ONE HEALTH POULTRY HUB

ONE HEALTH POULTRY HUB

Third Conference

Dhaka, Bangladesh

25 - 27 October 2022

GCRF Global Challenges Research Fund

UKRI UK Research and Innovation

Programme at a glance

	Tuesday 25 October: Showcasing the Hub as a platform for research and impact activities	**Wednesday 26 October:** Progress in research including work being done by all partners of the Hub	**Thursday 27 October:** Consideration of progress, planning of future activities, and horizon scanning
08:30	Registration	Introduction: Hub research and impact pathways	Introduction: Science-policy synchronisation to visualise impact
09:00	Official opening	Theme I: The societal role of poultry and its importance for livelihoods	Updates to ToC and ICE strategies
09:30	Introduction: positioning within the Hub Theory of Change	Theme II: Understanding poultry production and distribution systems	MEL, reporting and recording progress against objectives
10:00	*Tea break*	Poster session I	*Tea break*
10:30	Keynote presentation: Progress, potential and challenges of poultry production in South Asia	Theme II: Understanding poultry production and distribution systems	Research planning
11:00	Research updates from Bangladesh		
11:30			
12:00		Theme III: Impact translation from research and activities	
12:30	*Lunch*	*Lunch*	*Lunch*
13:00			
13:30	Novel Hub pipelines for AMU / AMR research in poultry systems	Theme III: Impact translation from research and activities	How do we improve our approaches? Improving our One Health Lens - lessons from the journey so far
14:00	Synergies with partners / networks and expanding the horizon of collaboration	Theme IV: Tracing of zoonotic hazards in poultry systems	
14:30			Building capacity through learning: training completed and planned
15:00	*Tea break*		
15:30	Synergies with partners / networks and expanding the horizon of collaboration	Poster session II	*Tea break*
16:00	Open discussion: how to share resources, data, training; opportunities to build One Health capacity and understandings; and how to work at the policy-science interface	Participatory discussion: bringing it all together	Participatory discussion: horizon scanning and future perspectives
16:30			
17:00		Poster session III	
17:30			
18:00			

Key:

PL	Plenary oral presentation
PA	Panel discussion
PO	Poster presentations
R	Training
WP	Work planning

Contents

Practicalities

Conference venue and facilities

The Radisson Blu Dhaka Water Garden hotel is the venue for the conference as well as accommodation for conference participants.

The hotel address is Airport Rd, Dhaka Cantonment, Dhaka, 1206, Bangladesh, and the contact telephone number is +880 2 9834555. The hotel is located 5 km or approximately 15 minutes' drive from Hazrat Shahjalal International Airport (DAC).

The arrival details of conference participants arriving at the airport have been registered, and participants will be met either by local organising committee personnel, or by the hotel airport transfer service. Hotel check-in will be expedited.

All meals will be provided. Specific dietary requests will be accommodated as per request. Any additional hotel service expenses (e.g. minibar, alcoholic beverages) are the responsibility of participants.

Health & Safety and COVID-19 policy

As a five-star hotel, Radisson Blue Dhaka Water Garden follows the hygiene, health and safety measures that apply to all Radisson hotels. For your peace of mind, please check: https://www.radissonhotels.com/en-us/health-safety.

COVID-19 policy

Measures still in place to limit the spread of COVID-19 vary across the countries of origin of the participants of this Hub conference. Likewise, individual behaviours and risk perceptions are likely to vary.

Use of face masks and hand sanitizer

At this conference, we request that all participants respect a few reasonable measures to minimise transmission risk while remaining reasonable and acceptable for all. These measures include the following:

- **Face masks are expected to be used during plenary presentations** in the main (Antara) hall. They will be provided but we strongly recommend participants to use their own, better-quality masks if possible.
- In smaller-scale sessions and meetings, we **strongly recommend** participants to utilise face masks when and as appropriate. However, this is not mandatory and is rather a question of personal respect and responsibility.
- Hand sanitizer will be provided, and we encourage participants to use this.
- Of course masks may be removed during tea breaks, lunch breaks and dinner.

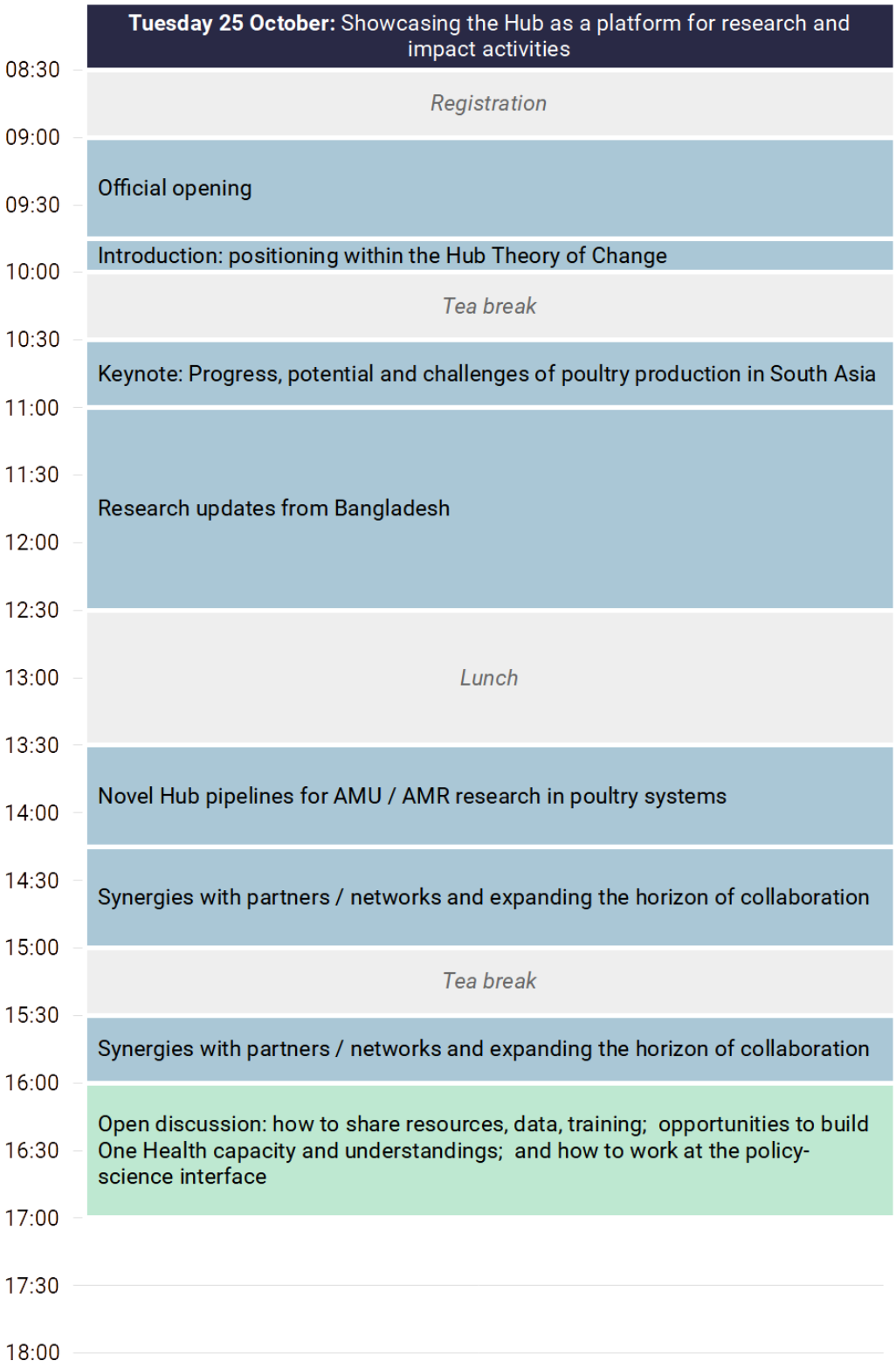
In the event of illness

Information on the COVID-19 situation in Bangladesh can be found at the Directorate General of Health Services (DGHS) website, at https://dghs.gov.bd.

If participants start experiencing COVID-19 like symptoms, please

- Inform the conference organisers and/or hotel staff.
- Please stay in the hotel room if possible. Rapid antigen tests can be provided.
- If positive, a confirmatory PCR test can be arranged through the hotel.
- Should further medical attention be required, a visit will be arranged to a nearby clinic.

