

# Terms of Reference

## Second Fleming Fund Country Grant to Tanzania

### 1. Overview of this grant

These are Terms of Reference (TOR) for a second Country Grant (CG2) to support surveillance of antimicrobial-resistant bacteria in Tanzania. The grant will be funded by the UK Department of Health and Social Care, under its Fleming Fund Country Grants Programme, which is managed by Mott MacDonald.

This Fleming Fund Country Grant for Tanzania will focus on sustaining the investments made in CG1, to continue to strengthen surveillance systems for antimicrobial resistance (AMR), antimicrobial use (AMU), and antimicrobial consumption (AMC) in human, animal health and environmental sectors. It will aim to further support the One Health approach to surveillance, bringing together multi-sectoral stakeholders to share surveillance data and gain a better understanding of AMR, AMU and AMC in Tanzania. This will include continued investments at the reference laboratories and surveillance sites supported in CG1, and the addition of two further sites: Ligula Regional Referral Hospital (HH site) and TVLA Iringa Centre (AH zonal laboratory).

The Grantee will be responsible to Mott MacDonald for all aspects of the grant, including the management of any partners, their performance, technical delivery and financial accountability. The Grantee will be required to sign a Grant Agreement and will be expected to enter into sub-granting arrangements with partners on the same back-to-back terms.

The Grantee will need to work in close coordination with the Tanzania Multi-stakeholder Coordinating committee (MCC), and other national stakeholders. The Grantee will also be required to harmonise efforts on this Country Grant with other types of grants under the Fleming Fund Grants Programme, namely the Regional Grants Programme and the Fleming Fellowship Scheme.

This grant is expected to last until February 2022. Grant application should be in the region of **£2million**, including all capital and recurrent costs, overheads and management costs.

## 2. Overview of the Fleming Fund

### 2.1 Introduction

The UK Government has established the Fleming Fund to respond to the global threat of drug-resistant infections due to bacterial Antimicrobial Resistance, also known as AMR. The Fleming Fund will be a critical tool in achieving the resolution of the 68th World Health Assembly, 2015 (WHA A68/20), and in realising the Political Declaration of the High-Level Meeting of the United Nations General Assembly (UNGA) on Antimicrobial Resistance, 2016. These recognise that urgent cross-sectoral rationalisation of antimicrobial use in humans, animals, food, agriculture and aquaculture sectors is key to tackling AMR, and call for innovative research and development; affordable and accessible antimicrobial medicines and vaccines; improved surveillance and monitoring; increased governance on antimicrobial use; and increased international cooperation to control and prevent AMR.

The Fleming Fund aims to address critical gaps in the surveillance of antimicrobial-resistant bacteria in low- and middle-income countries (LMICs) in Asia and Sub-Saharan Africa. Countries in these areas are set to bear the highest burden of antimicrobial-resistant infections. A Global Action Plan on AMR has been developed by the World Health Organization which acts as the blueprint for a multi-stakeholder global response to averting a global health crisis caused by AMR<sup>1</sup>.

The Fleming Fund comprises of several workstreams (see [www.flemingfund.org](http://www.flemingfund.org) for more information). One workstream provides support to the Tripartite Alliance – the Food and Agriculture Organization (FAO), the World Organisation for Animal Health (OIE) and the World Health Organization (WHO) – as part of the 'One Health' approach. Through funding to the Tripartite Alliance, the Fleming Fund has contributed to the development of National Action Plans in Sub-Saharan Africa, South and South East Asia, and to the building of the evidence base and guidance for AMR surveillance. The Fleming Fund also funds initiatives in academic institutions to develop guidance on the development of AMR surveillance systems, such as the LSHTM Roadmap for developing an AMR surveillance protocol in human health systems<sup>2</sup>

The Fleming Fund Grants Programme is the largest stream of financial support available through the wider Fleming Fund. The UK Department of Health and Social Care has appointed Mott MacDonald as the Fleming Fund Management Agent for the Fleming Fund Grants Programme. Mott MacDonald is a global company with expertise in multi-sectoral international development and fund management. On behalf of the UK Government, Mott MacDonald is responsible for funding allocation and oversight of all investments made across a wide portfolio of grants in different activities and in different countries.

The aim of the Fleming Fund Grants Programme, is to improve the ability of recipient countries to diagnose drug-resistant infections, with an emphasis on bacterial infections, and to improve data and surveillance to inform policy and practice at national and international levels. The overall goal is to reduce the human and economic burden of AMR.

