



# Bangladesh AMR Newsletter



National AMR Coordination Centre



September 2021 | Issue No. 2

## Dissemination of Findings on “Antimicrobial Use in Human and Animal Health Using One Health Approach” and Data Utilization through Clinical Engagement at Mymensingh Medical College Hospital



Brig. Gen. Md. Fazlul Kabir, Director, MMCH

The Antimicrobial Resistance Containment Program, Communicable Disease Control, DGHS with the support from the Fleming Fund Country Grant to Bangladesh (FF-CGB) organized a sharing meeting titled- ‘Antimicrobial Use in Human and Animal Health Using One Health Approach and Data Utilization through Clinical Engagement’ at the Mymensingh Medical College Hospital (MMCH) on September 04, 2021. The meeting was chaired by Brigadier General Muhammad Fazlul Kabir, Director, MMCH. Dr Aninda Rahman, DPM, CDC, DGHS; Dr Zakir Hossain Habib, PSO, IEDCR; Dr S.M Shariar Rizvi, Evaluator, CDC; Prof. Dr Nitish C. Debnath, Dr Khaleda Islam,

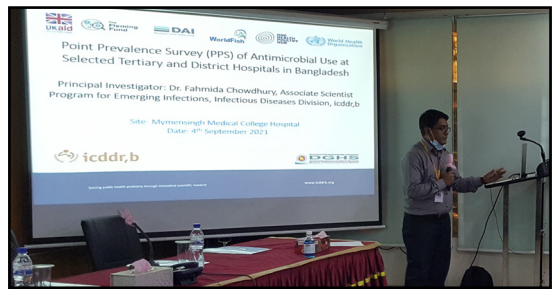


Dr Sanjukta Roy, MMCH



Dr Aninda Rahman, DPM, CDC, DGHS

FFCGB were some of the guests at the meeting. Dr Sanjukta Roy, MMCH, shared the ‘Antimicrobial Susceptibility Pattern of Commonly Isolated Bacteria at Mymensingh Medical College’. Dr Mahbubur Rashid, icddr,b shared the findings of ‘Point Prevalence Survey (PPS) of Antimicrobial Use at Selected Tertiary and District Hospitals in Bangladesh’. Ms. Amethyst Gillis from Fleming Fund Head Office, shared ‘Data Utilization through Clinical



Dr Mahbubur Rashid, icddr,b

Engagement’ by joining a video call. The Director informed that MMCH is working to establish an automated system for data collection. Dr Aninda Rahman, informed about how the National Program on Antimicrobial Containment is working in several areas in Human Health, Animal Health and in Aquaculture, to contain AMR.

Dr Aninda Rahman, DPM, CDC, DGHS

## Editorial



Antimicrobial resistance (AMR) is one of the top ten global public health threats that the humanity is facing and it poses a threat to the achievement of the Sustainable Development Goals (SDGs). To address that, the AMR Containment Program, CDC, DGHS took several initiatives, one of which is evidence generation and we already have conducted few national

level studies like ‘Political Economic Analysis for AMR Containment Advocacy in Bangladesh’ and ‘Antimicrobial Use in Human, Commercial Chicken and Aquaculture Using One Health Approach in Bangladesh’. We also developed the ‘National Strategic Plan for Antimicrobial Resistance Containment in Bangladesh [2021-2026]’, which is aligned with the Global Action Plan adopted in 2015. Taking all these major steps we are moving forward to the AMR Containment in the country adopting a One Health approach.

**Prof. Dr Md. Nazmul Islam**  
Chief Editor

Director, Disease Control and Line Director, CDC





## First Meeting of Sectoral Working Group (Human Health) of AMR Surveillance



Sectoral Working Group (SWG) is the apex coordination body for the coordination of AMR surveillance activities in human health. Recently the 31-member sectoral working group was approved by the Director General, DGHS. The group comprises laboratory experts throughout the country as well as public health specialists, pharmacologists, clinicians and ICU experts. The group is assigned to oversee the nationwide ongoing AMR surveillance activities conducted by IEDCR as well as the activities of the National Reference laboratory (NRL) for AMR surveillance. The committee is chaired by the Director IEDCR Prof. Dr Tahmina Shirin, PhD while Dr Zakir Hossain Habib, Principal Scientific Officer and Head, Department of Microbiology of IEDCR is the member secretary of this prestigious technical expert committee.