Tuesday 25 October



Session 1: Official opening and keynote address

Type of activity	Oral presentations		
Time	09:00 – 09:50	Official opening	Dr. Nahid Rashid, Secretary, Ministry of Fisheries and Livestock, Bangladesh; Prof. Goutam Buddha Das, Vice-Chancellor, Chattogram Veterinary and Animal Sciences University; Prof. Abul Bashar Mohammed Khurshid Alam, Director General of Health Services; Major General Mohammad Yousuf, Director General of Drug Administration; Dr. Monjur Mohammad Shahjada, Director General, Department of Livestock Services; Dr. S.M. Jahangir Hossain, Director General, Bangladesh Livestock Research Institute; Mr Matt Cannell, Development Director, British High Commission in Dhaka; Prof. Fiona Tomley, Principal Investigator and Director, One Health Poultry Hub; Prof. Nitish C. Debnath, Prof. Md. Ahasanul Hoque, One Health Coordinator, Bangladesh
	09:50 – 10:00	Tomley F	Introduction: positioning within the Hub Theory of Change
	10:30 – 11:00	Khaled SA	Progress, potential and challenges of poultry production in South Asia
Place	Antara Hall		

Session 2: Research updates from Bangladesh

Type of activity	Oral presentations		
Session leads	Chair: Prof. NC Debnath (Bangladesh) Co-chair: Dr. D Vink (UK)		
Time	11:00 – 11:10	Fournié G	Poultry production and distribution networks in Bangladesh
	11:10 – 11:20	Houghton E	Key roles, relations and practices shaping poultry production and distribution networks
	11:20 – 11:30	Biswas PK	Zoonotic pathogens circulating in poultry farms and live bird markets
	11:30 – 11:40	Alam AN	Influenza surveillance and human health impacts due to circulation of poultry-borne AIV subtypes in Bangladesh
	11:40 – 11:50	Chowdhury F	Antimicrobial use in humans and in poultry farms in Bangladesh
	11:50 – 12:00	Samad MA	Screening for antimicrobial resistance in poultry pathogens
	12:00 – 12:10	Muzaffar Goni Osmani TABM	Contribution to Avian Influenza mitigation policy in Bangladesh
	12:10 – 12:20	Sufian MA	FAO-DLS joint sink surveillance on AIV and AMR

	12:20 – 12:30	Summing up	
Place	Antara Hall		

Session 3: Novel Hub pipelines for AMR / AMU research in poultry systems

Type of activity	Oral presentations		
Session leads	Chair: Prof. Z Habib (Bangladesh) Co-chair: Dr. H Paleja (India)		
Time	13:30 – 13:45	Joshi M	Molecular diagnostics for AMR surveillance
	13:45 – 14:00	Pelligand L	Detection of antimicrobial residues in poultry meat and feathers
	14:00 – 14:15	Pinotti F	Modelling the transmission dynamics of avian influenza viruses through poultry networks
Place	Antara Hall		

Session 4: Synergies with partners and expanding the horizons of Hub collaboration

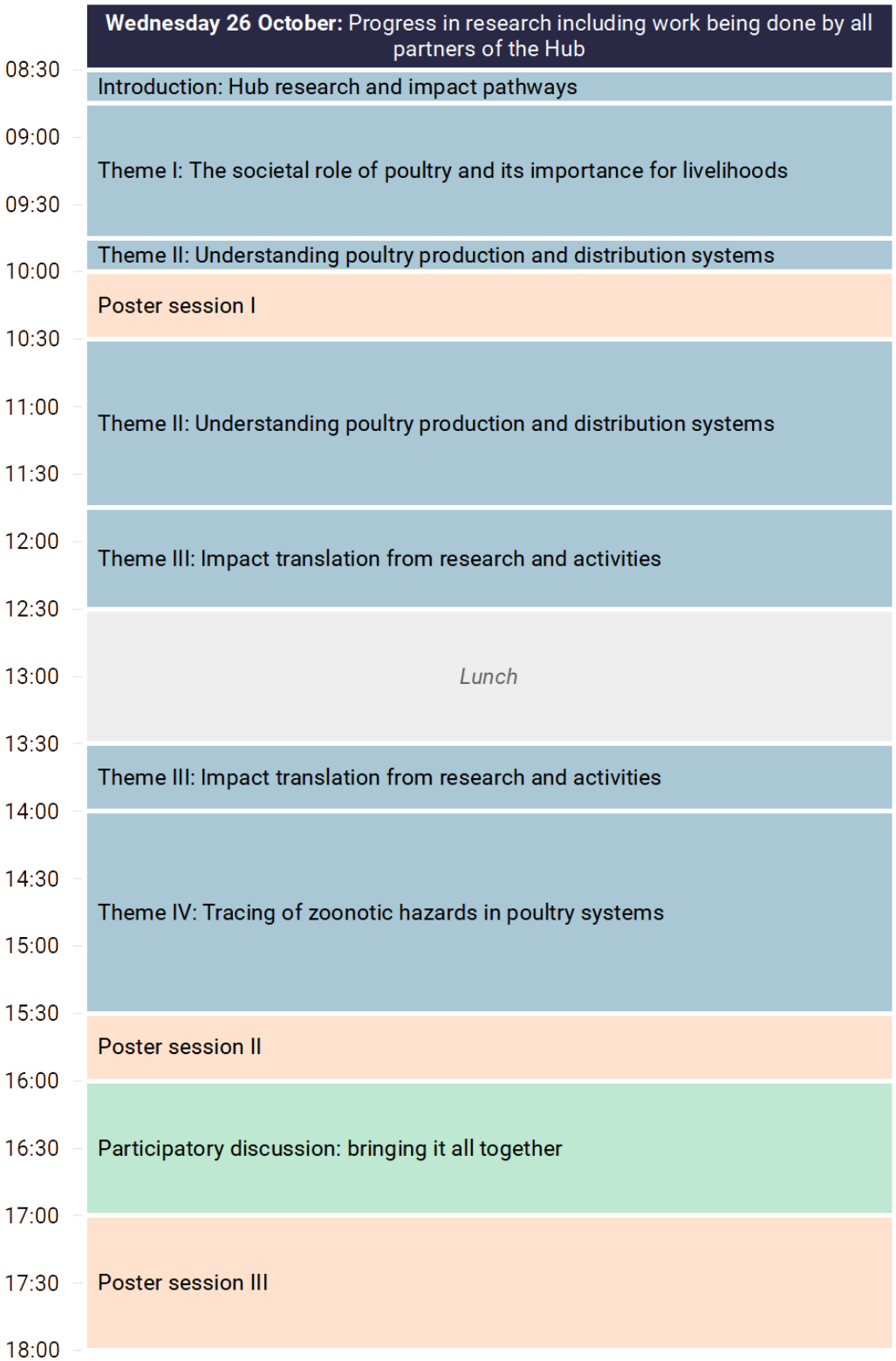
Type of activity	Oral presentations		
Session leads	Chair: Prof. F Tomley (UK) Co-chair: Prof. Vu Dinh T (Vietnam)		
Time	14:15 – 14:25	Debnath NC	Fleming Fund Bangladesh
	14:25 – 14:35	Rasmussen C / Kalam MA	USAID Supports for Global Health Security and Pandemic Prevention in Bangladesh
	14:35 – 14:45	Rahman H / Brum E	Bangladesh AMR Response Alliance (BARA) initiative
	14:45 – 14:55	Newman S	AMR and the Environment
	15:30 – 15:40	Card R	AMR in animal health and aquaculture sectors
	15:40 – 16:00	Summing up	
Place	Antara Hall		

Open discussion

Type of activity	Open discussion
Session leads	Reajul Huq M, Debnath NC, Vink D
Time	16:00 – 17:00

Scope	A panel constituted of the experts who presented during the day will discuss how to share resources, data, training; opportunities to build One Health capacity and understandings; and how to work at the policy-science interface.
Place	Antara Hall

Wednesday 26 October



Theme 1: The societal role of poultry and its importance for livelihoods

Objectives

This session is themed to include outputs of Hub research and activities that highlight the importance of poultry in society, and for the livelihoods of poultry producers, other stakeholders who rely on poultry production, and consumers. The focus is on social science.

Programme

Type of activity	Oral presentations		
Session leads	Chair: Prof. R Alders (Australia) Co-chair: Dr. I Syndicus (UK)		
Time	08:45 – 09:00	Sattar AA	Accessible veterinary care in poultry farms and antimicrobial resistance in Bangladesh: A qualitative investigation
	09:00 – 09:15	Ganesh J	The impact of COVID-19 lockdown on the sale of chicken meat in small retail meat shops in Chennai, Tamil Nadu, India
	09:15 – 09:30	Seelagama PK	A comprehensive study on different practices adapted in broiler meat industry in Sri Lanka
	09:30 – 09:45	Nguyen Thi D	Making a living in chicken PDNs in Vietnam: Livelihood practices and financial arrangement of stakeholders and its implications on the health risks
Place	Mollika / Madhubi Rooms		

Presentation details

First author	Other authors	First author institution	Title of the presentation
Sattar AA	Irin N; Sultana A; Islam M; Esha EJ; Dilshad SM; Mahmud R; Barnett T; Syndicus I; Houghton E; Fournie G; Hoque MA	Chattogram Veterinary and Animal Sciences University	Accessible veterinary care in poultry farms and antimicrobial resistance in Bangladesh: A qualitative investigation

With Bangladesh's fast-growing poultry industry, the provision of appropriate veterinary care and drugs on poultry farms has become challenging. This study investigates the extent to which veterinary services are available in poultry farms and assess farmers' understanding of antibiotics, and their potential contribution to emerging antimicrobial resistance (AMR). A qualitative study through semi-structured interviews was conducted with exotic broiler and Sonali poultry farmers (n=35), feed dealers (n=29), and veterinarians (n=45) in ten districts about disease management, veterinary services, antibiotic usage, and farmers' antibiotic understanding. For most independent or dealer-based farms, the initial course of treatment begins with the farmer's or dealer's own experience, followed by veterinarian consultation if desired results are not attained. Some are hesitant to accept veterinarians' suggestions due to their supposition of having superfluous prescriptions and unwillingness or inability to pay for medications. Contrarily, veterinarians struggle to reach farmers in remote areas due to their multiple responsibilities and, sometimes, dependence on feed dealers for access to farms, leaving farmers to rely on non-expert advice. Gaps between farmers and veterinarians and the involvement of intermediary stakeholders have exacerbated the overuse or misuse of medications,

including antibiotics. Disease and medication use are minimal in company-regulated contract farms because of veterinarians' routine inspections and prompt services. The study further revealed the farmers' insufficient knowledge about antibiotic usage, misuse effect, and AMR. These factors have contributed to the irrational antimicrobial usage in poultry, which has in turn aggravated the AMR issues. More accessible veterinary services, AMR awareness, and legislation prohibiting antibiotic abuse with effective monitoring systems can help address this rising threat.

