of Control of Zoonotic Diseases
- Standing Committee of Zoonosis at National, State & District Level Established.
- SARE workshop conducted by DAHD in collaboration with NCDC
- ICMR & ICAR joint task force

Key players/stakeholders responsible for rabies control in India:

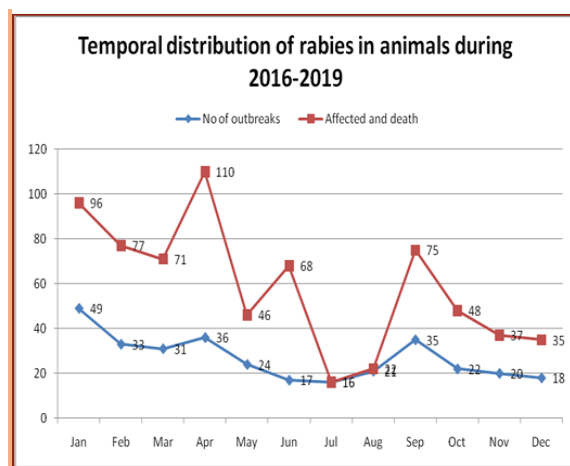
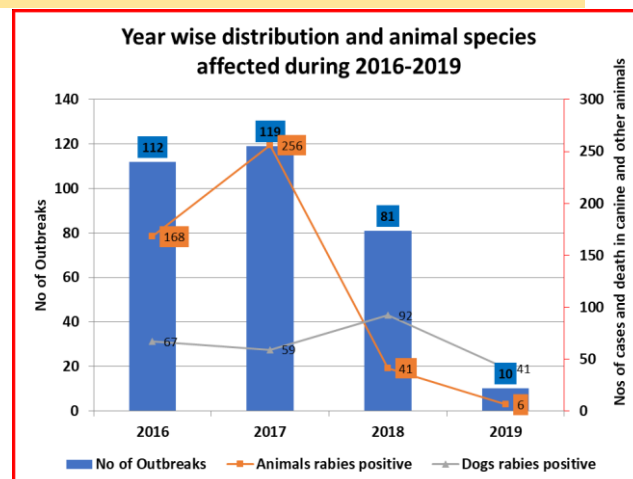
- DAHD, Ministry of Fisheries, Animal Husbandry and Dairying

- NCDC, Ministry of Health
- State Veterinary/Animal Husbandry & Human Health Departments
- Municipal Corporations
- Veterinary & Medical colleges and Research Institutes
- NGOs working on animal welfare, stray dog management

Nepal

Rabies Situation in animal and human

- Rabies is endemic in Nepal
- Rabies is maintained in 2 cycles: Urban and Sylvatic
- 150 animals die every year
- Estimated annual incidence of rabies in human is 100
- Rabies is serious public health concern in Nepal



| Number of cases of bites and death due to rabies in human | | | | | |
|---|--------------------------|------------------------------------|---|---------------------------|--------|
| Fiscal year | No of cases of dog bites | No. of cases of other animal bites | No. of cases of animal bites (dog + other animal) | No. of ARV vials consumed | Deaths |
| 2008/09 | 24,005 | 2,571 | 26,576 | 145,978 | 97 |
| 2009/10 | 23,517 | 2,145 | 25,662 | 168,194 | 89 |
| 2010/11 | 24,269 | 2,197 | 26,466 | 167,663 | 83 |
| 2011/12 | 29,102 | 2,211 | 31,313 | 229,851 | 76 |
| 2012/13 | 31,937 | 2,996 | 34,933 | 219,651 | 68 |
| 2013/14 | 31,976 | 2,540 | 34,516 | 195,868 | 10 |
| 2014/15 | 17,320 | 3,290 | 20,610 | 273,000 | 13 |
| 2015/16 | 20,133 | 2,494 | 22,627 | 320,139 | 6 |
| 2016/17 | 23,726 | 2,518 | 39,774 | 217,639 | 8 |
| 2017/18 | 33,204 | 2,477 | 35,681 | 281,718 | 32 |

Existing policies and strategies for rabies control/elimination

Acts and Regulations

- Public Health Service Act, 2018
- Animal Health and Livestock Service Act, 1998
- Animal Health and Livestock Service Regulation, 1999
- Animal Health program implementation procedure, 2019

Structures and institutions in place

- One health section is established at Department of Livestock Services
- Animal Disease Investigation and Control Division is responsible for coordination of rabies control activities at central Level.
- Central Veterinary Laboratory is responsible for confirmatory diagnosis and Animal Disease Investigation Laboratory in 5 regions are responsible for rapid diagnosis.

- National Vaccine Production Laboratory is responsible for cell culture anti-rabies vaccine production for animal use .
- Veterinary epidemiology section at Department of Livestock Services is responsible for conducting outbreak investigation & managing database.
- Zoonotic & Other Communicable Disease Control Section Established in Epidemiology & Disease Control Division of Department of Health Services.
- National Guidelines for rabies prophylaxis in Nepal (2019)
- Epidemiology and Disease Control Division (EDCD) is responsible for recording/reporting, outbreak response and control activities of rabies in human and for the free supply of cell culture ARV and immunoglobulins (ERIG) for human use, IEC like logistics arrangements, trainings & orientations on rabies.

Moving Forward

- Rabies to be included as notifiable and priority disease
- National rabies control strategy and plan to be approved and endorsed with sufficient resources
- Strategic mass vaccination campaign in dogs
- Expansion of free immunoglobulin service to human throughout all provinces and free vaccination service to human throughout the country
- Intersectoral coordination mechanism to be developed at federal, provincial and local levels including related stakeholders.
- Enhancement of institutional capacity for surveillance, diagnosis, prevention and control in all levels.
- Awareness programs in all local level with special emphasis on schools and communities.

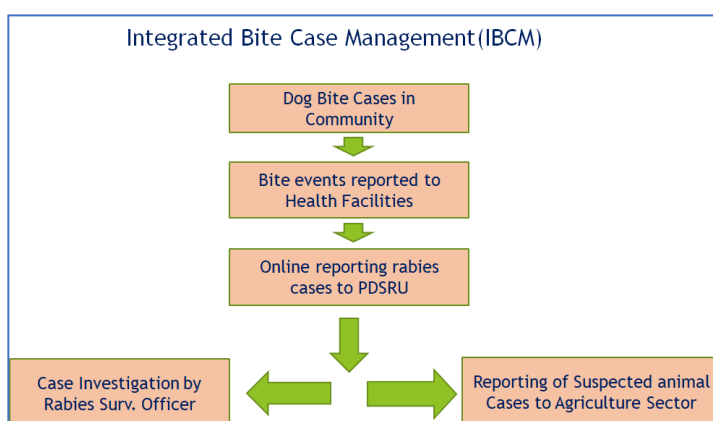
Pakistan

Rabies Situation in Pakistan

- Rabies is endemic in Pakistan. Dogs are the source of 99% of human rabies cases.
- It is suggested that nearly 2,000 to 5,000 deaths been reported annually due to rabies, in Pakistan.
- Rabies is a priority zoonotic diseases in Pakistan (2017)
- National One Health Organizational Framework and Strategic Plan has been developed and is undergoing endorsements and approvals.
- As per SARE assessment, Pakistan is currently at stage, 1.5, on their way to Stage 2 of strategic planning for control and elimination.
- Data collection strategies have been different in different parts of the country still no integration exist.

