

# REPORT



## Workshop on Highly Pathogenic Emerging Diseases Surveillance in SAARC Region

5-7 March 2012 Jaipur, India





Dr Subhash Morzaria, Regional Manager, FAO-RAP delivering keynote address



Group exercise in progress-Dr Mohinder Oberoi, Sub-regional Manager, ECTAD and RSU Coordinator, Kathmandu facilitating one of the groups

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Diseases Surveillance in SAARC Region

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# Contents

Acronyms and abbreviations	iii
<b>Summary</b>	<b>1</b>
<b>Background and objectives</b>	<b>3</b>
<b>Inaugural session</b>	<b>5</b>
<b>Technical Session I: Diseases surveillance and information system</b>	<b>5</b>
<b>Technical Session II: Diseases surveillance systems in SAARC Member States</b>	<b>6</b>
● Country presentations on background information and current surveillance systems in South Asia	7
<b>Technical Session III: HPEDs surveillance for informed decision and actions and planning for an enhanced surveillance system in the SAARC region</b>	<b>12</b>
<b>Technical Session IV: Planning for an enhanced surveillance system in the SAARC region</b>	<b>14</b>
Group findings	15
Recommendations	26
Closing session	28
<b>Annex I: Guidelines for country presentation</b>	<b>29</b>
<b>Annex II: Agenda</b>	<b>31</b>
<b>Annex III: List of participants</b>	<b>34</b>

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## Acronyms and abbreviations

ASEAN	Association for South East Asian Nations
AVL	Animal Virus Laboratory
BLRI	Bangladesh Livestock Research Institute
BSL	Bio-safety Level
CVO	Chief Veterinary Officer
DLD	Department of Livestock Development
DLS	Department of Livestock Services
ECTAD	Emergency Centre for Transboundary Animal Diseases
EID's	Emerging Infectious Diseases
EMPRES	Emergency Prevention System for Transboundary Animal, Plant Pests and Diseases
EMS	Event Management System
ENVIS	Environmental Information System
EPT	Emerging Pandemic Threats
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FETP	Field Epidemiology Training Programme
FETP-V	Field Epidemiology Training Programme for Veterinarians
FELTP	Field Epidemiology and Laboratory Training Programme
FMD	Foot and Mouth Disease
GFN	Global Food-borne Infection Network
GF-TADs	Global Framework for the progressive control of Transboundary Animal Diseases
GIS	Geographical Information System
GISRS	Global Influenza Surveillance and Response System
GOARN	Global Outbreak Alert and Response Network
GREP	Global Rinderpest Eradication Programme
HPAI	Highly Pathogenic Avian Influenza
HPEDs	Highly Pathogenic and Emerging Diseases
IATA	International Air Transport Association
INFOSAN	International Food Safety Authorities Network
LDIS	Livestock Disease Information System (Bangladesh)
LIMS	Laboratory Information Management System
NADRES	National Animal Disease Referral Expert System (India)

NGOs	Non Governmental Organizations
NRLPD	National Reference Laboratory for Poultry Diseases
OFFLU	OIE/FAO Network of Expertise on Avian Influenza
OH	One Health
OIE	World Organization for Animal Health (Office International des Epizooties)
PD_ADMAS	Project Directorate for Animal Disease Monitoring and Surveillance
PD-FMD	Project Directorate on Foot and Mouth Disease
PPR	<i>Peste des Petits Ruminants</i>
RAP	FAO Regional Office for Asia and the Pacific
REC	Regional Epidemiology Centre
RLDL	Regional Leading Diagnostic Laboratory
RSU	Regional Support Unit
SAARC	South Asian Association for Regional Cooperation
SMS	Short Messaging Service
SOP	Standard Operating Procedure
TADs	Transboundary Animal Diseases
VFUs	Veterinary Field Units
WHO-SEARO	World Health Organization-Regional Office for South East Asia



## Summary

A regional workshop was organized in Jaipur, India from 5 to 7 March 2012 with the objectives to develop a generic surveillance framework for HPEDs to be adapted by the member countries in the SAARC region. A total of 34 participants attended the workshop.

The key note speech was delivered on One Health approach and animal disease surveillance. This was followed by technical and country presentations on various aspects of surveillance systems. The existing situation of disease surveillance systems in the SAARC region was discussed and identified.

The workshop consisted of structured group discussions by the participants on various aspects of the surveillance system with an overall goal to enhance the existing surveillance system for HPEDs. The participants held group discussions to develop an approach to detect early and respond to unknown/emerging threats.

The outcome of the discussions led to a number of recommendations which are summarized below:

1. There is a need for structured, generic, regional and national surveillance plans for priority TADs and emerging diseases. The Member States with the support of development partners should develop national disease surveillance plans leading to assist in the early identification and the progressive control of animal diseases with a special focus on HPEDs.
2. Sharing of outbreak information on HPEDs and unknown emerging infectious diseases between SAARC Member States and RSU is important and steps should be taken to establish systems for timely information sharing.
3. A roadmap to develop enhanced generic surveillance systems and reporting mechanisms for priority HPEDs and other unknown/emerging diseases in the region should be prepared as a first step.
4. The Member States and/or region should enhance their technical capabilities to diagnose HPEDs and develop the required infrastructure and expertise for recording, managing and analysing diagnostic and surveillance data.
5. Member States should develop (1) case definitions for consistent outbreak reporting, (2) standard operating procedures (SOPs) for outbreak investigation, (3) an integrated disease information database system (e.g. *TADinfo*) with Geographical Information System (GIS)

capability, (4) quick and effective disease response mechanism backed by appropriate legislation, and (5) identification of quick and bi-directional information technology (e.g. toll free number, mobile phone, e-mail etc) for surveillance of all priority HPEDs.

6. The RSU shall consider organising follow up meetings to discuss the outcomes of this workshop at country level.
7. All stakeholders considered public awareness and education on disease surveillance to be a priority to enhance the reporting mechanism for early detection of the diseases. This should be enhanced by exchange of information and experience as well as collaboration between medical, veterinary, educational, research, environmental, local government and the private sector including non government organizations (NGOs).
8. Training on HPED epidemiology, diagnosis, proficiency testing, development of diagnostic kits, developing and harmonizing protocols should be organized at regional and national levels.
9. The Member States in collaboration with RSU should consider establishing an early warning system and strengthen regional and national epidemiology and laboratory networks to address HPEDs for timely detection and response.
10. Member States should support One Health (OH) initiatives to diminish the emergence of epidemics and pandemics and the threat of highly infectious and pathogenic diseases of humans, animals and wildlife.



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## Background and objectives

The South Asian Association for Regional Cooperation (SAARC) and the Food and Agriculture Organization of the United Nations (FAO) jointly established a Regional Support Unit (RSU) within FAO in Kathmandu, Nepal through the European Commission (EC) funded regional cooperation programme on highly pathogenic and emerging diseases (SAARC component) in 2010. The overall objective of RSU is to strengthen and empower SAARC in its ability to prevent, control and or eradicate highly pathogenic and emerging diseases (HPEDs), including highly pathogenic avian influenza (HPAI), through improved veterinary and public health services and inter-sectoral collaboration on a regional basis.

With a view to take forward the mandate of the HPED project, a regional workshop was organized in Jaipur, India from 5 to 7 March 2012 with the objectives to develop a generic surveillance framework for HPEDs to be adapted by the member countries in the SAARC region. A total of 34 participants attended the workshop (Annex III). These included representatives from all SAARC member countries (Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka), and resource persons from various organizations such as FAO-RAP, FAO-India, FAO-RSU (SAARC), WHO-SEARO and wild life expert (India).

There has been a remarkable improvement in early response to the highly pathogenic avian influenza (HPAI) H5N1 outbreaks in South Asia in recent years. However, the disease is still prevalent in countries in the Indo-Gangetic plains of South Asian region leading to endemicity in some of the countries.

Due to globalization and increased movement, the threat of transboundary animal diseases and the emergence of new diseases affecting human health are increasing. The HPEDs such as HPAI, foot and mouth disease (FMD) and *peste des petits ruminants* (PPR) are impacting directly or indirectly on the socio-economic fabric and public health in the SAARC region. The knowledge on the epidemiology and transmission mechanism of these diseases is limited both at country and regional level.

