

THE FLEMING FUND

THE PETRI DISH

— Contact Megan.Howe@mottmac.com with any feedback —

Editors Notes

Greetings to our readers - we hope you are healthy and staying well during this period.

Our issue this month includes an introduction to our new Regional Coordinator for South East Asia, Stanley Fenwick, and a story from one of our Nigeria Fellows, who is helping the country respond to the COVID-19 crisis while continuing AMR surveillance work.

Programme Updates & News

Laboratory Equipment Procurement & Installation continues, despite travel restrictions

Despite continued global travel restrictions due to COVID-19, delivery and installation of critical bacteriology equipment is continuing in several countries.

Last month we reported that equipment was delivered to Zambia. This month, we can report that a local engineer was found and is currently installing the equipment.

In Malawi, grantees are producing video site assessments for equipment suppliers so that the procurement processes can begin.

In Tanzania, equipment is being shipped from the Netherlands during the last week of May and will be stored in Dar es Salaam until installation is possible.

In Ghana, generators have been installed in the laboratories and the equipment, which is currently being stored locally, is now ready for installation.



And, in Timor-Leste, grantees have installed a blood culture machine over Zoom with help of the supplier BD. All seems to be working well!

Upcoming Fellowship Webinar

We will be holding a webinar for Fellows on Wednesday 3rd June at 08:30 British Summer Time (07:30 UTC). This webinar will be an opportunity for Fellows to connect, raise questions, and will include two short presentations on relevant AMR/U/C topics. The Mott MacDonald Fellowships team will be sending out a link and agenda to all Fellows.

New Regional Coordinator for South East Asia: Welcome to Stanley Fenwick

The Fleming Fund welcomes Stanley Fenwick to the team who is taking over from Anthony Huszar as the Regional Coordinator for South East Asia.

Stanley is a veterinarian and highly experienced veterinary public health specialist, lecturer and professor, with over 25 years' experience in veterinary public health and zoonotic disease, including animal pathogens of national and international importance.

Programme Updates & News

Stanley Fenwick, continued....

His experience includes field experience in the Yemen Arab Republic, before a long period in academia, first as a lecturer in Veterinary Microbiology at Massey University, New Zealand, where he completed his PhD, then later as a lecturer and Professor at Murdoch University, Perth, Australia. Stanley's extensive work and research has included managing multidisciplinary research teams involving human and animal health professionals, as well as a number of international collaborative projects, including being part of a team developing a marker vaccine for H5N1 Avian Influenza.

More recently, he was the Regional Technical Director of the RESPOND project, the capacity building arm of the USAID-funded Emerging Pandemic Threats Program, where he was seconded into DAI's offices in Bangkok, supporting all aspects of One Health capacity building in the SEA region, specifically in Thailand, Lao PDR, Cambodia, Vietnam, Malaysia and Indonesia. Having finished in September 2014, RESPOND was replaced by the follow-on USAID project, Emerging Pandemic Threats Program 2, where Stanley continued to provide support through the South East Asia One Health University Network (SEAOHUN), working with governments to build capacity to prevent, detect and respond to emerging pandemic and other global threats, including AMR. In 2019, SEAOHUN expanded to include Cambodia, Lao PDR and Myanmar.

With his extensive knowledge and experience in the region, as well as his most recent work on donor-funded programmes, we are very pleased that Stanley is joining us to continue the great progress that Anthony and the SEA team have achieved so far.

Fellow Responds to COVID-19



Since the outbreak of the COVID-19 pandemic, the world's best scientists, laboratory technicians and academics have been engaged in fighting the disease, including some of the Fleming Fund fellows.

In Nigeria, Victoria Adetunji, Lecturer at the University of Ibadan and a Fleming Fund Fellow in Laboratory Animal Health, has been helping to respond to the pandemic, in addition to continuing her work on AMR.

What is your job?

I am a lecturer in the Department of Public Health at the University of Ibadan. I am responsible for teaching and research in food safety, food microbiology and veterinary health.

How have you been helping the COVID-19 response in Nigeria?

I have been heavily involved in reporting weekly COVID-19 trends for Oyo state as part of the Governor's COVID-19 Taskforce. I've also helped develop protocols for decontamination and containment. My colleagues and I recently held a symposium to train volunteers to decontaminate high-risk areas like churches and schools. We've even been invited by another state to help train them in decontamination techniques.

I have also been appointed as a coordinator for the University's Emergency Response and Research Committee. Currently our committee has been developing proposals to conduct further research into COVID-19 risk factors, therapeutic antiviral treatments and the virus' epidemiology across Nigeria's southern states. We are also producing face masks for low-income households and giving interviews in newspapers and on radio shows to highlight critical public health messages.

What have you been doing as part of the Fleming Fund Fellowship?

