

4.6

ENABLING POLICY ENVIRONMENTS

for a One Health Approach

BACKGROUND

Over the last several decades, tens of thousands of people have died from emerging pandemic zoonotic diseases, including over 18,000 human deaths from the 2009-H1N1 influenza pandemic, with over \$200 billion economic losses incurred. Disease emergence is facilitated by increased human, wildlife, domestic animal and ecosystem interactions. Strategic points of intervention are under multiple jurisdictions: public and private, health, agriculture, environment, labor, transportation, tourism, and other sectors.

Despite growing recognition that closer collaboration among sectors is necessary and often despite having leaders with the competencies and skills needed for such collaboration (See parallel session 6) obstacles (jurisdictional organizational lines, competing agendas, struggles for limited resources, and being steeped in differing disciplinary cultures) still exist. “Siloed” approaches to detecting, and responding early and effectively to these threats have often proved to be ineffective and disease outbreaks continue to emerge with humans, all too frequently, serving as sentinels. This has resulted in continued loss of human life and livelihoods, compromised nutrition, stressed health delivery systems, and threatened wildlife and ecosystem health.

This session is aimed at stimulating a frank and robust discussion among public health, animal health, and environmental health, and other officials and experts on innovative approaches and policy tools (see Appendix 1 for examples) that the public and private sectors can employ to achieve a strategic and robust multi-sectoral response.

MODERATOR

**Marguerite
PAPPAIOANOU**

Senior One Health
Technical Advisor
DAI, Inc.
USA

OBJECTIVES

To identify and discuss:

- barriers to multisectoral collaboration
- strategic approaches, policy interventions, instruments and tools that have been used to overcome these barriers
- essential characteristics of a one health workforce that will seek to develop political will and create new environments that enable and reward multi-sectoral collaborations

PANEL PRESENTATIONS

PANEL 1

Enabling One Health Policy Environments – Views from the Public Sector

- **Santanu K Bandyopadhyay**
former Animal Husbandry Commissioner,
Department of Animal Husbandry, Dairying and Fisheries, India and currently Member,
Agriculture Scientists Recruitment Board, India
Overview of effectiveness of multisectoral collaboration around detection and response to highly pathogenic H5N1 avian influenza virus outbreaks in West Bengal—challenges and opportunities for promoting One Health following the emergence of Bird-flu in the developing world: Policy perspectives.
- **Gervais Ondobo Andze**
Inspector in charge of health and former Director of Disease Control,
Ministry of Public Health, Cameroon
Development of a National Program to Control and Fight against Emerging and Re-emerging Zoonoses in Cameroon, based on multisectoral collaboration— The Cameroonian experience, an example of multi-sector collaboration.
- **Ruben Donis**
Chief of the Molecular Virology and Vaccines Branch,
Centers for Disease Control and Prevention, USA
- **Joseph Anelli**
Director, One Health Coordination Office, Office of the Deputy Administrator Veterinary Services, Animal and Plant Health Inspection Service (APHIS), US Department of Agriculture, USA
Achieving improved collaboration across human and animal health sectors to address complex health problems, including global zoonotic diseases, food safety, and other disease threats — Views from the Public Sector.

PANEL 2

Enabling One Health Policy Environments

—Perspectives from Public –Public Sector Partnerships

- **Michael Robach,**
Vice President, Corporate Food Safety & Regulatory Affairs,
Cargill, USA
Issues around promoting stronger public-private sector policies for improved risk reduction, early reporting, and enhanced response— One Health and Food Safety.
- **Theerapat Prayurasiddhi,**
Deputy Director General, Department of National Parks,
Wildlife and Plant Conservation,
Ministry of Environment and Natural Resources, Thailand
Policies that reinforce best practices in preventing risks of human exposure to emerging zoonotic disease threats in SE Asia.
- **Steven Phillips,**
Senior Fellow, Chatham House
(Royal Institute of International Affairs), United Kingdom
Extractive Industries Infectious Diseases Risk Assessment and Management. Formerly Medical Director for Global Projects at Exxon Mobil Corporation. A recap of the challenges and lessons learned—steps to move policies ahead that enable multisectoral collaborations for improved human, animal, environmental health.

MODERATOR

Joseph ANNELLI

Director

*One Health Coordination
Office, Office of the Deputy
Administrator Veterinary
Services, Animal and Plant
Health Inspection Service
(APHIS), US Department
of Agriculture
USA*



Indian Graduate in Veterinary Science with Masters in Microbiology. PhD from Cambridge University in UK on regulation of Gene Expression in Bovine Herpes virus-1 infection. Exclusive 20 years of research experience on animal viruses, e.g., FMD, rinderpest, PPR, Bluetongue, particularly in epidemiology and development of diagnostics and prophylactics. Was involved in teaching graduate students in the discipline of Microbiology and supervised 5 PhD students as Chairman and also worked as Head of the Faculty. As Project Director of FMD Epidemiology Programme in India between 2000 to 2004 coordinated activities of 22 laboratories in India involved in laboratory diagnosis and field epidemiology of FMD in India. Worked as Dean of Graduate programme in a National University from 2002 to 2004 in India.

Worked as Animal Husbandry Commissioner of the Government of India from 2004 to 2009. Besides CVO, this job also involved development and regulation of the livestock sector in the country with about 550 million livestock and 300 million poultry. The biggest challenge faced during the period is the emergence of bird-flu in India, which was successfully contained and subsequently confined to a small endemic zone in the eastern part of the country. As CVO also monitored the official FMD control programme fully sponsored by the Government in specific and defined areas of the country. Represented India as the Chief of Delegation in OIE General Sessions several times during this period and managed to secure freedom from rinderpest disease and infection for India. Also obtained OIE status of International HPAI Reference Laboratory for the national referral laboratory in India. Was elected a Member of the OIE Biological Standards Commission from 2006 to 2009.

**SANTANU K
BANDYOPADHYAY**

Member

*Agriculture Scientists
Recruitment Board
India*

Between 2009 and 2012 worked as Senior Technical Coordinator and Team Leader for the FAO's HPAI programme in Viet Nam. The CVO experience of India was helpful in facing a different set of challenges in Viet Nam including the challenges of constantly evolving new strains of HPAI, particularly in northern region and the issue of vaccination of poultry against HPAI.

Presently working as Member of the Agriculture Scientists Recruitment Board in India. The job involves recruitment of Scientists and Science Managers in about 85 research establishments of the Indian Council of Agriculture Research, with particular reference to animal and fishery science research.



Professor Gervais Ondobo Andze is a Professor of Pediatric surgery since his brilliant success at the competitive examination of aggregation of the African and Malagasy Council for Higher Education (AMCHE) in 1998.

After medical studies between 1978 and 1984, in October 1984 he was made Doctor of Medicine from the Yaounde University Teaching Hospital (YUTH), notably after defending a thesis which advocated the DUHAMEL operation in the surgical treatment of Hirschsprung Disease in children in Cameroon.

Thereafter, he furthered his post-graduate surgical training at the Cheikh Anta Diop University of Dakar from late October 1984 where he obtained the Certificate of Special Studies (CSS) in General Surgery in October 1988, and at the University of Montreal from December 1988 to December 1990 where he obtained the Diploma of Special Studies (DSS) in General Pediatric Surgery.

Upon his return to Cameroon in late December 1990, he was recruited in early 1991 in the Ministry of Public Health, and posted as a surgeon in the Surgical Unit of the Yaounde General Hospital where he worked for 10 years before being appointed in 2002 as Head of the Paediatric Surgical Unit of the Yaounde Gynaeco-Obstetrics and Pediatric Hospital.

