

## 2.4

### Measuring the Impact of Cross-sectoral Collaboration on Disease

## **PREVENTION AND CONTROL**

### at the Human-Animal-Ecosystems Interface

#### **BACKGROUND**

Health threats at the human-animal-ecosystems interface have increased over the past few decades. These health threats are caused by multiple drivers, many of which are associated with human behavior, including the effects of modified landscapes, and changes in agricultural practices. With approximately 60% of emerging infectious diseases originating from animals, and of those, 70% deriving from wildlife, we are challenged to establish robust, global animal health systems. The recent efforts to control highly pathogenic avian influenza (HPAI) reflect the need for reducing risks associated with zoonotic pathogens and other diseases of animal origin. Reducing these risks cannot be done by one sector alone, therefore international organizations and their member states are increasingly converging towards a One Health approach that incorporates a collaborative, cross-sectoral, multidisciplinary mode of addressing threats and reducing health risks at the human-animal-ecosystems interface.

It is often assumed that disease prevention is more cost-effective than response, however it is difficult to quantify the benefits of prevention. This leads to difficulty in attracting the required investment to implement activities that address disease emergence, maintenance or spread. This session will be dedicated to broadening the discussion around indicators used to evaluate the impact of cross-sectoral collaboration in various sectors (health and non-health related) and poses the question: How can we meaningfully measure the impact of One Health in the next decade? During High Level Technical Meeting held in Mexico City in November 2011 (convened by the government of Mexico, with support from FAO, OIE, WHO and UNSIC) the following key operational elements of effective cross-sectoral collaboration were identified:

#### **MODERATOR**

##### **Katinka DE BALOGH**

Senior Officer  
*Veterinary Public Health  
Food and Agriculture  
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##### **Debra OLSON**

Professor  
*School of Public Health  
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- Joint cross-sectoral coordination mechanisms
- Routine communication
- Joint simulation exercises
- Data sharing
- Joint risk assessment
- Active cooperation on disease prevention/control programmes

## **OBJECTIVES**

- Provide a specific country example where the One Health approach has been successfully adopted;
- Examine other domains that have established indicators for measuring similar collaborative programs;
- Identify options for measuring the impact of cross-sectoral collaboration on disease prevention, taking into consideration the key elements, but not limited to them;
- Discuss how we can meaningfully measure the impact of One Health in the next decade.

## **SPEAKER**

**Nitish Debnath**, National Consultant, FAO ECTAD Bangladesh, Bangladesh

## **PANELISTS**

- **Penelope Mavor**, Consultant, Impact International, Italy
- **Paul Williams**, Director, Agriculture, Food and Veterinary Programs, Georgia Office of Homeland Security, USA
- **Wilhelm von Trott**, Partner, Trott Consulting, Germany
- **Frans van Kappen**, Head of the Veterinary Public Health Division, Institute for Risk Assessment Sciences, Utrecht University, The Netherlands



Katinka de Balogh is of Dutch and Hungarian origins and grew up in Latin-American. She studied veterinary medicine in Berlin and Munich and graduated and obtained her doctorate in tropical parasitology from the Tropical Institute of the University of Munich in 1984. Later she specialised in tropical animal production and health in France and in Veterinary Public Health (VPH) in the Netherlands. After a short career as a zoo veterinarian in the Rotterdam Zoo she moved to Africa where he worked for 9 years initially as a district veterinary officer in rural Zambia and later as lecturer at the veterinary faculties of Lusaka, Zambia and Maputo, Mozambique.

Thereafter she worked for 5 years at the Utrecht veterinary faculty in the Netherlands as lecturer and international project coordinator. In the late 80's she had spent two years as a young professional at the Veterinary Public Health Unit of the World Health Organization (WHO) in Geneva. In 2002 she started working at the Food and Agriculture Organization of the United Nations (FAO) in Rome, Italy in the Pro-poor Livestock Policy Facility (PPLPF) and after the start of the highly pathogenic avian influenza global outbreaks as coordinator for avian influenza projects and as response manager of the newly created Crisis Management Centre of FAO.