Continuous presence of HPAI in South Asian countries like Bangladesh, India, Nepal and Bhutan pointed out certain gaps in the knowledge and deficiencies in the continuum of surveillance system and response capacities. The major challenges for effective surveillance include:

- Inadequate reporting, investigation and laboratory diagnosis
- Lack of transparency, poor compensation, insufficient incentives for extra work of government staff

- Little and/or lack of involvement of commercial producers and other stakeholders
- Poor/inadequate linkages between animal and human health
- Timeliness, representativeness and quality of data collection/analysis, and the timely use of this information
- Limited/no trained epidemiologists in the national veterinary services in many South Asian countries
- Other cross cutting issues include lack of effective communication among the stakeholders and role of GIS and diagnostic laboratories in surveillance activities
- Gaining political support

The Regional Support Unit (RSU) established in sub-regional ECTAD unit, FAO, Nepal took an initiative to urge SAARC countries look beyond the geographical boundaries and to build their capacity to control, prevent and in early detection of priority infectious animal diseases while considering the harmonization of control efforts at regional level. To this end, a workshop was organized with the overall objective to develop a generic surveillance framework for HPEDs to be adapted by countries in the SAARC region.

**The specific objectives of this workshop were to;**

- a) Get an understanding of the existing surveillance systems and mechanisms in the member countries;
- b) Enhance the capacity of the veterinary and wildlife personnel in surveillance activities;
- c) Develop an enhanced passive (general) animal disease surveillance system and reporting mechanism likely to be considered by SAARC member states for its adaptation; and
- d) Forge an understanding between the various stakeholders including those from the wildlife sector on the importance of surveillance and information sharing for an effective and efficient preventative and outbreak response to HPEDs.

The expected outcome of this workshop was to identify weaknesses of current surveillance systems and recommend the generic components/actions of a generic regional surveillance framework for priority diseases including FMD, PPR, HPAI and unknown/emerging disease.

# Proceedings of the workshop

## DAY ONE

### Inaugural session

Dr John Weaver, Team Leader, FAO-ECTAD India extended a welcome to the participants. Dr Mohinder Oberoi, Sub-regional Manager/RSU Coordinator, FAO-sub-regional ECTAD welcomed the delegates and briefly explained the objectives and role of RSU in holding this workshop under HPED project.

Dr Subhash Morzaria, Regional Manager FAO-RAP while giving a key note address on 'One Health approach and animal disease surveillance' emphasised the importance and need of regional approach to control HPEDs to address the issues related to global food security and public health. Introduction on ECTAD and the role of FAO in addressing the global food security issues were also highlighted. He also stressed GF-TADs which is an important joint FAO-OIE platform to address the progressive control of transboundary animal diseases. On the regional cooperation among countries, he remarked that the political commitment is increasing in the regional platforms like SAARC and ASEAN. Dr Morzaria emphasised the importance of One Health approach and animal disease surveillance for the region.

### Technical Session I: Disease surveillance and information system

The session started with a presentation by Dr Mohinder Oberoi, Sub-regional Manager ECTAD/RSU Coordinator on disease outbreak investigation and designing a HPED surveillance system on behalf of Dr David Castellán, Regional Veterinary Epidemiologist, FAO-RAP, who could not attend the workshop.

It was emphasised that surveillance data underpins the quality of disease status reports thus affecting the international trade as well as national decision making for various disease control interventions and resource allocations. There are two methods namely; active surveillance (by "pulling" information from communities and farms actively) and passive surveillance ("pushing" information by rumours, owners, veterinarians and laboratories etc,) used to detect the disease and or gather the information from people about a disease. The definition of surveillance and outbreak investigation was well discussed. Other important factors for disease surveillance like coordination, components and connections in different phases of emerging phases were discussed.

Dr John Weaver, Team Leader, FAO-ECTAD, India shared his experience of avian influenza surveillance in Viet Nam. Referring to surveillance strategies applied in Viet Nam, he narrated three steps of surveillance; early detection, epidemiology and monitoring and control programme. The primary objectives of avian influenza surveillance in Viet Nam were for early detection, understanding the epidemiology and to monitor the vaccination programme. To increase the early detection through passive surveillance, awareness campaigns were undertaken and animal health workers were trained. Standard operating procedures (SOPs) were developed to improve outbreak investigation and laboratories were strengthened. The improved outbreak investigation detected subclinical infection in ducks, markets and vaccinated population. It also helped in monitoring of vaccine response. Viet Nam has made good progress in developing surveillance systems and multiple systems are in place. The surveillance data is collected, analysed and reported. However lack of transparency, inadequate reporting, investigation and laboratory diagnosis still remain a challenge.

Dr Gyanendra Gongal, WHO-SEARO made a presentation on emerging disease surveillance in humans in South Asia. In his presentation he gave brief introduction of different strategies, regulations and networks formulated by WHO under International Health Regulations. He described the different disease surveillance systems which are applied in WHO such as GOARN, EMS, GISRS, INFOSAN, GFN etc. He also highlighted on training courses initiated by WHO on microbiology and epidemiology in the region.

Dr Bana Behari Dash, from PD-FMD, India discussed the lessons learnt from the surveillance of FMD in India in designing national control programme. Dr. Dash highlighted that 54 districts were already in stage 3 and 167 districts in stage 2 while the rest of the country is in PCP-FMD stage 1.

Dr Acty George, Wildlife Expert gave an insight on approaches to wildlife disease surveillance and explained how it is evolving in the region. He pointed areas of cooperation and collaboration with stakeholders in better reporting and data sharing in spite of various gaps and shortcomings. He also suggested referring virtual platforms such as national animal disease referral expert system (NADRES) and environment information system (ENVIS) on wildlife and ecological issues. He also stressed on capacity building of wildlife professionals and topics like bird migration and FETPV.

## **Technical Session II: Diseases surveillance systems in SAARC Member States**

Dr. Khadak Singh Bisht, RSU Assistant Coordinator highlighted the background, mandate and progress of Regional Support Unit (RSU) and Regional Epidemiology Centre (REC). The RSU, REC and a network of RLDLs have been established to backstop epidemiological studies. It was also planned to develop a regional coordination mechanism, generate epidemiological information, develop regional disease control strategies, provide technical support to improve the laboratory diagnosis of the priority HPEDs and backstop epidemiological studies. He also elaborated on technical support provided to participating countries in the recent past.

## Country presentations: background information and current surveillance systems in South Asia

An overview of country surveillance system for HPEDs is given below

### Afghanistan

Dr Mohibullah Halimi, Director General Livestock and Animal Health presented on "highly pathogenic and emerging diseases surveillance in Afghanistan" focusing on current surveillance situation of HPEDs in the country and the future plans in pipelines. Both active and passive surveillance system are in place. The active surveillance system is used for notifiable diseases while the passive surveillance system is employed for other priority diseases. The early warning and detection through veterinary field units (VFU) network and early reaction to disease epidemics and other animal health emergencies are the purposes of current surveillance systems. The emergency preparedness plan has been developed and available for HPAI, FMD, PPR, brucellosis and other notifiable diseases. Major control measures for HPAI include stamping out with compensation, ring vaccination using H5N2 strain, movement control and public awareness programme. However he emphasised the difficulty in controlling the animal movement between Pakistan and Afghanistan border. There have been initiatives taken for the establishment of new surveillance system for brucellosis, FMD and PPR with the support of US government. The challenges to improve the surveillance system include improvement of capacity and capabilities of regional laboratory, provincial veterinary staff and VFUs. He finally recommended that coordination and collaboration among SAARC is the present need.

### Bangladesh

Dr Md Abul Kalam, Senior Scientific Officer, Department of Livestock Services gave an overview of current surveillance situation of HPEDs in Bangladesh and the future plans. The major emerging diseases are Nipah and HPAI. The other zoonoses and/or high impact diseases include anthrax, brucellosis, rabies, FMD and PPR. Passive surveillance using paper based reporting of diseases is the main system. Targeted or risk based surveillance for HPAI has now expanded to 306 upazilas supported by the World Bank funding. Microsoft access based software is used for data entry and analysis. Mobile phone based SMS is used for early reporting of HPAI outbreaks. Event based surveillance of FMD and anthrax is carried out but not regularly. TAD*info* has been used for HPAI and DLS is committed to expand it for other HPEDs. Surveillance data was rarely used for informed policy decisions, prioritisation and future disease control measures.