In the meantime, he served as Secretary General to the organization of the Cameroon National Medical Conference from 1992 to 1997 and as such, he played a vital role in the field of Continuing Medical Education of health professionals from the Ministry of Public Health of Cameroon. He contributed over time to make the National Medical Conference of Cameroon at that period the most important annual Medical Forum in the Central African sub-region. This earned him the privilege of organizing many other international scientific meetings, particularly in the field of laparoscopic surgery and telemedicine.

In June 2008, he was appointed Director of Disease Control in the Ministry of Public Health and cumulatively, Chairperson of the National Onchocerciasis Technical Group (NOTG). This was the beginning of a career at high levels in the Cameroon Administration where he distinguished himself by numerous reforms in the field of disease control, including the development of several national strategic plans

**GERVAIS
ONDOBO ANDZE**

Inspector in charge
of health and former
Director

*Disease Control
Ministry of Public Health
Cameroon*

to prevent and control certain diseases, as well as a political statement by the highest authorities of the country resolved to eliminate onchocerciasis in the national territory.

Between 2010 and March 2012, as Director of Disease Control, he chaired the Malaria Control Steering Committee along the Chad-Cameroon pipeline corridor and the SURVAC Project Committee (Strengthening Epidemiological Surveillance in Central Africa) funded by the Bill and Melinda Gates Foundation. He also participated in several statutory government missions in the field of public health with multinational institutions (WHO, UN) and took part in many international ministerial conferences, particularly in Europe and Africa on health issues of current concern, especially cross-border cooperation in the fight against cholera and other emerging / re-emerging diseases.

As a result of performing such duties he became an actor in strengthening the Integrated Disease Surveillance and Response (IDSR) in his country, including the EPT component with USAID/RESPOND. At the same time, he became an African stakeholder in the implementation of the "One Health" approach in collaboration with the African Union Interafrican Bureau for Animal Resources (AU-IBAR).

In April 2012, he was appointed Inspector of Medical and Paramedical Services in the Ministry of Public Health, by Decree of the Prime Minister, Head of Government, a position he holds to this day.

He has published hundreds of scientific papers as author or co-author in national and international medical journals and is a member of several learned societies in the world.



Dr. Joseph Anelli is the Director of the US Department of Agriculture's (USDA) Animal and Plant Health Inspection Service's (APHIS) Veterinary Services One Health Coordination Office. As such he assists Veterinary Services, APHIS and USDA in implementing the One-Health principles of applying joint strategies at the human-animal-ecosystem. The core of his work involves providing senior level leadership and coordination for USDA One Health Joint Working Group in addition to VS. This working group is responsible for coordinating strategic policy, plans and actions for all USDA Agencies and Offices as they relate to the interrelationships of the human-animal-ecosystem interface and its impact on agriculture and public health.

Dr. Anelli comes to this position with a rich background in addressing diseases at the human animal interface. He has been in private practice in Tennessee and New York before joining USDA APHIS in 1985. His first position was section veterinarian for New York City and Long Island where he ran a number of task forces to eradicate Avian Influenza from live bird markets. In 1988 he was selected for a graduate degree program in public health and swine medicine at the University of Minnesota where he was awarded a Masters of Veterinary Medicine in Epidemiology. He served as National Swine Epidemiologist and Chief of Swine Health Staff where he was successful at reducing the number of known swine brucellosis infected herds to zero, initiating discussions on trichina reduction projects, and began a revision of the swine health protection program. Dr. Anelli was asked to combine Swine Health Staff with the former Miscellaneous Diseases Staff and so began the National Animal Health Programs Staff (NAHPS). As Chief of NAHPS his worked covered 23 programs affecting all species. In 1996 Dr. Anelli was appointed Chief of Emergency Programs. Since that time he has worked closely with State and industry officials to redefine our beliefs regarding emergencies and our response to them. He has been instrumental in the rewriting of the Federal Response Plan into the National Response Plan and is one of the primary authors of Emergency Support Function 11 for Agriculture. As a result of this interagency coordination Dr. Anelli headed the division of Emergency Management responsible for interagency coordination and liaisons with the Department of Homeland Security, the Federal Emergency

JOSEPH ANELLI

Director

*One Health Coordination
Office, Office of the
Deputy Administrator
Veterinary Services
Animal and Plant Health
Inspection Service (APHIS)
US Department of
Agriculture
USA*

Management Agency, the Department of Defense, and the Department of Health and Human Services and other federal, State and local emergency management functions across the United State.

When global concerns for highly pathogenic H5N1 avian influenza and the possibility of an emerging pandemic began he started in a new role at the APHIS and Departmental levels. Dr. Anelli was detailed to the Office of the Secretary as liaison to the White House's Homeland Security Council on Avian Influenza and also served as Director of the International Avian Influenza Coordination Center before returning to Veterinary Services in his current position. He was ideally positioned to continue in this role through the 2009-H1N1 Influenza Pandemic building upon the networks and partnerships developed through the National Strategy for Pandemic Influenza and the response to highly pathogenic H5N1 avian influenza.



Dr. Ruben Donis is a molecular virologist, specialized on vaccines and public health. He earned his Veterinary Medicine degree from the University of Buenos Aires, Argentina, in 1978 and his Ph.D. in Virology from Cornell University, Ithaca, New York, in 1986. He trained on influenza virology as a postdoctoral fellow at St. Jude Children's Research Hospital, in Memphis, Tennessee, under the supervision of Dr. Robert Webster.

Dr. Donis began his career as assistant professor of virology at the University of Nebraska-Lincoln, in the United States in 1989. Dr. Donis was a professor at the University of Nebraska-Lincoln, where he conducted research on influenza and flavivirus molecular biology, taught courses on virology and bioinformatics and coordinated the Intercampus Virology Meetings. After his promotion to Professor he also participated in the leadership of the UNL Center for Biotechnology and served as virology consultant to government and industry organizations.

Dr. Donis joined the Influenza Branch of the Centers for Disease Control in 2003 as Chief of the Molecular Genetics Section, to lead influenza molecular biology research and vaccine development and contribute to the terms of reference of the World Health Organization Collaborating Center for the Surveillance, Epidemiology and Control of Influenza in Atlanta, Georgia, USA. From 2007 to 2012 he served as Chief of the Molecular Virology and Vaccines Branch of the Influenza Division with responsibility to develop expanded risk assessment capacity at the animal-human interface in the Division. In this period, he contributed to the discovery of canine influenza virus (2005) and bat influenza virus (2012). In 2012, Dr. Donis became Associate Director for Policy, Evaluation and Preparedness at the Influenza Division. In this capacity, he oversees programs related to influenza vaccines and pandemic preparedness and policy, including risk assessments based on the properties of emerging viruses and their evolution.

Since 2004, Dr. Donis serves as adjunct Professor of Microbiology at Emory University School of Medicine. Dr. Donis is member of the Editorial Board of Virology and Plos Currents and contributes to the mission of the Biomedical Advanced Research and Development Authority and Public Health Emergency Countermeasures Enterprise of the Department of Health and Human Services, the OIE-FAO Network of Expertise on Influenza (OFFLU) Swine Influenza Virus Surveillance Group, and the World Health Organization Consultation on the Composition of Influenza Vaccines.