Presently she leads the global Veterinary Public Health activities of FAO where every day she uses at least 5 of her 7 languages.

## **KATINKA DE BALOGH**

Senior Officer

*Veterinary Public Health  
Food and Agriculture  
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Received Doctor of Veterinary Medicine (DVM) degree from the Bangladesh Agricultural University in 1978, MSc in Tropical Vet. Medicine from the University of Edinburgh in 1983, PhD in the field of Animal Virology in 1992 from the University of Surrey and postdoctoral training in Japan in 1994. Joined the Department of Livestock Services, Bangladesh in 1979 and worked at different positions until 1986. From 1986, continued research in the field of Animal Virology and Epidemiology in Bangladesh Livestock Research Institute until November 1996. In November 1996, joined the newly established Chittagong Government Veterinary College (CGVC), Bangladesh and occupied the position of Principal and founder Vice Chancellor of Chittagong Veterinary and Animal Sciences University (CVASU). In November 2010, returned to the Department of Microbiology, CVASU in as Professor. As of August 2011, worked for the Food and Agriculture Organization (FAO) of the United Nations, Bangladesh as National Consultant.

Pioneered a One Health movement in Bangladesh in 2007 jointly with veterinarians, physicians and environmental scientists, and launched a new professional organization called One World One Health Bangladesh Initiative (One Health Bangladesh). He has been chairing One Health Bangladesh for the last five years and organized three international conferences at CVASU on One Health. Because of his leading role in research and educational networking and collaboration with RVC London, University of Copenhagen, Tamil Nadu Veterinary and Animal Sciences University, EcoHealth Alliance, CDC, Commonwealth Veterinary Association, DANIDA, DFID and British Council, CVASU has become one of the premier universities in South Asia. Interests lie in virology, one health, and veterinary public health teaching, research and development. Served as President of the Bangladesh Veterinary Council and now serving as President of Krishibid (Agricultural Graduates) Institute, Bangladesh (KIB). Also has been serving on the board of the International Association for Ecology and Health (IAEH) as one of the members since 2011.

## **NITISH DEBNATH**

National Consultant

*FAO ECTAD Bangladesh  
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Penelope is an internationally experienced leadership coach and consultant. Penelope draws her expertise, experience and energy from working in sustainable development and leadership development in New Zealand, United Kingdom and Italy. For the last 19 years she has been helping individuals, teams and organizations from multiple industry sectors enhance their performance through coaching and facilitation.

She was Senior Programme Director with international leadership organization Common Purpose, and a consultant with Performance Consultancy Lane4 Management Group Ltd, in the United Kingdom. Since 2009 she has been in Rome as a freelancer under Quintessenza Consulting and has become an associate of Impact International.

Penelope's diverse consultancy experience has focused on leadership development and creating a high performance culture. As delivering on client and programme objectives is central to Penelope's approach, her consulting experience also includes programme evaluation and delivery of feedback from 360 questionnaires and other diagnostic offerings.

Her broad sector range experience includes the Professional Services, Financial Services, Information Technology, Engineering, Project Management, Energy, Manufacturing, Retail, Pharmaceutical, Life Sciences, Healthcare, Leisure, Government and Not-for-Profit organisations. Various clients include UN FAO, Ericsson, Oracle, Pfizer, Coca-Cola Enterprises, Centrica Energy, GE and UK NHS Trusts.

## **PENELOPE MAVOR**

Consultant

*Impact International  
Italy*

Interested in supporting her practice with academic rigour, she holds a Masters in Regional and Resource Planning (Sustainability) and an MBA in International Business (Italy), has published articles on mindfulness and intuition and blogs regularly on leadership and learning.