The future plans include sustaining the surveillance system for HPAI by utilising the manpower for other HPED surveillance and strong backup support by laboratory based surveillance. Universities and research organisations carry out surveillance on PPR, FMD, brucellosis and leishmaniasis on limited scale. The Bangladesh Livestock Research Institute (BLRI) has undertaken a project on PPR and FMD research. Dr Kalam emphasised an urgent need to enhance the collaboration among the institutions like DLS, universities and research organisations, as well as between wildlife, public health and animal health.

### **Bhutan**

Dr Nirmal Kumar Thapa, Principal Livestock Health Officer presented an overview of current surveillance situation of HPEDs in Bhutan and highlighted the future plans. He reported that FMD, rabies and anthrax are endemic in Bhutan while HPAI, PRRS and PPR are emerging in the country. Both active and passive surveillance systems are being used for FMD, PPR, HPAI and anthrax. The purpose of passive surveillance system is the detection/confirmation of infection at herd/flock level and implement the control programme for FMD and PPR. The purpose of active surveillance system is early detection, prevention (HPAI, PPR) and strengthening national surveillance system for FMD.

The future plan includes strengthening the regional livestock development centres (RLDCs) in their diagnostic and epidemiological capacity and abattoir surveillance for important HPEDs. He also emphasised that the surveillance plans should be inbuilt in each of the disease control programme, and implementation and initiation of the One Health approach for effective surveillance of zoonotic diseases.

### **India**

Dr K Vijayakumar, Joint Commissioner (Livestock Health), Government of India presented an overview of current surveillance situation of HPEDs in the country and the future plans. He stated that on an average 12 villages make one animal disease reporting unit in India. There are 51 973 such units across the country manned by approximately 86 073 veterinary staff. The FMD, PPR and HPAI have been reported in different parts of the country.

Control of FMD through vaccination has been included in 10th Five Year Plan and would be continued in next plans across the country. The pre and post vaccination sero-surveillance is carried out to monitor the immunity level. The PD-FMD Laboratory in Mukteswar is a designated Regional Leading Diagnostic Laboratory (RLDL) for FMD and the High Security Animal Disease Laboratory (BSL III+) in Bhopal is OIE reference laboratory for avian influenza. These are the major laboratories used for laboratory based surveillance activities. Active surveillance and post outbreak HPAI surveillance are in place. Testing of at least 10 000 samples every month is the planned sampling frame. Government of India has created a "Cell" for concurrent monitoring of surveillance and

preparedness against HPAI. National control programme on PPR has been launched since August 2010 in phased manner with the aim to control the disease with vaccination by 2017, followed by subsequent eradication.

### **Maldives**

Ms Aminath Hawau, Zoological Officer, Ministry of Fisheries and Agriculture presented a introduction to surveillance system in Maldives. She highlighted the overview of livestock sector and stated that Maldives is free from important TADs which are found in this region. However, PPR was introduced in one island through importation of goats in 2007 that caused death of all goats in the island. She mentioned that population of goats, scavenging poultry, wild birds, bats and cats are increasing in the islands. Though HPAI has not been reported the threat cannot be ignored.

The importation of live birds, poultry and eggs were banned from neighbouring countries having reported HPAI outbreaks. Plant, animal and food quarantine station has been established at the Male International Airport to mitigate the risk of introduction of exotic infection or infectious agents through imports. A veterinary laboratory has also been established by the Maldives Food and Drug Authority. Recently "Animal Health Act" has been formulated with support of FAO. Coordination between Ministry of Fisheries and Agriculture and Ministry of Health for surveillance of emerging infectious diseases and zoonoses does exist.

### **Nepal**

Dr Ram Krishna Khatiwada, Programme Director, Directorate of Animal Health, Nepal presented an overview of current surveillance situation of HPEDs in the country and highlighted the future plans.

Passive surveillance is the main surveillance system for major animal diseases using paper based reporting from the field units. The data management is done using Microsoft access at the epidemiology unit. There is a monthly disease epidemiological reporting system based on the passive surveillance. There is a provision of immediate notification in case of notifiable diseases while weekly reporting for HPAI and fortnightly reporting for FMD outbreaks. Usually disease reporting is paper based however electronic and telephonic means of communication (E-mail, Fax and Toll Free telephone) are also in use.



A dedicated veterinary epidemiology centre has been established for data management and analysis. Targeted risk based active surveillance is in place in case of HPAI. The software for data management used are Microsoft access for major diseases (monthly epidemiological reporting) and TADinfo for HPAI while web-based system for reporting is under development.

The suggested future plan includes coordination mechanisms for prevention, detection and response of HPEDs to be developed and enforced at national and regional level. Other suggestion include establishment of coordination/information mechanism among the member countries for control of HPEDs, improvement of laboratory diagnostic capacities for HPEDs and strengthening surveillance and response capacity to implement HPED control activities at the regional level and provision of financial assistance and country level capacity building in epidemiology and diagnostics.

### **Pakistan**

Dr Muhammad Khalid, Deputy Director, Ministry of National Food Security and Research, Pakistan detailed the current surveillance situation of HPEDs in the country and highlighted the future plan. He reported that both passive and active surveillance are in place. Active surveillance has been used for HPAI and passive surveillance system for other diseases. The purpose of active disease surveillance system is to early detect and respond to the HPAI, while passive surveillance system is to monitor the trends and distribution of diseases in animals in different geographical regions across the seasons.

A network of 40 regional surveillance units and 10 regional laboratories have been established across the country for HPAI surveillance. The NRLPD is the designated RLDL for HPAI. A federal epidemiology unit has been established in Islamabad for TADs including FMD and PPR having linkages with regional sub epidemiology units throughout the country. Paper based disease reporting is the usual method however, during emergency, cases are reported through fastest means such as telephone, SMS and email. A continuing challenge is to maintain the core capacity and the capability of the animal health services to respond to emerging diseases in the future.

### **Sri Lanka**

Foot and mouth disease is endemic in the country where as PPR and HPAI have never been reported in Sri Lanka. Sero-surveillance for PPR has been conducted during 2000 and HPAI surveillance has been going on since 2006 under national surveillance programme. Eighteen district investigation centres linked with national veterinary investigation centre (VIC)

and animal virus laboratory (AVL) are functioning in the country for diagnosis and confirmation of FMD and HPAI. Risk based identification of zones and mass-scale preventive vaccination programme and ring vaccination in case of outbreak along with management of animal movement and import regulations are the important measures agreed in the national level policy for FMD control. Stamping out policy with compensation is the national policy for control of HPAI. The future plan includes;

- Establishment of veterinary investigation centres in all 25 districts for strengthening the epidemiology, surveillance and diagnosis of HPEDs;
- Development of Sri Lanka animal health information system to strengthen the management system for surveillance data; and
- Capacity building in epidemiology, surveillance and diagnostic methodologies.

## DAY TWO

### **Technical Session III: HPEDs surveillance for informed decision and actions and planning for an enhanced surveillance system in the SAARC region**

Dr Pasang Tshering, REC Coordinator, FAO Nepal delivered presentation on existing surveillance system in the SAARC region. Besides providing background information and defining animal health surveillance, he delved on existing animal disease surveillance systems in the SAARC member states, epidemiology networking, information system and surveillance.

Dr Ravi Dissanayake, Disease Information Data Expert, REC/RSU, FAO Nepal discussed in his presentation on the geographical information system (GIS) as a tool for surveillance. The discussion included the applications of GIS and its utility for surveillance activities and spatial data analysis. The major challenges for using GIS are expensive spatial data sets and licensing of GIS software. Lack of trained manpower, lack of proper database for animal health, data management (*TADinfo*) and lack of awareness are other challenges.