Existing policies and strategies for rabies control/elimination

- Online (DSS) reporting of the dog bite cases in some parts of the country (Islamabad, Punjab)
- Registration and control of dogs by implementation Punjab Local Government Act 2013(Eighth Schedule(9) as well as in Khyber Paktunkuwah
- Capacity building of the technical staff on surveillance and laboratory diagnosis of the Rabies at all levels
- Animal health sector engaged to prepare and implement National dog population management strategy and carry out vaccination and birth control activities in dog populations
- Provincial Disease Surveillance and Response Unit(PDSRUs) responding to all rabies outbreaks with collaboration of communicable disease control program, livestock department and local government



Sri Lanka

Rabies Situation in animals and human

- Rabies is the number one zoonotic disease in terms of socio-economic impact in Sri Lanka.
- Presently, number of human deaths by rabies approximately 20 and 30 per year.
- Vaccination of dogs and Post Exposure Prophylaxis (PEP) on animal bite victims have a strong positive effect in reducing the number of human deaths.
- However, over 10% of human rabies deaths occur despite the Post Exposure Therapy (PET).
- 95% of human rabies deaths are caused by dog bites and the remaining 5% are caused by cats and wild animals.
- A novel lyssavirus designated as Gannoruwa Bat Lyssavirus (GBLV) was found in Indian flying foxes (*Pteropus medius*).
- Sylvatic rabies virus variants have been found in civets and bats.

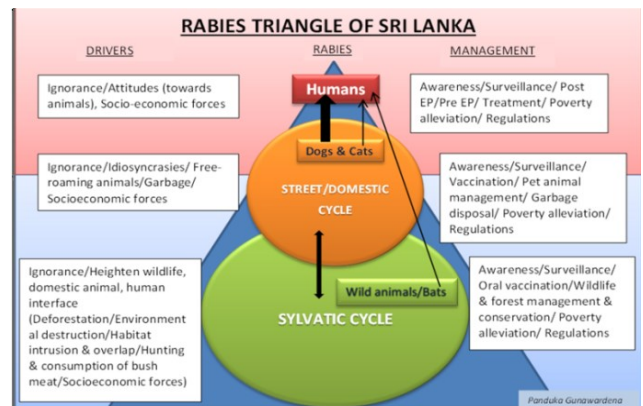
Human rabies deaths from 2015 – Feb. 2018

| Rabies Deaths | 2015 | 2016 | 2017 | 2018 up to Feb. |
|-------------------------------|--------------------|----------------|--------------------|--------------------|
| No of Lab confirmed /total | 24/26 (92.3%) | 20/25 (80%) | 23/34 (67.6%) | 6/8 (75%) |
| No of children affected | 3/24 (12.5%) | 5/20 (25%) | 3/23 (13.1%) | 2/6 (33.3%) |
| Male: | 19 : 5 | 13 : 7 | 18 : 5 | 4 : 2 |
| Female ratio | M 79.2% F 20.8% | M 65% F 35% | M 78.3% F 21.7% | M 66.7% F 33.3% |
| Due to dog bites | 18/24 (75%) | 17/20 (85%) | 18/23 (78.3%) | 5/6 (83.3%) |
| Due to puppy bites | 5/24 (20.8%) | 3/20 (15%) | 3/23 (13%) | 1/6 (16.7%) |
| Due to other animals/ unknown | 1/24 (4.2%) | 0/24 (0%) | 2/23 (8.7%) | 0/23 (0%) |
| PET not taken | 22/24 (91.7%) | 18/20 (90%) | 20/23 (86.9%) | 4/6 (66.7%) |

- Interface between three main sectors namely humans, domestic or street animals (dogs and cats) and wild animals (wild carnivores and bats) facilitates the existence and spread of rabies in the country.

Existing policies and strategies for rabies control/elimination

- Rabies is a notifiable disease in both human and animal health sectors.
- Legislation and policies for rabies control.
 - Rabies Ordinance – Ordinance to provide for the suppression of rabies in Sri Lanka.
- National plan for rabies control and prevention.
 - Free Post Exposure Prophylaxis (PEP) for animal bite victims.
 - Free vaccination (Regular, Mass and Ring) of dogs.
 - Laboratory diagnosis of rabies.
 - Animal birth control programmes to reduce stray dog density.
 - Habitat control, e.g. Proper garbage disposal.
 - Awareness campaigns on rabies and responsible dog/pet ownership.
 - Continuous monitoring and evaluation.
- Use One Health approach for rabies control through inter-institutional cooperation.
 - Ministry of Health.
 - Dept. of Animal Production & Health.
 - Dept. of Wildlife Conservation.
 - Faculty of Veterinary Medicine & Animal Science.
 - Sri Lanka Wildlife Health Centre.
 - Local Governments, e.g. Municipal & Provincial Councils.
 - Non-Governmental Organisations (NGOs).
- Stepwise Approach towards Rabies Elimination (SARE).
- Development of a roadmap using the tool “Practical Work-plan towards Achieving Rabies Elimination (PWARE)”.



b) Knowing your neighbour exercise

Knowing your neighbour session, a face to face discussion was primarily set up between the neighbouring countries to learn from each other - mainly on the policies and strategies on rabies control or elimination plan and its implementation status of their neighbour and issues related to cross border problem and addressing it together. In the first round one group of country teams would interview while the other country team will answer. After 20 minutes the sides switch and the other country group team would interview in turn. Since seven SAARC countries participated and also being an island country some resource persons team was fielded to interview Sri Lanka.

A set of lead questions were prepared and shared with the facilitators and country participants. The countries were allowed to ask further follow on questions as to get a clearer picture which

otherwise couldn't be captured from the poster or flash talks. Countries were asked to treat it purely as a technical session to understand each other's current scenario and how we can help each other to achieve our common goal and not at all to challenge/offend, or find faults with the other country, or question other country's deficiencies or weaknesses.

| Country grouping | Facilitator- Pasang overall |
|---|------------------------------------|
| Nepal and Bangladesh | Gongal |
| Bhutan and India | Kinzang |
| Afghanistan and Pakistan | Katinka/Yoenten |
| Sri Lanka and Expert/resource from India & Bangladesh (Prof Benazir Ahmed, Dr Isloor, Dr Amit Chaudari, Dr Ashis Kumar Samata) | Andre/Terrence |

Key outputs as captured by the interviewing country team during knowing your neighbour exercise

Bangladesh

Legislation and rabies as notifiable disease

- Rabies is notifiable
- Have national rabies control strategy and being implemented nationwide

National/sub-national rabies elimination policy and strategic plan

As per strategy and action plan for rabies control Bangladesh has targeted to eliminate rabies by 2022 but it seems quite challenging.

The strategic activities are:

- Advocacy, communication and social mobilization,
- Dog bite management: phased out nerve tissue vaccine since 2011
- Dog rabies vaccination started since 2010 and scaled up throughout country from 67 centres.
- Piloted MDV in November 2011 and scaled up in all districts municipality, 39 districts and 10 city corporation. Human health sector has supported in this activities.

Multi-Sectoral collaboration/One Health approach mechanism in rabies control including mapping of key stakeholders and their roles

- Very good coordination mechanism under one health established
- Three types of functional multi-sectoral committee are there: a) National steering committee b) National technical committee c) Joint coordination committee

Cross border rabies transmission issues and collaborative approaches to addressing the issues

- Cross border issues are not their major concerns of Bangladesh right now. They are giving priority to in-country rabies control program.