First author	Other authors	First author institution	Title of the presentation
Ganesh J	Vigneshvaran P; Kumaravel P	Tamil Nadu University of Veterinary and Animal Sciences	The impact of COVID-19 lockdown on the sale of chicken meat in small retail meat shops in Chennai, Tamil Nadu, India

COVID-19 pandemic not only affected people's daily lives, it also affected the poultry supply chain, poultry retailers, as well as poultry farmers. The present study focuses on the impact of COVID-19 lockdown measures on the sale and supply chain of small retail chicken meat shop in Chennai city, Tamil Nadu, India. A questionnaire survey was conducted in selected areas of Chennai city to study the impact of COVID-19 lockdown on chicken meat sale in small retail chicken shops. Out of the 50 retail chicken shops surveyed, 84% shops were operated by the owners, while 16% shops were operated in partnership mode. The average age of the surveyed shops were 05 to 12 years. Significant reduction of the chicken meat sale was observed during the COVID – 19 lockdown period and 82% of small chicken retailers closed their shops temporarily to overcome the financial crisis and due to lack of transportation and rumour of COVID – 19 transmissions through chickens. This survey suggests that the government should provide continuous support to implement some policies in the future to protect the livelihoods of people who run small retail chicken meat shops.

First author	Other authors	First author institution	Title of the presentation
Seelagama PK	Wickramapathirana HAGHD; Wijekoon WMDV; Dassanayake NN; Kalupahana RS; Munasinghe DMS; Fernando PS; Satharasinghe DA	University of Peradeniya	A comprehensive study on different practices adapted in broiler meat industry in Sri Lanka.

Livestock is considered as an important element in the Agricultural sector in Sri Lanka and poultry products are considered as one of the main protein sources for Sri Lankans. Out of a variety of poultry products, chicken meat is one of the most popular source of protein. The chicken meat industry in Sri Lanka is dominated by broiler meat, which is produced at the large commercial scale by local manufacturers. Broiler meat production, compared to other meat types has increased rapidly in the last two decades due to growing consumer demand. The objective of this paper is to examine different poultry production practices among actors in the broiler meat industry in Sri Lanka and identify the knowledge and attitudes that that will lead to such practices. Further, the study attempts to investigate potential risky behaviours among these actors that may pose health risks to consumers. Participants of this study were divided in to three types, Type 1: Farm Managers, Type 2: Factory/ Processing Plant Managers, Type 3: Farm/Factory/Processing Plant Labourers. The data was gathered through face-to-face in-depth interviews using a topic guide. 19 key informant interviews in 10 different sites were conducted as part of this study. Observations at all stages of production were made using a detailed observation guide. Qualitative data was analysed using the thematic approach. The findings revealed that there are risk factors associated with practices on poultry production, transportation, sales, and hygiene. Also, findings showed a knowledge gap between the levels in different hierarchies. Findings further revealed that most of the risky practices have been triggered by unfavourable attitudes of the actors associated in the poultry production. Therefore, attitudes affect the practices in the broiler poultry production system in Sri Lanka.

First author	Other authors	First author institution	Title of the presentation
Nguyen Thi D		Vietnam National University of Agriculture	Making a living in chicken PDNs in Vietnam: Livelihood practices and financial arrangement of stakeholders and its implications on the health risks

The socio-economic factors, especially the financial arrangements are considered as the determinations of the behaviours toward the antibiotic use, biosecurity, and disease management of stakeholders involved in the chicken PDNs. This paper focuses on the livelihood practices, the sources of capital investments and the financial relations among the stakeholders in the chicken PDNs resulting in their potential association with the health risks. The research involves the primary data collection from observation and key informant interviews with 70 stakeholders from production and distribution of chicken in Northern Vietnam. The initial results show that the volume and source of capital investments in making living in chicken PDNs are various which resulted in two main patterns of behaviours and livelihood strategies. The income stability strategy is pursued mostly by the stakeholders with small size business with their own household capital investment and family labour. The high profit strategy is implemented by the stakeholders with large size business with the combination of household capital and loan, family and hired labour. The levels of loan associated to the natural and social uncertainties determine the livelihood practices that improve or expense the appropriate biosecurity. This research emphasizes the interactions of the livelihood drivers and the health risks in chicken PDNs in Vietnam.

Theme 2: Understanding poultry production and distribution systems

Objectives

In this session, findings will be presented on different aspects of the poultry production and distribution systems, and how these drive the propagation and emergence of transmissible disease hazards and antimicrobial resistance in the study countries.

Programme

Type of activity	Oral presentations		
Session leads	Chair: Dr. E Houghton (UK) Co-chair: Dr. MA Samad (Bangladesh)		
Time	09:45 – 10:00	Ferdous J / Henning J	Commercial poultry trading networks and its impact on Avian Influenza virus transmission in Bangladesh
	10:30 – 10:45	Dupas MC	Spatial distribution of poultry farms using point pattern modelling: a methodology to address disease transmission risks
	10:45 – 11:00	Le Thi Thanh H	Characterization of major live bird market in Northern Vietnam influencing the risk of avian affluenza transmission
	11:00 – 11:15	Sultana A	Preliminary findings from an exploration of characteristics and zoonotic disease risk factors in poultry live bird markets in Dhaka, Bangladesh
	11:15 – 11:30	Gunasekera KWMUP	Knowledge, Attitudes, and Practices (KAP) of backyard poultry keepers on management practices and biosecurity in the Western Province of Sri Lanka

	11:30 – 11:45	Hennessey M	A principal-agent assessment of stakeholder perspectives on broiler production and antibiotic use
Place	Mollika / Madhubi Rooms		

Presentation details

First author	Other authors	First author institution	Title of the presentation
Ferdous J	Uddin H; Hossain M; Esha EJ; Gibson J; Fournie G; Hoque MA; Henning J	University of Queensland	Commercial poultry trading networks and its impact on Avian Influenza virus transmission in Bangladesh

The spatial patterns poultry traders' movements are an important factor influencing avian influenza virus (AIV) spreading in poultry trading chains. A longitudinal study was conducted in Chattogram, Bangladesh, involving 16 live poultry traders. Each trader's movements were recorded with a bespoke mobile phone TRACKING App over three consecutive days, while survey questions, incorporated into the App, captured details of the transactions. Additionally, oro-pharyngeal swabs collected from chickens at farms and transport endpoints, and environmental samples from vehicles were screened for AIVs. In-depth qualitative interviews with traders and employed staff provided data on perceptions, behaviours and barriers of poultry trading. A total of 87 individual daily movements ('trip") were recorded. One trip includes on average 9 stops, including farms, roadside trading sites, chicken storage facilities and live bird markets (LBM). Mean distance travelled per trip was 101.1 km, median distance from one stop to another on a trip was 2.4 km. During each trip, traders visited 1-3 farms (purchasing 160-1,600 birds/farm and transporting in average 784 chicken/truck load) and supplied birds to 4-16 LBMs or roadside trading sites. At LBM, they supplied 20-1300 chickens to 1-8 vendors, while at roadside sites, they supplied 9-387 chickens to 1-2 vendors. Around 0-10% samples were positive for AIVs on farms whereas at the trading endpoints this increased to 12-19%. Network analysis will be used to investigate the social structures of trading networks, while regression models will be applied to identify risk factors of AIV. Qualitative interviews highlighted, employed staff merely follow instructions provided by traders, including inconsistent adherence to biosecurity measures during chicken loading and unloading. This study highlights that traders' movements and some of their practices are likely influencing the spread of AIV in poultry and need to be addressed to achieve effective mitigation of zoonotic disease risk associated with poultry trading. Moreover, the TRACKING App used in this study can readily be adapted and modified for other purposes, providing a sustainable research tool that can be rapidly scaled up in a variety of research scenarios to record mobility data.

First author	Other authors	First author institution	Title of the presentation
Dupas MC	Pinotti F; Lourenço J; Joshi M; Joshi C; Gilbert M; Fournié G	Université Libre de Bruxelles	Spatial distribution of poultry farms using point pattern modelling: a methodology to address disease transmission risks

The distribution of farm locations and sizes is paramount to characterize disease spread patterns. With some regions undergoing rapid intensification of livestock production, resulting in increased clustering of farms in peri-urban areas, measuring changes in the spatial distribution of farms is crucial to design effective interventions. However, those data are not available in many countries, their generation being resource-consuming. Here, we develop a farm distribution model (FDM), which allows predicting locations and sizes of poultry farms in countries with scarce data. It combines (i) a Log-Gaussian Cox process model simulating the farm distribution as a spatial Poisson point process with logarithm varying intensity depending on covariates, conserving the level of clustering of spatial points patterns, and (ii) a random forest (RF) model simulating farm sizes (i.e. the number of animals per farm). Spatial predictors are used to calibrate the FDM on intensive broiler and layer farm distributions in Bangladesh, Gujarat (Indian province) and Thailand. The LGCP and RF models yielded realistic farm distributions in terms of spatial clustering, farm locations and sizes, while providing insights on spatial analysis of the poultry production systems and spatial clustering drivers. Finally, we tested disease transmission scenarios with an individual-based model on an array of spatial distributions of farms, with transmission intensity being weighted by a spatial kernel. We found that farm distributions generated from the LGCP and RF models yielded spreading patterns consistent with simulations using

observed data, while random point pattern models yielded radically different patterns. Indeed, spatial clustering increases vulnerability to epidemics, highlighting the relevance of spatial clustering and farm sizes to study epidemic spread. As the FDM maintains a realistic distribution of farms and their size, Its use to inform mathematical models of disease transmission is very relevant for regions where these data are not available.