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<sup>1</sup> <http://www.who.int/antimicrobial-resistance/global-action-plan/en/>

<sup>2</sup> <https://amr.lshtm.ac.uk/wp-content/uploads/sites/12/2016/11/AMR-Surveillance-Protocol.pdf>

The geographic focus of the Fleming Fund Grants Programme is 20-24 LMICs from Sub-Saharan Africa, including Tanzania, and South and South East Asia. The Fund is providing financial support up to 2022 to participating countries via three funding channels:

- Country Grants
- Fleming Fellowship Scheme Grants
- Regional Grants

The Fleming Fund is independently evaluated by ITAD, a specialist evaluation firm appointed by the UK Department of Health and Social Care.

## 2.2 Problem statement to be addressed by the Fleming Fund Country Grants

The main issues to be addressed by Fleming Fund Country Grants are outlined below (please note that these are general issues in LMICS with regard to AMR, and may not all be relevant for Tanzania):

- There are too few trained microbiologists to undertake the volume of testing required for representative surveillance on AMR.
- There are few health facilities that routinely undertake bacterial culture; even fewer who do routine antimicrobial susceptibility testing or that meet the requirements for accreditation.
- There is no culture of routine surveillance for AMR in healthcare delivery and there are barriers to developing it.
- There is little perceived use of surveillance data at any level, including low demand for information related to AMR from policy makers.
- There is a lack of knowledge on the use and consumption of antimicrobial agents across One Health sectors.
- There is a lack of antimicrobial stewardship.
- Logistical challenges are significant. Transporting samples in a safe and secure manner under often challenging transport conditions; ensuring a quality assured and sustained supply chain for reagents and consumables; and ensuring appropriate servicing of equipment are some examples.
- Surveillance systems (national, regional and global) that do exist are often vertical in nature, are not linked across sectors, and are often unwilling to integrate.
- There is a mixed picture across countries and regions in terms of starting points, political will, capability, and donor interest and engagement.
- There are poorly defined and applied quality assurance standards in laboratory testing.
- There is a lack of understanding from basic surveillance of pathogens on transmission patterns and drivers such as inappropriate use of antimicrobial drugs across all sectors.

## 2.3 Fleming Fund investment areas and outputs

To address the problems above, the Fleming Fund Grants Programme invests in:

- Laboratory infrastructure enhancement.
- Human resource strengthening and workforce reforms.
- Surveillance systems strengthening.
- Establishing mechanisms for AMR surveillance data use.
- Promoting rational use of antimicrobial medicines.

Investment in these areas is expected to achieve the following outputs:

- Improved laboratory conditions for bacterial identification and antimicrobial susceptibility testing (AST) and improved data quality.
- Strengthened One Health workforce with the necessary skills for AMR surveillance.
- Stronger AMR surveillance systems and processes at country and regional levels.
- Stronger demand for AMR data at regional, country, subnational and facility levels.

- Better knowledge of country level practices and use of antimicrobials (particularly for bacterial infection) across sectors.

Fleming Fund outputs are expected to contribute to the following country outputs:

- Increase in quality and quantity of AMR data collected.
- AMR data shared in country to support evidence-based policy and practices.
- AMR data shared internationally to improve and inform the global response.

The TORs for Country Grants have been designed to ensure that investments and activities contribute directly to these outputs. Grantees are expected to adhere to and demonstrate this alignment and contribution to outputs in their applications.

## 2.4 Core principles within the Fleming Fund Grants Programme

The Fleming Fund is built on four core principles. Grantees are expected to demonstrate how they will align with these principles while implementing the grant.

**1. Country Ownership:** The Fleming Fund Grants Programme works closely with national governments to ensure that country plans and aspirations, as laid out in their National Action Plans, are implemented. Mott MacDonald as the Fleming Fund Management Agent will consult and work together with national governments to agree the approach and ensure sustainability. Grants and TORs will conform to national priorities outlined in the National Action Plan and as articulated during Country Assessment visits. Unless there are good reasons not to do so, Fleming Fund grants will chiefly invest in the public sector to support development of national public health systems.

**2. One Health:** The Fleming Fund recognises that the problem of AMR is a great danger to human health and cannot be controlled without a One Health approach. A specific set of One Health investment parameters has also been developed and is summarised below. This approach is aligned with key documents and guidelines from OIE<sup>3</sup> and FAO<sup>4</sup> as well as the Global Action Plan.