Bhutan

Rabies situation in Bhutan

| | |
|-----------------------------|----------------|
| Dog population | approx. 82,000 |
| Human population | 750,000 |
| Overall dog and human ratio | 1:8 |
| Pet dog and human ratio | 1:7 |
| Stray dog and human ratio | 1:14 |

Bhutan has National Rabies Prevention & Control Plan implemented by Royal Govt. of Bhutan & Humane Society International (HIS) employing CNVR protocol;

- Capture, Neutering, Vaccination, Release

Dog Survey report is used as the basis for formulation of strategic planning. Since 2009 Bhutan is implementing dog population management programme. Stages of the programme include;

- Announcement
- Fixed vaccination unit
- Mobile vaccination unit
- Counting coloured dogs to check whether 70% of population was covered under vaccination

In 2018 and 2019 there were 12 animal rabies outbreaks per year.

Diagnosis and management approach:

- Suspected rabid dog is quarantined & put under observation
- Diagnosis of rabies at field unit level by lateral flow assay/kit
- In case of positive result the brain samples are sent to central lab for confirmatory diagnosis/FAT
- In confirmed cases a small investigation is conducted by local veterinarians to identify the exposed human & animal population in consultation with local public health officials
- If the exposed population is at high risk/magnitude of the outbreak is huge, a joint rapid response team is formed
- Since 2014 there is only one single case of human rabies death in 2016 and no further cases till date.

India

Legislation and rabies as notifiable disease

- Not notifiable in both human and animal health sector (currently under process of making it notifiable)
- Reporting is robust and functional in human health sector. Although there is a system in place, rabies reporting is not reliable and systematic.
- Stray dog cases are grossly under reported.

Multi-Sectoral collaboration/One Health approach mechanism in rabies control including mapping of key stakeholders and their roles

There is need to enhance;

- Data sharing mechanism between animal, human and wildlife health sectors.
- Inter-sectoral collaboration for prevention of rabies and other zoonotic diseases.

Cross border rabies transmission issues and collaborative approaches to addressing the issues

- Mass vaccination is a strategy but it is being initiated only in some areas. There is mandatory control program for PPR, FMD and other diseases but there is no mandatory control program for rabies.
- Sikkim, Goa and Kerala are only few of the States that are considering seriously on mass dog vaccination.
- In rest of the States ad-hoc and erratic vaccination programs are carried out

Approach envisaged

- Sign MoU with the neighboring States on TADs control including rabies
- Development partners like WHO and OIE should be involved to buy in the political support- coordination led by the host country

Others

- Ministry of Health leads the rabies control program (if a control program is made as a joint national program, State governments are bound to follow)
- Lack of man power
- Funding issues
- Animal welfare
- Sustainability is a concern
- Need to buy in more Government commitment for rabies control program to ensure sustainability

Nepal

| | |
|--|-------------------------|
| Human Population: | 30 million (estimated) |
| Dog Population: | 2.5 million (estimated) |
| Rabies endemic in the country, both in human and animals | |

- Rabies is not yet a notifiable disease and is neglected
- High rural-burden migration
- Rabies data collected and analyzed for initiation of local level campaign
- Country has been assessed to be in SARE stage: 0.5

National/sub-national rabies elimination policy and strategic plan

- The country is in the process of developing Rabies Control/Elimination strategy
- Planning for Mass Dog Vaccination from 2023

Post Exposure Prophylaxis for human:

- 2006: phased out NTV
- Dec 2017: started IDRV
- May 2019: started 3 doses of IDRV PEP regimen following WHO's latest recommendation
- PEP is provided by District hospitals and all primary Service Centres

Animal anti-rabies vaccine production:

- Tissue Culture Vaccine: since December, 2006 using Pasteur strain
- Quality Control Assessment (passed OIE QCA)
- Good Antigenicity and Immunogenicity
- Capacity: 120,000 doses/yr
- Use of PEP in cattle (as slaughtering of cattle is strictly prohibited)

Multi-Sectoral collaboration/One Health approach mechanism in rabies control including mapping of key stakeholders and their roles

- One Health Secretariat established in 2018 but yet to be operational
- Key stakeholders are identified from human health and animal health sectors mainly
- The system for coordination and collaborative activities is improving

Cross border rabies transmission issues and collaborative approaches to addressing the issues

- Share long border with India (porous border)
- However, development and implementation of in-country strategic action plan is a priority for the moment

Sri Lanka

Legislation and rabies as notifiable disease

- Both human and animal rabies are notifiable diseases in Sri Lanka
- Legal back up provided by Rabies ordinance – 1894, Dog registration ordinance – 1902, Animal disease act – 1992
- Laws need to be revised and updated to suit the current needs

National/sub-national rabies elimination policy and strategic plan

- National target is “Elimination of dog-mediated human rabies by 2025”
- Both human and animal rabies control activities are carried out by medical and veterinary sectors by the Ministry of Health
- Public Health Veterinary Services (PHVS) under the Ministry of Health, Nutrition and Indigenous Medicine (MHNIM) is the institute responsible for the rabies control activities
 - Consist of a One Health setup with both human and animal health professionals working together
 - Human rabies control is guided by the Medical Research institute
- Strategies used in prevention and control of rabies
 - Immunization of dogs against rabies

- Stray dog population control through sterilization
- Post exposure prophylaxis
- Surveillance of animal rabies
- Community mobilization through awareness

Multi-Sectoral collaboration/One Health approach mechanism in rabies control including mapping of key stakeholders and their roles

- Key Stake holders have been identified
 - Ministry of Health
 - Department of Animal Production and Health
 - Ministry of Provincial councils and local governance
- Both human and animal health professionals have been working together- the Public Health Veterinary Services employs atleast 6 veterinarians.
- Lack of active involvement of the other stakeholders is an area which needs prompt intervention

Cross border rabies transmission issues and collaborative approaches to addressing the issues

- Minimum cross boarder transmission is possible as Sri Lanka is an island
- Only from the animals entering through points of entries (Airports/Seaports) is possible
- Strong quarantine regulations can eliminate the possibility

Others

- Only 20-25 human deaths from rabies reported per year since few years
- Human rabies surveillance is almost 100%
- Animal rabies surveillance need to be improved for the elimination goal

Annex 2: National rabies elimination strategy based on the SARE assessment and PWARE work planning:

(Brief country specific feedback from the MSs with key activities envisaged to be accomplished within the next 3 years)

Bangladesh

- Dr. Umme Ruman Siddiqi, DPM, Zoonotic Disease Control Program, Communicable Disease Control, DGHS, MoHFW, Bangladesh

Meeting overview

Meeting focus: i) Stepwise Approach towards Rabies Elimination (SARE) assessment for Bangladesh, ii) Development of a Practical Workplan for the Bangladesh pending activities.

SARE Assessment: SARE Score – 2.5.

Current SARE Milestones: National rabies control programme being implemented nationwide, with clear inter-sectoral collaboration.

Practical workplan

The “Rabies Action Workplan” has been finalized with inputs from all of the Stakeholders that attended the workshop

Key activities that have been prioritized by Bangladesh for completion in the next 3 years

- 1) 3 rounds Mass Dog Vaccination
- 2) Strengthening of Lab. Diagnosis capacity
- 3) Animal Exposure and Human Rabies Reporting and Surveillance
- 4) Animal Rabies Surveillance
- 5) WHO/OIE prequalified vaccine

Key Prioritized Activities

- 1) Three rounds of Mass Dog Vaccination in all 64 districts of the country
- 2) Strengthening of Lab. Diagnosis capacity (animal & human)
- 3) Animal Exposure and Human Rabies Reporting and Surveillance
- 4) Animal Rabies Reporting and Surveillance
- 5) Increase coverage of PEP

Bhutan

- Sangay Rinchen, Regional Livestock Development Centre, Tsimasham, Department of Livestock

Meeting overview: i) Stepwise Approach towards Rabies Elimination (SARE) assessment for Bhutan, ii) Development of a Practical Workplan for the Bhutan pending activities

SARE Assessment: During both the assessments (2017 and 2019) the score was **3.5**

Current SARE milestone: Country nearing freedom from dog-mediated human rabies, with concurrent decline in animal rabies cases.