First author	Other authors	First author institution	Title of the presentation
Le Thi Thanh H	Dai NV; Hoa PTT; Conan A; Tomley F; Tuan HA; Duc DV; Luan NT; Ngoan VD; and Fournié G	National Institute of Agricultural Sciences	Characterization of major live bird markets in Northern Vietnam influencing the risk of avian affluenza transmission

The type, location of live bird markets (LBM) and trading practices of their vendors may influence the transmission of HPAIV H5N1 viruses. This study aims to characterize LBMs in Vietnam with respect to factors influencing disease transmission (figure 1). The survey of 11 wholesale (WM) and 18 retail markets (RM) was implemented in four study provinces Hai Duong, Bac Giang, Quang Ninh and Hanoi city. Observations were made and 29 market managers and 160 vendors were interviewed using structured questionnaires.
Preliminary findings suggest that LBMs could be classified into 3 types. Type 1 markets (n= 4) had an average of 2 to 3 vendors and an average of 6000 poultry were sold per day, they were supplied by 5 to 6 middlemen and most (75%) were open only a few days a month, depending on the lunar calendar, 50% they offered only chickens for sale and 50% both chickens and ducks, all used simple equipment for cleaning. Type 2 markets (n= 18) had the lowest numbers of stalls, chickens sold and middlemen supplying them compared to the two other categories, 93.8 % offered additional poultry species for sale alongside chickens and ducks and only 37.5% had slaughtering areas for vendors. Type 3 markets (n = 7) had the highest number of stalls, chickens sold, and middlemen, 85.7% of these were WMs and were located in Hanoi. It seems that the risk of disease transmission and difficulty in disease control increases from market type 1 to type 3. Individual trader practices are now being analysed.

First author	Other authors	First author institution	Title of the presentation
Sultana A	Hoque MA, Biswas PK, Samad MA, Mahmud R, Hasan M, Sattar AA, Irin N, Barnett T, Houghton E, Syndicus I, Fournié G	Bangladesh Livestock Research Institute	Preliminary findings from an exploration of characteristics and zoonotic disease risk factors in poultry live bird markets in Dhaka, Bangladesh

In Bangladesh's poultry industry, outbreaks of certain avian influenza viruses (AIV) have been a public health threat since the first HPAI H5N1 was reported in 2007. One key space in which this can be seen is in Live Bird Markets (LBMs), which are still considered hotspots of AIV prevalence and present a high risk of virus dissemination.
We use case studies to explore some preliminary findings from a study of how LBMs in Dhaka are run and used. Our study reveals why certain underlying business patterns/structures mean these markets are vital spaces when it comes to the transmission and evidence of diseases such as AIV in Bangladesh. Case studies reveal how the physical attributes of markets commonly associated with disease risk (e.g. bird storage, slaughtering facilities) are embedded in broader social structures that ultimately inform the supply and use of poultry markets in Dhaka.
Data were collected using ethnographic observation and semi-structured interviews in 7 live bird markets of varying size in Dhaka city. Respondents working in a range of roles in the markets were selected purposively by researchers.
Despite exposure to AIV outbreaks, a large proportion of people working in LBMs are not aware (or choose not to worry) that certain bird handling/selling practices can influence disease transmission. Instead, market vendors and other workers' associate bird diseases only with its potential to influence the profit and loss of business rather than health threat. By focusing on some key examples, this study introduces preliminary findings that help explain why a lot of embedded factors are accountable for disease transmission pathways observable in markets, such as lack of clear policies of market authorities for wet products, inappropriate stall settlements, arrangement systems including slaughtering and waste storage, drainage dirt water, dominant cultural practices on poultry purchasing and the preferred working environment stalls.

First author	Other authors	First author institution	Title of the presentation
Gunasekara KWMUP	Kalupahana AW; Gunasekara YD ; Kalupahana RS; Silva-Fletcher A	University of Peradeniya	Knowledge, Attitudes, and Practices (KAP) of backyard poultry keepers on management practices and biosecurity in the Western Province of Sri Lanka

The backyard poultry industry in Sri Lanka plays a major role in reducing malnutrition and empowering low-income households. It is important to understand the existing knowledge, attitudes and practices (KAP) of backyard poultry keepers on management practices and biosecurity. Using a multi-stage random sampling technique 150 farmers were selected, representing fifty farmers per district from all three districts in the Western province of Sri Lanka. Data were collected between January to March, 2022 using a piloted and structured interviewer-administrated questionnaire. According to the results, the common flock size was 5-20 birds and it was mainly reared for only egg production. The cost of feed (47.3%) and predators (39.3%) were identified as the most common problems. The majority (84%) believed that there would be a good market for their products and 74% would like to expand their farms. A few respondents (7.3%) had heard the term “biosecurity” but a working knowledge of the principles of biosecurity (as measured via a test question) was only evident in 1.3% of respondents. Only 60.7% of respondents kept sick birds separately from a healthy flock. The burial of dead birds was the most common practice of disposal of dead poultry. Although 52% of respondents believed that vaccines prevent diseases, 76.6% did not vaccinate their birds. The majority did not know the causes leading to diseases in poultry (69%), or diseases spread from one individual to another (40%), or the identity of diseases that can be prevented with vaccines (84%). Further, 88.7% of farmers preferred to participate in training programs about poultry management. It can be concluded that despite following some biosecurity measures, the majority of backyard poultry keepers do not have adequate KAP about biosecurity. Appropriate educational materials and training programs will help in uplifting the KAP of farmers in backyard poultry production.

First author	Other authors	First author institution	Title of the presentation
Hennessey M	Samanta I; Fournie M; Quaife M; Paleja J; Kumaravel P; Biswas R; Alarcon P	Royal Veterinary College	A principal-agent assessment of stakeholder perspectives on broiler production and antibiotic use

Broiler production is a rapidly growing livestock sector, both globally and within India. However, studies have reported high levels of antibiotic use in Indian broilers which is concerning given this is a driving force for the development of antibiotic resistance. Contract farming, introduced to India in the late 1980s, has come to dominate broiler production. This study considers the nature of contract relationships and how these may influence antibiotic usage and stewardship development.
We used an economic approach – the principal-agent framework – to examine the relationship between contract company stakeholders and broiler farmers. This framework focuses on informational asymmetry between service providers and seekers and the costs needed to avoid aberrant outcomes (Fig 1). Interviews were conducted with stakeholders (n=37) and broiler farmers (n=21), using online and face-to-face interviews. Reflexive thematic analysis, using a blended approach of deductive and inductive coding, was used to analyse data.
Themes generated describe how contract farming provides broiler farmers with uncertain opportunity, limited by credit inequality. Farmers appear to value local knowledge and use contract motility as a tool to navigate uncertainty, though antibiotic use did not appear to be a major part of these decisions. For contract company stakeholders, generated themes concerned how environmental challenges create an incomplete service acquisition-provision relationship, where antibiotics, and their alternatives, are needed as a risk mitigation strategy to create suitable environments for broiler production.
Using the principal-agent framework we argue that perspective is key in understanding contract relationships, with both parties being able to act as service seekers and providers. Efforts to reduce antibiotic use in Indian broilers could look at alternative ways of mitigating production risk, such as bolstering company confidence in antibiotic alternatives or providing farmers with access to financial credit to allow infrastructural upgrading.

Theme 3: Impact translation from research and activities

Objectives

In this theme, we examine the ways in which the research evidence and findings generated by the Hub are contributing to changes, with a focus on policy change.

Programme

Type of activity	Oral presentations		
Session leads	Chair: Prof. F Tomley (UK) Co-chair: Dr. P Mishra (India)		
Time	11:45 – 12:00	Esha EJ	One Health, multiple impacts: a review of 10 years of One Health work in Bangladesh and the region with a focus on the poultry industry in Bangladesh
	12:00 – 12:15	Vu Dinh T	Modernising chicken slaughter in Vietnam: why the gap between policies and implementation?
	12:15 – 12:30	Ton G	Contribution analysis: evaluating the One Health Poultry Hub's contribution to policy change
	13:30 – 13:45	Islam R	*Invited presentation:* Translation of research knowledge into policy
	13:45 – 14:00	Pfeiffer DU	*Invited presentation:* Barriers to bridging research and policy implementation
Place	Mollika / Madhubi Rooms		

Presentation details

First author	Other authors	First author institution	Title of the presentation
Esha EJ	Hoque MA; Abbas SS; Alders R	Chattogram Veterinary and Animal Sciences University	One Health, multiple impacts: a review of 10 years of One Health work in Bangladesh and the region with a focus on the poultry industry in Bangladesh

Bangladesh is embracing "One Health" (OH), with a strong focus on zoonotic diseases. This study assesses the impacts and lessons learned from the implementation of OH approaches in Bangladesh and the region over the last decade. It also identifies new OH endeavours that can better support health security, especially for the poultry sector. The scoping review protocol set inclusion and exclusion criteria for Bangladesh and selected South Asian Association for Regional Cooperation and Association of Southeast Asian Nations documents. A tailored interview guideline used with 25 key informants determined how effectively the OH approach connects to emerging diseases and antimicrobial resistance (AMR). Bangladesh is at high risk for zoonotic diseases like Avian influenza, Nipah, Rabies, Anthrax, and leptospirosis due to high human population density, human-animal interaction, and environmental degradation. Deforestation, natural disasters, and AMR encourage OH stakeholders to strategize how best to implement this approach across all sectors robustly and efficiently. Our review revealed that, relative to the other study countries, Bangladesh has made solid progress in institutionalizing the OH approach via inter-ministerial steering committee, technical advisory committee, coordination committee and an OH secretariat. However, despite the establishment of these bodies, Bangladesh lags in effective OH communication between sectors and with the public. Inadequate coordination among stakeholders, incompatible funding, and minimal evidence-based research were common obstacles. Bangladesh can learn from several countries regarding more effective OH action through the strengthening of their inter-sectoral and public awareness communication, and the establishment of local OH teams. Strong

coordination mechanisms, which enable multi-sectoral stakeholders to promote honest and timely knowledge sharing and management are essential. Engaging high-level government bodies that oversee frontline ministries helps overcome bureaucratic hurdles in OH implementation.