Mr Prakash Nayak, Communication Expert, RSU, FAO Nepal made a presentation on social communication and risk communication in animal health management. The major area of focus was on risk communication, recent events and existing communication mechanism. The challenges he highlighted were lack of information to change behaviour. Attitude influencing needs to be repetitive, consistent, frequent, and seasonal and finally communication cannot work as an add-on.

Dr Muhammad Akram, REC Assistant Coordinator, FAO Nepal made a presentation on 'Animal health surveillance: communication between science and policy decisions'. In his presentation, animal health surveillance, communication tool for policy decisions, HPAI surveillance in South Asia, factors influencing policy decisions, resonance of HPAI surveillance in South Asia and possible way forward were reviewed.

The technical sessions were followed by group exercises to achieve the output of the workshop.

**Group exercise 1:** Planning disease surveillance strategy/systems for FMD, PPR, HPAI and unknown emerging disease(s).

Three groups were formed on the same topic. Group exercise was focused on identifying targets to be achieved by this surveillance system. The participants discussed the following issues.

- Existing system of active and passive surveillance
- Pros and cons of passive surveillance system
- Inter and intra disciplinary information sharing within national system

These points of discussion were examined in more detail by discussing the following issues:

- Current purpose(s) of existing surveillance systems for respective disease in the countries of the region
- Criteria for the selection of surveillance system
- Identify and recommend specific purpose(s) for respective diseases in the regional countries

## DAY THREE

### Technical Session IV: Planning for an Enhanced Surveillance system in the SAARC region

The proceedings of day 3 started with group discussion session

**Group exercise 2:** Disease reporting, investigation, analysis, response and communication mechanisms.

The participants in three groups discussed the following points;

- Responsible unit in the country to analyse and report
- How frequently the data need to be analysed and reported
- Analyse the communication gap/findings at all levels of stakeholders (farmers to policy level)
- Reporting rumour cases
- Mechanism to investigate

Following the group discussion, Dr Mandava Venkatasubbarao, Laboratory Coordinator, RSU, FAO Nepal made a presentation on 'the role of laboratory in disease monitoring/surveillance'. He gave an elaborative presentation on the role a laboratory plays prior to disease outbreak, during outbreak and after outbreak. He also discussed the role of Regional Leading Diagnostic Laboratories and their support to the national laboratories in the region.

**Group exercise 3:** Role of laboratory in the surveillance/monitoring

The participants in three groups discussed the following points;

- Diagnostic status and test protocols at different level
- Role of RLDL in analysing surveillance samples and networking- sharing of the data
- Linkage between field surveillance data (Epi) and laboratory at various levels
- Role of private laboratory (if any)

**Group exercise 4:** Planning for detection of unknown/emerging pathogens-surveillance at animal-human-ecosystem interface

The group discussions revolved around;

- Linkage between animal health and public health surveillance
- Delivery of training
- Role of member countries and RSU

**Group findings**

**Outcome of the Group Discussions:** The outcomes of the group discussions on various components of surveillance and role of laboratories were compiled in terms of weaknesses in the existing systems and proposed actions to overcome the identified weaknesses.

**Identification of the purpose of surveillance:** The weaknesses identified were;

- a) The active surveillance systems including risk based/targeted surveillance are used for HPAI for early detection of disease and response, however the purpose is not pursued on scientific basis;
- b) The passive surveillance systems are routinely used for FMD and PPR but purpose of surveillance is not clearly defined and pursued scientifically; and
- c) The criteria for the selection of surveillance system for respective diseases are not defined.

**The participants proposed the following actions for respective diseases in the region;**

**FMD:** Emphasis should be on the scientific management of the disease, zoning and prioritizing /targeting the disease control efforts including vaccination, animal movement control etc taking into consideration the understanding of the disease distribution (prevalent serotypes), seasonal trends and socio-economic impact and losses.

**PPR:** Mapping to make assessment of the endemicity of the disease. The control and eradication measures should be based on the prevalence, socio-economic impact and international trade.

**HPAI:** The main criteria for surveillance are public health concerns, socio-economic impact and international trade. These criteria prompt early detection and response to contain the disease at

source to reduce the risk to human population particularly the workers, producers and consumers. The surveillance should include wild life reservoirs.

**Case Reporting:** The weaknesses identified were;

- a) Case definitions are not clearly defined and observed while reporting;
- b) Under or no reporting due to perceived impact on trade;
- c) Numbers without denominators are usually reported;
- d) Data standard e.g. age, species, exact location, epidemiology unit, husbandry system, herd characteristic etc are inadequately recorded and reported;
- e) Case reporting is mainly paper based;
- f) Monthly reporting of diseases except HPAI that causes delayed response;
- g) Weak infrastructure, legal framework and facilities for monitoring, reporting and identification of cases;
- h) Information transmission is usually unidirectional thus there is no feedback to stakeholders;
- i) Little awareness and accessibility of farmers to veterinary services in rural and remote settings;  
and
- j) Inadequate refresher/training courses on disease diagnosis, sample collections etc for veterinary staff especially in those areas where diseases like PPR, HPAI are not earlier observed and reported but are at risk.

**The participants identified certain actions to be taken at the policy level and at operational level;**

**Policy level**

- a) Development/establishment of infrastructure able to develop case definition, monitor case identification and reporting in accordance with requisite data;
- b) Identification of appropriate information technology which should be quick and bi-directional e.g. toll free number, mobile phone, email etc.;



- c) An appropriate mechanism for compensation in the event of culling/destruction of affected animals/birds etc.;
- d) Allocation of sufficient financial resources for surveillance activities from the core budget of National government;
- e) Immediate reporting of infectious disease to Regional Support Unit (RSU) and or to member states of SAARC;
- f) RSU should arrange training of trainers (ToT) in the field of disease surveillance, monitoring and reporting; and
- g) RSU should develop Web site for SAARC countries to use for HPEDs reporting and RSU should periodically publish weekly bulletins on HPEDs including TADs etc.

#### **Operational level**

- a) Launch disease awareness/training programmes for veterinary staff and farmers to enhance case reporting timely and efficiently as well as appropriate sample collection and dispatch etc.; and
- b) Decide and widely disseminate the required frequencies of reporting/sampling for notifiable and non notifiable diseases and follow extensively.

**Outbreak Investigation:** The weaknesses identified were as under;

- a) Inadequate laboratory diagnostic facilities, equipment, supplies and transportation facilities in certain countries in the region;
- b) Delayed administrative decision regarding logistics, composition and mobility of disease investigation teams;
- c) Weak coordination and communication across the disciplines e.g. public health, wildlife and livestock disciplines;
- d) Outbreaks are usually investigated by research organizations without involving epidemiologists and subject matter specialists from other related disciplines and without plan;
- e) Preliminary and concluding reports sometimes lack corrective measure to be followed up at operational and policy level; and

- f) Poor animal identification system leading to difficulty in identification and follow up of the cases.

**The participants identified certain actions to be taken at the policy level and at operational level to strengthen outbreak investigation;**

**Policy level**

- a) Directives for all outbreak investigation, proper documentation and appropriate follow up till resolution of outbreak(s);
- b) Support field epidemiology training programs like FETPV, FELTP etc.;
- c) Institution of animal identification system at least at village level;
- d) Administrative approval for team composition and logistic should be telephonic and or electronic in case of emergencies to avoid delays; and
- e) Contingency budget for disease investigation should be provided and placed at the disposal of head of epidemiology unit.

**Operational level**

- a) Dedicated disease investigation sub-unit headed by epidemiologist with in the epidemiology unit with the provision to include subject matter specialists from disease related disciplines and laboratories;
- b) Standard operating procedures (SOPs) for outbreak investigation should be developed and implemented; and
- c) RSU should share information on outbreak investigation to member countries once these are made available by the concerned country.

**Data Analysis:** The weaknesses identified in data analysis were;

- a) No organized and integrated database due to inadequate skilled manpower;
- b) Inadequate and limited analysis of disease data due to lack of information e.g., denominators, age, demography, immunity status etc, inadequate technology and capacity for collection and storage of data e.g. paper based reporting, little or no use of disease information software, lack of trained manpower etc.; and

- c) Epidemiological evidences are seldom generated and used for policy and operational decisions.