- One Health strategic plan (yet to be operational) 2023
- Seven years until dog-mediated human rabies elimination (2025)

- Recent Inter-ministerial Committee for One Health (IMCOH) meeting aligned the target to global target of 2030

Practical workplan

The “Rabies Action Workplan” has been finalized with input from all of the sectors that attended the workshop (DoL, MoAF, DoPH-MOH, BAFRA-MOAF, DOFPS-MOAF)

Key activities that have been prioritized by Bhutan for completion in the next 3 years

- Develop a protocol for case-based investigation for human rabies and put in place a mechanism for implementation of the protocol
- Emergency/contingency plan developed, funding secured, personnel trained and resources available for the possible implementation of the plan
- Revise national DPM strategy and allocate sufficient funding to continue DPM efforts after the elimination of canine-mediated human rabies
- Develop National Advocacy Plan for rabies
- Develop surveillance plan and conduct animal surveillance in line with the OIE standards for self-declaration of freedom

India

- Dr. Debalina Mitra, Livestock Officer, Dept. of Animal Husbandry and Dairying

Meeting overview

Meeting focus: i) Stepwise Approach towards Rabies Elimination (SARE) assessment for India, ii) Development of a Practical Workplan for the India pending activities

SARE Assessment: SARE score - 1.5

Current SARE milestone: Small-scale rabies control programs are in place and the country is working towards developing a national rabies control programme

Practical workplan

The “Rabies Action Workplan” is being finalised with input from a One Health technical working group.

Key activities that have been prioritized by India for completion in the next 3 years

- Formation of a National Task Force for rabies elimination
- Formulation of SOPs for observation/handling of probable/confirmed animal rabies cases and animal bite management in other animals
- Developing of a functional animal rabies surveillance system and coordination with human rabies surveillance system
- Strengthening mass dog vaccination campaigns: increasing coverage (increase in areas & vaccinated dog population)
- Ensuring availability of ARV and RIG in sufficient amount in all parts of country both for human and animals

Nepal

- Dr Madhav Dahal, Senior Veterinary Officer, National Vaccine Production Laboratory

Meeting overview

Meeting focus: i) Stepwise Approach towards Rabies Elimination (SARE) assessment for Nepal, ii) Development of a Practical Workplan for Nepal (pending activities)

SARE Assessment: SARE score - 0.5

Current SARE milestone: Situational rabies data are being collected and analysed for initiation of local-level intervention campaigns during outbreak.

Dog population management is being carried out in limited areas especially in urban areas.

- Human health has planning for training the professionals.
- Human health has emergency fund that can be mobilized when required.

Practical workplan

The “Rabies Action Workplan” has been finalised with input from all related stakeholders present at the workshop.

Key activities that have been prioritized by Nepal for completion in the next 3 years

- 1) Rabies is recognized as notifiable and priority disease.
- 2) Contact with International reference laboratory is established.
- 3) Approval of national rabies control and elimination strategy.
- 4) A multisectoral rabies taskforce is established and operated.
- 5) Enhanced surveillance system for human and animal rabies including feedback mechanism

Pakistan

- Dr. S. Asad Ali Shah, Dr Muhammad Aftab Gohar, Dr. Shahnaz Nasim (Ministry of Health Regulations Services & Coordination Ministry of National Food Security & Research)

Meeting overview

Meeting focus: i) Stepwise Approach towards Rabies Elimination (SARE) assessment for Pakistan, ii) Development of a Practical Workplan for Pakistan (pending activities)

SARE Assessment: SARE score - 1.5

Current SARE milestone: Small-scale rabies control programs are in place and the country is working towards developing a national rabies control programme

- One Health Secretariat established at National Level involving public and animal health and environment sectors, etc. (Federal & provincial Focal persons identified) (2019)
- Rabies is a notifiable disease and identified as priority disease (2017)

Key activities that have been prioritized by Pakistan for completion in the next 3 years

- Endorsement and implementation of the National One Health Framework and Strategic Framework (2018-23) has been formulated
- Develop national campaign using a One Health approach to improve information, education, and communication on rabies virus to all stakeholders by 2023
- Improve prevention, detection, and response for rabies virus in Pakistan by 2023

- Develop a national dog population management strategy by 2023 (Rabies task force, Nationally notifiable, Compulsory vaccination)

Sri Lanka

- Dr. Desika Jayasinghe, Ministry of Health Nutrition & Indigenous Medicine

Meeting overview: i) Stepwise Approach towards Rabies Elimination (SARE) assessment for Sri Lanka, ii) Development of a Practical Work plan for the Sri Lanka

SARE Assessment for Sri Lanka: SARE score -1.5

Current SARE milestone: Small-scale rabies control programs are in place and the country is working towards developing a national rabies control programme

Practical workplan

The “Rabies Action Workplan” is being finalized with input from all of the sectors that attended the workshop

Key activities that have been prioritized by Sri Lanka for completion in the next 3 years

With a score in this zone, activities for rabies control were identified using the SARE tool and included the following:

- 1) Improve the vaccination coverage through field vaccination staff capacity building and by ensuring sustainable government commitment through advocacy
- 2) Improve Animal rabies surveillance through enhancing sample collection and transportation to laboratories.
- 3) Improve community awareness through implementing IEC plans which are directed and adopted to specific target groups (e.g. Community leaders, at-risk groups)
- 4) Strengthen inter-sector coordination through conducting stakeholder meetings among identified key stakeholders
- 5) The current rabies legislation to be reviewed and endorsed in support of achieving the rabies elimination goal.
- 6) A technical working group for rabies elimination needs to be established.
- 7) One Health surveillance needs to be strengthened.

Annex 3: Country roadmaps and regional plan for supporting elimination goal of ‘Zero by 30’: Commonalities and recommendations from the World Café Session

Prevention and Control

Human vaccine forecasting - commonalities

- All the countries do conduct vaccine forecasting
- Decentralized mechanism of vaccine forecasting which is evaluated at district level and accumulated at state or provincial level for procurement
- Generally vaccine forecasting is based on previous year vaccine consumption and 10-15% is added for the following year

Human vaccine forecasting - unique findings

- Five-year plan is made, although vaccine forecasting system is much in place but there are few gaps in term of storage & funding (Bangladesh)
- Every three months forecasting and procurement of vaccine is exercised based on previous consumption with 10% addition for the following quarter, it is desirable to have a mechanism to evaluate collective demand on annual basis (Bhutan)
- The estimated number of dog bite victims are 50k annually while vaccine is received only for 20K patients due to budget constraints (Afghanistan)

Tender specification and human vaccine quality – commonalities

- It is preferable to have WHO-prequalified vaccine
- WHO non-prequalified vaccine are also used when WHO standard vaccine is short in supply
- Designated procurement committees/department responsible to purchase vaccine

Tender specification and human vaccine quality – unique findings

- Vaccine is locally produced also and quality control is ensured by the local authorities/suppliers (India, Bangladesh & Pakistan)
- Strictly and only procure WHO prequalified vaccine and health ministry is responsible and ensure the quality through evaluation every year (Sri Lanka)
- Always purchase WHO-prequalified vaccine, and relying only on companies quality control as there is no quality assurance mechanism in place locally (Bhutan)

Use of animal vaccines that conform to OIE standards

- Rabies vaccine is produced by the Punjab (one of the four provinces) and meet OIE standards and vaccine is given to pets and mass vaccination campaign yet to be started (Pakistan).
- For rabies elimination project in Karachi, vaccine is arranged from outside and ensured that meets OIE standards (Pakistan).
- Vaccine is produced locally (30% of the total requirement) as well as procured from outside and quality is controlled by the old methods, it is desirable to get support from OIE/SAARC for quality control training of latest standards (Nepal).
- Animal vaccine is procured from outside and is done based on the information shared by the technical department. All the vaccine purchased should meet OIE standards (Sri Lanka & Bhutan).
- For MDV vaccines are purchased from outside and ensured that meets OIE standards, support from WHO/FAO/OIE is needed to procure good quality vaccine and established vaccine bank (Bangladesh).
- DCGI standards are being followed which ensures OIE standards for the vaccine (India).

