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# Interface

*A One Health Newsletter*  
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## Editorial

It is a great event for One Health (OH) Initiative in Bangladesh to publish a newsletter fostering a bond among human health, animal health and ecosystem. We are proud that Bangladesh is the pioneer in forming a One Health Secretariat at government level for coordination among ministries steering the above three health systems. This newsletter, Interface, will be one of the intellectual meeting points of the academics, scientists, policy makers, planners and implementers of the three health systems.

The first issue reports the proceedings of the Ninth One Health Conference in Bangladesh. Many important scientific information and innovations have been presented in the scientific sessions. We have tried to mention those, although in brief, in this newsletter. A key-note and eight thematic papers were presented by eminent scientists from home and abroad. A good number of oral presentations followed after the thematic presentations. Posters were also displayed during the conference.

We thank the persons involved in publishing the Interface. Contributions and reports are welcome from our readers.

## Health Minister hails One Health approach for improving health

Mr. Mohammad Nasim, MP, Honourable Minister, Ministry of Health & Family Welfare, lauded One Health (OH) activists for promoting and practicing One Health approach in Bangladesh while inaugurating 9th One Health Conference in Bangladesh held on 17-18 September, 2017. He urged all the partners of One Health to share ideas, vision, information and work together for the benefit of health and wellbeing of the people of Bangladesh. He also reiterated the support of his ministry towards One Health activities.

Prof. Meerjady Sabrina Flora, Director, Institute of Epidemiology, Disease Control & Research (IEDCR) and also the Chair of One Health Secretariat in her welcome speech briefly narrated the journey of One Health Bangladesh. "The sapling is now a fully bloomed tree" she rejoiced. She also informed the house about establishment of One Health Secretariat which will play a crucial role in OH coordination. "Allocation of budget from the core government is a huge accomplishment and possibly Bangladesh is the only example of getting money from the exchequer" Prof. Flora said.

The theme of the conference was "Achieving Sustainable Development Goals (SDGs) through One Health Approach". Prof. Nitish Debnath, National Coordinator of One Health, Bangladesh in his keynote speech highlighted the need for embarking on OH approach to achieve the SDGs. "Building partnership is central to the SDGs which clearly aligns with the core principle of OH," Prof. Debnath said.

Speakers from United Nations (UN) partners expressed their satisfaction



to see the progress of One Health in Bangladesh and considered Bangladesh as the role model. All speakers from the OH government partners emphasized the need for joint action to combat interface issues such as zoonotic disease, food safety and antimicrobial resistance. Those are posing insurmountable threat to people, animal and environment of Bangladesh.

Thirty seven papers were presented by scientists from home and abroad in the conference on i) Emerging infectious disease and zoonoses ii) Food safety and food security iii) Antimicrobial resistance and its containment iv) One Health governance, advocacy and policy and v) Eco system health and conservation.



“Work together for the benefit of health and wellbeing of the people of Bangladesh”

*Mr. Mohammad Nasim, MP  
Minister, Ministry of Health & Family Welfare*

## Emerging infectious disease and zoonoses

Papers on avian influenza reveal high level of contamination in live bird markets with H5 and H9 avian influenza viruses. Recent H9 isolates are becoming more pathogenic which is classically a low pathogenic strain. Co-circulation of H5 and H9 in both animal hosts and environment increase the chance of reassortment and emergence of novel virus. Notably, highly pathogenic avian influenza H5 virus was found in bat and may be due to co-roosting with infected crow. An anthropologic study reveals that traders and market workers are habituated with risky practice and do not perceive those as risk necessitating further understanding the underlying cause of practicing risky behaviours.

The conference recommended continuing surveillance, data sharing, special attention to H9N2 and updating the avian influenza and pandemic influenza preparedness plan.

Papers presented in the conference indicate that so called neglected zoonoses remain as big public health threat as witnessed by high prevalence of brucella in milk samples, presence of antibody of Q fever in dairy cattle and continued outbreak of anthrax.

The conference also recommended for multisectoral approach, enhanced surveillance and capacity building to detect, control and prevent zoonotic diseases in the country.

“Traders and market workers are habituated with risky practice and do not perceive those as risky behaviours”

*Prof. Dirk. U Pfeiffer  
Chair Professor of One Health,  
City University of Hong Kong*





## Antimicrobial resistance and its containment

The capability of rapid spread of antimicrobial resistant genes is very much alarming for public health. Moreover, the danger of gene transference from one bacteria to other bacteria is also rapid. Study was cited to show that antimicrobial resistance (AMR) was increasing gradually from time to time. It was also presented that human and chicken gut microbiomes share 36 mobile resistance genes which can exchange among animal, human and environment.