First author	Other authors	First author institution	Title of the presentation
Vu Dinh T	Ebata A	Vietnam National University of Agriculture	Modernising chicken slaughter in Vietnam: why the gap between policies and implementation?

This paper explores why a series of public policies that aimed at modernising the chicken slaughter sector in Vietnam have yielded limited results in the last decade. In response to major poultry disease outbreaks, rapid economic growth and urbanisation, and increasing citizens' concerns for food safety, the Government of Vietnam has enacted a number of regulations to modernise slaughter sector in the past decade. However, industrial scale slaughterhouses remain a minority and small-scale slaughter points and facilities, including slaughtering of live chickens at markets, continue to play an important role along the chicken supply chains. This study explores why this is the case, and what can be done to improve veterinary public health, food safety and environmental impacts of chicken slaughtering. Researchers at the Vietnam National University of Agriculture (VNUA) and Institute of Development Studies (IDS) have analysed existing policies at the national and provincial levels to understand the aims of these policies and intervention tools by the government to encourage and support the development of industrial scale slaughter facilities in northern Vietnam (Hanoi, Bac Ninh, and Hai Duong provinces). We further conducted stakeholder interviews with policy makers at the national, provincial and commune-levels, slaughterers, traders, retailers and food outlets to understand the real-life implications of these policies and the socio-economic, cultural and political dynamics that prevent industrial scale slaughterhouses to be further developed. We also review policies of other countries in the region - such as Thailand, Hong Kong and Malaysia - that have faced similar dynamics to Vietnam - rapid urbanisation, increasing demand for animal protein, food safety concerns - and evaluate how other countries' experiences can be utilised in the Vietnamese context.

First author	Other authors	First author institution	Title of the presentation
Ton G	Abbas S; Dasgupta R; Alders R; Tomley F; Vink D; Marks N; Bloom G	Institute of Development Studies	Contribution analysis: evaluating the One Health Poultry Hub's contribution to policy change

The presentation will explain the methodological underpinning of contribution analysis for impact evaluation. Contribution analysis uses the logic of generative causality where an intervention only produces an outcome when it activates or invigorates processes or mechanisms that are already present in the context. Policy changes are at the limits of the sphere of influence of a research programme but often provide the rationale for funding. We present the strategy to respond to the accountability requirement related with policy impact acknowledging the complexity of the processes to which the OHPH contributes. We describe the first phase where each hub defined a context-specific theory of change that reflected their strategy to create policy impact. A second phase consisted in the 'harvesting' of impact stories that indicated where and how the contributions by the OHPH came about. The third phase - just started - is the critical verification and validation of the main contribution claims.

Theme 4: Investigating zoonotic hazards in poultry production systems

Objectives

This session includes presentation of research findings and results related to zoonotic pathogens circulating in poultry populations. The focus in on biological and natural sciences.

Programme

Type of activity	Oral presentations		
Session leads	Chair: Ass. Prof. J Henning (Australia) Co-chair: Dr. P Koringa (India)		
Time	14:00 – 14:15	Joshi M	Food-borne diseases of poultry origin in India: results to date of Hub research
	14:15 – 14:30	Trang HN	One Health Poultry Hub with NIVR
	14:30 – 14:45	Stabler R	What does genomics tell us about Campylobacter through the food chain?
	14:45 – 15:00	Carnegie L	H9N2 and H5N1 avian influenza virus dispersal along Bangladeshi poultry trading networks
	15:00 – 15:15	Hay M	The use of machine learning approaches to identify factors that contribute to chicken enterotypes and resistomes
	15:15 – 15:30	Pelligand L	Prevalence of antimicrobial residue in broiler meat in Vietnam
Place	Mollika / Madhubi Rooms		

Presentation details

First author	Other authors	First author institution	Title of the presentation
Joshi M	Ajjampur S, Koringa P, Paleja H, Ronald S, Gowthaman V	Gujarat Biotechnology Research Centre	Food-borne diseases of poultry origin in India: results to date of Hub research
Food-borne diseases in India: results to date.			

First author	Other authors	First author institution	Title of the presentation
Ngoc TP	Vuong NB; Son TD; Huong QL; Thuy TH	National Institute of Veterinary Research	One Health Poultry Hub with NIVR
In Vietnam, chicken meat is a major source of protein and poultry production is important for many rural households. Intensification of production and associated value chains, through its impact on chicken population structure and dynamic, creates conditions for generation and dissemination of high impact zoonotic health hazards. In a collaboration with the Hub, National Institute of Veterinary Research (NIVR) has conducted the WP7 with the aim to analyse diversity of pathogen genetic material sampled along value chains (human/bird premises, environments) targeting avian influenza virus, Escherichia coli, Salmonella typhimunium, Campylobacter jejuni, analysis of antimicrobial residue and poultry microbiome. 27 live bird markets, 51 chicken farms and 25 chicken slaughtering systems in 4 provinces of Ha Noi, Bac Giang, Hai Duong, Quang Ninh were chosen as study sites. Looking healthy hybrid broilers > 70 days age with only exotic broilers on the same site were sampled. For live bird sampling, cloacal and oropharyngeal swabs of 10 chickens were sampled. For terminal sampling, sample types of cloacal swabs, oropharyngeal swabs, caecal pouches, colon swab, whole blood, gut/faecal microbiome, tissues, feather and environments were collected from 5 culled chickens. The analysis of avian influenza virus and food-borne bacteria samples were analysed in NIVR. Results: E. coli were found in 100% of 114 rectal swabs, 36 out of 104 (34.6%) environmental samples			

contaminated with Salmonella, 41.79% of 560 caecal swabs positive with Campylobacter, including 58.97% C. jejuni and 39,74% C. coli, positive proportion with avian influenza virus of 681 pooled samples is 27.7%, 8.16% and 34.8% for markets, farms and slaughtering systems, respectively.

First author	Other authors	First author institution	Title of the presentation
Lehri B	Huong LQ; Samad MA; Biswas PK; Stabler R	London School of Hygiene and Tropical Medicine	What does genomics tell us about Campylobacter through the food chain?

Thermophilic Campylobacter, C. coli and C. jejuni, are the most common cause of bacterial gastroenteritis worldwide, primarily driven by the consumption of contaminated poultry. Widely unregulated antimicrobial usage in poultry production is likely driving antimicrobial resistance (AMR) in poultry-derived Campylobacter, however, little is known about the landscape of AMR in Campylobacter in hub study countries. This study aimed to characterise phenotypic and genotypic AMR from a selection of C. coli isolates, representing farms and markets in Bangladesh and Vietnam.

Campylobacter isolates were phenotypically characterised: motility and growth characteristics were measured, and phenotypic AMR was determined by MIC antibiograms. Whole genome analysis was conducted, identifying AMR genes and providing epidemiological information for seven C. coli, isolated from Vietnam and nineteen C. coli isolated in Bangladesh. C. coli isolates displayed broad phenotypic resistance to multiple antibiotic classes and contained known AMR genes.

This study provides an in-depth analysis of C. coli isolates from poultry products and demonstrates that these C. coli isolates have the potential to be equally virulent as C. jejuni, but with higher levels of resistance to front line antibiotics. With foodborne diarrhoea a leading cause of global mortality and morbidity and enhanced genetic exchange between C. jejuni and C. coli linked to poultry production intensification, this has the potential to worsen the situation further.

First author	Other authors	First author institution	Title of the presentation
Carnegie L	Hasan M; Mahmud R; Hoque MA; Debnath N; Uddin MH; Lewis NS; Brown I; Essen S; Giasuddin M; Pfeiffer DU; Samad MA; Biswas P; Raghwani J; Fournié G; Hill SC	Royal Veterinary College	H9N2 and H5N1 avian influenza virus dispersal along Bangladeshi poultry trading networks

Avian influenza virus subtypes H9N2 and H5N1 are considered as endemic in Bangladesh's poultry population. Both subtypes affect poultry production and pose a potential zoonotic risk. Insufficient understanding of how the poultry trading network shapes the dissemination of these viruses has hindered the design of targeted interventions to reduce their spread. Here, we use phylodynamic approaches to investigate the spatial spread and dispersal patterns of H9N2 and H5N1 viruses in Bangladesh’s poultry population, focusing on its two largest cities (Dhaka and Chattogram) and their poultry production and distribution networks. Our analyses suggest that avian influenza virus lineage movement occurs relatively less frequently between Bangladesh’s two largest cities than within each city. H9N2 viruses detected in single markets are often more closely related to viruses from other markets in the same city than to each other, consistent with close epidemiological connectivity between markets. Our analyses also suggest that H9N2 viruses may spread more frequently between chickens of the three most commonly sold types (sunali - a cross-bred of Fayoumi hen and Rhode Island Red cock, deshi - local indigenous, and exotic broiler) in Chattogram than in Dhaka. Overall, this study improves our understanding of how Bangladesh’s poultry trading system impacts avian influenza virus spread, and should contribute to the design of tailored surveillance that accommodates local heterogeneity in virus dispersal patterns.