- No procurement of animal vaccine

Animal vaccine forecasting – commonalities

- Forecasting mechanism is based on previously consumed vaccine and future programmatic requirement (Nepal, Sri Lanka, Bangladesh & Bhutan)

Animal vaccine forecasting – unique findings

- Since there is no national rabies control program so no forecasting tools are available, but this is done on program level and once expansion is taken place will put in place (India).
- Highly concerned, this is based on pet owner demand and procured annually. On a mass level this is being done only by Rabies Free Karachi Program which is based on programmatic requirement (Pakistan)

Tender specifications and animal vaccine quality - commonalities

- Specifications are decided by the authorized bodies/committees and ensured quality vaccine (Bhutan, Bangladesh, Sri Lanka, Nepal & Pakistan).
- DCGI is responsible for the specification and ensuring quality of vaccine (India).

Recommendations

- Develop consistent and specific tender requirements to ensure purchase of high quality vaccine
- SAARC to assist Nepal in the quality assurance of their locally produced vaccine
- Improve forecasting using the GDREP tool

Laboratory Diagnosis

Outcome / Recommendations

- Expectations to undergo training at Bangalore (CVA-KVAFSU laboratory and NIMHANS – funding secured through CVA)
- Sample collection [Occipital foramen route of brain], packing, shipping for animal health professionals
- dRIT, DFA diagnosis
- PT / Inter laboratory validation
- Limitation: Limited availability of dRIT conjugate
- Development of indigenous conjugate / Procurement of commercial conjugate
- Trained persons to become trainers in their own country
- Consider the training for sample collection through the proposed RACE center

Cross-Cutting Issues

Recommendations

- Establishment of a SAARC steering group, task force or working group on rabies
- SAARC to engage in high level advocacy on rabies and need for inter-sectoral coordination committees at country level
- Stimulate development of Memorandum of Understanding between countries in SAARC region for harmonized regional approach towards rabies elimination
- Ensure harmonization of approaches, e.g. diagnosis and surveillance, standardized reporting in MS and between sectors (DHSI II?)
- Establish a rabies strategy review committee or advisory committee
- Advocate for inclusion of wildlife surveillance where relevant
- Facilitate communication between countries and sectors (OH Hubnet, Whatsapp group)

Dog population management

Dog population estimations

- Afghanistan - never done, important but not a priority, no national programme, may be in distant future
- Bangladesh - Done in 39 out of 64 districts (1.6 million dogs, 83% stray), important for making estimations and monitoring. Already incorporated in the National programme (National Steering Committee consisting of Depts. of Human Health, Animal Health & Local Governments). Will also be carried out in 2020 (1st round) and 2021 (2nd round) countrywide
- Bhutan - Carried out in 2015 & 2018 countrywide and will continue 3 yearly. Important for monitoring 70% vaccination coverage. Already included in the National Rabies Prevention & Control Plan presently implemented by the Dept. of Livestock and Dept. of Public Health
- India - Done in 2012 (Total 30 mill, stray 18 mill) through National Livestock Census. Presently no National Programme for animal rabies as dogs are not considered economically important. Some states have Local Programmes. Important for planning, can be included in the proposed National Plan
- Nepal - Not done. Needed for planning and to achieve 70% vaccination coverage. With facilities, can be done in 3 years
- Pakistan - Only done in Punjab (169,859). Useful for planning
- Sri Lanka - Done in 4 MOH divisions in 2 provinces in 2013 (Total 1: 7, Domestic 1: 10). Important for planning, to determine vaccination coverage, monitor the progress of control programmes. Can be incorporated into DHS (Demographic Health Survey) and/or 3 yearly livestock survey

DPM programme

- Afghanistan - No programme at present, but prefer a one in future, can be implemented under the National Zoonotic Disease Committee
- Bangladesh - Carried out by NGOs since 2011 only in urban areas. No positive effect on rabies control. No need for a countrywide programme. Will not be included in the National Programme
- Bhutan - ABC carried out under the National Programme countrywide. Abandoning of dogs not allowed
- India - ABC only in urban areas. Some are successful e.g. Goa, Nilgiri & Ranch. There is a need for a country programme incorporated into the Proposed National Programme implemented by the National Taskforce combining the Ministry of Fisheries, Animal Husbandry & Dairying and Ministry of Health. Abandoning of dogs should be prohibited.
- Nepal - Only few, small scale carried out by NGOs. There is a need. Need to train VSs. Can be implemented by the Ministry of Agriculture and Livestock under a National programme
- Pakistan - Only a pilot project in Karachi (sterilisation 18,000, chemical castration 128). There is a need for a country programme. It can be included in the suggested National Programme implemented by the Taskforce for Zoonotic diseases under the One Health Programme Secretariat
- Sri Lanka - Countrywide programme is already in operation for both stray and domestic dogs (more females) under the National Programme. Often combined with mass vaccination programmes

Culling/euthanasia

- Afghanistan - Accepted as a policy and carried out using strychnine
- Bangladesh and Bhutan - Culling is not accepted. Euthanasia on case by case basis

- India - Culling was banned in 2001. Euthanasia only under VS recommendation
- Nepal and Pakistan - Not accepted
- Sri Lanka - No kill policy, Euthanasia only under VS recommendation

Recommendations

- Advocate for the development of clear DPM programmes in line with the rabies programmes
- Ensure the phasing out of all mass culling activities throughout the SAARC region
- Dog population is considered important and is requested in all countries
- There is a need for dog ecology studies throughout the region.

Information, Education, and Communication

Common activities

- Public awareness
- Advocacy
- Education & Training (professionals & others)
- Social mobilization

Country examples

- Documentaries
- Theme songs / Folk musicals
- Little doctor program
- One Health approach at national and subnational level
- Hotline
- Rabies slogans
- Story book for school children
- Training Religious leader
- Dedicated website for human rabies
- Audiovisual & other materials accessible to all (downloadable)
- TV commercials
- KAP studies

Country recommendations on national IEC plan

- Need to develop IEC country plan
- Advocacy to policy makers for prioritization of rabies at Human & Animal level (ex: Nepal, India)
- Suggestions to include celebrities or countries as Rabies ambassadors to increase public awareness etc

Country recommendations on regional IEC plan

- Improve at countries high level advocacy at ministerial level, and communicating recommendations from the consultative meetings.
- Establish a Rabies SAARC technical working group constituted of representatives of member states who can support and expedite SAARC inter-ministerial bodies to take action regarding plans.
- SAARC ambassadors
- Promote harmonization and coordination between member states for topics such as: Cross borders topics, vaccine quality harmonization and regional vaccine bank, etc
- Promoting one health approach

- Creating an exclusive window for rabies in the SAARC website that enables to observe progress of SARE of MS and other indicators.
- Declare a dedicated month for Rabies to deploy specific activities amongst MS.
- Continue its role of catalyzer and facilitator amongst MS, to enable a global view to countries of the regional situation.
- SAARC secretariat to prioritize rabies within their workplan