This danger for public health was evidenced by the presenters in the dedicated session on AMR. They showed the existence of multi drug resistant *E coli* in commercial meat producing poultry, high prevalence (11%) of Shigatoxin producing drug

resistant *E coli* in healthy buffaloes, anti microbial resistant Salmonella and Staphylococcus in free ranging rhesus macaque, plasmid mediated colistin resistant gene in poultry and street food, antibiotic residue in chicken and fish meat, high use of antibiotic at household and hospital settings. It demonstrates the enormity and complexity of AMR problem in Bangladesh.

The conference recommends judicious use of antibiotic and use of One Health platform for mapping and coordinated action for the containment of AMR. Awareness of healthcare providers and receivers about the danger of AMR was also recommended.

## One Health governance, advocacy, communication and policy

Papers presented in this session showed that Bangladesh has made remarkable progress in OH governance. One Health Secretariat has been established with funding support from the government and development partners. Government has also prioritized zoonotic diseases for the best utilization of resources and human capital. One Health Strategic Framework developed in 2012 has been revised and waiting for government approval. An invited paper revealed that Participatory One Health Disease Detection (PODD), an event based / syndromic surveillance is working very well in Thailand and deserves replication in other countries including Bangladesh

with appropriate adaptations. Establishment of One Health Institute at Chittagong Veterinary and Animal Sciences University and Zoonotic Disease Resource Centre at Sher-E- Bangla Agricultural University are two outstanding achievements. However, sustained funding is the key challenge for continued operations of such institutions.

The conference recommended further strengthening of OH platforms for timely and sustained coordination and expanding partnership with Ministry of Agriculture and Ministry of Food, along with existing partnership among Ministry of Health & Family Welfare, Ministry of Fisheries and Livestock and Ministry of Environment and Forest

**“Bangladesh has made remarkable progress in One Health governance”**

*Prof. Dr. Meerjady Sabrina Flora  
Director, IEDCR and Chair, One Health Secretariat*



## Food safety and security

Despite improvement in overall nutritional scenario in Bangladesh, stunting among children remain a challenge. Population growth, water scarcity, poor hygiene and sanitation makes the gains fragile and there is a need for increasing the production efficiency of crop, livestock and fish to prevent any

future slide. The papers revealed food safety threat from the poultry wastes and contamination of dairy and dairy products sold in the restaurant. Research for developing cattle breed through selective breeding using molecular technique to avoid production of A1 beta casein responsible for

wide variety of non-communicable diseases was suggested. A presenter suggested for sulphur supplementation of ruminant feed to reduce methane emission from ruminant animals. The

conference recommended judicious land use to prevent food shortage, regulated use of poultry wastes and initiate research for selective breeding of cows that produce safer milk.

## Ecosystem health and conservation

Deforestation, forest degradation and urbanization are drivers of many vector borne epidemics across the world and the traditional efforts like source reduction, treatment and truck mounted aerosol spray have failed to bring expected result. A paper on nipah shows that diverse nipah virus circulate in the country and may explain the reason behind differed nipah burden in different part of the country. "The planned global virome project expects to

make the globe better prepared against any ensuing pandemic" presenter from Eco Health alliance informed the audience. A study on 45 parasite showed 55% prevalence of parasites in rhesus macaques. Another paper presented in the conference showed closer proximity of human and rodents in larger metropolitan city demonstrating the chance of spillover. The conference recommended a holistic approach for controlling vector borne diseases.

## Best poster awards

A panel selected 5 posters from 43 posters displayed during the conference. The awardees were: Farzana Islam Rume and Plabon Paul of Patuakhali Science and Technology University, M.A.Hoque of Department Livestock Services, Bangladesh, AHM Taslima Akhter of FAO-Food Safety Program, Institute of Public Health Mohakhali, Dhaka, Ausrafal Islam from International Centre for Diarrhoeal Disease Research, Bangladesh.



*Best poster award distribution and appreciation of presenters*

## One Health Secretariat: Journey begins for institutionalization



*1st Interministerial Steering Committee meeting*

Population-dense Bangladesh has long encountered health problems and threats at the human-animal-environment interface, and is considered as hotspot for emerging disease threats, which may create public health emergencies of international concern. At the outset of avian influenza outbreaks in the country, a group of visionary professionals formed One Health Bangladesh in 2007. Government of Bangladesh developed and endorsed a National One Health Strategy in 2012.

