Fleming Fund Technical Bulletin
OUR APPROACH

Issue 1: September 2019

News from South Asia

Nepal increased its GLASS reporting from one site to 15 in just one year. They collected over 82,000 samples in 2018 that were reported to GLASS, nearly 90% of which were from sites supported by the Fund.

In Bhutan, the Government has set up an inter-ministerial committee on One Health. This is the highest body for policy and decision-making for AMR in the country.

Also in Nepal, the government conducted several workshops to revise their AMR National Action Plan. FHI 360, the Country Grant lead, was asked to provide inputs on the current AMR/AMU situation in country.

Welcome
by Dr Toby Leslie, Global Technical Lead, Mott MacDonald

Welcome to the first edition of the Fleming Fund Technical Bulletin. Our programme has been running for two and half years now and we've learned lots along the way. It's been a privilege to partner with 24 national governments who are central to the global effort to tackle AMR. Equally, it's been rewarding to work with grantees who are providing the operational muscle and technical expertise to strengthen surveillance systems on the ground. None of that would be possible without the team at the UK Dept of Health and Social Care and the Chief Medical Officer of England, Professor Dame Sally Davies.

That said, we know the Fund has broad scope, complex implementation requirements and a distinct set of priorities & challenges in every country. That's why we're creating a technical bulletin.

We'd like to do a better job of explaining the rationale behind our project design, ensuring that we highlight important technical progress and most importantly, we want to create an ongoing dialogue with grantees.

This will be a quarterly publication, with articles authored by our core technical team across the Fleming Fund. For our first issue, we discuss our approach – including the rationale behind our laboratory assessments and our poultry surveillance protocol. We also provide a few highlights from our South Asia team. In our next issue we will discuss One Health, what it means to us and why we think it's so critical.

Because we want this bulletin to be useful to you, please do send feedback to us. We want to hear your technical questions, concerns, comments and suggestions and we hope this publication will provide a forum for learning. My colleague Megan Howe, our Communications Manager and editor of the technical bulletin, will be your first point of contact. She'll make sure your questions get timely answers and may include particularly relevant Q&As in our following edition in December.

To all our grantees, Government partners and other stakeholders, we appreciate your hard work and dedication to this programme. We look forward to continuing to tackle AMR together over the coming months.

A Needs Assessment Tool for AMR Surveillance Sites
by Dr Cyril Buhler & Dr Ben Amos, Microbiology & Laboratory Specialists

The Fleming Fund aims to strengthen AMR surveillance systems in low- and middle-income countries (LIMCs) by building laboratory capacity and improving national data sharing systems. Every country across the Fund is distinct, and there are significant differences in laboratory capacities even within the same country. Surveillance sites range from small hospitals to large, busy, urban reference laboratories. And yet, at the programme's inception, no AMR-focused laboratory assessment tools existed nor any that took into account a One Health approach – including human health, animal health and environmental health sectors.

Therefore, we needed an assessment tool that could:
- Determine the baseline capabilities for AMR diagnostics and data management, assess what support was needed and monitor progress
- Assess human, environmental and animal health laboratories
- Include microbiologists, pharmacists, clinicians and veterinarians
- Be completed in less than one working day

It was also important the assessment process was a positive experience for laboratory staff and clinicians, and that these staff felt the assessment would help their laboratory, rather than highlight inconsistencies.

After visiting initial sites in four countries, Fleming Fund core technical staff, microbiologists, One Health specialists and epidemiologists worked together to create an assessment tool that would fulfill the above criteria. The new tool was initially piloted with help from the AMR Coordinating Committees in the early investment countries, Nepal, Ghana and Uganda. It has now been used in over 100 clinical laboratories and 50 veterinary/food/environmental laboratories in 22 Fleming Fund supported countries.