Ways SAARC can help in coordinating international organizations

- Mapping and situational analysis of stakeholders activities to better guide interventions
- Mobilization and allocations of funds
- Establish consultation meetings to monitor & evaluate progress and provide recommendations
- Keep the website updated with the information

Legislation

Country profile

- Animal rabies is notifiable in 4/7 countries
- Human rabies is notifiable in 5 of 7 countries
- Animal rabies case definition is available in 4 of 7 countries
- Human rabies case definition is available in 6 of 7 countries

Groundwork for rabies notifiability

Technical Body/committee recommendation → Cabinet/Parliament endorsement → Incorporation in Act/policy

- OIE notification obligatory priority
- Showcase countries where the program has been successful
- Formal agreement between Ministries of Health and Agriculture/Livestock with support from International Organizations
- PVS/IHR recommendations

Groundwork for rabies case definition

Technical Body/committee/working group → Define a case definition harmonized with the OIE/WHO case definition → Internal Circular/Notification Incorporate in action plans

- Expert consultation
- Refer National Strategies of other countries
- Technical workshop
- Laboratory experts

SAAARC, WHO, OIE, and FAO support

- High level advocacy and sensitization
- Creation of technical rabies body within the SAARC Secretariat
- Facilitation of platforms for various discussions at all levels
- Technical support (International standards/requirements)

Challenges

- Political will/support
- Technical gaps
- Resources
- Implementation
- Hospitals

Recommendations

- All SAARC member states to make rabies notifiable in both sectors by 2020
- Incorporate case definition according to guidelines provided by OIE and WHO and periodically review the same
- Sensitization and education of staffs at all levels in both sectors

Data Collection and Analysis

Challenges:

- Timeliness of reporting often a challenge
 - Most of the reports related to rabies are obtained after 1 week or 1 month of the event.
- Difficulties in obtaining data from the local level
- Because of irregularities in obtaining data reporting to international organizations is difficult.
- Response from central level – inconsistent,
 - no feed back mechanism and no immediate action ---no further reporting from local level

Commonalities:

- E-system (specifically mobile phone reporting)
 - 4/7 countries mentioned that this is important and has helped to improve timely reporting
- Importance of community involvement in data reporting
 - Notifiability is KEY----must report
 - Education and awareness at local level critical to show importance of reporting
- Use experiences and lessons learnt from other diseases (Avian Influenza, Polio etc.) for rabies control program

Interesting examples:

- Bhutan (for rabies) and other countries (including Nepal for other diseases) use “Flash reports” during outbreak situations.
- Combination of paper reports being photographed and emailed to central/district level
- Toll-free number for people in the community to report immediately: but needs verification

Recommendations

- Ensure that rabies is a practiced, notifiable disease in all MS (critical for surveillance and timely reporting)
- The formation of a regional surveillance system (DHIS2)-based for regional data sharing and reporting
 - System to be in-line with E-systems currently used in MS
 - Ensure that all MS collect rabies indicators in-line with the international standards and guidelines
- Promote and advocate for improved community surveillance activities.

Annex 4: Workshop Agenda

PROVISIONAL AGENDA

Workshop on Enhancing Progress Towards Rabies Elimination 'Zero by 30' in the SAARC Region

26-28 June 2019 | Kathmandu, Nepal

| DAY ONE – Wednesday, 26 June 2019 | | |
|-----------------------------------|--|--|
| 08:15– 08:45 | Registration | Organiser/facilitators |
| 08:45–09:15 | OPENING SESSION | MC- Ms. Dipti Shah, SAARC Secretariat |
| 08:45-09:15 | Opening Remarks <ul style="list-style-type: none"> ✓ FAO Representative to Nepal ✓ OIE Representative ✓ WHO Representative to Nepal ✓ SDF, SAARC Secretariat ✓ SG, SAARC ✓ State Minister of MoHP, Nepal (Chief Guest) ✓ Secretary, MoALD, Nepal (Chair) | Dr Somsak Pipoppinyo Dr Gregorio Torres Dr Jos Vandelaer Dr Sunil Motiwal Ms Rishfa Rasheed/ SG's behalf Hon. Dr Surendra Yadav Mr Prakash Mathema |
| 09:15-09:25 | <ul style="list-style-type: none"> ✓ Introduction of participants and their expectations | MC- FAO Pasang Tshering Gyanendra Gongal |
| 09:25-09:35 | <ul style="list-style-type: none"> ✓ Overview of workshop and its objective & expected outputs | |
| 09:35-09:45 | <ul style="list-style-type: none"> ✓ Overview of progress made since last SAARC Rabies Meeting (2015) | |
| 09:45-10:15 | Photo session and tea/coffee break | |
| TECHNICAL SESSIONS | | |
| 10:15-11:30 | Session 1: Updates on Global Strategic Plan Zero by 30, international, standards and guidelines related to rabies control and regional activities on rabies Chair/Co-chair: Prof Be-Nazir Ahmed/Dr Aamir Bin Zahur | Facilitator: OIE |
| 10:15-10:25 | Presentations from Tripartite (10-15 minutes each) <ul style="list-style-type: none"> • One Health approach for rabies control and subsequent elimination | Gyanendra Gongal |
| 10:25-10:35 | <ul style="list-style-type: none"> • The Global Strategic Plan to Eliminate Human Deaths from Dog-mediated Rabies by 2030 including the business plan. | Gregorio Torres, |
| 10:35-10:45 | <ul style="list-style-type: none"> • Lesson learned from around the world in Rabies control elimination – Latin America and Europe experiences | Katinka de Balogh |
| 10:45-10:55 | <ul style="list-style-type: none"> • OIE's Standards and manuals on rabies - the revised chapters and regional activities | Kinzang Dukpa |
| 10:55-11:05 | <ul style="list-style-type: none"> • Update on WHO's position on rabies -WHO recommendation for PEP in human, monoclonal Abs vs RIG | Gyanendra Gongal |
| 11:05-11:20 | <ul style="list-style-type: none"> • Partners for Rabies Prevention (PRP) | Prof Louis H Nel |
| 11:20 -11:30 | Panel and Q&A session | |

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| 11:30-16:30 | Session 2: Setting the scene: Current Rabies Situation and Elimination Programmes in the SAARC region including some success stories | Facilitator: OIE |
| 11:30-11:35 | Introduction to session 2 and instructions on flash talk/gallery session | Pasang Tshering |
| 11:35- 12:20 | 5 minutes flash talk on country poster sessions: successful plans and activities towards rabies elimination ‘Zero by 30’ (with 10 minutes grace period in between) Afghanistan Bangladesh Bhutan India Nepal Pakistan Sri Lanka | |
| 12:20 - 12:50 | Country Poster Gallery Walk session | |
| 12:50-13:50 | Lunch | |
| 13:50 - 14:10 | Knowing my Neighbour Session – round one | |
| 14:10 - 14:30 | Knowing my Neighbour Session – reverse round | |
| 14:30-15:00 | Plenary session – country group to present on the country interviewed (4 minutes x7 countries) | |
| | Success stories on rabies control/vaccination from the sub region and Asia Chair/Co-chair: Prof Abdul Rahman/Dr Samir Kumar Adhikari | |
| 15:00 -15:10 | • Rabies-free initiatives in India- success stories and key elements for the successes and lessons learnt particularly in mass dog vaccination | Dr Frederic Lohr, Mission Rabies |
| 15:10-15:20 | • Effective Rabies control programs in Philippines by better dog population estimates and using mobile phones based technology & Bhutan -HSI joint Project on Rabies and CNVR. | Dr Amit Chaudhari, HSI |
| 15:20-15:50 | Tea/Coffee break | |
| 15:50 -16:00 16:00-16:10 16:10-16:20 | • OH Secretariat/approach and rabies control in Bhutan • Ways and means for scaling up MDV for elimination of rabies based on Bangladesh experience • Integrated Bite Case Management (IBCM): Community Based Surveillance & Communication - the Philippines experience. | Dr Sonam Wangchuk Prof Be-Nazir Ahmed Dr Sarah I Jayme, GARC |
| 16:20-16:30 | Panel – Q & A session | |
| 16:30-17:15 | Session 3: Practical approaches in addressing sector specific issues and challenges | Facilitator: OIE |