- Collaborative multi-sectoral governance of AMR:*** Leadership and resourcing of AMR surveillance and mitigation measures in all sectors that directly contribute to the emergence of AMR.
- Integrated AMR and antimicrobial use and consumption surveillance in all sectors:*** Surveillance, data collection and analysis in humans, livestock, aquaculture, crops, food and the environment to produce information that is interpreted by multi-sectoral teams to help understand factors associated with AMR emergence within and between sectors.
- AMR mitigation policies and programmes prioritised across multiple sectors:*** Evidence-based policies and programmes for AMR mitigation measures that are prioritised across the relevant sectors, based on information generated through AMR and AMU/AMC surveillance in all sectors.

**3. Alignment of Approach:** The Fleming Fund Grants Programme seeks to invest in areas which complement and build on work done to date, rather than create new systems. Grant applicants will need to demonstrate that they understand government investments and other actors' work in the field of improved laboratory capacity (both within and outside the sphere of AMR surveillance), improved disease surveillance and the One Health approach. Applications will be assessed for duplication of efforts

<sup>3</sup> OIE Standards, Guideline and Resolution on Antimicrobial resistance and the use of antimicrobial agents

<sup>4</sup> The FAO Action Plan on Antimicrobial Resistance, 2016-2020

and/or the development of parallel systems. To the extent possible, prospective Grantees will need to demonstrate how their proposals add value to existing and planned investments and systems.

- 4. Sustainability:** The Fleming Fund Grants Programme will focus assistance on national systems with a view to long-term sustainability. Investment size and scope should, as far as possible, be aligned with national government spending so that systems created with Fleming Fund grants are sustainable within the public health system. The Grantee will be expected to: take a strategic approach to sustainability; identify key challenges and critical factors relating to sustainability; explain concrete strategies specifically designed to address these challenges and factors; and outline an exit strategy.

## 2.5 The Fleming Fellowship Scheme

The Fleming Fellowship Scheme is part of the broader Fleming Fund Grants Programme and is managed by Mott MacDonald. Fellowships provide funding to support on-the-job training over a programme of structured learning, mentoring and skills development for four to eight Fellows in each investment country. The Fellowships do not duplicate basic training, rather they focus on building advanced skills and leadership to promote the application of best practice in identified 'Beneficiary Institutions', while promoting the One Health principle. Beneficiary Institutions are organizations such as AMR reference laboratories national epidemiology units in the human and animal health sectors, hospitals and/or national drug administration agencies that add strategic value and complementarity to achieve the Fleming Fund's aims in the country. They are also institutions most likely to derive sustainable benefit from the Fellowship activities.

The initial focus of the Professional Fellowship Scheme is on strengthening the quality of laboratory diagnostic data and the analysis and use of AMR and AMU surveillance data in Beneficiary Institutions. Fellows in each country are supported by mentors who provide the expertise required to support the needs of the Fellows as well as to help them to improve the sustainability of AMR programmes in their institution. The data they generate will be applied to deliver evidence-based approaches to tackling AMR, for example to improve antimicrobial stewardship.

Priority areas to be supported through the Fellowship Scheme are discussed by the Mott MacDonald regional team together with the national AMR committee in each country and reviewed with the Beneficiary Institutions to which they are assigned. A template is provided for each Fellowship terms of reference which is adapted to the Beneficiary Institutional needs. One, or at most two, expert 'Host Institutions' are matched with all the Fellowships in a specific country. The Host Institution is drawn from a preselected pool, and after attending an initial workshop with the Fellows and Beneficiary Institution, the Host Institution develops a budgeted work plan. Once workplans and budgets have been agreed by Mott MacDonald, Fellows are formally accepted, and their Fellowship activities expensed through the Host Institution.

The grantee will be expected to ensure coherence and alignment between the activities on the country grant and those of all the Fellows, throughout the life of the grant. The grantee is expected to:

- Ensure that Fellows are aware of country grant activities relevant for their own work plans, for example by including them in stakeholder consultations.
- Avoid duplication. The country grant should not be covering work that Fellows are doing, and vice versa.
- Ensure synergies are maximised, for example by disseminating SOPs developed by the Fellows.
- Work together with Fellows where appropriate e.g. data gathering, transporting samples, but should avoid interdependency.

- Ensure that any training provided to the Fellows aligns with that provided by the mentors from the Fellowship scheme Host Institutions.
- Ensure that the Host Institutions are aware of training being provided by the grantee

## 3. Progress, outcomes and gaps under Country Grant 1

### 3.1: Human Health Laboratory Capacity

#### 3.1.1 Progress under Country Grant 1

The Tanzania CG1 has contributed to improve capacity of 10 laboratories which received an upgrade of their IT infrastructure, renovation of the workspaces and equipment. The staff in these laboratories have been trained and provided with the skills in bacteriology to identify, isolate, culture and perform antimicrobial susceptibility testing (AST) for specific pathogens. All the laboratories have been linked to the National AMR surveillance system. Laboratory protocols, SOPs and bench aids have been harmonized in line with CLSI standards, and onsite training and mentorship of laboratory staff is ongoing.