**The actions identified and proposed by participants at policy and operational levels are as under;**

**Policy level**

- a) An appropriate database should be developed and integrated with disease information system (e.g. TADinfo) and GIS.

**Operational level**

- a) Dedicated data management experts and analysts should be deputed with the provision of appropriate animal disease information system and epidemiological evidence thus generated should be used for various policy and operational decision surrounding the planning for disease control; and
- b) Early warning system should be developed.

**Inter-intra ministerial/discipline communication/information sharing mechanism**

The weaknesses identified in this area were;

- a) Limited and inadequate communication across the disciplines due to inadequate facilities/ technology e.g. e-mails, phones, computers, internet etc and professional communication staff in veterinary field; and
- b) Reluctance to information sharing across the disciplines due to privacy and undefined process.

**The action points proposed were;**

**Policy level**

- a) A mechanism should be developed to share information across the discipline while providing appropriate technology, dedicated communication staff and well defined process;
- b) Establishment of website and linking with all the stakeholders;

- c) RSU should establish a Data Bank at regional level; and
- d) Pending CVO's meeting should be held as soon as possible to enhance communication among the member states and discuss cross border harmonization of animal disease control measures.

#### **Operational level**

- a) Establishment of central animal disease information monitoring, sharing and dissemination across the disciplines.

**Response mechanism:** The weaknesses identified were;

- a) Inadequately defined response mechanism in the event of disease outbreak e.g. vaccination is a standalone corrective measure (response) but not integrated with other prerequisites including bio-security, movement control (both human and animal etc), culling or stamping out of animals, disinfection and cordoning off the affected premise and immediate surveillance area, regulation of wet markets and other animal markets and awareness of the general public and concerned professionals; and
- b) Inadequate trained rapid response teams and logistics.

**The action points proposed by the participants were;**

#### **Policy level**

- a) Movement of animals should be subjected to certification regarding vaccination against certain diseases from local veterinary administration;
- b) Comprehensive control plans for FMD, PPR and HPAI should be developed and implemented;
- c) National bio-security plan should be developed and implemented; and
- d) Appropriate legislation should be in place for implementation of disease investigation and response measures.

#### **Operational level**

- a) Development of rapid response teams for appropriate/prompt measures; and

- b) Well defined response mechanism should be in place and simulation exercises should be organized to sensitize all the concerned stakeholders including local administration and general public among others.

**Role of diagnostic laboratories in surveillance:** The discussion points revolved around confirmation of cases by isolation and identification of causative agent, determination of antibodies and gene sequencing etc. The participants identified the following weaknesses;

- a) Only Maldives in the region lacks capacities for confirmation of FMD, PPR and HPAI;
- b) Problem in prompt collection and transportation of suitable clinical materials due to delayed reporting and delays in postal transportation to labs in addition to security and political issues and inadequate funds for laboratories and surveillance activities;
- c) Less motivated and inadequately trained field veterinarians and logistic constraints for collection and shipment of appropriate materials for FMD and PPR investigation; and
- d) Inadequate number of epidemiologists deputed in the laboratories.

**The action points proposed by the participants were;**

- a) Trained epidemiologists should be posted in the laboratories;
- b) National laboratory networks should be established involving states/provincial labs;
- c) Regional leading and selected national laboratories should seek accreditation and ISO (International Organization for Standardization) certification;
- d) Laboratories network should be regularly evaluated under pre-defined criteria;
- e) RLDL should develop guidelines for monitoring and evaluation of laboratory networks;
- f) RLDL for FMD should be strengthened to enhance its diagnostic capacity to address the surveillance needs for FMD at regional level;
- g) RLDL for PPR and national laboratories in Bangladesh should be strengthened to enhance their diagnostic capacity to address the surveillance needs for PPR at regional and national level;

- h) Coordination mechanism for laboratories at national and regional level should be enhanced;
- i) The RLDLs should provide diagnostics and training for identification and typing of the viruses while characterization of virus should be done at the Regional Leading Diagnostic Laboratories;
- j) Infected materials transportation kits and fast mode of transport should be used;
- k) Quick dissemination of the results to the sender would increase the number of samples submission from field to National Laboratory; and
- l) Field laboratories should be prompted to send samples from every outbreak to the National Reference Laboratory.

#### **Detection of unknown/emerging pathogens- surveillance at animal-human-ecosystem interface**

The participants in three groups deliberated on the component of surveillance system and proposed actions ensuring early detection of emerging/unknown infection/disease/condition in the country/region. The outcomes of each group were presented and discussed as described below.

#### **Purpose of the surveillance was identified as;**

- Early detection of novel/exotic pathogen especially zoonoses in wildlife and domestic animals and identification of the causative agent;
- To understand the epidemiology of novel pathogen;
- Timely response to control/contain the unknown infection; and
- Promote and strengthen diagnostic research in national and regional laboratories.

#### **Sensitivity of the existing surveillance systems for capturing information about new pathogens or re-emerging pathogens was characterised by;**

- Heterogeneous capacities in the region in terms of capturing information about novel pathogens and re-emerging pathogens. For example;
  - ▶ Surveillance system of Bangladesh (icddr,b for Nipah; Planned EPT<sup>+</sup>), and India (HSADL, Bhopal) and Sri Lanka have capacities to capture information about novel and re-emerging pathogens.

- ▶ About 60 percent of other pathogens were detected during brucellosis surveillance in Afghanistan.
- ▶ Malaria surveillance in Pakistan could not detect dengue.
- The conduct of only passive surveillance may not be sensitive. So following actions were proposed.
  - ▶ Immediate reporting system in unusual morbidity and mortality.
  - ▶ Case management of new disease.

#### **Types of passive (general) and active surveillance to be adopted including event based surveillance**

- Defining trigger points for event based detection of pathogens.
- Syndromic surveillance needs to be conducted from any unusual clinical signs.
- Clinical manifestation followed by post-mortem should be mandatory to report.
- Routine reporting system from the field/slaughter houses/farms/wild life/live markets should be strengthened.
- Rumour based surveillance need to be taken into consideration.

#### **Linkages with and capacities of the laboratory to support diagnosis in surveillance**

- Strengthen laboratory capacities to enable diagnosis of existing and new diseases (test kits/equipment).
- Establish linkages/liaise with cross sectoral local laboratories like veterinary, medical and universities and with foreign laboratories.



### **List of the stakeholders and collaborators**

- Wildlife division/department, National Wildlife Parks, Department of Disaster Management, Ministry of Health (public health), animal welfare organizations, NGOs etc.

### **Institutional arrangements in place**

- Collaboration of livestock department with wildlife conservation society/department does exist in Pakistan, Afghanistan and Sri Lanka.
- NGO and International bodies in Bangladesh are collaborating with the government.
- Need based collaboration amongst wildlife institutions, NGOs and international organizations exist in India.

### **What new collaborative instruments and setups need to be put in place?**

- Need to develop memorandum of understanding among different stakeholders to strengthen collaboration.
- Setup coordination committee of relevant stakeholders in regional and central level.
- Initiate reporting mechanism from wildlife to veterinary epidemiological unit.

### **The existing operational arrangements with the public health sector for surveillance of zoonotic diseases and the proposed new arrangement for One Health approach mechanism in the SAARC countries**

- Bangladesh has limited operational arrangement with public health institutions.
- Rapid response team and technical subcommittee on HPAI are in place.
- Joint committees with Ministry of Health have been constituted in Sri Lanka.
- Zoonotic disease committee with Department of Public Health is functioning in Afghanistan.

- A task force with health department and other authorities has been constituted in Pakistan.
- One Health approach followed in HPAI could be replicated in other zoonotic diseases.

**Ways to advocate for gaining political support for disease surveillance**

- Advocacy at political and departmental level by providing substantial technical information supported by socio-economic and public health gain and presenting past evidences.

**External support (except funding) which is anticipated**

- Support from International organizations for technical assistance in terms of capacity building in wildlife surveillance;
- Strengthen diagnostic capabilities for newly emerging/unknown diseases; and
- Support development of SOPs on surveillance and control of new diseases and assistance in developing and strengthening communication component.