Debra Olson, is Professor and Associate Dean at the University of Minnesota School of Public Health and is responsible for developing strategic partnerships for the delivery of competency based learning opportunities for interdisciplinary health professional students and the public health practice community.

These programs increase the availability of public health education world wide through the application of innovative teaching techniques such as technology-enhanced learning. She has been instrumental in moving forward One Health at the university as well as internationally.

## **DEBRA OLSON**

Professor

*School of Public Health  
University of Minnesota  
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Dr von Trott graduated as veterinarian from Munich University and specialised in tropical veterinary medicine.

After a short period in the Commission of European Communities in Brussels he joined Bayer Animal Health, Germany, where he held various positions in marketing and general management in headquarters, Africa, Latin America and Italy.

In 2001 he became the Head of Global Marketing of Boehringer Ingelheim Animal Health and member of the Management Team.

In 2009 he became a shareholder and Managing Director of Comp-Any and in 2010 he founded Convaero GmbH, Erding, Germany, a company which developed a process for Bio-Drying of waste for the generation of alternative fuels, where he was the MD until 2012.

Today he is a member of the shareholder's committee in various companies and a consultant to the animal health industry and international organisations.

**WILHELM  
VON TROTT**

Partner

*Trott Consulting  
Germany*



Frans van Knapen started his career as a veterinary surgeon in 1973. After two years he obtained a position in the National Institute of Public Health Bilthoven, the Netherlands. He joined various laboratories in this Institute during more than 15 years (pathology, zoonoses, food hygiene). Eventually he got in charge of the laboratory of parasitology and mycology. His major field of research was in parasitic infections: trichinellosis and toxoplasmosis. In 1993 he was invited to a part-time professorship at the Faculty of Veterinary Medicine Utrecht in the field of epidemiology of parasitic infections. From 1995 onwards he obtained a full professorship and became head of the department of Food Science and Public Health.

His special fields of interest are today: food safety and exposure assessment of zoonoses. He is director of the IRAS - division VPH, Utrecht University. He advises/advised in numerous commissions on parasitology, veterinary public health, food safety, water hygiene, responsible pet-ownership, and risk assessment of mans direct environment related to pets, vermin and wildlife.

## **FRANS VAN KNAPEN**

Head

*Veterinary Public Health  
Division  
Institute for Risk  
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Utrecht University  
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Dr. Williams joined the Georgia Emergency Management Agency / Office of Homeland Security in 2000 and has since directed programs that include food, agriculture and veterinary medicine. In 2001 he received the Governor's Award for Contributions to Emergency Management and Public Safety.

Dr. Williams is a graduate of the University of Georgia with a Doctorate in Veterinary Medicine and has had extensive training in a wide variety of fields that include the Centers for Disease Control and Prevention, the Federal Emergency Management Agency/ Emergency Management Institute, the Department of Defense Civil / Military Institute, the Department of Energy, and the Department of Homeland Security / Center for Domestic Preparedness.

He has been fortunate to experience twenty years of private practice, worked as a researcher for the National Institutes of Health in the area of tropical parasitic disease, directed the laboratory for Advanced Trauma Life Support, directed Interagency Coordination for various capabilities for the 1996 Centennial Olympic Games, provided cross-sectorial coordination for the 2004 G 8 Summit in Food Defense and Mass Causality capability and in 2011 provided subject matter expertise to Tsunami / Earthquake planning for the US Virgin Islands.

Today he provides subject matter expertise to a variety of areas that have influenced the National Response Plan, National Response Framework and the National Infrastructure Protection Plan. His ground breaking work in measuring and quantifying effectiveness of cross-sector collaboration in the reduction of morbidities, mortalities and economic consequences in chemical, biological and radiological incidents has painted a picture of 21st Century Preparedness. Most recently he provided testimony before the United States Senate Committee on Homeland Security regarding the importance of being able to measure effectiveness of our capabilities in the reduction of consequences in chemical, biological, radiologic incidents as well as natural disasters.