First consultative meeting of the Sectoral Working Group (Human Sector) of AMR surveillance was held on 14 June, 2021 at the conference room (IEDCR new building) supported by Fleming Fund Country Grant to Bangladesh.

The meeting was presided over by the Director IEDCR Prof. Dr Tahmina Shirin, PhD. Chief Guest of the program

was Prof. Dr Md. Nazmul Islam, Director Disease Control, Line Director CDC, DGHS and the special guests were Prof. Nitish C. Debnath, DVM, PhD, Team Lead, Fleming Fund Country Grant to Bangladesh, DAI, Dr Khaleida Islam, Surveillance Lead, Fleming Fund Country Grant to Bangladesh, Dr. Zobaidul Haque Khan, MD, MPH, Deputy Team Lead, Fleming Fund Country Grant to Bangladesh, DAI. Due to ongoing COVID-19 pandemic situation some of the participants attended online in the meeting.



Four presentations were delivered in the meeting

1. AMR surveillance in Bangladesh (2016-20210- Achievements and challenges)- Dr Saima-binte-Golam Rasul
2. AMR surveillance in Bangladesh- Way forward, role of Sectoral Working Group members- Dr Zakir Hossain Habib
3. AMR containment- Government's initiatives and plans- Dr Aninda Rahman, DPM, AMR, CDC
4. Role of Fleming fund Bangladesh- Dr Nitish C. Debnath, Team lead, Fleming Fund Country Grant

There was a lively discussion on- Challenge of AMR containment in Bangladesh by all the participants at the end of the meeting.

Dr Zakir Hossain Habib, IEDCR

## Consultative Meeting of Sectoral Working Group (SWG) for AMR Surveillance and Training Program on Supportive Supervision System for Animal Health Sector



The first meeting of the Animal Health (AH) Sector Working Group for AMR surveillance was held on June 21, 2021 in the conference room of the Department of Livestock Services (DLS). The Chairperson of the Animal Health Sector SWG, Dr Monjur Mohammad Shahjada, Director, Admin, DLS chaired the meeting where Dr Shaikh Azizur Rahman, Director General, DLS was present as the Chief Guest. Along with the 17 SWG members, a total of around 35 participants from DLS, BLRI, BARC and academic veterinarians from different universities attended the meeting. Due to COVID- 19 movement restrictions throughout Bangladesh, during the time, some of the SWG members

attended meeting using online platform. In the meeting there were three presentations along with an open discussion on the challenges of AMR containment in the animal health sector. The three presentations in the meeting were:

1. Overview of AMR Surveillance in Animal Health Sector
2. AMR Containment in Animal Health Sector: Government Initiatives and Plans
3. Roles of SWG towards Development of a Sustainable AMR Surveillance System: Challenges and Way Forward

After a comprehensive discussion following major recommendations were suggested in the meeting:

- AMR data collected from the AH sector AMR surveillance sentinel laboratories and from the different institutes belonging to the livestock sector, including private sector organizations and the pharmaceutical companies has to be incorporated and processed through Bangladesh Animal Health Intelligence System (BAHIS) of DLS.
- To make SWG a strong coordination body for fighting AMR, members from all the four disciplines of extension services, research institutes, educational institutes and private sector organizations were requested to work together, with a sense of active participation, to prepare strong evidence base for convincing the relevant stakeholders in the sector to take action on judicious use of antimicrobials.

(please see the next page)

- University veterinary clinics and hospitals, with their trained manpower and state-of-the-art equipment, were requested to play as a role model for AMR surveillance and act as focal points for antibiotic stewardship.

- Emphasis was given to prepare antibiotic use guideline for therapeutic and prophylactic uses in the Animal Health Sector.