RUBEN DONIS

Chief of the Molecular
Virology and Vaccines
Branch

*Centers for Disease Control
and Prevention
USA*



Dr. Marguerite Pappaioanou is a veterinarian and epidemiologist with over 30 years' experience working in global and U.S. public health. She joined the Bethesda-based Development Alternatives, Inc. (DAI) in January 2012, as Senior One Health Technical Advisor to the USAID funded Respond Project, Emerging Pandemic Threats Program. From 1983-2005 she served at the U.S. Centers for Disease Control and Prevention (CDC), beginning as an Epidemic Intelligence Service officer, assessing the effectiveness of malaria drugs in African national malaria control programs, and then as a staff epidemiologist, designing and implementing the family of HIV seroprevalence surveys, directing the USAID funded global capacity building Data for Decision Making Project to strengthen evidence based policies and programs in Africa and South America, supporting field epidemiology training programs, designing emerging infectious disease surveillance, prevention and control programs, and as Associate Director for Science and Policy in CDC's Office of Global Health during 1999-2005, coordinating CDC's programs in Africa and Asia. From February 2005 to October 2007, as Professor, Infectious Disease Epidemiology, University of Minnesota, she led research programs focused on surveillance for emerging zoonotic infectious diseases at the human-animal interface, particularly avian influenza. From 2007-2011, she served as Executive Director of the Association of American Veterinary Colleges. During 2008-2009, she co-chaired the Institute of Medicine, National Research Council Committee on Sustaining Global Surveillance and Response for Emerging Zoonotic Diseases. She received her Doctor of Veterinary Medicine degree from Michigan State University in 1972, Master of Preventive Veterinary Medicine and Doctor of Philosophy degrees from the University of California, Davis, in 1976 and 1982, respectively.

**MARGUERITE
PAPPAIOANOU**

Senior One Health
Technical Advisor

DAI, Inc.
USA



Senior Fellow at Chatham House and Project Manager for the IDRAM initiative (Extractive Industries Infectious Diseases Risk Assessment and Management), a global policy-level discussion among the extraction industry, international development and finance institutions, national government stakeholders and science leaders addressing the risks and management of infectious disease outbreaks in global transmission hot zones. Dr. Phillips was formerly Medical Director for Global Projects at Exxon Mobil Corporation. His career there included managing the \$110 million ExxonMobil Malaria Initiative. He has worked closely with governments, NGOs, foundations, UN agencies, multilateral, and faith-based organizations, and the private sector in fostering public-private partnerships as a development platform to address urgent global health priorities. He has served two terms as private sector representative on the Board and Executive Committee of the Roll Back Malaria partnership in Geneva.

He currently serves on the boards of malaria NO MORE™, the World Economic Forum's Global Health Advisory Board, and as an advisor to the United Nations Special Envoy for Millenium Development Goals (MDGs), as well as the Global Health Programs of Harvard's Massachusetts General Hospital and the University of California at San Francisco.

STEVEN PHILLIPS

Senior Fellow

*Chatham House (Royal
Institute of International
Affairs)
United Kingdom*



Mike Robach leads Cargill's efforts across food safety, quality assurance, animal health and regulatory compliance. Mike graduated from Michigan State and Virginia Tech. He is a board member of the Global Food Safety Initiative, Safe Supply of Affordable Food Everywhere, the American Meat Institute, the National Turkey Federation, GMA's Science Institute Executive Board, U.S Poultry and Egg Association, International Association of Food Protection, Institute of Food Technologists, and American Society for Microbiology. He has worked with the OIE, FAO, USDA, FDA and global governments regarding food safety policy, HACCP, and regulatory reform based on science.

From 1995 through 2000, Mike was a member of the National Advisory Committee for Microbiological Criteria in Foods.

MICHAEL ROBACH

Vice President

*Corporate Food Safety &
Regulatory Affairs
Cargill
USA*



Theerapat born in Bangkok on September 29, 1962. He is a graduate of BSc. Forestry Science at Kasetsart University, Thailand in 1984, Msc. Forestry Science at Kasetsart University, Thailand in 1987, and PhD. Conservation Biology at the University of Minnesota, USA in 1997.

From 2006 to 2007 he served as the Director of the Minister of the Natural Resources and Environment Office, after which, in 2008, he was promoted to the Director of the Planning and Information Bureau for the Department of National Parks, Wildlife and Plant Conservation. In 2011, he worked as the Deputy Director General of the Royal Forest Department.

Theerapat, a former chief of the Royal Forest Department's Wildlife Research Station at Huai Kha Khaeng Wildlife Sanctuary, is well-known both in Thailand and abroad for his strong commitment on research and public awareness activities for wildlife in Thailand. For his doctoral dissertation, Theerapat chose to study gaur and banteng, which are two endangered species in Thailand. The importance of his work comes from the fact that not many large wild animals are systematically researched in Thailand. "Thailand's forest and wildlife policy has been emphasized on the protection side," said Theerapat. "Now I think it's time that we invest more on research, for both small and large wild animals. I know the large ones have not been the subject of studies because of all the difficulties, danger and diseases associated in the wild." For his dissertation, Theerapat installed radio transmitters on gaur and banteng for the purpose of monitoring their biology behaviors. The technology is still costly and not prevalent in Thailand. "I also want to adapt some forest management concepts here to use in our country. Adapt, not adopt. The situation here may not be the same as to other countries," said Theerapat.

THEERAPAT PRAYURASIDDHI

Deputy Director General
Department of National
Parks, Wildlife and Plant
Conservation

*Ministry of Environment
and Natural Resources
Thailand*

For most Thai people, having an animal named after one is a real insult, particularly if that animal is a water buffalo, which is often made fun of as stupid, but environmentalist Theerapat Prayurasiddhi considers it an honor. Since 1996, the subspecies of wild water buffaloes in Thailand have been known internationally as *Bubalus arnee theerapati*. Australian taxonomist Dr. C.P. Groves named the endangered animals after Theerapat, who took the first photo of the live wild animals in

1987 in Thailand's Huai Kha Khaeng Wildlife Sanctuary. Wild Water Buffaloes had not been seen alive at all in Thailand for decades.

"The name (theerapati) honors Mr. Theerapat Prayurasiddhi, whose continuing fieldwork in Huai Kha Khaeng has added notably to our understanding of the ecology of gaur, banteng, and the 50-100 remaining wild buffaloes, laying a sound basis for their conservation," wrote Groves in his article on "The Taxonomy of the Asian Wild Buffalo." It was published in the International Journal of Mammalian Biology -- a Germany-based publication.

While working as the Deputy Director General of the Department of National Parks, Wildlife and Plant Conservation, Theerapat intensifies his efforts to suppress the wildlife trade, especially at international airports and border checkpoints. "CITES has faulted us for being a hub for wildlife smuggling. Unfortunately, Thailand is a hub for regional transportation. What we can do right now is to come up with tougher wildlife trade inspection measures, especially at Suvarnabhumi Airport, where confiscations of wildlife have been increasing. Thailand will closely work with ASEAN – WEN and CITES to combat on illegal wildlife trade. In addition, he has established 30 wildlife operation units to monitor on emerging zoonotic disease threat in Thailand and worked with the Ministry of Agriculture and Cooperative and the Ministry of Public Health.

ENABLING POLICY ENVIRONMENTS FOR A “ONE HEALTH” APPROACH: The Cameroonian Experience, An Example of Multi-Sector Collaboration.

Gervais ONDOBO ANDZE, PHD

INTRODUCTION

The first decade of the 21st century was marked by the emergence of global pandemics such as HIV/AIDS, the influenza A (H1N1) pandemic in 2009, the highly pathogenic avian influenza A (H5N1), or severe acute respiratory syndrome. About 75% of these zoonotic diseases have a significant public health and socio-economic impact. Lessons learned from the strategies put in place, for the prevention and fight against these diseases of animal origin have highlighted the need for an inter-sector collaboration, particularly in the human health, animal health and environmental domains.