First author	Other authors	First author institution	Title of the presentation
Hay M	Hinsu A; Pandit R; Dong X; Koringa P; Psifidi A; Tomley F; Joshi C; Blake D	Royal Veterinary College	The use of machine learning approaches to identify factors that contribute to chicken enterotypes and resistomes

Identifying poultry farming practices that decrease the abundance of zoonotic pathogens and antimicrobial resistance (AMR) genes, optimise food conversion efficiency and minimise susceptibility to infection is valuable for chicken welfare and productivity, the environment, and public health. However, these desirable traits, and the factors that determine them, are complex and multifactorial.
Enterotypes represent distinct microbial community phenotypes and resistomes represent population AMR phenotypes. Variation in both can have significant effects on chicken health and public health risk. In the Poultry Hub, we plan to use dimensionality reduction and clustering to identify enterotypes (from 16S rRNA data) and resistomes (from AMR AmpliSeq data) in chickens from farms and markets in India, Viet Nam and Bangladesh. Thereafter, we will use Random Forest Models to identify (various combinations of) factors that associate with specific enterotypes and resistomes on farms.
To test this approach, we analysed the microbiomes of 300 indigenous Kadaknath and 300 commercial Cobb400 chickens from 60 farms in western India using 16S rRNA gene analysis. Using a compositional data approach, we identified three enterotypes (PA1 (n=290), PA2 (n=142) and PA3 (n=67)) that were shared across chicken breeds. PA2 had the lowest Firmicutes: Bacteroides ratio, a significantly higher Campylobacter abundance than PA1, and significantly lower alpha diversity than PA1 or PA3. Random Forest Modelling using farm characteristics was able to predict enterotype, suggesting that enterotypes are influenced by farming practices and that modification of farming practices could be used to reduce Campylobacter burden.
This study confirms that machine learning can be used to cluster complex phenotypes. The salient factors that determine these phenotypes can be identified and used to design interventions and inform policy to reduce risk in the future.

First author	Other authors	First author institution	Title of the presentation
Pelligand L	Seow K; Hoang Thi T; Luu Quynh H; Dang Thanh S; Pham Thi N; Thi Thanh Pham H; Cheng Cheah Y; Wang Y; Pessel D; Fournié G; Blake D; Tomley F; Conway P	Royal Veterinary College	Prevalence of antimicrobial residue in broiler meat in Vietnam

Increased antimicrobial resistance due to over/misuse of Antimicrobial Drugs (AMD) in poultry farming could be an important contributing factor to antimicrobial resistance (AMR) globally. AMU is permitted but withdrawal periods have to be respected before chicken meat can be consumed, as concentration fall below the Maximal Residue Limit (MRL) The aim of this study is to report incidence of AMD residues in meat in the Vietnam poultry production system.
A total of 127 chicken (21 exotics and 86 hybrids) were sampled, (47, 45 and 35 from Farms, Markets and Slaughterhouses, respectively. Chicken breast meat samples were collected and kept frozen (-80ºC) until analysis at a central laboratory. Samples were extracted and analysed by LC/MS (validated protocol adapted from the EU Reference Laboratory) to screen for the presence of a panel of 70 AMD at MRL level. A sample was positive when at least 1 AMD was detected above MRL.
Fourteen samples were positive (6 farms, 6 markets, 2 slaughterhouses). Prevalence of positive samples was 12.8% of farms (95% highest posterior density interval: 5.3-24.1%, binomial likelihood with flat prior), 13.3% on markets (95% HDI: 5.6-25.1%). Prevalence was 5.7% in slaughter facilities (95% HDI: 0.9-16.8%) but no positive sample was detected in any (semi)industrial slaughterhouses.
There was no difference in prevalence between sampling site (Chi square, P = 0.19) or between breeds (P = 0.11). The detected AMD were Doxycycline (4 samples), Tilmicosin (3), Ciprofloxacin (2) and one count for Oxytetracycline, Sulfadimetoxine, Sulfaclozine, Sulfamonomethoxine, Enrofloxacin, Azithromycin, Florfenicol and Florfenicol Amine. Three samples contained 2 AMD or more at MRL. Six samples contained very high concentrations (>10MRL). An additional 7 samples had residues between 0.5 and 1 MRL
The high prevalence of residue found in meat highlights insufficient withdrawal time since recent antibiotic administration and poses a health risk for consumer.

Participatory discussion

Objectives

This panel discussion will rely on the inputs of conference participants to weave together the four themes in the context of the Hub theory of Change. Aims are to highlight areas of progress and opportunity, to assess how impact pathways are being shaped and are progressing, and to identify areas requiring further attention.

Type of activity	Participatory discussion
Session leads	Prof. F Tomley, Prof. MA Hoque, Prof. PK Biswas
Time	16:00 – 17:00
Scope	Rapporteurs will present a 5-minute synthesis from each of the theme sessions. This will be followed by a facilitated discussion with audience participation.
Place	Mollika / Madhubi Rooms

Poster presentations

Objectives

The posters will present a broad cross-section of work being carried out across the Hub. These will form a rich supplement to the oral presentations. Our aim is for these presentations to be as (inter)active as possible, and for the work presented to contribute to the panel discussion.

Programme

Type of activity	Poster presentations
Times	10:00 – 10:30; 15:30 – 16:00; 17:00 – 18:00
Scope	During the first two sessions, posters will be presented in the poster viewing area. The third session will include virtual presentation by their presenting authors. As these sessions overlap with breaks, they will be relaxed and informal. Subsequently, prizes will be awarded for the best poster and best oral presentation.
Place	Poster hall

Presentation details

Poster number	First author	Poster title
1	Abbas SS	Meanings and mechanisms of One Health partnerships: Lessons from a critical review of literature on cross-government collaborations
2	Alagesan A	Prevalence of food-borne pathogens in broiler chicken and farm environment in Tamil Nadu, India
3	Azizul Islam SKM	Prevalence of Antimicrobial Residues in Poultry Meat in South Asian Countries: a PRISMA-Compliant Systematic Review
4	Balakrishnan	Prevalence of Zoonotic food-borne pathogens in Commercial Broiler and Desi chicken

	A	from live bird shops in Tamil Nadu, India
5	Chavan M	Prevalence of Antimicrobial Resistant E coli in poultry from various PDN's of Gujarat
6	Chisty NN	Prevalence of Campylobacter and Non-typhoidal Salmonella in South and Southeast Asia from Chicken Origin: A Systematic Review and Meta-analysis
7	Chisty NN	Backyard Poultry Biosecurity: Existing Knowledge, Attitude and Practices in Chattogram, Bangladesh
8	Esha EJ	A stakeholder analysis of the poultry sector in Bangladesh
9	Ferdous J	Comparison of the live and dressed poultry trading chains in Bangladesh
10	Golaviya A	Variation in antimicrobial resistance gene occurrence in the caecal microbiota of broiler chickens fed antibiotics or probiotics
11	Hay M	Metagenome-assembled-genomes (MAGs) from the chicken caecum to identify the bacterial hosts of antimicrobial genes
12	Hedges S	Novel lateral flow techniques to detect antimicrobial residues from chicken feathers
13	Hinsu A	A longitudinal study of chicken caecal microbiota focused on microbial diversity and the occurrence of AMR genes
14	Irin N	Consumer perceptions on consuming poultry products and their personal safety while buying poultry products during COVID-19 pandemic in Bangladesh
15	Koringa P	Developing a network of researchers with expertise in molecular diagnostics to monitor and investigate antimicrobial resistance (AMR)
16	Kumar D	The NGS platforms reproduce same results for the AMR analysis
17	Luu Quynh H	Prevalence of campylobacter spp. on chicken farms, chicken slaughterhouses and retail markets in Vietnam
18	Mahmud R	The One Health Poultry Hub: A Research Platform for sustainable poultry production and distribution with emphasis on reducing disease risks for humans and animals.
19	Pham Thi Thanh H	Progress in achieving the impacts of the One Health Poultry Hub in Vietnam
20	Satharasinghe DA	Poultry and poultry products distribution in Sri Lanka: An Overview
21	Scudiero L	What lies beyond urbanisation? Re-evaluating poultry consumption in urban India
22	Sequeira S	Investigating poultry trade patterns in Gujarat to improve disease surveillance: A cross-sectional study in Gujarat
23	Tak M	Desi to global chicken: How financialisation industrialised Indian poultry?
24	Vigneshvaran P	IMPACT OF COVID-19 PANDEMIC ON VARIOUS STAKEHOLDERS IN POULTRY INDUSTRY IN TAMIL NADU: AN EXPLORATORY STUDY
25	Vink D	The role of Social Network Analysis (SNA) as an evaluation tool in complex One Health partnership networks
26	Carnegie L	H9N2 and H5N1 avian influenza virus dispersal along Bangladeshi poultry trading networks
27	Pinotti F	Transmission dynamics of H9N2 Avian Influenza virus in a Live-Bird market in Chattogram, Bangladesh
28	Ton G	Contribution Analysis
29	Dilshad SM	Stakeholder training: in support of positive change
30	Sattar AA	Accessible veterinary care in poultry farms and antimicrobial resistance in Bangladesh: A qualitative investigation

Cultural event and gala dinner

A cultural event will take place at 19:00. This will be followed by a gala dinner.
During the gala dinner, there will be a prizegiving ceremony for the best poster and the best oral presentation.

Thursday 27 October

Session 1: Theory of Change, MEL and recording progress

Objectives

Substantial work has been done to review and update the ToC. In this workshop session, these will be further discussed. There will be an emphasis on identifying the impacts pathways that will contribute to Hub impacts. ICE will be a part of this discussion. This needs to 'translate' to the more applied context of implementation and measurement of such outcomes.

Structure

An initial workshop style discussion will review changes to the ToC, and how this informs the ICE strategies. This will be higher-level. It this will be followed by a work planning session on MEL and reporting (which is more applied and will include things like risk registration and log frame).