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| 16:30-17:15 | <p>Parallel sessions on Dog vaccination/population control and WHO's position on rabies immunization. Short presentation and discussion.</p> <ul style="list-style-type: none"> - Animal health group: Dog vaccination strategy, dog population management, dog rabies surveillance (sampling by straw method, field diagnosis, etc), Rabies Action Centre for Excellence (RACE) proposal. - Human health group: WHO position on human rabies prophylaxis, surveillance and reporting of human rabies, PEP. <p>(The outputs from this session will feed into the World Café session)</p> | <p>Kinzang Dukpa/ Pankaj KC/ Eric Brum/Gregerio Gyanendra Gongal/ Benazir Ahmed/Amila Darshan</p> |
| 17:15 | Close of day's session | |
| 18:30-20:30 | Welcome dinner | |
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| DAY TWO – Thursday, 27 June 2019 | | |
| 08:50-09:00 | Recap of day 1 | TBC |
| 09:00-09:50 | <p>Session 4: Updates from rabies collaborating/ reference centres on rabies control</p> <p>Chair/Co-chair: Dr Panduka/Dr Simmi</p> | Facilitator: WHO |
| 09:00-09:10 | • OIE twinning programme for rabies diagnostics and the designation as OIE Reference Centre for rabies, Karnataka Veterinary College India | Dr Srikrishna Isloor |
| 09:10-09:20 | • Overview of WHO Online Laboratory Techniques in Rabies diagnosis | Dr Reeta Mani |
| 09:20-09:30 | • Adapting WHO recommendations on human rabies prophylaxis in national guidelines | Dr Anup Bastola |
| 09:30-09:40 | Panel – Q & A session | |
| 09:40-11:00 | <p>Session 5: Tools/innovative approaches on rabies elimination and multi-sectoral collaboration for supporting rabies control/elimination</p> <p>Chair/Co-Chair: Dr Sonam Wangchu/Dr Q Sahidi</p> | Facilitator: FAO |
| 09:40-10:05 | <p>5 minutes flash talk on the POSTER</p> <ul style="list-style-type: none"> • State-of-the-art Rabies Vaccination Application. • GARC's capacity building tools to support rabies elimination strategy and program delivery including GARC Data Logger (GPS dog vaccine tracker) and GARC Education Platform, etc. • Oral Rabies Vaccination in Dogs | <p>Dr Amit Chaudhari, HSI</p> <p>Dr Terence Scott/Sarah, GARC</p> <p>Dr Frederic Lohr, Mission Rabies</p> |

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| | <ul style="list-style-type: none"> Global Dog Rabies Elimination Pathway (GDREP) Tool and VAX Tool IHR-PVS National Bridging Workshop: towards strengthening inter-sectoral collaboration and OIE's PVS with rabies specific content | Julie Cleaton, US CDC Pasang Tshering/ Gregorio Torres |
| 10:15-10:45 | Tea break and poster viewing | |
| 10:45-11:00 | Panel discussion and Q&A session | |
| 11:00-13:10 | Session 6: Analysis of country plans towards the development of a country and regional strategy for rabies elimination | Facilitators: GARC with Tripartite support |
| 11:00-12:10 | Plenary session- 10 minutes presentation for each country | |
| 12:10-12:55 12:55-13:10 | <ul style="list-style-type: none"> Analytical presentation on in-country SARE assessment outputs and the identification of 7 Station Leads Discussion session | Dr Andre Coetzer |
| 13:10-14:00 | Lunch | |
| 14:00-17:00 | Session 7: Developing Country roadmaps and Regional Plan and Strategy for Supporting Elimination Goal of 'Zero by 30' | Facilitators: GARC with Tripartite support |
| 14:00-16:55 | <p>World Cafe session on developing a regional plan for rabies elimination goal based on SARE outputs. 7 stations (30-20-20-15-15-10-10 minutes +20 minutes grace period)</p> <p>Station 1: Dog population management (STOP-R) Station 2: Information, Education and Communication (STOP-R) Station 3: Data collection and analysis (STOP-R) Station 4: Prevention and control (STOP-R) Station 5: Laboratory diagnosis (STOP-R) Station 6: Cross-cutting issues (STOP-R) Station 7: Legislation (STOP-R)</p> <p>Tea/Coffee (during the World Café session) (30-minute break)</p> | |
| 16:55-17:20 | Final round of the World Café – the original group returns to their stations and prepares the report for the plenary session. | |
| 17:20 | Close of the day's session | |
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| DAY THREE – Friday, 28 June 2019 | | |
| 08:50-09:00 | Recap of day 2 | |

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| 09:00-09:40 | Plenary session on World Café- 7 minutes presentation by each station rapporteurs followed by discussion | GARC |
| 09:40-11:00 | Group exercises – parallel sessions on developing a road map for implementation of the country plans and road map for the Tripartite and partners to support countries with timelines. Group A - MSs -animal health and public health and others Group B– Tripartite and partners | Facilitator: WHO |
| | Tea/coffee to be served in between | |
| 11:00-11:30 | Plenary session | |
| 11:30-12:45 | Session 8: Garnering support and proposals from partners | |
| 11:30-12:10 | Panel discussion – short statements from each panelists followed by facilitated discussion Panelists – <ul style="list-style-type: none"> • SAARC Development Fund (SDF) – Dr Sunil Motiwal • Other partners/donors – US CDC, World Animal Protection, HSI, Mission rabies, Fondation Merieux, etc – TBI - Panel Discussion | Facilitator: FAO |
| 12:10-12:30 | Gaining political support and Government ownership for zoonoses control with focus on rabies – Facilitated panel discussion. Panelists –Country experts - Prof. Be-Nazir Ahmed Dr Abdul Rahman Bhutan Sri Lanka country reps | Facilitator: SAARC Secretariat |
| 12:30-12:40 | Q&A session | |
| 12:40-13:40 | Lunch | |
| 13:40-15:30 | Session 9: Recommendations and Way forward and Closing session | |
| 13:40-15:00 | Recommendations and Way forward/Road map – Priority proposals from the parallel group work sessions on developing the road maps Rapporteurs: Yoenten Phuentshok (FAO); Chari Ampari, GARC; Lungten Wangchuk (WHO); Rishfa Rashid/ Zuliqar Ahmed, SAARC Secretariat. | Rapporteurs (Presenter from country participant) |
| 15:00-15:30 | ----- <u>Closing session</u> Closing remarks Closing remarks Closing remarks | ----- Dr Banshi Sharma, DG, DLS Dr Vivek Lal, Director, EDCCD, |

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| | | Tripartite /GARC/ World Animal Protection |
| 15:30-16:00 | Tea/coffee and departure for country participants and observers | |
| 15:30- 16:30 | Next steps and follow up action by technical partners including future Regional UAR actions for rabies among Tripartite+ GARC+World Animal Protection+ SAARC SEC/SDF | Facilitator - Katinka |

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Annex 6: Country workplan developed from the SARE workshp conducted in each of the rabies endemic countries except Afghanistan.