After the consultative meeting was over, a training program

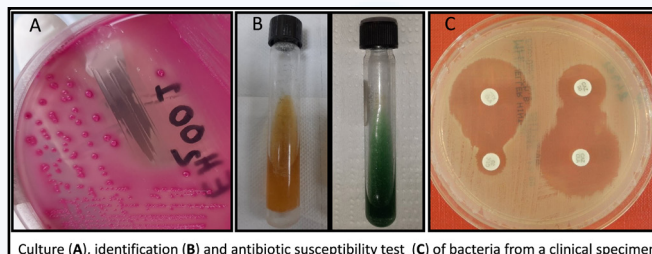
titled- 'Supportive Supervision System for Animal Health Sector' was held for particularly the SWG members and the National Reference Laboratory (NRL) staff. The training involved three modules on- Setting up and planning Supportive Supervision (SS) visit; Conducting SS visit; and Reporting and planning follow-up activities. The training program was conducted by Dr Kazi M. Kamaruddin, Animal health sector Lab Capacity Specialist, FFCGB.

Dr Monjur Mohammad Shahjada, DLS

### Fleming Fund Country Grant Develops a Laboratory Manual for 'One Health' Antimicrobial resistance (AMR) surveillance in Bangladesh

**Laboratory testing and AMR surveillance:** Quality testing of human and animal specimens is critical for 'One Health' AMR surveillance. High quality laboratory services ensure that the medical workers and public health experts receive high quality information. This helps caregivers provide the best quality care on the one hand and on the other hand, this helps develop policies for infection prevention and antimicrobial resistance (AMR) containment. The 'One Health' manual will help technicians and laboratory experts to perform quality testing of patient samples in human health laboratories and also guide quality testing of samples in animal and aquatic sectors. It is expected that the laboratory staff will immensely benefit from this manual and that it will serve the purpose of the national AMR surveillance programme in Bangladesh.

**Key areas of the manual:** The manual describes laboratory methods for the collection and transportation of human, animal and aquaculture specimens. It includes guidelines for microbial culture, identification of bacterial isolates and antimicrobial sensitivity testing (AST). It includes sections on bacteriological media preparation, internal quality control procedures and methods for



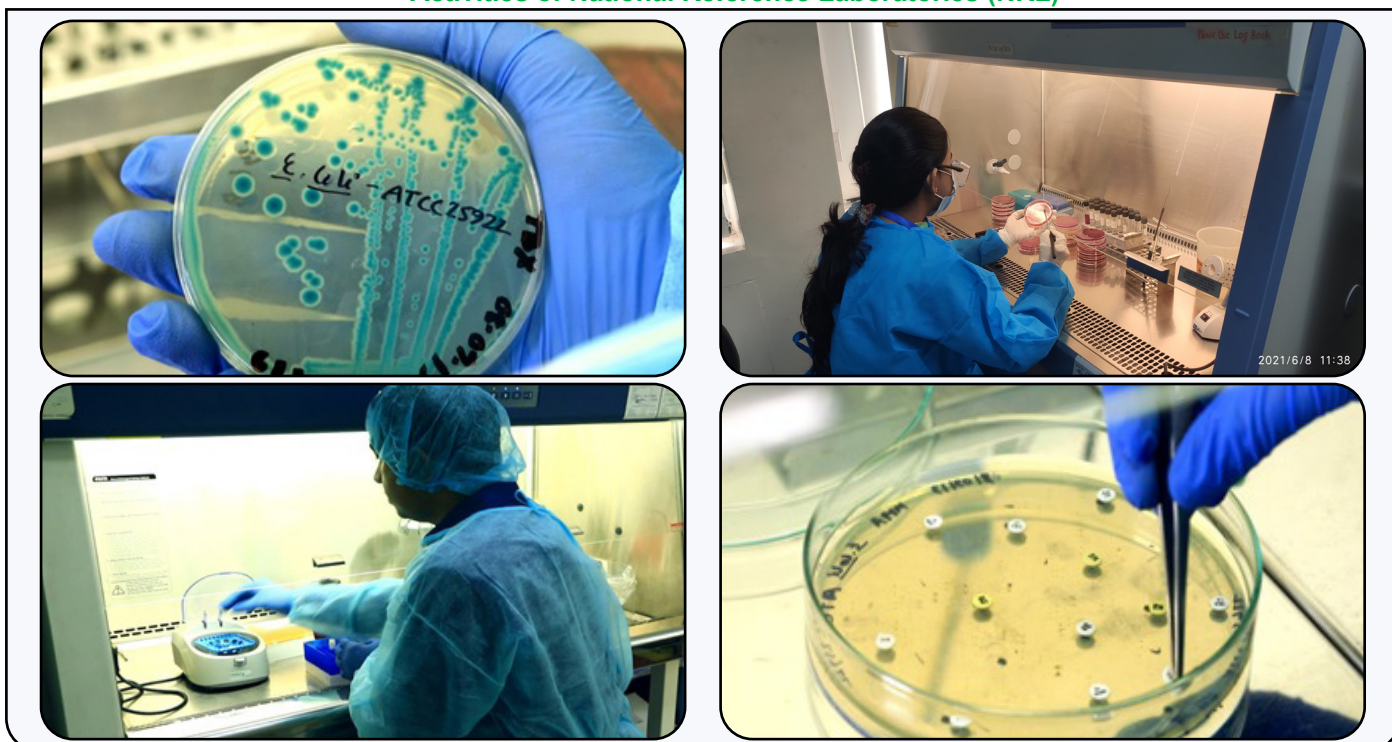
Culture (A), identification (B) and antibiotic susceptibility test (C) of bacteria from a clinical specimen