For long, we have completely separated the human health, animal health and even environmental health domains. This separation should be resolved, because the interaction between the environment, animals and human life is inevitable. Thus, men are constantly exposed to risks associated with this Human-Animal-Ecosystem interface. Indeed, according to the World Organization for Animal Health (OIE), 60% of human pathogens are of zoonotic origin and 80% of the agents which may have potential bioterrorist use are zoonotic

pathogens. The development of a holistic approach here therefore has all its importance and relevance, hence, the need to develop principles and set objectives to facilitate this inter-sector collaboration.

Promoting a collaborative approach like the “One Health” type at the national level will confer an enhanced political support over time, to ensure coordinated disease prevention with major impact on public health and animal health in the man-animal-ecosystem (OIE) interface. That is why, we should insist on the importance of continuous improvement of inter-sector collaboration of all actors working for the well-being of the ecosystem (human-animal-environment).

II- THE CAMEROONIAN EXPERIENCE OF MULTI-SECTOR COLLABORATION

II-1. The Common Fund Project (2006-2010)

During the management of zoonotic risks that the country has faced in recent years, the Cameroon Government fully integrated the principle of multi-sector participation in the response to epidemics, notably with the Common Fund Project for the

Prevention and Control of Avian Influenza in Cameroon. To facilitate this operation, the project consists of:

- An Ad Hoc Inter-ministerial Committee (IMC) in charge of administrative coordination: 13 Ministries were involved;
- The UNDP ensured the financial management of funds allocated by the various donors in accordance with the management procedures of the United Nations system;
- A Steering Committee co-chaired by the Chairperson of the IMC and the UNDP Resident Representative;
- The Coordination Unit based in the Prime Minister's Office: it was the centre of operations and the communication link between the various stakeholders;
- A Technical Committee (housed in the Prime Minister's office) and Focal Points designated in each ministry;
- A National Brigade.

The Inter-ministerial Committee has shown its effectiveness in the management of health risks associated with avian influenza A(H5N1) and mobilized all forces of the country against this phenomenon. The partnership that was within the Government has not only proven its effectiveness in crisis and disaster management, but also in the rational use of resources, through the establishing of a common fund with efficient financial management procedures.

II-2. The development of the Integrated Disease Surveillance and Response (IDSR) guide and the management of rabies

The IDSR Guide for Cameroon was developed in 2005 by the Ministry of Health with support from

WHO, and revised in 2011. The revision of the IDSR Guide was carried out while integrating the "One Health" concept with a strong involvement of livestock, fisheries and animal industries.

Moreover, interventions in the management of certain diseases such as rabies are carried out in conjunction with the Ministry of Fisheries and Animal Industries, the Ministry of Territorial Administration and Decentralization and even Communities. Indeed, the investigation teams of suspected cases of canine and/or human rabies are multi-sector, and this therefore provides an opportunity for all sectors to better identify or target interventions and carry out appropriate responses in a coordinated manner.

II-3. The National Programme for Prevention and Control of Emerging and Re-emerging Zoonosis (NPPCERZ)

Lessons learned from the Common Fund Project were enhanced by the creation of an Ad Hoc Inter-Ministerial Committee responsible for developing and implementing the NPPCERZ in accordance with Decree No.070 of April 28th 2008 of the Prime Minister, Head of Government.

Through a participatory and consensual approach, the Committee, composed of representatives of 8 ministries under the supervision of two consultants, developed the programme from September 2011 to February 2012.

In its execution, this programme aims to implement the multi-sector and inter-disciplinary approach based on three axes:

- Epidemiological surveillance and response, notably establishing a network of

epidemiological surveillance of wildlife at the level of protected areas. In this perspective, it involves initiating a common agreement with hunting guides, collecting samples from wildlife animals legally hunted within the context of strengthening epidemiological surveillance and even epidemiological vigilance;

- Training;
- Research.

Institutionally, it consists of three main organs, namely:

- The Steering Committee;
- The Technical Committee Orientation;
- The National Coordination.

The lessons learned from this measure clearly reveal that the “One Health” concept which materializes through inter-sector collaboration in the fields of human health, animal health and the environment health is not a new phenomenon in Cameroon. Moreover, this collaboration needs to be operationalized, so that it is no longer only a reactive approach but rather an anticipatory and proactive approach faced with the potential health risks associated with interactions between recurring human life, animal life and global warming.

This means that the lessons learned from the Cameroonian experience mentioned above allow us to assert that the success of a multi-sector and even inter-sector collaboration greatly relies among other things, on good multi-sector system coordination and the existence of an integrated national policy document.

III- BASIC PILLARS OF AN EFFECTIVE MULTI-SECTOR COLLABORATION

III-1. 1st pillar: One Coordination

Coordination is defined as the harmonious management of the actions of several persons towards a common goal. There are several types of coordination systems, it is therefore necessary to adopt a coordination system that best suits the socio-political environment, that is to say, a system which respects the administrative and political structure of the country.

In the case of Cameroon, the Government is headed by the Prime Minister. The coordination strategy of inter-ministerial and / or multi-sector places him at the head of intervention mechanisms. A regulatory text signed by him obligatorily commits all ministers concerned, on behalf of the principle of subordination. Similarly, coordination at the intermediate level (regional and divisional) of multi-sector activities is ensured by the Governor and Senior Divisional Officer, local authorities and representatives of the Government.

- **III-1.1 The sharing of information and knowledge between different sectors of human health, animal health and the environment.**

This involves breaking down the barriers between the different disciplines of human health, animal health and environmental health (general medicine, human biology, public health, zoology, animal biology, nutritionists, veterinarians, eco-guards, environmentalists, etc...). It is therefore necessary to set up a platform and /or a network that will allow

information sharing and data harmonization, to optimize prevention, Human-Wildlife conflict management in Protected Areas and management of potential epidemics. This network should be a group of persons and structures established throughout the country that constantly carry out monitoring, in order to detect any occurrence of priority diseases and inform the central level for quick decisions and consequent actions. The establishment of such an inter-sector network to monitor health, based on the use of a multi-sector coordinated dynamic mapping of geo-referenced potential health risks (diseases and their vectors) will thus facilitate the development of a common language between experts of different sectors.

- **III-1.2. An Appropriate Institutional Framework**

Health risks management, associated with the Human-Animal Interface, through inter-sector collaboration in the fields of human health, animal health and environmental health, needs to be legally framed. This legal framework is achieved through the creation of a multi-sector structure by the highest authority of the country if necessary, with regulations governing the organization and operation. This is about giving that structure the legal characteristics necessary for an effective implementation of its recommendations in the community. All this would de facto enable each entity of the structure to fully play its complementary role in relation with the other entities. This institutional framework would primarily aim at harmonizing the coordination of various interventions.

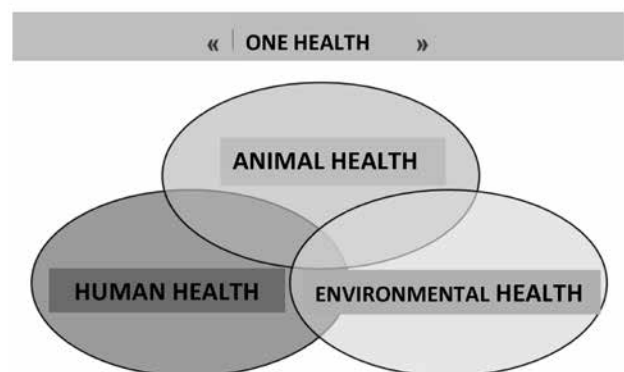
In addition, this regulatory framework aims in a short-term at ensuring the follow-up of activities registration related to the National Programme for

Prevention and fight against emerging and re-emerging zoonosis in budget lines (programme budget 2013-2015) of key sectors (Health, Forest and Wildlife, Environment, Research, Livestock and Animal Industries) for the implementation of this programme from 2013.