## **PAUL WILLIAMS**

Director

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# ONE HEALTH MOVEMENT IN BANGLADESH:

Its Progression and Way Forward

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## INTRODUCTION

The concept of One Health is rapidly gaining recognition and acceptance, internationally, articulated through the official statements being made by governmental agencies and by a range of professional associations and international bodies, and expressed through a number of forums - colloquia, conferences etc. Increasingly, on a number of stages and in variety of ways, this thinking is becoming translated into research and developmental practice. One Health is based on the understanding that the health of humans, animals and of the environment is inextricably linked, and that promoting the wellbeing of all species can only be achieved through co-operation across sectors, professions, disciplines and national borders, and by promoting sustained collaboration between donor agencies and those organizations responsible for delivery. Fundamental to One Health thinking is that research and development should be implemented which is inter-disciplinary in nature; undertaken by health, veterinary and environmental professionals pooling their insights, knowledge and expertise. In addition, attention must be paid to enhancing the

quality of leadership and management to ensure goals are met.

A set of principles underpins the implementation of One Health practice. Although these are expressed somewhat differently from agency to agency, they are evolving in educational programme, joint outbreak investigation and surveillance and in intersectoral collaboration for combating diseases at human-animal-environmental interface. Although, the underpinning principles are widely accepted, how these translate into practice, in different contexts is still evolving. Since One health is being interpreted in different ways, and at different rates in different countries,

this fluidity provides institutions and agencies with a unique opportunity to play a very significant role in shaping development in relation to education, research, collaborative development and communication in their own national context. Bangladesh having unprecedented population growth, intensive agricultural production, fragile ecosystems and hot spots for emerging diseases is considered to be an ideal place to benefit from one health concept.

## **BEGINNING OF ONE HEALTH MOVEMENT IN BANGLADESH**

The outbreak of avian influenza in 2007 demonstrated the interdependencies of human, animal and environmental health and vulnerabilities of Bangladesh to the eyes of policy makers and related sectors. In order to combat HPAI in Bangladesh intersectoral collaboration was initiated and multisectoral task force was formed to take measures against the spread of avian influenza. While government initiative was underway to bring related sectors together to control avian influenza, informal discussion began at Chittagong Veterinary Animal Sciences University (CVASU) in 2007 to bring professionals including veterinarians, physicians and wildlife specialists to articulate one health approach for controlling emerging infectious diseases including HPAI H5N1, Nipah and other re-emerging diseases. Positive responses from professionals working in human, animal and environmental health sectors prompted to convene a meeting to promote one health concept among health professionals, scientists, policymakers and environmental activities. A leading role of CVASU, Institute of Epidemiology and Diseases Control Research (IEDCR), International Centre for Diarrheal Disease Research, Bangladesh (ICDDR,B) attracted other major agencies associated with animal health, human health and environmental health to be involved with the promotion of one health concept at working level. Professionals, scientists and social workers from nearly twelve government and nongovernment organizations decided to get together in a conference in Chittagong in March 2008 and made a Chittagong Declaration and formed a professional body, One Health Bangladesh, to promote and coordinate one activities.

## **ACTIVITIES OF ONE HEALTH BANGLADESH:**

### **Advocacy and Communications**

One Health Bangladesh provides a forum for discussing the idea of One Health and its relevance for Bangladesh.. Over the last five years, a diverse group of professionals from across Bangladesh have participated in six conferences ( three in Chittagong and three in Dhaka), that discussed scientific and policy issues, related to One Health. Several presentations at these conferences have explored zoonotic diseases that are moved from animal to human. In Bangladesh, recent outbreaks of avian influenza, Nipah virus, and anthrax have highlighted the linkage between animal health and human health and provided useful specific local examples to discuss better ways for diverse professionals and groups to work together. Bangladesh hosted a regional one health forum which convened representatives from human health and animal health from several neighboring countries to discuss sound approaches to shared concerns. In addition, One Health Bangladesh has been regularly organizing seminars, and consultations and sharing experiences on cross-cutting issues. Through these activities a general consensus developed that One Health Approach would particularly be relevant to Bangladesh. Bangladesh has the highest population density of any country in the world that is not a small city state. Even with this highest density of population, the great majority of food consumed in Bangladesh is grown within the country, grown often treated inappropriately with pesticides and increasingly contaminated with industrial wastes. Shallow tube wells are most common source of drinking water in Bangladesh but half of all tube wells have levels