extended and advanced testing of microbial pathogens using state of the art technologies such as VITEK MS and VITEK2. Guidance for molecular detection of AMR mechanisms is also included in the manual. Finally, the manual provides complete guidance on biosafety and biosecurity principles and procedures and quality management in laboratory testing.

**Key contributors:** Dr Asadulghani from International Centre for Diarrhoeal Disease Research, Bangladesh (icddr,b), and Dr Paritosh Kumar Biswas from Chattogram Veterinary and Animal Sciences University (CVASU) led the development of manual and edited the content. All other team members including partners from Liverpool School of Tropical Medicine (LSTM) and DAI contributed to the development of the manual. Professor Dr Nitish C. Debnath, team lead of the country grant provided the overarching supervision.

Dr Arif Hussain, icddr,b. FFCGB

### Activities of National Reference Laboratories (NRL)





## Bangladesh Introduces Supportive Supervision System for Supervision and Monitoring of AMR Surveillance Activities at Sentinel Site Laboratories

Supervision and feedback on performance is an important component of Human Resource Management for improving the quality of service delivery through motivating staff in an organization. Traditional supervision usually emphasizes inspection rather than facilitation and therefore, often fails to help improve the overall quality of services. To solve this problem of traditional supervision Marquez and Kean (2002) proposed “Supportive Supervision” which, according to them, is a “facilitative approach to supervision for promoting continuous improvements in the quality of services at all levels of the service delivery system by strengthening relationships within the system, focusing on the identification and resolution of problems, optimizing the allocation of resources, promoting high standards, team work and better two-way communication”.

Supportive Supervision happens at three levels of external supervision (from outside the respective service facility), internal supervision (from within the respective service facility), and self/peer supervision (by the members from within the organization, by which individuals monitor and improve their own skills and performance or that of their colleagues).



Supportive Supervision visit at FIQCL, Savar

These three mechanisms of supervision jointly help accomplishing the core tasks of supervision efficiently, as shown in figure below.

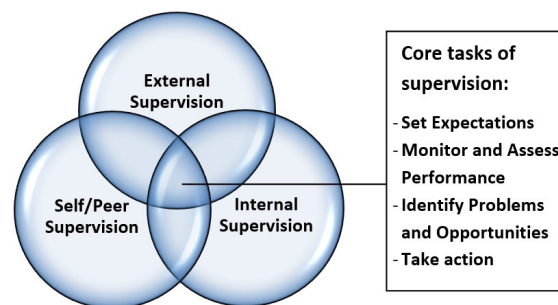


Figure: The Mechanisms of Supportive Supervision (Adapted from Marquez and Kean, 2002).