Finally, it is planned to conduct awareness campaigns on the concept of “One Health” in training schools and faculties of human and veterinary medicine, wildlife and forests, public health administration.

- **III-1.3. The designation of Focal Points in different sectors of human health, animal and environmental health.**

To avoid the dispersion of energy and create an atmosphere of confusion in the work of different sectors, resource persons should be designated to collect and disseminate data and/or information for the benefit of these sectors: they are Focal Points. They are chosen within each ministry involved in the management of health risks.



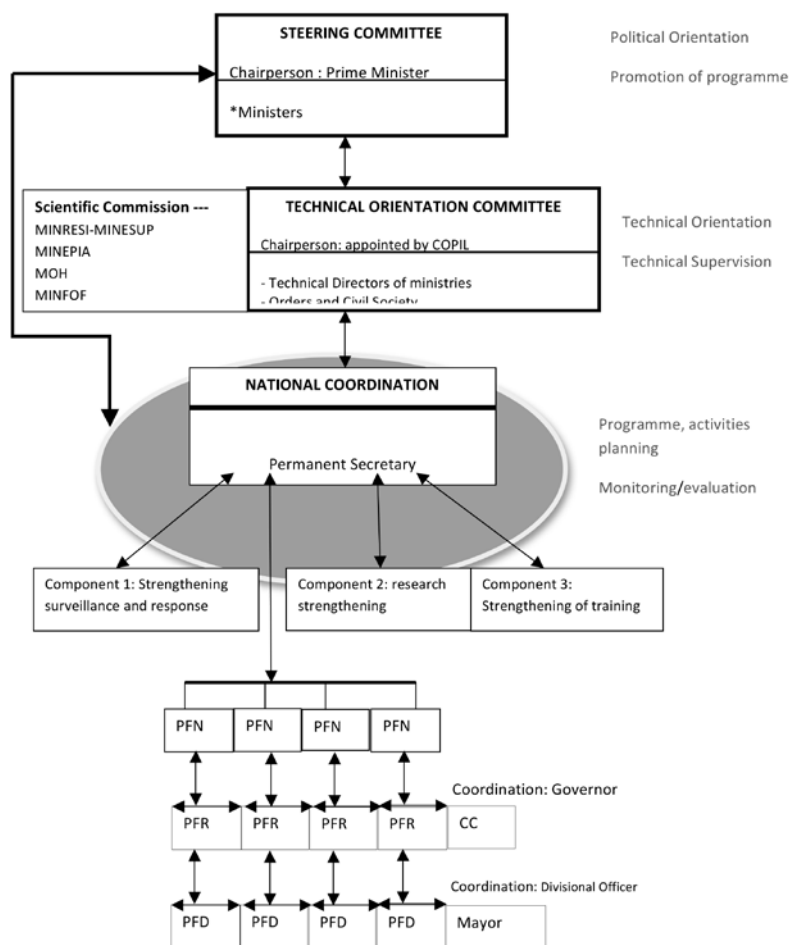


Figure 1: Diagram of PNPLZER Coordination System

III-2. 2nd pillar: A single integrated national strategy document

The philosopher Ludwig Wittgenstein said that: “The strategy comes when forecasts are no longer possible.” The existence of a national strategy is essential in the resolution of health risks related to the emergence of infectious diseases in a country, because of their unpredictability. A national strategy is therefore a detailed plan to achieve success, all decisions and activities selected to achieve long-term goals. It is in this perspective that Cameroon has developed its “One Health” national strategy.

The “One Health” national strategy is the result of efforts to be produced by the health animal sectors themselves (domestic and wildlife), human

health and Cameroon environmental health to now work together, in an inter-sector and synergic manner for the management of health security of human and animal species. This is the operational framework within which all programmes and projects related to animal, human and ecosystem health must be registered.

III-3. 3rd pillar: Capacity building and awareness of human resources of human health, animal and the environmental health.

Human resources from different sectors should be sensitized on the need for dialogue between the actors from these sectors for the well-being of humans, the preservation of animal species and the preservation of ecosystem or environmental health.

Capacity building through training of staff and organization of refresher seminars are essential for the acquisition of key concepts relating to the Human-Animal-ecosystem interface by the different actors. All this would contribute to a good mastery of decisions taken collectively and coordinated for effective and efficient inter-sector collaboration.

III-4. 4th pillar: Broadening the dialogue platform to other related sectors

Health risks management related to the Human-Animal-Environment interface do not only challenge the human, animal and environmental health sectors, but also all other related activities sectors which suffer little or no consequences of abnormalities of this interface. This is the case for example of the economy and town planning, social housing, tourism, education, higher education, water and energy sectors with structural projects or industrial development. All these sectors should actually participate in the multi-sector collaboration network at the research, prevention level as well as response level to the abnormalities of the interface.

CONCLUSION

In the context of multi-sector and inter-sector collaboration mentioned above, the implementation of a single integrated national



Figure 2 : Diagram of the "One Health" strategy approach in Cameroon.

strategy is essential to the success of any national programme for the prevention and control of zoonosis and emerging/re-emerging diseases under the leadership of an efficient centralized coordination with decentralized organized and operational multi-sector structures.

The national multi-sector collaboration should invest in baptismal fonts of a more active international cooperation in the field of prevention and control of any zoonotic risks, for the purpose of protecting the entire planet against the adverse health effects related to such risks on public health worldwide, while also preserving the inherent hazards and scourges that threaten global food security and the survival of the human race.

BASCHIROU DM. Rapport interne d'activité annuelle. Panafrican Programme for the Control of Epizooties (PACE –Cameroon) 2006: 33.

Loul S. Proceedings of the workshop to finalize the emergency plan and epidemiological surveillance network IMPM-CRESAR-PRESICA; Limbe, April 2th, 2005.

World Health Organization and Centers for Disease Control and Prevention (): Technical Guidelines for Integrated Disease Surveillance and Response in the African Region. Brazzaville, Republic of Congo and Atlanta, USA 2010: 1-439.

World Health Organization and Ministry of Public Health: A Technical Guide for Integrated Disease Surveillance and Response in Cameroon, September 2011.

Public Health Agency of Canada: "One World, One Health" from ideas to action, Report of Expert Consultation 2009.

MOH: Local Plan of Control and Prevention of rabies epidemic in AMBAM Health District 2012.

MINEPIA: Decision No ----- to create a Secretariat of the Committee in charge of the development of the National Programme for the Prevention and Control of emerging and re-emerging Zoonosis 2011.