## Recommendations

The workshop was organized with the following objectives:

- Enhance the capacity of the veterinary and wildlife personnel in surveillance activities.
- To get an understanding of the existing surveillance systems and mechanisms in the member countries.
- To forge an understanding between the various stakeholders including those from the wildlife sector on the importance of surveillance and information sharing for an effective and efficient preventative and outbreak response to HPEDs.
- To develop an enhanced passive (general) animal disease surveillance system and reporting mechanism that can be considered by SAARC member states.

Considering that:

- There has been a substantial increase in animal production and productivity, and change in the consumption pattern of livestock products.
- Deforestation, consumption of bush meat, exotic animal farming and changing climate and vector ecology are significant factors for the emergence of new pathogens and or re-emergence of pathogens.
- On average one new infectious disease has emerged every year during the last few decades and more than 70 percent of these are zoonotic in nature having links to wildlife.
- Being of global significance control of emerging infectious diseases is an international public good.
- Emerging pathogens are ubiquitous, prone to rapid mutations and transboundary in nature impacting food security and safety, human health and livelihoods.
- Robust/enhanced surveillance systems for animal diseases and reporting mechanisms in the region are either non-existent or weak or limited to only one or two diseases.

- Sharing of disease outbreak investigation or surveillance information between the member states is uncommon.
- There is a need to strengthen or enhance passive (general) surveillance systems and reporting mechanisms including a secure disease information system in the member states.
- Disease prevention and control programme for highly pathogenic and emerging diseases has progressively developed in the region.

Following discussions at the workshop, recommendations were drafted as below:

1. There is a need for structured, generic, regional and national surveillance plans for priority TADs and emerging diseases. The Member States with the support of development partners should develop national disease surveillance plans leading to assist in the early identification and the progressive control of animal diseases with a special focus on HPEDs.
2. Sharing of outbreak information on HPEDs and unknown emerging infectious diseases between SAARC Member States and RSU is important and steps should be taken to establish systems for timely information sharing.
3. A roadmap to develop enhanced generic surveillance systems and reporting mechanisms for priority HPEDs and other unknown/emerging diseases in the region should be prepared as a first step.
4. The Member States and/or region should enhance their technical capabilities to diagnose HPEDs and develop the required infrastructure and expertise for recording, managing and analysing diagnostic and surveillance data.
5. Member States should develop (1) case definitions for consistent outbreak reporting, (2) standard operating procedures (SOPs) for outbreak investigation, (3) an integrated disease information database system (e.g. *TADinfo*) with GIS capability, (4) quick and effective disease response mechanism backed by appropriate legislation, and (5) identification of quick and bi-directional information technology (e.g. toll free number, mobile phone, email etc) for surveillance of all priority HPEDs.
6. The RSU shall consider organising follow up meetings to discuss the outcomes of this workshop at country level.

7. All stakeholders considered public awareness and education on disease surveillance to be a priority to enhance the reporting mechanism for early detection of the diseases. This should be enhanced by exchange of information and experience as well as collaboration between medical, veterinary, educational, research, environmental, local government and the private sector including NGOs.
8. Training on HPED epidemiology, diagnosis, proficiency testing, development of diagnostic kits, developing and harmonizing protocols should be organized at regional and national levels.
9. The Member States in collaboration with RSU should consider establishing an early warning system and strengthen regional and national Epidemiology and Laboratory Networks to address highly pathogenic and emerging infectious diseases for timely detection and response.
10. Member States should support One Health initiatives to diminish the emergence of epidemics and pandemics and the threat of highly infectious and pathogenic diseases of humans, animals and wildlife.

## Closing session

Dr Mohinder Oberoi, Sub-regional Manager and Coordinator RSU, FAO ECTAD, Kathmandu, Nepal closing the workshop on behalf of Dr Subhash Morzaria, Regional Manager, ECTAD-RAP, Bangkok summarised the outcome of the proceedings of the workshop. He advised all the participants to work on the recommendations relevant to their respective country and promised all the technical support from RSU to the member states to optimise the surveillance activities.

He thanked the Government of India and FAO-ECTAD India team for extending their support in organising the workshop. He also thanked European Union for providing financial support to the workshop, all the experts and the participants for their active participation in the deliberations of the workshop.

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## Guidelines for country presentation

**Please prepare your country presentation along the following lines.  
The time for presentation should not exceed 30 minutes**

- Highly pathogenic and emerging diseases (HPEDs) on the top of priority in your country.
- Criteria for prioritisation of HPEDs being followed (e.g. economic loss, risk to human health, trading importance, international reporting requirements etc.).
- Surveillance systems being practiced for prioritized HPEDs. (e.g. passive surveillance, mandatory (notifiable/reportable) field and laboratory surveillance, targeted (risk based) surveillance, surveillance by university/research organisations for academic purposes; as a part of outbreak response surveillance (in the event of emergencies like HPAI outbreaks) etc.
- Purpose of surveillance of respective priority HPEDs. (e.g. for early detection of disease, to demonstrate disease freedom from country/zone, compartment, to monitor trends of disease (if disease is endemic), to support taking informed policy and operational decisions and future planning for disease control etc.).
- To what extent the respective surveillance system has served/is serving the purpose and the approximate annual cost of surveillance for respective priority HPEDs and the source of funding.
- Means of reporting of the respective priority HPEDs [e.g. paper based, electronically (software based etc), telephonically, SMS/emails etc].
- Management of the priority HPEDs surveillance data. (e.g. paper based (registers etc), computerized using Excel, Word, Access, etc) or computerised using specific disease database system, e.g. *TADinfo* or locally developed system).
- Responsible unit for performing the analysis of the disease data collected and what types of reports or information are generated.

- The distribution list of the reports/information generated from the surveillance systems (e.g. national policy makers, provincial policy makers, departmental decision makers, local veterinary officers, farmers/associations, NGOs, etc).
- Evaluation of the respective surveillance system carried out in terms of its sensitivity, cost effectiveness and specificity, etc during the last 3 years.
- The benefits of the evaluation of surveillance systems for the country/region.
- Reporting mechanism for priority HPEDs from field to central/national and from the central/national to other national institutions/departments, and regional and international organisations like RSU, SAARC, OIE, FAO and WHO.
- Future plans for enhancing the HPEDs surveillance system in the country.
- Specific need or assistance required to enhance the efficiency and effectiveness of the existing surveillance system in your country.

## Agenda

### DAY-1 5 March 2012 (Monday)

Time		
08:30-09:00	<b>Registration of participants</b>	
09:00-09:30	<b>Inaugural Session</b>	
9:30-10:00	One Health approach and animal disease surveillance	Dr Subhash Morzaria, Regional Manager, ECTAD, FAO-RAP
<b>10:00-10:30</b>	<b>Photo Session and Tea/Coffee Break</b>	
<b>Technical Session I: Diseases Surveillance and Information System</b>		
10:30-11:00	Disease outbreak investigation and designing a HPED surveillance system	Dr David Castellan, FAO-RAP (Presented by Dr Mohinder Oberoi, Coordinator RSU)
11:00-11:30	Lessons learnt from avian influenza surveillance activities in South East Asia with particular reference to Viet Nam	Dr John Weaver, FAO-India
11:30-12:00	Emerging infectious disease surveillance in humans in South Asia	Dr Gyanendra Gongal, WHO-SEARO, India
12:00-12:30	Lessons learnt from the surveillance of FMD in India in designing the national control Programme	Dr B B Dash, PD-FMD, India
12:30-13:00	Approaches to wildlife disease surveillance	Dr Acty George, Wildlife Expert, India
<b>13:00-14:00</b>	<b>Lunch Break</b>	
<b>Technical Session II: Diseases Surveillance Systems in SAARC Member States</b>		
14:00-14:30	Regional Support Unit (RSU) and Regional Epidemiology Centre (REC)- its mandates and objectives	Dr Khadak Singh Bisht, RSU, FAO-Nepal
14:30-15:30	Country Presentations (15 minutes each) <ul style="list-style-type: none"> <li>o Afghanistan</li> <li>o Bangladesh</li> <li>o Bhutan</li> <li>o India</li> </ul>	Country participants