Some of our work had to stop because of COVID-19, but we can do desk-based activities, develop standard operating procedures, etc. I've identified the research sites I need to visit for the Fellowship collaborative project. I'll be sampling poultry in commercial poultry farms across Oyo state and testing them for salmonella and two types of e.coli to help develop an antibiogram and understand how antibiotics are used in animals in Nigeria.

Is there a link between the COVID-19 response and the Fleming Fund programme?

There is a strong link with the vision and objectives of the Fleming Fund and the response to COVID-19. The basis for a pandemic response in the past has always been the generation of accurate data – it's important to do research

Programme Updates & News

Fellow Responds to COVID-19 continued...

and surveillance to control the disease.

We are also aware of cases where people are treating the virus with antibiotics, meaning there is a possibility of antimicrobial resistance increasing with COVID-19. We need to do research and collect data to understand the link and discourage people from taking antimicrobials when they are not needed.

Article Discussion: [Genomic Analysis of Fluoroquinolone- and Tetracycline-Resistant *Campylobacter jejuni* Sequence Type 6964 in Humans and Poultry, New Zealand](#)

This month, Natalie Moyen, Mott MacDonald's One Health Specialist led a question and answer discussion on the article above with some of the fellows. Some of the highlights are below:

Q: Can you explain the difference between AMR phenotypic and genotypic surveillance?

Natalie: AMR phenotypic surveillance will provide you with information on resistance patterns (which bacteria is resistant to which antibiotic). If done using minimum inhibitory concentrations, it can provide you with information on how the sensitivity of bacteria to an antibiotic evolves over time. Information resulting from this type of surveillance provides you with information that is useful to inform clinical practices.

Genotypic surveillance will provide you with information on the bacteria's changes in genetic material. Information may be used, for example, to determine whether the strain that is observed is new in the area/country, or be used for source attribution, or, if added to phylogenetic analysis it can help to identify the origins of the strains or a cluster. We can use genetic information to investigate whether the bacteria have been transmitted between humans, or humans and animals, or whether the resistance genes themselves have transmitted between different types of bacteria.

We can only use genotypic surveillance for resistance genes that we already know about. Bacteria are constantly evolving and at any time, a new resistance gene or mutation could emerge – so we need phenotypic testing alongside genotypic surveillance to make sure that we can detect new genes/mutations and mechanisms.

Q: What are the opportunities in application of genomics such as Whole Genome Sequencing (WGS) in developing countries?

Natalie: For AMR, WGS can be use in several ways.

1. Understanding whether resistant strains in humans are the same as those in animals, food or the environment. Comparing whole genome sequences can let us see how closely related different isolates are, and therefore whether they are likely to have come from a recent common ancestor.
2. Understanding whether resistance is the result of individual mutations, or whether they have been transmitted on mobile genetic elements (plasmids, bacteriophages etc.) and where those elements might have come from.
3. Looking for new resistance genes. Looking at the sequences can tell us whether the resistance mechanism is something known, or whether it is due to a new gene or mutation. The New Delhi Metallo-beta-lactamase-1 and the mcr-1 genes (carbapenem and colistin resistance, respectively) have been recently discovered in this way.
4. Looking at outbreaks/transmission clusters. If there is a cluster of patients/animals with resistant infections, it could be due to a single strain which has spread between cases, indicating poor infection prevention measures. However, it could also be due to lots of different strains, in which case the cause could be high background levels of resistance in a community with environmental contamination and poor use of antimicrobials. Whole genome sequencing may help to understand the underlying cause of a resistance cluster.

Whole genome sequencing is becoming much easier and cheaper. There are now automated extraction methods to obtain DNA, and rapid sequencing systems (e.g. MiSeq benchtop sequencers, Nanopore near-patient sequencers).

Progress: Fellowship Scheme

	Host Inst. Assigned	Applications Open	Fellows Review	Workshop Completed
Bangladesh	Yellow	Green	White	White
Bhutan	Green	Green	Green	Green
Burkina Faso	Grey	Grey	Grey	Grey
Eswatini	White	Yellow	White	White
Ghana	Green	Green	Green	Green
India	White	White	White	White
Indonesia	Green	Green	Green	Green
Kenya	Green	Green	Green	Yellow
Laos	Green	Green	Green	Green
Malawi	Green	Green	Green	Green
Nepal	Green	Green	Green	Green
Nigeria	Green	Green	Green	Green
Pakistan	Green	Green	Green	Green
Papua New Guinea	Green	Green	Green	Green
Senegal	Green	Green	Green	Green
Sri Lanka	Green	Green	Green	Green
Tanzania	Green	Green	Green	Green
Timor-Leste	Green	Green	Green	Green
Uganda	Green	Green	Green	Green
Vietnam	Green	Green	Green	Green
Zambia	Green	Green	Green	Green
Zimbabwe	Green	Green	Yellow	White

Senegal Biography

One additional fellow was added to the existing Senegal Cohort this month.