PM: Order No. 070/PM of April 28th 2008 establishing a Committee on the development of the National Prevention Programme and emerging and re-emerging Zoonosis control, Prime Minister, Head of Government;

Website:

-WHO: [http://www.who.int/fr:Document RSI \(2005\) ;](http://www.who.int/fr:Document RSI (2005) ;)

-OIE : <http://www.oie.int/fr: «une seule santé » en bref.>

ENABLING ONE HEALTH POLICY ENVIRONMENTS – VIEWS FROM THE PUBLIC SECTOR: Centers for Disease Control and Prevention and the United State Department of Agriculture

Ruben O. DONIS, PHD and Joseph F. ANNELLI, DVM, MS

This conference focuses on interdisciplinary collaborations and communications, otherwise known as a “One Health” approach, in all aspects of policy and actions for human, animal and environmental health. Influenza epitomizes the Conference theme of “A world united against infectious disease: cross-sectoral solutions” .The world’s human and animal health officials have been galvanized since the emergence of and recognition that the highly pathogenic H5N1 avian influenza virus was not only lethal to birds but also to people (WHO report on the cumulative number of cases and deaths as of December 17, 2012 was 610 cases with 360 fatalities). Over the last several decades, tens of thousands of people have died from emerging pandemic zoonotic diseases, including over 18,000 who died from the 2009 H1N1 influenza pandemic which also caused over \$200 billion in economic losses.

Recently it was discovered that people were infected with a variant of the H3N2 virus found in swine at state and county fairs in the United States. This situation, described in detail in various Morbidity and Mortality Weekly Report articles

(an example below) will be used as the “case study” for how various public sector organizations worked together to identify cases , characterize the situation, develop options for mitigation, and implement intervention strategies that minimized both disease transmission and economic impact.

Morbidity Mortality Weekly Report. 2012 Jul 27;61(29):561.

Notes from the field: Outbreak of influenza A (H3N2) virus among persons and swine at a county fair--Indiana, July 2012. Centers for Disease Control and Prevention (CDC).

During July 12-16, 2012, the Indiana State Department of Health and the Indiana

Board of Animal Health identified respiratory illness among swine and persons at a county fair held July 8-14. On July 16, specimens were collected from four persons with respiratory illness; two had become ill on July 12 and sought care at an emergency department, and two were identified as part of the subsequent public health investigation. All four persons were swine exhibitors or family

members of swine exhibitors and had close contact with swine. On July 18, reverse transcription-polymerase chain reaction testing at the Indiana State Department of Health laboratory identified suspected influenza A (H3N2) variant (H3N2v) virus* in all four specimens. On July 21, partial genome sequencing at CDC confirmed H3N2v virus with the influenza A (H1N1)pdm09 virus M gene; the viruses detected in the four specimens are similar to 12 viruses detected in 2011 and one detected earlier this year. None of the four persons were hospitalized, and all have fully recovered. PMID: 22832938 [PubMed - indexed for MEDLINE]

Some of the policies and factors that enabled effective cross-sectoral collaboration to investigate these influenza infections at fairs were: 1) Establishment of a plan or framework for zoonotic disease case investigations engaging public and private organizations, 2) High level and flexible plans for all aspects of the investigation: epidemiologic and virologic studies, sample collection, testing, reporting results, communication plan, identification of key personnel, 3) Effective and timely communication, including frequent teleconferences, 4) Transparent data sharing, and perhaps most important; 5) Trust. One of the constraints that was removed was the provision of funding to meet the expectations of the plan.

This session will address both the enablers and barriers to multi-sectoral collaboration and strategic approaches, policy interventions, instruments and tools that we have used to improve the outcomes of these situations. We will also identify some of the essential characteristics of a one health workforce that is necessary to develop political will and create new environments that enable and reward multi-sectorial collaborations.

ONE HEALTH AND FOOD SAFETY

Mike ROBACH

Cargill is an international producer and marketer of food, agricultural, financial and industrial products and services. Founded in 1865, our privately held company employs 140,000 people in 65 countries. We help customers succeed through collaboration and innovation, and are committed to sharing our global knowledge and experience to help meet economic, environmental and social challenges.

In fiscal year 2011, Cargill had \$119.5 billion in sales and other revenues. Earnings from continuing operations were \$2.69 billion. The company also realized \$1.55 billion in income from discontinued operations.

Cargill's purpose is to be the global leader in nourishing people. That takes into account health and nutrition, as well as food safety and food security. We have a mission to create distinctive value, and our approach is to be trustworthy, creative, and enterprising.

As an agricultural and food company, food safety is fundamental to Cargill's ongoing business. Our goal is to provide high quality, safe food every time, everywhere. We recognize that our work in this important area is never done. Every day we work to earn the trust of our customers and consumers,

beginning with the safety of the products we produce and extending to improving food safety around the world.

Our definition of food safety is simple -- protecting people and animals from illness or injury from handling or consuming our food products. Our efforts to ensure this—all along the vast supply chain, from production to consumption—are much more complex. Because we touch the global food supply chain in so many ways and in so many places, we take a broad, comprehensive, science and risk-based approach to ensure the safety and integrity of all of our products. This comprehensive approach is designed to address biological, chemical and physical hazards.

Because we recognize that food safety practices, legislation and regulatory oversight vary between and even within nations, we have adopted one global systems approach to which we hold ourselves accountable across all of our business, in all of our geographies.

It's everyone's responsibility, and we take a very holistic approach from the farm all the way to the plate. We embrace the concept of One Health.

Partnership
Global-to-Local Food Safety Systems

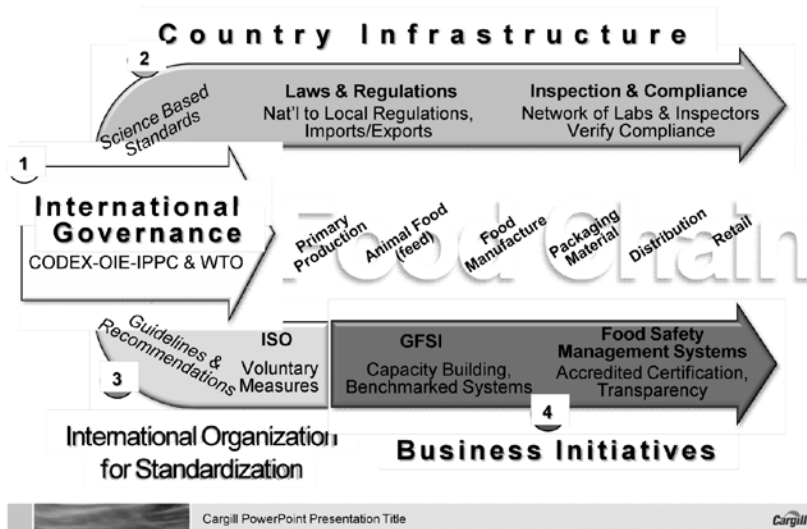


FIGURE 1 Roadmap for the components of global food safety.

I want to share this as a roadmap. It is an example of what One Health is all about. We've worked on this with a number of other colleagues in the food industry and through Michigan State University to create this map for the components around global food safety (Figure 1).

We begin with international governance on the left. There is a track that goes across the top around how governments can adopt the principles, guidelines and recommendations coming out of Codex Alimentarius, the OIE (World Organization for Animal Health) and the International Plant Protection Commission as a basis for the regulatory oversight programs. These organizations are the international standard setting bodies prescribed by the World Trade Organization's Sanitary and Phytosanitary Agreement.

The bottom track outlines how industry has taken those same principles, guidelines, and

recommendations and through an ISO framework, and transformed them into food safety systems that can be implemented and then audited against to assure that the systems have been appropriately deployed. These systems can cover the entire food network going from the farm on the left all the way through to the consumer on the right. It's a shared responsibility, shared accountability thought process through the whole thing.

National governments established the WTO and the SPS agreements, and use CODEX, OIE, and IPPC, for the process for setting international food safety standards. Out of these organizations you have science-based standards that have been internationally vetted, discussed and adopted. From this process guidelines and recommendations are developed that can be utilized by both the public and the private sector in global food safety.