To introduce a Supportive Supervision System for supervision and monitoring of AMR surveillance activities at all the sentinel site laboratories, “Supportive Supervision Guideline for Quality Management of AMR Surveillance in Bangladesh” has been developed. According to the guideline prospective supervisors (SWG members, NRL staff, sentinel site staff, etc.) have been provided training on supportive supervision mechanism. Supervisory teams have been formed at the respective NRLs. Supervisory checklist relevant to AMR surveillance developed. Supportive supervision visits have been scheduled by the respective NRLs. In the meantime, Bangladesh Livestock Research Institute (BLRI), the NRL responsible to provide supportive service to Fish Inspection and Quality Control Laboratory (FIQCL) conducted a Supportive Supervision visit at FIQCL, Savar with the support from FFCGB.

**Reference:** [Marquez, L. and L. Kean \(2002\): Making Supervision Supportive and Sustainable: New Approaches to Old Problems. Maximizing Access and Quality Initiative, MAQ Paper No. 4, USAID, Washington, DC.](#)

Dr Kazi M. Kamaruddin, Director (Retired), PRTC, CVASU

## Exploring the Beneficial Effects of Probiotic and Phytobiotic as Alternative to Antibiotic Growth Promoters

Poultry industry in Bangladesh, during the last few decades, has grown very fast alongside with an irrational use of antibiotics as growth promoters (AGP) in poultry feeds. This type of indiscriminate use of antibiotics expedites the development of multidrug resistant bacteria in poultry that in turn enter into food chain and/or contaminate the environment and pose threat to public health. With this backdrop, for the production of safe meat and eggs, research efforts have been given paramount importance towards the search for alternatives to antibiotic as in-feed growth promoters. In Bangladesh, researchers are also working hard to explore the potentials of probiotics, phytobiotics and their combinations as growth promoters. Recent studies, revealed that average final live weight gain to be highest in broilers fed with probiotic supplemented feed (1095±6.03gm) followed by the group fed with phytobiotic + probiotic (1024.50±21.25gm) compared to AGP treated feed group (665±4.16gm). Feed conversion ratio was also found to be lowest (1.72) in the probiotic feed group followed by phytobiotic + probiotic feed group (1.75) compared to AGP treated group (1.96).

Total coliform count in phytobiotic as well as in phytobiotic + probiotic feed group was significantly ( $P < 0.05$ ) lower ( $0.024 \times 10^3$  and  $0.38 \times 10^3$  respectively) compared to AGP group ( $7.00 \times 10^3$ ). Supplementation of probiotic and phytobiotic in feed has been found to reduce significantly ( $P < 0.05$ ) the triglyceride, cholesterol and HDL values compared to the control group. Above mentioned results indicate that probiotic or its combination with phytobiotic has the potential of being the excellent alternative to AGP due to their positive effects on growth performance, lowering FCR and improving gut health of broiler chicken. It is hoped that this information would be of great help for awareness development to encourage farmers using phytobiotic and probiotic as growth promoters alternate to AGP in an effort to AMR containment. Details are available in the following links:

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6760507/pdf/JAVAR-6-409.pdf>

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6702877/pdf/JAVAR-6-253.pdf>

<https://www.ebupress.com/journal/aajbb/wp-content/uploads/sites/3/2019/08/1.pdf>

Professor Dr Kazi Rafiqul Islam, BAU

## “National Strategic Plan for Antimicrobial Resistance Containment in Bangladesh [2021-2026]” and “Political Economic Analysis for AMR Containment Advocacy in Bangladesh” Dissemination at 3rd Quarterly Meeting of Core Working Group



Prof. Dr Md. Nazmul Islam, Director, Disease Control and Line Director, CDC, DGHS

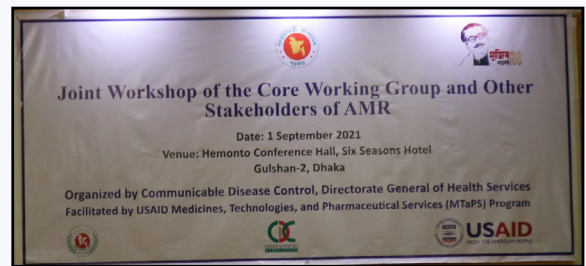
The Communicable Diseases Control (CDC), Directorate General of Health Services (DGHS) and USAID MTaPS Program of Management Science for Health (MSH) organized a joint workshop of the Core Working Group and other relevant stakeholders of AMR on 1st September 2021 at Six Seasons Hotel, Gulshan-2, Dhaka. The meeting was chaired by Prof. Dr Md. Nazmul Islam, Director, Disease Control and Line Director, CDC, DGHS, and moderated by Dr Aninda Rahman, Deputy Project Manager, DGHS. Members of the Core Working Group (CWG) of AMR National Technical Committee and the representatives WHO, FAO, USAID, Bangladesh Food Safety Authority, Department of Environment Fleming Fund Country Grant to Bangladesh (FFCGB) attended the workshop.