An inter-ministerial meeting held in June, 2016 decided to establish One Health Secretariat and Inter-Ministerial Steering Committee on One Health. The leadership of these entities will rotate among Ministry of Health and Family Welfare, Ministry of Fisheries and Livestock, and Ministry of Environment and Forests at an interval of every three years. The Inter-Ministerial (IM) Steering Committee on One Health in 2017 endorsed the terms of reference of IM Steering Committee, Technical Advisory Group, One Health Secretariat Coordination Committee and One Health Secretariat. One Health Secretariat was officially launched with seconded staff at the Institute of Epidemiology, Disease Control & Research within the Ministry of Health and Family Welfare in early 2017.

Government has already mobilized resources from the 4th Health, Population and Nutrition Sector Program for One Health Secretariat. One Health Secretariat has assessed the performance of One Health mechanisms for future planning, coordinated zoonotic diseases prioritization and updated national one health strategy. The secretariat has been coordinating zoonotic disease outbreak investigations such as, avian influenza and anthrax.

Functional One Health platform will help strengthening coordination, collaboration, networking, joint surveillance, preparedness and response to counteract health hazards and thus be able in contributing to achieving Sustainable Development Goals.

## Bangladesh prioritizes zoonotic disease

Zoonotic diseases are serious public health concern and about 75% of emerging infectious diseases are zoonotic in nature. Prioritization of zoonotic diseases is imperative for the best use of financial and human resources. United States Center for Disease Control and Prevention has developed a tool for prioritizing zoonotic diseases. The process includes generation of a list of all the diseases to be ranked, development of criteria and questions, ranking of the criteria and finally ranking of the zoonotic diseases. A workshop on One Health Zoonotic Disease Prioritization was held on July 12-13, 2017 in Bangladesh. This workshop was conducted with support from U.S. CDC, Preparedness and Response, United States Agency for International Development, and Food and Agriculture Organization. The workshop included voting members and facilitators from the lead government agencies of human health, animal health and wildlife. Seventeen subject matter experts from multiple organizations and sectors supported the core group. Rabies, zoonotic influenza, anthrax, nipah, brucellosis and



*Zoonotic disease prioritization workshop*

zoonotic tuberculosis were identified as the top six zoonotic diseases of the country. The report has been submitted to One Health Secretariat for review and obtaining endorsement from the government. The prioritization will enable Bangladesh to take necessary steps to mitigate the risk of zoonotic diseases and contribute to protect the health of human, animal and wildlife and economy as well.

## Review of the One Health strategic framework

Strategic framework provides direction for the strengthening of a One Health approach to prevent and control emerging and high impact infectious

diseases and conditions. Recognizing the need for a formal and institutionalized mechanism to ensure its sustainability, the strategic framework and action





*Strategic framework validation workshop*

plan for One Health approach to infectious diseases in Bangladesh, was developed in 2012 and was subsequently endorsed by the Ministry of Health and Family Welfare, Ministry of Fisheries and Livestock and Ministry of Environment and Forests.

The inter-ministerial meeting on One Health held on June 2016 suggested reviewing the One Health strategy and making necessary revision of the document. Accordingly, a literature review was performed using both online and offline available resource materials. Several small group brainstorming sessions were organized for initial review and conceptualization of the revised document. A multi-stakeholders workshop involving stakeholders from government, UN agencies,

universities, research organizations and non government organizations was conducted on 24 May 2017 to identify the achievements, strengths, weaknesses, opportunities and threats regarding One Health activity in Bangladesh. Three in-depth interview sessions were conducted with key stakeholders who were not present in the workshop. As per the recommendations of the workshop and interview, revised Strategic Framework and Action Plan was drafted. A second workshop was organized to validate the draft strategic document to confirm its compatibility with the policy and administrative requirements of the government of Bangladesh. "The consequences of emerging and high impact diseases and conditions are minimized through institutionalizing the One Health approach by contributing to food security, food safety, and a healthy population in thriving ecosystems" is the vision statement of the document.

The agreed framework comprises seven components each of which covers specific requirements and objectives for the implementation process. The components are institutional governance and programme management, coordinated surveillance, coordinated outbreak investigation and response, transdisciplinary research, networking and partnerships, strategic communication and advocacy, and capacity building.

## Recent events

### Bangladesh

#### World One Health Day 2017

World One Health Day 2017 was celebrated in Bangladesh on 5 November 2017 at Sher-e-Bangla Agricultural University. The event was supported by One Health Secretariat, One Health Bangladesh, Preparedness & Response Project of USAID, and EcoHealth Alliance. The celebration of the Day began with a colorful rally followed by a seminar. The seminar was participated by students, teachers, physicians, veterinarians, wildlife experts, agriculturists from different institutions.