The assessment is structured around a core bacteriology and AMR laboratory module that can be used to assess capacity and skills in any laboratory, irrespective of the sector. This core module assesses:
- The infrastructure of the premises and potential renovation needs
- The AMR diagnostic capabilities with a clear focus on the GLASS recommendations for the pathogen-antimicrobial combinations
- How data is managed and communicated both within and outside the institution

Additional modules were added to differentiate between clinical and veterinary laboratories. For clinical laboratories, the tool asks about the type of samples collected, how results are communicated to clinicians and focuses on the GLASS priority pathogens. For veterinary laboratories, the tool aims to understand the source and type of samples, e.g. whether they are from diseased and/or healthy animals, food and the environment, and addresses zoonotic pathogens and commensal bacteria in the animal health sector.

The tool also includes an automatically generated a list of equipment that a laboratory requires. This list can easily be extracted and links directly with our procurement catalogue, so that we can compile procurement lists, estimate costs efficiently and easily cross-check grantee procurement requests with assessments. It also allows us to track laboratory capacity and investment needs across all of our sites in a standardized way.

So far, the assessments have been well received at both the regional and national level and have been useful in building relationships between the Fleming Fund staff, beneficiary governments and other AMR stakeholders in country. They have also had other useful consequences, including bringing antimicrobial stewardship staff together for the first time in some hospitals and linking other hospitals to veterinary laboratories to provide a reliable source of sheep blood (which is needed in laboratories to grow bacteria). Most importantly, the assessments have provided a global picture of the bacteriology and AMR capabilities in LMICs and an inventory of the equipment and training needed to strengthen these laboratories – a vital source of information in designing laboratory provision now and in the future.

Poultry Surveillance Protocol – the start of a One Health Approach
by Dr Joanna McKenzie, One Health Advisor, Massey University

The Fleming Fund has designed a protocol for surveillance of AMR in healthy chickens raised for human food-consumption. This will produce information on resistance to antibiotics used in chicken production and critically important for human health. It is also aligned with other One Health approaches being tested (e.g. the Tricycle programme).

Why do we focus on chickens?
Chicken production takes place in most countries and the use of antibiotics within these production systems is high. Additionally, chickens are an important source of foodborne infections, chicken droppings and other waste from farms are also widely used as fertiliser so this is considered a good starting point for a One Health approach.

Dr Natalie Moyen, Fleming Fund One Health Coordinator conducts poultry sampling

Why zoonotic bacteria and antibiotics critical to human health?
The Fleming Fund is focused on generating evidence on AMR risks for people. Thus, animal health surveillance provides information on bacteria and genes that may spread from chickens to people. This can drive resistance in harmful human bacteria to antibiotics that are critical for treating human diseases.

Why is active surveillance necessary vs passive surveillance?
We've focused on active surveillance because samples must be taken from healthy chickens that will enter the food chain. Samples must be proactively collected from these populations, based on a sampling plan that produces representative data to assess the prevalence of resistance in the target population. Although small-scale piloting may be required for testing sampling procedures or a laboratory's capacity, small, non-representative samples of sick and healthy chickens tested in a laboratory won't give a representative measure of the status of the general population in healthy chickens - to which the human population is exposed.

Why prioritise sample collection from abattoirs and/or live bird markets?
Sampling at these locations provides a cost-effective approach to AMR surveillance because there is no need for expensive field collection on farms. In areas where chickens are not sold at abattoirs or markets, samples do need to be collected directly from farms. The protocol is flexible so that sample collection can be refined based upon the local chicken production and marketing systems.

How will this help tackle AMR?
Surveillance of AMR in poultry will highlight AMR risks to people by identifying the type and prevalence of resistant pathogens carried by chickens. These can be further investigated through molecular testing of human and chicken isolates and through additional surveillance that helps to clarify specific transmission risks for humans. Ultimately, when coupled with data on antimicrobial usage in poultry farming, surveillance data should work to change farming practices and reduce the risk of transmission of AMR bacteria between the One Health sectors.