From a government standpoint we all know that strong systems are going to protect customers and consumers, and will also facilitate trade. A number of countries already used CODEX as a basis for a number of their regulations. Many of them reference ISO as voluntary measures, and as suggestions for the industry in terms of adoption. Regarding government inspections and compliance, if a regulatory agency is verifying compliance and evaluating a firm's preventative measures, and the focus is on the elements that come out of international governance, you will have industry and government looking at the same criteria and thus aligned as to what it is that is important as it relates to the safety of our food system.

On the private sector side, the rationale is to build on science-based standards coming out of Codex, OIE, and IPPC. A strategic partnership exists between ISO and WTO to facilitate market requirements. They're working together to make sure that there's a framework available for the private sector to adopt these principles.

The process standardizes implementation, provides harmonization, alignment and consistency across the food chain from origination through consumption. In some cases there may be a market requirement, or it may be referred to in regulations and legislation. For the industry it's a good framework, using the guidelines, recommendations and principles out of Codex, OIE, and IPPC and putting them into a framework that can be adopted then by facilities in their food safety systems.

Within the industry there has been a lot of discussion about food safety being competitive issue. Back in the mid '90s the US beef industry got together as they were struggling with E. coli

O157:H7 and how to deal with the situation. The industry made a decision that food safety would not be a competitive issue.

Companies together shared insight, best practices, and data. Together we've driven O157 presence down significantly focusing in on what were the important elements of a food safety system and getting alignment over how to address the challenge..

We work through an organization called the Global Food Safety Initiative. GFSI is a multi-stakeholder group that benchmarks food safety systems. We just came out with guidance document six earlier this year. It is based on the principles of good hygiene and HACCP from CODEX.

The guidance document has requirements for food safety systems and their delivery. It also has a component around capacity-building that allows these principles to be implemented in emerging markets where the capacity might not be there. There's a process that takes countries or individual facilities in countries through a step-wise progression so that they can achieve this certification process.

We think food safety management systems are really the way to go in terms of having a robust program, and an accredited certification gives us third-party assurances that we're doing the right thing. We strive to create transparency, and confidence in the supply chain. This has to be done through a partnership. We believe it's effective and efficient. We believe that it protects consumers around the globe. This has been implemented within Cargill (Figure 2).



Cargill Food Safety Policy

Cargill is committed to providing safe food and animal feed products and services. We will use only those product development, procurement, supply chain, transportation, storage, production, manufacturing, and distribution systems and suppliers that ensure the safety and regulatory compliance of our products. We will communicate relevant food safety matters both internally and externally. We will adhere to the food safety requirements we have mutually agreed to with our customers. Every Cargill Business Unit, Function, and employee has a responsibility to ensure the production of safe products that comply with the applicable laws, regulations and Corporate Food Safety and Regulatory Affairs requirements. Cargill management will provide the resources and support necessary to enable our employees to fulfill this responsibility and continually improve our programs and processes.

Greg Page
Chairman and Chief Executive Officer

Mike Robach
Vice President
Corporate Food Safety & Regulatory Affairs

FIGURE 2 Cargill
Food Safety Policy.

This document is in every one of our facilities around the world. Everybody is aware of it. Everybody knows it and understands it. In most places around the world you're going to have both the business unit leader and the plant manager also signing this document. It's a true reflection of both top-down and bottom-up commitment to the policy.

We have based our policy and procedures on CODEX. It's a focus on food safety management systems. We have general requirements that are required to be documented. The next section describes management responsibility. Every business unit leader, every plant manager has a responsibility that they must achieve in order to be compliant with the policy.

We also have a resource management section. We have a section describing planning and realization of safe products. These may sound like strange section titles to you, but they're taken from ISO, coming right out of CODEX. These are

very consistent all the way through. In fact, we just this past year renumbered our policy and procedures manual to be in line with CODEX, so it's quite clear.

In looking at planning and realization of safe products, the key is prerequisite programs, steps you must take to enable a hazard analysis, doing the hazard analysis, and then putting in your operational prerequisite programs and establishing your HACCP plan.

Plans are updated on a regular basis, and reassessed annually. Traceability is required, as is control of any nonconforming products. The next essential section includes validation and verification as well as continuous improvement of the management system.

You've got to be able to validate that what you've put in place is effective. Then you've got to verify that you're doing what you said you were going to do over time. These all become

important components. It's important for us to remain outcome-based so that we can drive continuous improvement.

When new technology becomes available, new interventions become available, we want to be able to take advantage of those and not be constrained by a regulatory construct that is prescriptive and telling me how to do it. Let's focus on outcomes. Let's agree on what those performance standards need to be. Let's agree what the outcome needs to be, and then let industry move forward and innovate and continuously improve and share that information across the supply chain.

In summary, I believe that we do have a path forward I think the One Health approach makes a lot of sense. Breaking down the silos between animal health, plant health, food safety, and public health are mandatory. We believe that we have a structure and a mechanism for effective global partnerships in place. We work closely not only with our supply chain and our competitors in the industry, but also with our customers and with the regulatory agencies. Working with academia, consumer groups, government, and industry is the way forward. We've all tried to do it alone. The private sector has tried to do it alone. Government has tried to do it alone. It doesn't work. We've got to work together. We've got to get on the same page. We've got to get aligned around some of these issues.

We believe that resources must be deployed based on risk. You must have a science base and a risk base to apply resources. We're all operating with reduced resources.

We're trying to do more with less, so it becomes even more important that we're focused on the science, we're focused on the risk, and we're applying resources against the areas of greatest need. Focus has to be on prevention. It has to be on preventing issues from happening in order to maintain confidence in the food supply and to have a shared goal of safe, affordable food.

Food security plays into this in a major way, and the more preventative measures we can have in place around the world, the more assurance we're going to have of an abundant, safe food supply. It builds confidence in food safety, enhances global trade. It enhances food security. It enhances people's enjoyment of their nutrition.

Lastly, I have to finish with this last statement. Business shoulders the responsibility for safe food. I know a lot of times government thinks they have the responsibility. They don't. We do. It's our product. It's our brand. They're our customers. We want to work together, and we want to work collaboratively. But at the end of the day, we're the ones who have the responsibility to produce safe food and protect public health, and we accept that.

CHALLENGES AND OPPORTUNITIES FOR PROMOTING ONE HEALTH

Following the Emergence of Bird-Flu in the Developing World:
Policy Perspectives

Santanu BANDYOPADHYAY

While largely ignoring the events of 1997 in Hong Kong, South Asia in general and India in particular became concerned about the emerging HPAI in SE Asia only in 2004. There were a couple of scares, before it truly struck India for the first time in 2006 in Central West region. This was also the time when HPAI was reported globally from almost 58 countries covering continents of Asia, Europe and Africa. Two independent outbreaks covering a converging pockets shared by three different states were quickly stamped out with a well laid out Government Action Plan. HPAI never returned in that area. The disease though returned with a vengeance in 2007 and 2008 in the eastern and north-eastern region of India, which also included three countries sharing international borders in that very small region. Since then the disease got entrenched in that small geographical region referred also as Indo-Gangetic plateau but covering four countries, India, Bangladesh, Nepal and Bhutan. It is of interest to note that the H5N1 virus that struck in 2006 in West India is different from the one that subsequently emerged in the Indo-Gangetic Plateau since 2007.