The main objective of the meeting was to share the progress on drafting of “National Strategic Plan for Antimicrobial Resistance Containment in Bangladesh [2021-2026]” which is currently under preparation. Prof. Dr Sanya Tahmina and Dr Md. Nure Alam Siddiky, the two consultants deployed for developing the draft, updated the progress



Dr Aninda Rahman, DPM, CDC, DGHS

of preparation of the document and sought further guidance on some pertinent issues. The CWG members appreciated the hard work carried out by the consultants and provided some observations and suggestions for consideration during further development of the National Strategic Plan for AMR containment.



In addition to this presentation, the findings of a study on “Political Economic Analysis for AMR Containment Advocacy in Bangladesh” conducted by the Fleming Fund Country Grant to Bangladesh were also shared at the meeting. Prof. Sanya Tahmina, Former ADG, DGHS, Prof. Rumana Huque, Department of Economics, University of Dhaka and Dr Khaleda Islam, Surveillance Lead, FFCGB jointly presented the study findings. The CWG acknowledged the importance of findings of the PEA study, carried out for the first time in Bangladesh, and recommended that the relevant data be used for developing AMR communications materials.

Dr S.M Shariar Rizvi, Evaluator, CDC, DGHS

## Antibiotic Usage and Antimicrobial Resistance in Tertiary Care Hospitals of Bangladesh

Antibiotic use is the main driver of antibiotic resistance of microorganisms. The data on antibiotic use in different departments including Intensive Care units of tertiary care hospitals is of prime importance and not to mention the use of antibiotics on COVID-19 patients of recent pandemics. Recently Institute of Epidemiology Disease Control and Research (IEDCR) and American Society for Microbiology (ASM) jointly conducted a study- ‘Antibiotic Usage and Antimicrobial Resistance in Tertiary Care Hospitals of Bangladesh’ to find out the antibiotic usage pattern and antimicrobial resistance in selected tertiary care hospitals of Bangladesh for 3 months from 1 May 2021 to 30 July 2021. Ten public and private hospitals were selected throughout the country including one Infectious disease hospital (BITID) and one COVID dedicated hospital Shaheed Shamsuddin Ahmed Hospital, Sylhet.

1. Sir Salimullah Medical College Hospital
2. Uttara Adhunik Medical College Hospital
3. Chattogram Medical College Hospital
4. Chattogram International Medical College
5. Bangladesh Institute of Tropical and Infectious Diseases
6. Rajshahi Medical College Hospital



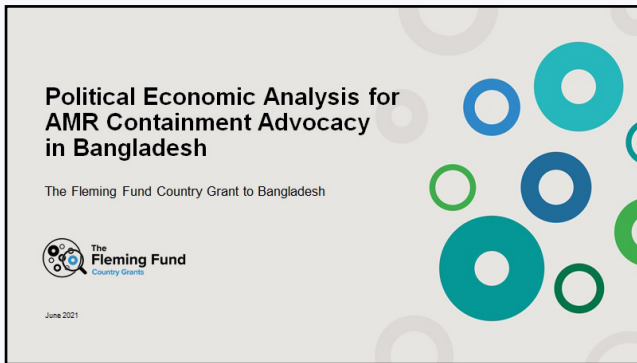
7. Islami Bank Medical College Hospital Rajshahi
8. Sylhet MAG Osmani Medical College Hospital
9. Jalalabad Ragib Rabeya Medical College Hospital
10. Shaheed Shamsuddin Ahmed Hospital Sylhet

The site personnel were oriented and data collectors were trained in May. The data collection was done during the 1st June to 31st July 2021. Data was collected regarding antibiotic prescribed to the patients admitted during the study period in the department of medicine, surgery, gynecology and obstetrics, COVID-19 dedicated units and ICU of the selected hospitals. The findings of the study were disseminated to the stakeholders on August 29, 2021. The result will be valuable for subsequent Antimicrobial Uses/Consumption (AMU/C) surveillance in the country and will provide information for the Antibiotic Stewardship Program.