SEYNABOU LO AMR Laboratory Human Health, Saint Louis Regional Hospital



I am Professor in Bacteriology-Virology in the Health Sciences from

Gaston Berger University in Saint-Louis. I am a hospital practitioner at the Biology Laboratory of Saint-Louis Hospital where I am a member of the committee to fight against infections associated with healthcare. AMR is one of my main areas of research and I collaborate with the Laboratories Directorate of Senegal concerning resistance monitoring. Currently, I'm coordinating a study on the molecular mechanisms of ESBL producing Enterobacteria in Senegal.

Next month, keep an eye out for information about our second round of fellowships and our new policy fellowships programme.

Progress: Country Grants

	RFP De-veloped	Appli-cations Open	Appli-cation Review	Grant Ne-gotiation & Sign
Bangladesh				
Bhutan				
Burkina Faso				
Eswatini				
Ghana				
India				
Indonesia				
Kenya				
Laos				
Malawi				
Myanmar				
Nepal				
Nigeria				
Pakistan				
Papua New Guinea				
Senegal				
Sierra Leone				
Sri Lanka				
Tanzania				
Timor-Leste				
Uganda				
Vietnam				
Zambia				
Zimbabwe				

Next month look out for our procurement tracker, where we will provide monthly updates on the status of critical laboratory equipment being shipped to key sites around the world.

We will also begin incorporating additional information about our second round of country grants.

Progress: Regional Grants

	RFP De-veloped	Appli-cations Open	Appli-cation Review	Grant Ne-gotiation & Sign
ROUND 1				
Grant 1				
Grant 2				
Grant 3				
Grant 4				
ROUND 2				
Grant 1				
Grant 2				
Grant 3				
Grant 4				
Grant 5				
Grant 6				
Grant 8				

Round 1

1) Collection of Historical Data
East & Southern Africa

2) Collection of Historical Data
West Africa

3) Collection of Historical Data
South East Asia

4) Collection of Historical Data
South Asia

Round 2

1) External Quality Assurance
Africa

2) External Quality Assurance
Asia

3) Common Surveillance Protocols
Global

4) Microbiology & Epidemiology Training
Global

5) Planning, Policy & Advocacy
Global

6) Reducing Barriers to Logistics and
Supply Chains
Global

8) Whole Genome Sequencing Training
Africa

HOST INSTITUTION DIRECTORY

Host Institutions	Regions					Expertise				
	WA	EA	SA	SE	HL	AL	HS	AS	HU	AU
University of Edinburgh	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Oxford University, Clinical Research Unit				✓	✓	✓	✓	✓	✓	✓
National Institute for Communicable Diseases	✓	✓			✓	✓	✓	✓	✓	✓
Technical University of Denmark, National Food Institute	✓	✓	✓	✓		✓	✓	✓		✓
The University of Hong Kong, School of Public Health				✓	✓	✓	✓	✓	✓	✓
Fondation Merieux	✓				✓	✓	✓	✓	✓	✓
London School of Hygiene & Tropical Medicine with RVC & LIDC	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Erasmus University Medical Centre			✓	✓	✓	✓	✓	✓	✓	✓
The Peter Doherty Institute of Infection & Immunity	✓		✓	✓	✓	✓	✓	✓	✓	✓
Brigham & Women's Hospital (WHONET)	✓	✓	✓	✓	✓		✓	✓	✓	
American Society for Microbiology	✓	✓	✓	✓	✓	✓	✓	✓		
Mahidol University			✓	✓	✓	✓	✓	✓	✓	✓
International Livestock Research Institute	✓	✓	✓	✓		✓		✓	✓	✓
African Society for Laboratory Medicine	✓	✓			✓	✓	✓	✓	✓	✓
Aga Khan University		✓	✓		✓		✓			
Public Health England with the Animal and Plant Agency	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Association Pasteur International Network	✓	✓		✓	✓	✓	✓		✓	✓

REGIONS

SE - South East Asia: Laos, Vietnam, Pakistan, Timor-Leste, Papua New Guinea

SA - South Asia: Nepal, Bhutan, India, Sri Lanka, Indonesia, Bangladesh

EA - East and Southern Africa: Uganda, Tanzania, Kenya, Zambia, Malawi, Eswatini, Zimbabwe

WA - West Africa: Ghana, Nigeria, Sierra Leone, Senegal, Burkina Faso

SECTOR EXPERTISE

HL - Laboratory, Human Health

AL - Laboratory, Animal Health

HS - AMR Surveillance, Human Health

AH - AMR Surveillance, Animal Health

HU - AMU Surveillance, Human Health

AU - AMU Surveillance, Animal Health

The Fleming Fund is a £265 million UK aid investment to tackle antimicrobial resistance in low- and middle-income countries around the world. The programme is managed by the UK Department of Health and Social Care, in partnership with Mott MacDonald, the Fleming Fund Grant Management Agent.