Keeping within the action points relating to India,

the major policy issues that evolved almost from the beginning of bird-flu episodes and which are continuing till date with periodical revisions are largely described as follows:

1. In a Federal System of Governance, acceptance of a uniform Action Plan by all constituent states for the control and containment of HPAI. This Action Plan in the animal health sector is well integrated in to the human flu Action Plan.
2. An agreement on equal cost-sharing between the federal government and the local government for all expenses related to surveillance, control and containment of bird-flu.
3. Constitution of a Joint Working Group on the wake of emergence of bird-flu even before it struck the country involved Ministries of Agriculture, Health and Environment of the Government at the very highest level, which continue to function till date.
4. A stamping out policy for control and containment with an instant compensation mechanism. Other measures, e.g., movement control, market closures etc., are integral

components of this policy.

5. Policy not to vaccinate poultry against HPAI though the option has been kept open in the event of wide-spread occurrence, which never happened.
6. Coordination between health, veterinary, agriculture, revenue, police and administration at the lowest administrative division at the site of any suspected/confirmed outbreaks of bird-flu.
7. Strengthening the AI diagnostic capacity. Recognition of the HPAI National Laboratory as OIE International Reference Laboratory in 2009 and Human Influenza National Laboratory as WHO Regional Reference Laboratory in 2008. More national laboratories established now.
8. Training of Veterinary and para-veterinary staff in detection, diagnosis, surveillance and management of HPAI. Almost 100% in the endemic region and about 60% of the total veterinary work force in India are now trained.
9. Ensure adequate stockpile of PPE, Tamiflu, disinfectants and other consumables at any time of the year in each of the State capitals.
10. A joint cross-border dialogue between India and Bangladesh opened and continuing to monitor cross-border movement of poultry and other livestock and the risks involved due to such movements. This initiative is apart from the FAO study on risks associated with cross-border trade in poultry between India, Bangladesh and Nepal.
11. A new veterinary legislation was passed through an Act of Indian Parliament in 2009 for the Prevention and Control of Infectious Diseases of Animals.

12. The Inter-Ministerial Conference on Animal and Human Influenza in New Delhi in 2006 was a real reckoner among the politicians and the administrators in India about the threat to the civilization emerging at the animal-human interface.

There are also policy decisions which do not always work well and could be counter-productive. A very common policy decision in the face of an outbreak in sporadic incidence countries is to clamp an immediate ban on import of livestock and products as soon as an outbreak is reported. In a situation, where cross-border trade, formal or informal, is a norm such clamp down has little effect. It actually increases the risks as it encourages illegal trade through often porous borders. Such illegally traded animals are not cleared through any health inspection at either side of the international borders as it would, if traded legally.

The 1997 episodes of HPAI were mostly ignored in South Asia. The alarm bells started really ringing from the beginning of 2004 in the whole of Asia with reports of HPAI emerging from Indonesia, Thailand, China and Vietnam. No other diseases of animals brought the focus on the concept of One Health as much as HPAI did. The murmurs arose in the developing countries with the emergence of SARS, which transformed in to action with HPAI and got further strengthened with pH1N1 or swine-flu. Until then the zoonoses was mostly restricted to rabies and food-borne salmonellosis. It is also to be appreciated that the veterinary service delivery capacity, particularly the capacity in diagnostic laboratories increased several folds following the threat of HPAI and a possible

pandemic human flu. The contributions of the Governments, international donor agencies and the financial institutions were significant in this respect. Training of the veterinary and para-veterinary staff to face and manage bird-flu will go a long way in managing similar disease emergencies arising in future in the human-animal interface.

The policy constraints that the developing countries face in the developing world are too many to count. The most important among those is the financial resources. The most dilapidated building in the lowest administrative division of a developing country belongs to the Veterinary Department with matching infra-structure. In a federal system of governance, veterinary service delivery is the responsibility of the provincial or local government, which are often fund-strapped. Veterinary service has the lowest priority even in agriculture based economies of the developing world.

Veterinary training for the field veterinarians is not always equipped to sense anything unusual at the animal-human interface except the classical zoonotic infections, e.g., rabies or anthrax. There is very little interaction at ground zero between the human health specialists and veterinarians. The threat to wild life or from the wild life vis-à-vis domestic animal is not fully appreciated by the custodians of welfare of either sector. Bird-flu indeed provided an opportunity for these two sectors to come closer in the affected countries and realize the importance of working together.

A cause for concern is the capacity of the public health professional at the field level to identify unusual disease syndrome appearing among human, which could be a newly emerging zoonotic

disease. Brucellosis is a very common cause of reproductive disorders in livestock in many developing countries with a covert capacity to cause serious health implication to animal handlers or people in regular contact with carrier of the infection or acutely infected animals. The medical practitioners or the para-medics are often not equipped to diagnose this infection and pass on as PUO(pyrexia of unknown origin) unless they are fully alert about the professional hazards and the risks associated with animal handlers. With H5N1, poultry handlers were possibly lucky as the human infection with this virus detected so far could not clearly establish if they were at any higher risks than those unfortunates who got the infection.

However, there are improvements in the thinking process at the policy level, particularly in those developing countries which bore the brunt of HPAI, SARS, Hendra-Nipah or similar newly emerging infections. It is now getting across to people at large and the administrators and political class in particular that the microbial world is changing fast with every attempt to exploit the environment for more physical benefits through development of industry or infra-structure. Possibilities of emergence of new pathogens at the human, animal and ecosystem interface are no longer within the pages of scientific fictions or plot of a blockbuster movie. The world of the microbes is evolving fast with increasing capacity to involve multiple species. Appropriate policies and enabling environment for pursuing One Health is not trendy but an absolute necessity. Concerted efforts will be needed to promote One Health involving all the stake holders. Particular focus is required for the emergence of any unusual disease events at the identified global hot-spots.

POLICY THAT REINFORCE BEST PRACTICES IN PREVENTING RISKS of Human Exposure to Emerging Zoonotic Disease Threats in SE Asia

Dr.Theerapat PRAYURASIDDHI

Southeast Asia is a hub of the international wildlife trade, functioning as supplier, consumer and import-export center. The increased of demand for wildlife species as pets, medicines and food from many countries leading to increase number of wildlife disease and facilitate additional infectious disease emergence. Emerging zoonotic diseases in Thailand enhance the interface between humans and wildlife both native and alien species.

Emerging diseases are dealt with in the environment with three major challenges including wildlife without border, ASEAN Economic Community and illegal wildlife trade. Department of National Parks, Wildlife and Plant Conservation (DNP) strategies consist of Illegal wildlife trade control, develops wildlife health control unit and monitoring emerging disease.

According to Surveillance and Monitoring Emerging Diseases Planning, DNP set up 31 mobile units to surveillance, prevent and control emerging diseases from wildlife in protected areas with coordination from Ministry of Agriculture and Cooperatives and Ministry of Health. In addition, DNP ranger will be educated on occupational health and safety, personal health and hygiene.

Human health checkups and vaccination programs (e.g. Rabies, Tetanus and Influenza vaccine) are required to prevent and control zoonosis from wildlife.

DNP research and monitoring program include avian influenza surveillance program in wild birds are ongoing activities. Bird migration are studied by using satellite transmitter e.g. Brown headed gull, Asian opened bill and migratory routes from birds banding. Emerging infectious disease surveillance program in wildlife in 2013 research for emerging diseases such as Avian influenza and Nipah virus, study on the viral pathogen in non human primate and surveillance of Salmonella spp. isolated from illegal reptiles trade. Moreover, study on wildlife ecology such as bird migration study, mapping of migratory water bird population, mapping of roosting sites and breeding, study colony of water birds and surveying of bat caves and roosting sites in Thailand are important to prevent movement of diseases.

Management of diseases on wildlife usually requires a change in human activities. However, the most important way is by controlling translocation of wild animals to prevent movement of diseases and promote awareness on wildlife zoonosis to public.