Type of activity	Updates to ToC and ICE strategies: Workshop
Session leads	Prof. F Tomley, Dr. D Vink, Dr. G Ton, Ms. N Marks
Time	08:45 – 09:15
Place	Mollika / Madhubi Rooms / Business Centre large meeting room

Type of activity	MEL, reporting and recording progress against objectives: Work planning
Session leads	Prof. F Tomley, Dr. D Vink, Dr. G Ton, Ms. N Marks
Time	09:15 – 10:00
Place	Mollika / Madhubi Rooms / Business Centre large meeting room

Session 2: Research planning

Objectives

To discuss practical questions about fieldwork, lab analyses and study design across the 5 sites. There will be a specific emphasis on field studies commencing soon.

Structure

This session has been left very open to be able to accommodate specific requirements and needs. There may be a focus on site or work area (or both). The session is likely to consist of break-out planning and coordination meetings. Further details will be passed on at the beginning of this day.

Type of activity	Work planning
Session leads	Dr. G Fournié (and other research leaders)
Time	10:30 – 12:30
Place	Mollika / Madhubi Rooms / Business Centre large meeting room

Session 3: Improving our One Health lens: lessons from the journey so far

Objectives

This workshop gives us an opportunity to pause and reflect on the 'One Healthness' of the Hub, by placing it in the context of recent global developments in One Health, including definitions of One Health, emerging initiatives and new programmes. We may touch on the development of effective partnerships and issues of inequity and other constraining factors.

The workshop will specifically and emphatically include a component on gender-related issues within the Hub (and more widely). This is likely to constitute the kick-off of gender studies to be implemented subsequently.

Structure

The structure of the workshop has not been well-defined, but it is likely to include break-out groups. Come prepared to contribute your insights and opinions!

Type of activity	Workshop
Session leads	Prof. R Alders, Prof. F Tomley, Prof. N Debnath
Time	09:00 – 10:30
Place	Mollika / Madhubi Rooms / Business Centre large meeting room

Session 4: Training and capacity development

Objectives

Training and capacity development has had to be scaled back as a consequence of budget cuts. However, the need for such support has remained equally great. In this current year, budget has been reserved to carry out training activities; furthermore, this will likely become more important in the final Hub year. This session is intended to address needs and plan activities in more detail.

Structure

This session has been left very open to be able to accommodate specific requirements and needs. It may consist of break-out planning and coordination meetings. Further details will be passed on at the beginning of this day.

Type of activity	Work planning
Session leads	Prof. A Silva-Fletcher
Time	11:00 – 12:30
Place	Mollika / Madhubi Rooms / Business Centre large meeting room

Participatory discussion: horizon scanning and future perspectives

Objectives

This final discussion session in the conference affords an opportunity to look back over the previous days and assess the progress that has been made. This will help to contextualise and preview the plans for the final year of the Hub.

An essential talking point will be looking forward beyond the Hub lifetime: considering opportunities to ensure the network is sustained and the legacy of the Hub is secured.

Structure

Type of activity	Participatory discussion
Session leads	Prof. F Tomley, Dr. G Ton, Dr. R Alders
Time	15:30 – 17:00
Scope	The session moderators will reflect on their impressions and thoughts from this conference, and speculate on the coming period. This will be followed by open discussion. This session is likely to be open and flexible in structure, and may, for instance, include break-out sessions to encourage participation.
Place	Mollika / Madhubi Rooms

Speaker biographies

Ahmed Nawsher Alam

Dr. Ahmed Nawsher Alam completed graduation from Sir Salimullah Medical College on 1993, and entered into Government service on 1997. He worked for 3 years at different Upazilla Health complexes which are the primary level of health care facility under Ministry of Health and Family Welfare. He was then admitted in MD-Virology course at Bangabandhu Sheikh Mujib Medical University. He completed post-graduate course on 2007. He also completed online masters' course on public health. After completed Virology course, he has been posted at National Polio and Measles Laboratory at Institute of Public Health and worked there from 2007 to 2011. This laboratory was mandated for polio virus detection by isolation in cell culture and serotyping by RT-PCR methods. Serological detection of antibody to measles, rubella and JE virus was done too. He was then posted at National Food Safety Laboratory of the same institute from 2011 to 2016. This is a food testing laboratory, has capacity to analyse food chemistry and food microbiology. He joined Institute of Epidemiology, Disease Control and research (IEDCR) on 2016 at virology department. This department has got molecular lab, serology and cell culture lab. The common laboratory tests perform in this lab are molecular test for Covid-19, Influenza, Dengue, Zika, Chikungunya, and Anthrax; for antibody detection Dengue, JE, Nipah, and Hepatitis E virus etc. As Head Virology laboratory, he supervises all activities in this lab.

Robyn Alders

Robyn has worked with family farmers in Africa, Asia and Australia as a veterinarian, researcher and colleague for over 25 years. For much of this time, she has worked to improve household food and nutrition security through improving the health and production of village chickens. The development of sustainable Newcastle disease (ND) control in rural areas has been a vital component as this disease is a key constraint to small livestock producers, many of whom are women and own only poultry. In addition to technical issues relating to food and nutrition security, Robyn has recognised the important role of socio-economic issues, including gender, in sustainable livestock development and value chain programs. She also has a practical understanding of the role of animal source food (both domestic and non-domestic) in food and nutrition security.

Paritosh Kumar Biswas

Paritosh Kumar Biswas earned Doctor of Veterinary Medicine (DVM) degree (1990) from the Bangladesh Agricultural University, Mymensingh, Bangladesh and PhD degree (1995) from the St. Petersburg State Academy of Veterinary Medicine, St. Petersburg (currently, St. Petersburg State Veterinary University), Russia. He also received a Diploma in Poultry Diseases and Diagnostic Methods (2006) from the Royal Veterinary and

Agriculture University (currently, integrated with the Copenhagen University), Copenhagen, Denmark and Six month-long intensive training on Molecular Microbiology from the Copenhagen University, Denmark (2010-11). He started his professional career as a Veterinary Assistant Surgeon (1995-96) under the Department of Livestock Services (DLS), Bangladesh, then served as the Livestock Specialist in Ansar-VDP Unnayan Bank (1996 -98), a specialized Bank in Bangladesh from which he joined the Department of Microbiology, the then Chittagong Government Veterinary College (currently, CVASU, from 7 August 2006) in 1998 and served as an Associate Professor until 2003. Since then he has been working as a Professor in the Department of Microbiology and Veterinary Public Health, except for 8 months in 2008 - 2009 when he served as a National Consultant (Highly Pathogenic Avian Influenza (HPAI) outbreak response and training, Bangladesh) at FAO, Bangladesh. As part of additional responsibilities he also held some other academic positions: Head of the Department of Microbiology (1998 – 2006, 2011-13), Coordinator in Bangladesh for the Commonwealth-funded Distance Learning Partnership Project on Commonwealth Scholarship with Master of Science degree courses in the areas: Livestock Health and Production, Veterinary Epidemiology and Public Health at the Royal Veterinary College, London, UK (2011-13); Dean, Faculty of Food Science and Technology, CVASU (2013-15); Executive Editor, Bangladesh Journal of Veterinary and Animal Sciences (2012-14) and Director (additional charge), One Health Institute, CVASU, and Director, Poultry Research and Training Centre (PRTC) (2015 -2022), CVASU. He was a recipient of International Conference on Emerging Infectious Diseases (ICEID) 2018 Leader, from Centers for Disease Control and Prevention, CDC, USA, and is a member, Advisory Board, Avian Pathology Journal (2019-). He has published 79 papers so far out of which 53 are in Internationally peer-reviewed journals. He is a co-investigator of OHPH.

Fahmida Chowdhury

Dr. Fahmida Chowdhury is working as associate scientist and Project Coordinator under the Programme for Emerging Infections (PEI) of Infectious Diseases Division of ICDDR B and also leading the Respiratory Viruses Research Group and Infection Control and AMR Research Group. She is a medical epidemiologist and carried out multiple research projects funded by US Centre for Disease Control and Prevention (CDC) and other international donors. She has started her career as a clinician in pediatrics in 2001 and has developed keen interest in infectious diseases research and have been involved in research on infectious diseases in Bangladesh since 2009. She is leading multiple research projects to assess the disease burden, identify key vulnerable populations, geographic localization and transmission dynamics for influenza and other respiratory viruses including emerging pathogens through hospital-based surveillance, cohort studies like birth cohort, pregnancy cohort, community survey and cost studies. She also leads multiple research projects on AMR to identify the burden of multi-drug resistant organisms including use of antimicrobials at different sectors through one health approach.

Nitish Debnath

Prof. Nitish Chandra Debnath is currently working as Team Leader of DAI Fleming Funded country project and is honourable member of National Advisory Group of One Health Poultry Hub, Bangladesh. He served more than seven years in FAO ECTAD as Senior Technical Advisor of One Health and Veterinary Education. Dr Debnath 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, in short, One Health Bangladesh. He has been chairing One Health Bangladesh for the last 12 years. He was the founding Vice-Chancellor of Chattogram Veterinary and Animal Sciences University (CVASU). Because of his leading role in research and educational networking Chattogram Veterinary and Animal Sciences University has become one of the premier universities in South Asia. Prof Debnath will be act as Technical Adviser in providing leadership role and guidance to the FETPV program in Bangladesh.

Guillaume Fournié

Guillaume is a veterinarian and an epidemiologist, currently working at the Royal Veterinary College, UK. His main research interest is understanding the way in which livestock production systems shape the emergence, spread, and maintenance of infectious diseases. He has worked on a wide range of animal and zoonotic diseases in a variety of geographical and cultural settings. His research is inter-disciplinary, involving collaborative work and the development of integrative approaches at the interface between epidemiology, virology, anthropology, economics and archaeology. He also has a strong interest in the translation of science into policy. He is the Research Coordinator of the GCRF UKRI One Health Poultry Hub.