**DAY-3**

**7 March 2012 (Wednesday)**

<b>Technical Session IV: Planning for an Enhanced Surveillance System in the SAARC Region</b>		
09:00-09:15	Recapitulation of day two	Dr Muhammad Akram, RSU, FAO-Nepal
09:15-10:00	<b>Group exercise 2:</b> Reporting, analysis, response mechanism, investigation, communication mechanism (3 groups on same topic)	Facilitators: Dr Ravi Dissanayake/Dr Mandava Venkatasubbarao/Mr Prakash Nayak/Dr John Weaver/Dr Ajender Bhagat Negi
10:10-10:30	Group work presentation	Group team leaders
<b>10.30-10.45</b>	<b>Tea/Coffee Break</b>	
10:45-11:15	Role of Laboratory in disease surveillance	Dr Mandava Venkatasubbarao, RSU, FAO-Nepal
11.15-12:00	<b>Group exercise 3:</b> Role of laboratory in monitoring/ surveillance of • FMD virus • PPR virus • HPAI virus	Facilitators: Dr Mohinder Oberoi/Dr Muhammad Akram/Dr Khadak Singh Bisht/Dr Mandava Venkatasubbarao/Dr Madhur Dhingra
12.00-12.30	Group work presentation	Group team leaders
12:30-13:15	<b>Group exercise 4:</b> Planning for detection of unknown/ emerging pathogens-surveillance at animal-human-ecosystem interface (3 groups on same topic)	Facilitators: Dr Khadak Singh Bisht/Dr Pasang Tshering/Dr Muhammad Akram/Dr Acty George
<b>13:15-14:15</b>	<b>Lunch Break</b>	
14:15-14:45	Group work presentation	Group team leaders
14:45-15:45	Finalisation of the recommendations	Dr Muhammad Akram, RSU, FAO-Nepal
<b>15:45-16.00</b>	<b>Tea/Coffee break</b>	
16.00-16.30	Closing and way forward	Dr Subhash Morzaria/ Dr Mohinder Oberoi

## List of Participants

### AFGHANISTAN

#### Dr Mohibullah Halimi

Director General  
Animal Health and Production  
Ministry of Agriculture, Irrigation and Livestock  
(MAIL)  
Jamal Mina-Kabul  
Mobile: +93-0700267328  
Office: +93-0752035048  
E-mail: [mohibullahhalimi@yahoo.com](mailto:mohibullahhalimi@yahoo.com)  
[mohibullah.halimi@mail.gov.af](mailto:mohibullah.halimi@mail.gov.af)

### BANGLADESH

#### Dr Almagir Safiul Alam

Deputy Director (Animal Health and Admin)  
Department of Livestock Services  
Ministry of Fisheries and Livestock  
Farmgate, Dhaka -1215  
Tel: +88-02-2-9118353  
Mobile: +88-0172722840, 0171722840  
E-mail: [alamgirsafiul@yahoo.com](mailto:alamgirsafiul@yahoo.com)

#### Dr Helena Khatun

Principal Scientific Officer  
Livestock Research Institute  
Department of Livestock Services  
Mohakhali, Dhaka-1212  
Mobile: +88-01711446350  
E-mail: [helenlri@yahoo.com](mailto:helenlri@yahoo.com)

#### Dr Md Abul Kalam

Senior Scientific Officer  
Quality Control of Vaccines and Drugs  
Livestock Research Institute  
Department of Livestock Services  
Mohakhali, Dhaka 1212  
Tel: +88-02-9858482  
Fax: +88-02-884528  
Mobile: +88-01714 225456  
E-mail: [azaddls@yahoo.com](mailto:azaddls@yahoo.com)

### BHUTAN

#### Dr Nirmal Kumar Thapa

Principal Livestock Health Officer  
National Centre for Animal Health  
Serbithang, Thimphu  
Tel: +975-351083/1787697  
E-mail: [nkthapa08@hotmail.com](mailto:nkthapa08@hotmail.com)

#### Dr Tshering Dorjee

Programme Director  
Regional Livestock Development Centre  
Khangma  
Tel: +975-17172662  
E-mail: [tsheringdorjee2002@yahoo.com](mailto:tsheringdorjee2002@yahoo.com)

#### Dr Pema Tshewang

Veterinary Officer  
National Animal Hospital  
Chubachu, PO Box 561  
Thimphu  
Tel: +975-17825633  
E-mail: [petskin11@hotmail.com](mailto:petskin11@hotmail.com)

**INDIA****Dr K Vijayakumar**

Joint Commissioner (LH)  
Ministry of Agriculture  
Department of Animal Husbandry, Dairying and  
Fisheries  
Krishi Bhawan  
New Delhi-110 001  
Tel: +91-11-23384190  
Fax: +91-11-23384190  
E-mail: [jclh-dadf@nic.in](mailto:jclh-dadf@nic.in)  
[vijikumaran@yahoo.com](mailto:vijikumaran@yahoo.com)

**Dr Bana Bihari Dash**

Senior Scientist  
Project Directorate on Foot and Mouth Disease  
SAARC Regional Leading Diagnostic  
Laboratory-FMD  
Indian Council of Agricultural Research  
Indian Veterinary Research Institute Campus  
Mukteswar-Kumaon  
District Nainital-263138, Uttarakhand  
Tel: +91- 5942-286122/286004  
Mobile: +91-9997663133  
Fax: +91- 5942-286307  
E-mail: [bbdash08@gmail.com](mailto:bbdash08@gmail.com)

**Dr Vinay Mohan**

Scientist  
Regional Disease Diagnostic Laboratory (North  
Zone)  
Department of Animal Husbandry  
Ladowali Road  
Jalandhar City-144 001, Punjab  
Tel: +91-181-2242335  
Mobile: +91-9814709170  
Fax: +91-181-2242335  
E-mail: [vmwadhawan@gmail.com](mailto:vmwadhawan@gmail.com)

**Dr Lal Singh**

Deputy Director (Pathologist)  
State Disease Diagnostic Centre  
Department of Animal Husbandry  
Jaipur, Rajasthan  
Telefax: +91-141-2374617  
Mobile: +91-9214028750  
E-mail: [lalsinghjsm@yahoo.com](mailto:lalsinghjsm@yahoo.com)

**Dr Lenin Bhatt**

Veterinary Officer  
State Disease Diagnostic Centre  
Department of Animal Husbandry  
Jaipur, Rajasthan  
Telefax: +91-141-2374617  
Mobile: +91-9829791073  
E-mail: [leninbhatt@yahoo.com](mailto:leninbhatt@yahoo.com)

**MALDIVES****Ms Aminath Hawau**

Zoological Officer  
Ministry of Fisheries and Agriculture  
7th Floor, Velaanaage, Ameer Ahmed Magu,  
Male  
Tel: +960-3322625  
Fax: + 960-3326558  
E-mail: [aminath.hawau@fishagri.gov.mv](mailto:aminath.hawau@fishagri.gov.mv)  
[amhawa@gmail.com](mailto:amhawa@gmail.com)

**NEPAL****Dr Ram Krishna Khatiwada**

Programme Director  
Directorate of Animal Health  
Department of Livestock Services  
Kathmandu  
Tel : +977-1-4261165  
Fax : +977-1-4261521  
E-mail : [ramkrishnakhatiwada@ymail.com](mailto:ramkrishnakhatiwada@ymail.com)

**Dr Indra Kant Jha**

Project Coordinator  
Avian Influenza Control Project  
Department of Livestock Services  
Chapali, Budhanilkantha  
Kathmandu  
Tel: +977-1-4650127  
Fax: +977-1-4372578  
E-mail: [aicpnep@gmail.com](mailto:aicpnep@gmail.com)  
[i\\_k\\_jha@yahoo.com](mailto:i_k_jha@yahoo.com)

**PAKISTAN**

**Dr Muhammad Khalid**

Deputy Director  
Livestock Department  
Ministry of National Food Security and Research  
Quetta, Baluchistan  
Tel: +92-81-9202246  
E-mail: [khalidnoshki@yahoo.com](mailto:khalidnoshki@yahoo.com)