of arsenic that exceed the WHO standard for safe drinking water and 40% of drinking water samples collected from tube wells are contaminated with bacteria. Above all, the Bangladeshi population has exceptionally close contact with domestic animals. Sixty-one percent of rural households raise poultry and over half of those keep poultry inside their home. These issues have been discussed in a one health context and communicated to a wider audience.

### **Joint outbreak Investigation**

Over the last several years Bangladesh has been experiencing outbreaks of several emerging infectious diseases including HPAI H5N1, Nipahm Influenza A H1N1 and remarkable increase of both cattle and human anthrax cases. In these cases, diverse professional groups including veterinarians, public health experts and anthropologists are jointly undertaking outbreak investigation and sharing both field and laboratory data between sectors, professions and disciplines. Those practices have laid the foundation of creating Bangladesh Laboratory Response Network (BLRN) to promote sharing laboratory data between animal health and human health. This initiative is also accelerating the 4-way linking approach between laboratory and epidemiology units in both human and animal health sectors in Bangladesh. One Health approach in both laboratory practices and epidemiological studies is thus now visible in Bangladesh.

### **One Health approach for rabies control programme.**

Over the last two years or so both human and animal health agencies of the government in collaboration with local governments and NGOs are undertaking Rabies control programme in Bangladesh through mass vaccination in dog population and dog bite management. A rabies

control strategy document has been prepared and has set a goal of eliminating rabies from Bangladesh by 2021. Mass dog vaccination programme has in the meantime covered more than 60% of the municipality areas. A dog population management programme through sterilization and mass vaccination, building mass awareness and social mobilization is also being implemented in Dhaka city jointly by human and animal health agencies, FAO and NGO. Joint training programme on laboratory diagnosis of rabies has been implemented and a joint surveillance programme is now underway of implementation. It has been envisaged that a One Health approach in rabies control programme in Bangladesh will enable to achieve the goal of eliminating rabies from Bangladesh in 2021.

### **One Health Capacity Building**

In order to achieve the goal of capacity building in One Health, an Introductory Training course on One Health has recently been implemented in Bangladesh with the initiative of ECTAD FAO Bangladesh. Participants received intensive hands-on training in 'One Health' issues with a specific focus on zoonotic diseases and issues relating to Bangladesh. There were 30 young professional participants from the Department of Livestock Services, Department of Health, and Forestry Department as well as colleagues from NGOs, Universities, and Research Institutes working at the human-animal-environment interface. The course included a combination of lectures (20), problem based learning activities (5), group presentations (5), and field site visits (9). Topics of the training included, but were not limited to ecosystems of Bangladesh and the importance of ecological

services in protecting human and animal health, anthropogenic & environmental drivers of disease emergence in wildlife, livestock and humans, risk communication and management of politics at the interface, and farming intensification and expansion in Bangladesh with implications for wetland and forest ecosystems. Specific diseases of importance addressed by the training included rabies, Ebola, H5N1 HPAI, Leptospirosis, Henipah Viruses, anthrax, and food safety or food borne illnesses. In addition, CVASU authority has recently taken decision to establish a One Health Institute to promote training, research and academic programme in Bangladesh. Furthermore, CDC , USA jointly with the Directorate General of Health , Bangladesh is going to implement Field Epidemiology Training Programme in the beginning of 2013. This initiative will contribute to capacity building both in human and animal health sectors.