Eve Houghton

Dr. Eve Houghton is a social anthropologist and Postdoctoral Research Fellow at The Royal Veterinary College, UK. In this position, she works for the GCRF One Health Poultry Hub, exploring the social conditions informing zoonotic disease transmission in poultry farms in South and Southeast Asia. She is also a contributing researcher to the BBSRC funded Rapid Response project 'Understanding animal health threats from emerging H5 high pathogenicity avian influenza viruses' (Flu-MAP), within which she oversees qualitative research investigating how stakeholders make decisions regarding biosecurity and respond to avian influenza outbreaks. Her past work in museums, charitable organisations and market research companies around the world has all been shaped by her interest in food systems, health, law, and agency. During her PhD, Dr Houghton's research explored the role of village courts and alternative dispute forums in Papua New Guinea.

Md. Abul Kalam

Dr. Md Abul Kalam is a veterinarian. He obtained the Graduate and Masters degree from Bangladesh Agricultural University. During his long 36 years career, he served in research institutes, state veterinary service, FAO, Development organization. He has been engaged in policy planning, regulations, pandemic preparedness and response among many others. He is a dedicated One Health activist. Dr. Kalam is currently working for USAID/Bangladesh as Global Health Security Specialist. She is actively engaged in USAID's efforts in building Bangladesh capacity to prevent, detect and respond to pandemic, endemic zoonoses and antimicrobial resistance.

Mohammed Rafiqul Islam

Prof. Dr. Mohammad Rafiqul Islam was born in Dhaka, Bangladesh in 1958. He was graduated with DVM in 1981 and obtained MSc (Vet Sc) in 1982 from Bangladesh Agricultural University, Mymensingh. He obtained his PhD from the University of Liverpool, UK in 1988. From 1999 to 2000 he was a Humboldt Fellow at the University of Leipzig, Germany. Currently, Dr. Islam is a Professor of Veterinary Pathology at Bangladesh Agricultural University. He is also associated with FAO ECTAD Bangladesh as a Senior Technical Advisor and previously served as the Regional Avian Influenza Laboratory Coordination at the FAO Regional Office in Bangkok, Thailand. Professor Islam is the President of World Veterinary Poultry Association - Bangladesh Branch (WVPA-BB). Previously he held different executive positions of Bangladesh Society for Veterinary Education and Research (BSVER), Bangladesh Veterinary Association (BVA), Bangladesh Society of Microbiologists (BSM) and World's Poultry Science Association - Bangladesh Branch (WPSA-BB). He also served as a member of the Editorial Advisory Board of Avian Pathology. His current research interests are in viral diseases of poultry and biosecurity in poultry farms. He has published more than100 research articles. He supervised or co-supervised 15 PhD students and many MS students. He received Bangladesh Academy of Science Gold Medal in 1994 and Avian Pathology Asian Lecture Award in 2014. He was inducted to "WVPA Hall of Honour" in 2017.

Shamsul Arefin Khaled

Mr. Shamsul Arefin Khaled was born in 1969. He was brought up and educated in Dhaka and obtained his Bachelors and Masters of Commerce in Accounting from the University of Dhaka in 1989 and 1990, respectively. He is the Director and Owner of Khaled Group of Industries, which includes the leading poultry enterprises such as Nourish Poultry & Hatchery Ltd., Nourish Agro Ltd., Nourish Grand Parents Ltd., Nourish Feeds Ltd. and Nourish Foods Ltd. Apart from poultry industries other ventures of Khaled Group of Industries includes garments, packaging, communications, fisheries, shipping, engineering, international trading and life insurance companies. Mr. Khaled is actively involved in World's Poultry Science Association (WPSA), Poultry Breeders Association, Poultry Owners

Association and Garments Manufacturers and Exporters Association. He was the immediate past President of the Bangladesh Branch of World's Poultry Science Association (WPSA-BB). Currently, he is the Vice President of Bangladesh Poultry Industries Central Council (BPICC).

Scott Newman

Scott is a wildlife veterinarian and biologist with over 20 years of international experience managing and implementing multidisciplinary One Health programs at the human-wildlife-livestock-ecosystem interfaces in Asia, Africa, North America, and Europe. He has worked in academic settings and for NGOs as a wildlife and conservation medicine research scientist, and has been with the Food & Agriculture Organisation of the United Nations (FAO) or 15 years. At FAO, his work focuses on transboundary animal and zoonotic disease prevention and control, antimicrobial resistance and food safety, sustainable agricultural production and pastoralism, wildlife ecology and natural resource management, and expanding One Health to include the wildlife and environment sectors. Scott holds a PhD in Integrative Pathology, a doctorate in veterinary medicine (DVM), a BS degree in Biology, and he has published over 100 peer-reviewed research articles.

T.A.B.M. Muzaffar Goni Osmani

T.A.B.M. Muzaffar Goni Osmani is a veterinarian and presently working as chief of epidemiology unit, Department of livestock Officer under Ministry of Fisheries and Livestock. In addition, he is coordinator of Field Epidemiology Training Program for Veterinarians. He is also the focal point WAHIS-WOAH of Bangladesh. He has strong link with One Health Bangladesh as executive member of coordination committee. He is an epidemiologist and his career focus on disease control modeling. He has special interest on AMR and zoonotic disease surveillance research.

Ludovic Pelligand

Ludovic is a professor of Veterinary Anaesthesia and Clinical Pharmacology at the Royal Veterinary College, London, UK. He completed a 3-year anaesthesia residency at the Royal Veterinary College (RVC), London, UK where he gained his European Diploma of Veterinary Anaesthesia and Anaesthesia in 2006, then completed his pharmacology PhD at the RVC in 2010 on the roles of cyclooxygenase (COX) isoenzymes in the regulation of inflammation and the renal function in the cat. Ludovic embarked on a post-doctoral appointment at the RVC and gained the European Diploma in Veterinary Pharmacology and Toxicology in 2014. He promotes the use of mathematical modelling and pharmacometrics (i.e. the PK/PD approach) to help resolve clinical questions. He is involved in international collaborations such as VetCAST (the veterinary subcommittee of EUCAST), the European Network for Optimization of Veterinary Antimicrobial Treatment (ENOVAT), the H2020 project on Alternatives to Veterinary Antibiotics (AVANT) and the One Health Poultry

Hub. Ludovic also an active member of several international committees, such as the Therapeutic Guidelines Group of WSAVA, the Comité Analyse et Maîtrise du Risque (SFAR).

Francesco Pinotti

Francesco Pinotti is working on the development of data-driven mathematical models to better understand the transmission and evolution of avian influenza and other multi-strain pathogens. He is a Postdoctoral Research Assistant in mathematical modelling, based in the Department of Zoology at the University of Oxford. He holds expertise in mathematical modelling of infectious diseases and individual-based models. His research interests include network epidemiology and the ecology of infectious diseases.

Habibur Rahman

Dr. Md. Habibur Rahman being a professional of ONE HEALTH CONCEPT having DVM and MPH is currently working as National Technical Advisor-One Health Training & Outreach in FAO ECTAD. He is the focal person to run public health interventions on AMR and Rabies in FAO. He was instrumental to form Bangladesh AMR Response Alliance (BARA) and to develop One Health AMU guidelines. He served more than ten years in FAO in different projects. Dr. Rahman was the senior technical consultant in Research, Training and Management (RTM) International for five years. He has 20 years of working experiences in different donor funded projects focusing on zoonotic diseases. He was USAID international consultant to lead three days TOT on IPC and five days Avian Influenza Commodities Training for the national level human doctors, veterinarian and agriculture officials of Bhutan. He was the member of National IPC guidelines development committee of Communicable Disease Control (CDC) of DGHS. He was the project coordinator for TBCARE-II Bangladesh. Therefore, he was one of the national committee members who developed “Handbook on TB” and incorporated in the MBBS curriculum.

Mohammed Abdus Samad

Mohammed Abdus Samad is a veterinarian and holds a PhD in nano medicine and drug delivery. He started his career with the Bangladesh Livestock Research Institute, Bangladesh as Scientific officer and has been working as Principal Scientific officer. Since January 2021 he also has been working as Director of the National Reference Laboratory for Avian Influenza (NRL-AI), BLRI, Bangladesh. His research focus on understanding zoonoses and public health in developing countries, with emphasis on mode of evolution and transmission in animal-human-environmental interfaces. He has been involved with several national and international research projects on animal health as well as public health.

Md. Abu Sufian

Dr. Md. Abu Sufian is currently working as Director, Department of Livestock Services, Bangladesh. He is working in the department last 23 years for different position starting from scientific officer, upazila livestock officer, district livestock officers and principal scientific officer. He did his PhD from Kagawa University, Japan. He has 16 publications in national and international journal. Ha has vast experience as a World Organization for Animal Health (WOAH) focal points for veterinary medicinal products. He already joined different international conference in eight countries.

Fiona Tomley

Prof. Fiona Tomley is the Principal Investigator and Director of the One Health Poultry Hub. She has intellectual leadership and overall responsibility for oversight and management of the proposed programmes of research, for delivery of excellent and relevant impacts, and for developing beneficial partnerships with stakeholders to add value and secure long-term sustainability of the Hub. She is Professor of Experimental Parasitology at RVC.

Daan Vink

Dr. Daan Vink is a veterinary epidemiologist, specialising in animal health surveillance, biosecurity, risk analysis and epidemic preparedness and response. Having worked in the NGO sector, academia, consultancy and public-sector veterinary services, he has an interest in what makes partnerships successful. He is the Hub Programme Manager based at the Royal Veterinary College, UK.

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