SARE Workplan outputs

The generation of a Practical Workplan is based on the outputs from the assessments done applying SARE tool. A set of issues or theme questions are discussed and then relevant objectives/activities along with deliverables and timelines identified for each of the country assessed to address the issues. The activities appearing in the Workplan are those activities marked as 'Pending' during the SARE assessment.

| Components and Themes | Issues or theme questions to address |
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| Data collection and analysis | |
| Surveillance | <ul style="list-style-type: none"> → Are you reporting all of the human or animal rabies cases that have been tested to a relevant international database such as WHO, OIE or a regional rabies network? → Are animal rabies surveillance systems, including feedback mechanisms, functioning and coordinated between administrative levels (national, province, district, municipal, etc.)? → Have linked human and animal rabies surveillance systems, including agreed SOPs, been established? → Is the on-going surveillance system for rabies being maintained? → As your country nears human rabies elimination, have field investigations for all suspected human rabies cases been conducted? → As your country nears human rabies elimination, is epidemiological data being collected to provide evidence of dog-transmitted human rabies-free zones? → Now that there are very few animal rabies cases in your country, are field investigations and laboratory confirmations conducted for all suspected rabies outbreaks in dogs? → As there are no more laboratory confirmed human rabies cases, are existing surveillance activities for all suspected cases in humans maintained in the country? → As your country nears dog-rabies elimination, has the epidemiological data from the routine surveillance of all animals (not only dogs) been used to refine the national rabies strategy? → Has freedom from dog-transmitted rabies in the entire country been verified by the absence of canine variant cases for at least a 2 year period? → Has an animal rabies surveillance* system been established at the national level? |
| Prevention and control | |
| Outbreak response and other rabies control activities; Human vaccines; Animal vaccines; Specimen referral | <ul style="list-style-type: none"> → Has Integrated Bite Case Management (IBCM)* been implemented at a local level? → Are WHO pre-qualified human rabies vaccines available and accessible in most parts of the country? → Is there active response to outbreaks in line with established SOPs? → Are SOPs available for the observation of rabies suspect dogs? → Are WHO pre-qualified vaccines and RIG available and accessible to high risk and exposed individuals throughout the country? → Now that your country is free from human and animal rabies, have modified protocols for PEP administration for rabies-free areas been implemented? → Have Standard Operating Procedures (SOPs) for coordinated action on reported outbreaks* at a local level been established? → Are WHO pre-qualified human rabies vaccines available and accessible in most parts of the country? → Have IBCM SOPs, including sharing of information between sectors, been agreed upon at a national level? → Are mass dog vaccination campaigns reaching at least 70% of the total dog population conducted according to the plan described in the national rabies strategy? → Are post-vaccination surveys* in dogs being carried out to evaluate vaccination coverage? → Is there capacity to conduct field investigations and planned outbreak responses for human rabies cases in the entire country? |

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| | <ul style="list-style-type: none"> → Has dialogue been initiated with neighbouring countries to prevent the re-introduction of rabies into designated rabies-free zones? → Is there capacity to conduct field investigations and planned outbreak responses for animal rabies cases in the entire country? |
| Laboratory diagnosis | |
| Laboratory capacity and testing | <ul style="list-style-type: none"> → Is rabies diagnosis being conducted in at least one national laboratory (veterinary or medical laboratory)? → Does your country undergo proficiency testing with an internationally recognised laboratory? → Has capacity for regular sample collection and transportation been established and functioning? → Is there routine laboratory diagnosis of animal rabies cases in country? → Do you regularly assess your capacity to accurately diagnose suspect rabies samples (both human and animal)? → Now that there are very few animal rabies cases in your country, is there maintenance of existing surveillance activities, including ongoing laboratory investigation, for all suspected cases in dogs in the country? → Are terrestrial wildlife (carnivore) samples submitted for rabies laboratory diagnosis? → Have several rabies suspect samples of animals or humans been submitted to a national laboratory and analysed? → Has capacity for regular sample collection and transportation been established and functioning? → Is access to reliable laboratory diagnosis available throughout the country for animal samples (and if possible also for human and wildlife samples)? → Is there regular characterization and analysis of circulating rabies virus variants by a national or international laboratory? |
| Dog Population Management | |
| | <ul style="list-style-type: none"> → Have discussions been held with stakeholders* to create a dog population management strategy at a local level? → Have you involved officials in waste management in your stakeholder* meetings? → Has a DPM* strategy and programme been drafted and shared with all relevant stakeholders at a local level? → Has the DPM strategy been finalized and implemented? → Has public sensitisation about DPM been built into rabies awareness campaigns at a local level? → Have training or refresher courses on responsible dog management been initiated for professionals in animal health at a local level? → Have rabies awareness campaigns, including responsible dog ownership, been expanded to more areas? → Has veterinary and animal technician training been completed across most of country? → Has the dog population management strategy been implemented nationwide? → Have dog population management and responsible dog ownership campaigns been continued after the elimination of canine-mediated human rabies? |
| Information, Education, Communication | |
| Public awareness; Advocacy; Professional education | <ul style="list-style-type: none"> → Have awareness programmes focusing on the maintenance of freedom from dog and dog-transmitted human rabies been implemented? → Has an IEC plan* been developed and implemented on a small scale? → Has broad public awareness messaging started at a national level? → Have human and animal health professionals involved in rabies control been identified at a local level? → Have training or refresher courses on rabies and public communication been initiated for professionals in human and animal health at a local level? → Has an advocacy plan* been developed and implemented at a national level? → Has the national advocacy plan been used to obtain support from stakeholders to financially resource the national rabies control strategy? |

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| | <ul style="list-style-type: none"> → Has the IEC plan been integrated into the national rabies strategy, implemented at national level and updated where needed? → Has a training plan been developed at a national level? → Has training of human and animal health personnel been conducted in most parts of the country? → Has the IEC plan been integrated into the national rabies strategy, implemented at national level and updated where needed? |
| Cross cutting issues | |
| National programme and strategy; Inter-sectoral collaboration | <ul style="list-style-type: none"> → Are the key stakeholders* still actively involved in rabies control? → Are the results of rabies sample(s) shared with local and national authorities? → Has an intersectoral rabies task force, committee or working group, including all relevant stakeholders*, been established at a local or national level and do they meet/communicate regularly? → Have mechanisms for mobilizing emergency funds for rabies control been identified? → Is the private sector included in the inter-sectoral task force's discussions and/or activities? → Has a national strategy for rabies prevention, control and eventual elimination been drafted and finalised in collaboration with all relevant stakeholders? → Have government resources been identified and allocated in support of the national rabies control strategy? → Have veterinary border inspection and quarantine measures been fully implemented in accordance with national regulations? |
| Legislation | |
| Legal Framework; Animal rabies national case definition; Human rabies national case definition | <ul style="list-style-type: none"> → Is a case definition available that is consistent with the OIE standards for animal rabies? → Is a case definition available that is consistent with the WHO guidelines for human rabies? → Is there national legislation that is relevant to rabies prevention and control? → Does the legislation regarding nationally licenced vaccines reflect that of international guidelines? → Has rabies been made a notifiable disease in humans? → Has legislation been updated to include specifications on the compulsory vaccination and international movement of dogs? → If there is legislation, has it been reviewed and endorsed? → Has rabies been made a notifiable disease in animals? → If there is legislation, has it been reviewed and endorsed? → Does legislation include measures for rabies outbreak response? → Is the relevant legislation enforced at the national level |

Note: The specific workplan for a country to be sent separately to the particular country only.