**Dr Muhammad Kashif**

Veterinary/Surveillance Officer  
Civil Veterinary Hospital  
Ministry of National Food Security and  
Research, Main Muree Road Barakhau  
Islamabad  
Mobile: +92-03458340378  
E-mail: [drkashif80@yahoo.com](mailto:drkashif80@yahoo.com)

**SRI LANKA**

**Dr S A P Subasinghe**

Veterinary Surgeon  
Veterinary Investigation Centre  
Department of Animal Production and Health  
Panduwasnuwara  
Tel.: +94-37-2291186  
Mobile: +94-775598598  
E-mail: [sapsubasinghe@ymail.com](mailto:sapsubasinghe@ymail.com)

**Dr G M C R Karunaratne**

Veterinary Investigation Officer  
Veterinary Investigation Centre  
Department of Animal Production and Health  
Wariyapola  
Tel.: +94-37-2267720, 37-22-46829  
Mobile: +94-718226803  
E-mail: [crkarunaratne@yahoo.com](mailto:crkarunaratne@yahoo.com)

**Dr T D S Sudurajitha**

Divisional Veterinary Surgeon  
Government Veterinary Office  
Department of Animal Production and Health  
Bingiriya  
Tel.: +94-32-2245171  
Mobile: +94-718159216  
E-mail: [sudurajitha@yahoo.com](mailto:sudurajitha@yahoo.com)

**FOOD AND AGRICULTURE ORGANIZATION**

**FAO-Regional Office for Asia and the Pacific,  
Bangkok, Thailand**

**Dr Subhash Morzaria**

Regional Manager  
FAO Regional Office for Asia and the Pacific,  
39 Phra Athit Road  
Bangkok 10200, Thailand  
Tel: +66-2-697-4138  
Fax: +66-2-697-4445  
Mobile: +66-81827 5771  
E-mail: [subhash.morzaria@fao.org](mailto:subhash.morzaria@fao.org)

**FAO- Regional Support Unit for SAARC Countries, Kathmandu, Nepal****Dr Mohinder Oberoi**

Sub Regional Manager  
Regional Support Unit/Sub Regional ECTAD Unit (SAARC),  
FAO Nepal/ UN House  
Pulchowk, Kathmandu  
Tel: +977-1-5010209  
Fax: +977-1-5526358  
Mobile: +977-9851104527  
E-mail: [mohinder.oberoi@fao.org](mailto:mohinder.oberoi@fao.org)

**Dr Khadak Singh Bisht**

RSU Assistant Coordinator  
Regional Support Unit/Sub Regional ECTAD Unit (SAARC), FAO Nepal/ UN House,  
Pulchowk, Kathmandu  
Tel: +977-1-5010313/14/15 Ext No. 106  
Mobile: +977-9801020238  
Fax: +977-1-5010312  
E-mail: [Bisht.khadaksingh@fao.org](mailto:Bisht.khadaksingh@fao.org)

**Dr Mandava Venkatasubbarao**

Laboratory Coordinator  
Regional Support Unit/Sub Regional ECTAD Unit (SAARC), FAO Nepal/UN House,  
Pulchowk, Kathmandu  
Tel: +977-1- 5010313/14/15, Ext. 113  
Fax: +977-1-5010312  
Mobile: +977-9801020231  
E-mail: [Venkatasubbarao.Mandava@fao.org](mailto:Venkatasubbarao.Mandava@fao.org)

**Dr Pasang Tshering**

REC Coordinator  
Regional Support Unit/Sub Regional ECTAD Unit (SAARC)  
FAO Nepal/ UN House  
Pulchowk, Kathmandu  
Tel: +977-1- 5010313/314/315; Ext. 115  
Fax: +977-1-5010312  
Mobile: +977-9801020233  
E-mail: [Pasang.tshering@fao.org](mailto:Pasang.tshering@fao.org)

**Dr Muhammad Akram**

REC Assistant Coordinator  
Regional Support Unit/Sub Regional ECTAD Unit (SAARC)  
FAO Nepal/UN House  
Pulchowk, Kathmandu  
Tel: +977-1-5010313/14/15 Ext. 117  
Fax: +977-1-5010312  
Mobile: +977-98010-20232  
E-mail: [Muhammad.Akram@fao.org](mailto:Muhammad.Akram@fao.org)

**Dr Ravi Dissanayake**

Disease Information Data Expert  
Regional Support Unit/Sub Regional ECTAD Unit (SAARC)  
FAO Nepal/UN House  
Pulchowk, Kathmandu  
Tel: +977-1-5010313/14/15 Ext. 114  
Fax: +977-1-5010312  
E-mail: [Ravi.Dissanayake@fao.org](mailto:Ravi.Dissanayake@fao.org)

**Mr Prakash Nayak**

Communication Expert  
Regional Support Unit/Sub Regional ECTAD Unit (SAARC)  
FAO Nepal/ UN House, Pulchowk, Kathmandu  
Tel: +977-1-5010313/14/15, Ext. 120  
Fax: +977-1-5010312  
Mobile: +977-9801020235  
E-mail: [prakash.nayak@fao.org](mailto:prakash.nayak@fao.org)

**FAO ECTAD Unit, New Delhi, India****Dr John Weaver**

Team Leader  
Emergency Centre for Transboundary Animal Diseases (ECTAD) - India  
Food and Agriculture Organization of the United Nations  
Animal Quarantine and Certification Service  
Station, Kapashera  
New Delhi-110037  
Telefax: +91-11-25066292  
Mobile: +91-8800098575  
E-mail: [john.weaver@fao.org](mailto:john.weaver@fao.org)

**Dr Ajender Bhagat Negi**

National Project Coordinator  
Emergency Centre for Transboundary Animal  
Diseases (ECTAD)-India  
Food and Agriculture Organization of the United  
Nations  
Animal Quarantine and Certification Service  
Station, Kapashera  
New Delhi-110037  
Mobile: +91-8800098572  
E-mail: [ajenderbhagat.negi@fao.org](mailto:ajenderbhagat.negi@fao.org)

**Dr Madhur S Dhingra**

National Consultant (Epidemiologist)  
Emergency Centre for Transboundary Animal  
Diseases (ECTAD)-India  
Food and Agriculture Organization of the United  
Nations  
Animal Quarantine and Certification Service  
Station, Kapashera  
New Delhi-110037  
Mobile: +91-8800098573  
E-mail: [madhur.dhingra@fao.org](mailto:madhur.dhingra@fao.org)

**Ms Nupur Sharma**

Operations Assistant  
Emergency Centre for Transboundary Animal  
Diseases (ECTAD)-India  
Food and Agriculture Organization of the United  
Nations  
Animal Quarantine and Certification Service  
Station, Kapashera  
New Delhi-110037  
Mobile: +91-9891533270  
E-mail: [nupur.sharma@fao.org](mailto:nupur.sharma@fao.org)

**World Health Organization-South East Asia  
Regional Office, New Delhi, India**

**Dr Gyanendra Gongal**

Scientist (VPH)  
Disease Surveillance and Epidemiology  
WHO Regional Office for South East Asia  
Mahatma Gandhi Marg, IP Estate  
New Delhi 110002, India  
Tel: +91-11-43040647  
Fax: +91-11-23370197  
Mobile: +91-9650197385  
E-mail: [gongalg@searo.who.int](mailto:gongalg@searo.who.int)

**WILDLIFE EXPERT**

**Dr Acty George**

Veterinary Surgeon  
Special Livestock Breeding Programme (SLBP)  
Iritty Circle, Kannur Dist  
Kerala-670703, India  
Mobile: +91-9446327762  
E-mail: [actygeorge@gmail.com](mailto:actygeorge@gmail.com)





Officials from India and Sri Lanka participating in the workshop



Participants from Bhutan, India and Pakistan during a technical session



**Regional Support Unit and Sub-regional ECTAD Unit for SAARC Countries**  
**Food and Agriculture Organization of the United Nations**

P.O. Box: 25, KSK Building, Block "B", Third Floor  
Pulchowk, Kathmandu, Nepal  
Tel: +977-1-5010313/14/15, Fax: +977-1-5010312  
<http://www.saarc-rsu-hped.org>