#### **Developing Strategic Framework for a One Health Approach to Emerging, Re-emerging and High Impact Infectious Diseases in Bangladesh**

Aforementioned activities culminated in a request by One Health Bangladesh to the UN Agencies and Government of Bangladesh for support to develop a strategic framework for the application of the One Health Approach in Bangladesh. In this process, three ministries of the Government of Bangladesh (Ministry of Health and Family Welfare, Ministry of Fisheries of Livestock and Ministry of Forestry and Environment) through three major agencies such as Directorate General of Health, Department of Livestock Services and Forestry Department and UN agencies such as FAO, WHO and UNICEF. made a joint approach to take One Health approach forward. As a result FAO and UNICEF offered material support to the conduct

of an workshop ‘Envisioning One Health for Emerging Infectious Diseases and Beyond’ that led to the formulation of a strategic framework for a One Health approach to Infectious Diseases in Bangladesh in January 2012 followed by a validation workshop in September 2012

This strategic framework provides the platform for initiatives that are possible under a One Health Approach to prevent and control emerging, re-emerging and high impact infectious diseases that have an interaction with the human-animal-environment interface in Bangladesh. It does not prescribe what diseases should be included, but outlines the mechanism whereby diseases will be prioritised for action. It was agreed that for success and sustainability the One Health Approach in Bangladesh needed the following attributes –

- An overarching vision of improving health outcomes for the people, animals and environment of Bangladesh
- Recognition of the interplay between factors related to people, animals and the environment in determining disease outcomes
- Application of a multi-disciplinary prediction, prevention and response focus on disease
- Promotion of multi-sectoral collaboration and communication to engage partners and stakeholders, including communities
- Emphasis on equitable partnerships and recognition of the individuals, institutions and civil societies engaged
- Focus on the importance of establishing the necessary institutional mechanisms to effectively deliver the outputs

- Incorporation of processes to correct capacity deficits for collaborating partners
- Recognition that achieving success depends on long term engagement and commitment
- A framework that is adaptive and responsive to change
- Applied research
- Networks and partnerships
- Capacity building
- Strategic communication and advocacy
- Social and economic aspects of disease
- Wildlife and ecology

In line with these attributes the strategy for the One Health Approach in Bangladesh has the overall vision that: ***The consequences of emerging, re-emerging and high impact infectious diseases are minimized through institutionalizing the One Health Approach, so contributing to food security, food safety and a healthy population in thriving ecosystems***

The strategic framework has 3 key goals to support achievement of the vision

1. Establishment of the necessary institutional arrangements to enable effective collaboration between sectors involved
2. Development of necessary capacity and technical procedures to prevent and control targeted emerging, infectious diseases
3. Application of sound environmental principles when ecosystems with potential disease/health interfaces with humans and animals are involved in control strategies

To achieve these goals the framework has following 9 interlinked components to organise and manage a comprehensive implementation of the One Health Approach

- Institutional Governance and programme management
- Coordinated surveillance
- Coordinated outbreak preparedness, prevention and response

## CONCLUSION

The Government of Bangladesh exerts major influence by setting policy that affects activities across the environment, agriculture and human health. For Bangladesh to benefit from One Health approach, the approach needs some degree of institutionalization within the government. Collaborative investigations and response to disease outbreaks is government function that would be a particularly effective area to develop multisectoral collaboration. Similarly, dealing with pathogens at human-animal-environmental interface will need multidisciplinary as well as multi-ministerial approach. Social scientific research has demonstrated that diverse groups of professionals are more effective in solving difficult problems compared with even very capable professionals from a single discipline. By working together on health issues, diverse professionals and diverse ministries will be more effective in understanding the underlying cause and identifying appropriate steps for prevention. Additionally, by working together, professionals will begin to develop personal and professional linkages making future collaboration. Implementation of Strategic framework for One Health Approach to Infectious Diseases could be a step forward to cross ministerial and cross professional collaboration, and so to institutionalization of a One Health approach to Bangladesh.