*A rally on One Health Day*

## Essay competition

A collaborative essay competition was organized for undergraduate and graduate students on the occasion of World One Health Day 2017. The prerequisite for eligibility to participate in the competition was, to form a joint team of two scientists from any of human, animal health and ecosystem. The team entered the competition as a single unit. Awardees were – First: Md Zahidul Islam and Salma Afroz Shifa; Second: Noor-a-Kasida Islam and Afrida Nurain; Third: Israt Sahrin Arafat and Trisha Ray. The competition was organized by One Health Bangladesh.



*Distribution of crests to the winners*

## Global

### Typhus scare back in Bengal, India

Typhus fever is again rearing its ugly head in Bengal, India. A team of doctors, led by Subroto Chakrabarty, recorded several cases in Kolkata and surrounding areas. The fever, if untreated, could lead to death. Rodents are the main vectors of the disease, which is caused by bacteria that thrive in old, wooden and cane furniture.

### China confirms first ever human case of H7N4 bird flu

A chinese woman has been confirmed as the first ever human case of H7N4 bird flu prompting officials in Hong Kong to advise citizens to avoid wet markets, live poultry markets or farms on the mainland during the week-long lunar new year holiday.

## Upcoming events

### One Health Congress 2018

5th International One Health Congress, will be held in Saskatoon, Canada, on 22 - 25 June 2018. The congress will be organized by the One Health Platform and the University of Saskatchewan, in close cooperation with the Southern African Centre for Infectious Disease Surveillance (SACIDS). Special attention will be given on antimicrobial resistance, translational science, and recent advances in the fields of zoonoses and emerging infectious diseases.

### International meeting on emerging diseases and surveillance

The Seventh International Meeting on Emerging Diseases and Surveillance (IMED) 2018 will be held in Vienna, Austria from 9–12 November 2018. IMED 2018 will once again bring leading scientists, clinicians and policy makers to Vienna to present new knowledge and breakthroughs and discuss how to discover, detect, monitor, understand, prevent, and respond to outbreaks of emerging pathogens. New approaches to vaccination and isolation, the uses of novel data sources, genomics, novel laboratory methods, rapid

point-of-care diagnostics, risk communication, political and societal responses to outbreaks have all seen innovation and change that will be explored at IMED 2018.

### One Health international summer course 2018 (12 - 17 Aug, 2018)

The International summer course in One Health aims to provide knowledge, skills and competences regarding efficient solutions to the multifaceted global challenges to human, animal and environmental health through cross-disciplinary research, education and collaboration between relevant institutions and stakeholders. The summer course focuses on zoonoses, emerging diseases, and emerging health-related problems (drug resistance, toxins, pollution, etc.).

### One Health Training

One Health Secretariat is planning following trainings for participants from different sectors and disciplines in April and May.

- Orientation on One Health Approach
- Scenario Based Outbreak Investigation Using One Health Approach

### USAID PREDICT project supports capacity buildup of wild life personnel

The PREDICT project, part of USAID's Emerging Pandemic Threats (EPT-2) program, is enabling global surveillance of pathogens that could spillover from animal hosts to people, by strengthening capacities to detect and discover viruses of pandemic potential.

In Bangladesh, PREDICT-2 is implemented by EcoHealth Alliance in close partnership with the Institute of Epidemiology Disease Control and Research (IEDCR), Bangladesh Forest Department (BFD), Department of Livestock Services (DLS), the International Center for Diarrhoeal Disease Research, Bangladesh (icddr,b), Bangladesh Livestock Research Institute (BLRI) and through cooperation with local stakeholders and communities.

In March 2017, the PREDICT team organized a 5-day field training that focused on rhesus

macaque diseases surveillance, biosafety, and zoonoses. In April 2017, the PREDICT team organized two 7-day field trainings, one on "Disease Surveillance in Rodents, Zoonotic Disease and Biosafety" and a second on "Transmission Ecology of Bat-borne Emerging Infectious Zoonotic Diseases". The team trained Government of Bangladesh forest officers, PREDICT global team members and PREDICT India team on wildlife capture, sampling, safe release of wildlife, and the use of personal protective equipment. These trainings have helped to enhance the workforce capacity on wildlife disease surveillance at national and regional level with a focus on animal welfare and personal safety. Trainings offered creates collaboration opportunities across the border.

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USAID GHSA advisor releasing a fruit bat during visit to the PREDICT field site.

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