Dr Saima-Binte-Golam Rasul, IEDCR



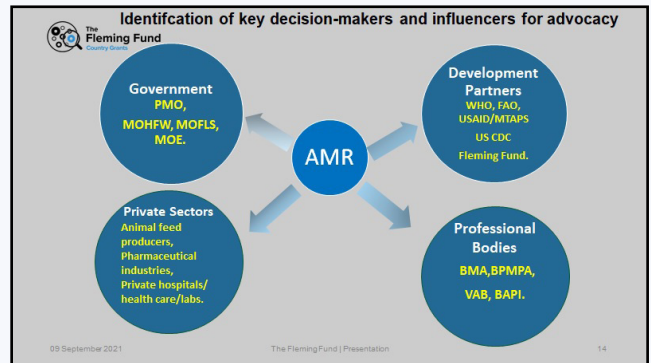
## Political Economic Analysis for AMR Containment Advocacy Strategy



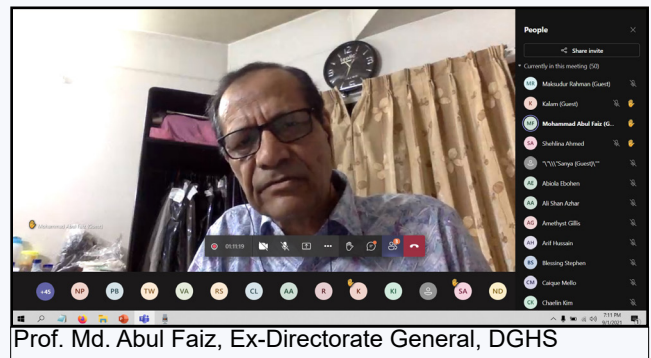
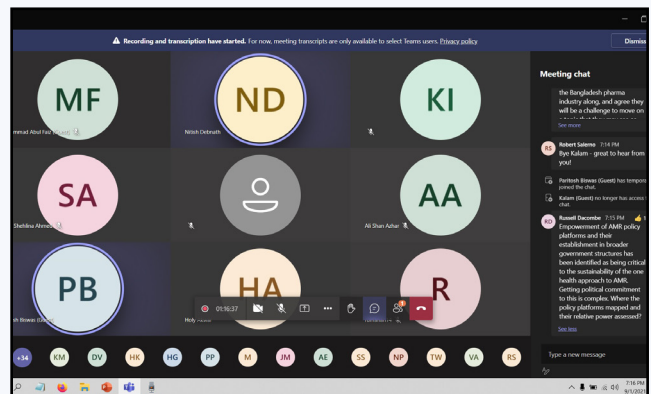
The Fleming Fund Country Grant to Bangladesh conducted a 'Political Economic Analysis (PEA) for AMR Containment Advocacy', first ever such initiative in Bangladesh to map and analyze AMR stakeholders and their resources; and also, to predict the economic impact of AMR and figure out the value for money for potential AMR interventions. Prof. Sanya Tahmina Jhora and Prof. Rumana Huque carried out the PEA through consultative interviews with government and development partners working in AMR containment issue. To disseminate the findings and recommendations of PEA, a webinar was organized on September 01, 2021 with around 42 participants from national and international organizations and expert groups. The participants in the webinar expressed that, the evidence based Political Economic Analysis will be an instrumentation document



Dr Vikas Aggarwal, Regional Coordinator-South East Asia, Mott MacDonald



to formulate AMR containment advocacy strategy in the country. The meeting discussed on ways to influence government and development partners to take actions against Antimicrobial resistance.



Prof. Md. Abul Faiz, Ex-Directorate General, DGHS

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### Supported by



*This material has been funded by UK Aid from the UK government; however, the views expressed do not necessarily reflect the UK government's official policies.*

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