To date, limited data has been collected at the surveillance site level because of the prolonged procurement and renovation programme, however, more rapid progress is expected now that the renovations have been completed.

#### 3.1.2 Gaps to address under Country Grant 2

With completion of the CG1 renovation programme, a key focus of CG2 will be to embed use of microbiology laboratories in routine clinical practice to ensure the sustainability of the surveillance system. Frequent stock-outs and poor-quality results have meant that historically, clinicians do not send samples or act on bacteriology results. CG2 will therefore need to engage clinicians, nurses and patient management teams to ensure that there is a scale up of demand and increased utilization of laboratory services, as well as strengthen national procurement and supply chain of reagents and consumables for microbiology services. Additional support will also be needed for quality management and data systems, and for equipment maintenance.

### 3.2: Animal Health laboratory capacity status

#### 3.2.1 Progress under Country Grant 1

Under CG1, Policy and guideline documents including the National Surveillance Strategy, AMU/C Surveillance Plan, protocol for active AMR surveillance in poultry, integrated surveillance strategy and Standard Operating Procedures, bench aids have been developed and training has been provided on data analysis and use.

#### 3.2.2 Gaps to address under Country Grant 2

Although progress has been achieved, renovation of all the laboratories has not been completed and the ability of the AH sector to generate AMR data is therefore limited. The sample transportation system is also inadequate.

There is a need to strengthen current microbiology capacity at all the laboratories including, but not limited to, updating Standard Operating Procedures (SOPs) that address sample handling, data management and flow, and bacteriology testing (i.e. bacterial identification and AST). There are several regional laboratories that were not supported under CG1, and CG2 will therefore include a site assessment for a single additional laboratory, and subsequent support.

Veterinarians and farmers regularly face treatment failure of mastitis in dairy production, and there is therefore interest in providing diagnostic bacteriology services (identification and AST) to understand the contribution of AMR in this important aspect of veterinary medicine.

### 3.3: AMU / AMC surveillance

#### 3.3.1 Human health

A Point Prevalence Survey (PPS) on AMU has been conducted at two hospitals during CG1. In CG2, PPS should be conducted in all human health surveillance sites. This AMU data should be shared locally to advise hospital administrators, antimicrobial stewardship committees and IPC, and the methodology can be used for further surveys.

#### 3.3.2 Animal Health

Within the AH, an AMU/C surveillance plan was developed, but data has not yet been collected. CG1 has supported Tanzanian Medicines and Medical Devices Authority (TMDA) to improve its ability to monitor import, manufacturing and sale of drugs which has ultimately supported reports of AMU data to OIE. This is expected to be sustained, and expanded as needed, under CG2.

### 3.4: Strategy and Policy

#### 3.4.1 Progress under CG1

Several policy documents have been developed, or are in development, including

- AMR Surveillance Plan for Human Health
- Integrated Framework for AMR surveillance in Animal Health
- MLF Poultry protocol for implementation of active AMR surveillance in Animal Health

In addition, several relevant committees (Stewardship, surveillance and awareness) have been constituted and supported to ensure that the respective government departments and agencies are active in the surveillance programme. 4 MCC and TWGs were held during implementation of CG1.

#### 3.4.2 Gaps to address under CG2

Several strategies have been proposed to strengthen action on policies. These could include:

- Strengthening the animal health technical working committee and working within the AMR surveillance committee to provide oversight to the development and finalization of guidelines and policy documents in Animal Health.
- Improving linkages with Sokoine University of Agriculture (SUA) to enhance data analysis capacity, quality of the documents produced, and rigor of AMR surveillance to build on improved government participation and ensure that the animal health sector is better integrated in the AMR surveillance strategy.
- Working with all sectors of government to increase public expenditure on diagnostic services including, but not limited to, the procurement of reagents and consumables and maintenance of equipment.
- Incorporating AMR strategies in the national policy debate. For example, in the Animal health sector, AMR and AMU surveillance results and communication strategies should be linked to National level discussions on Agriculture and productivity.
- Supporting incorporation of academia in decision making processes on AMR and AMU surveillance to enhance alignment and coordination between stakeholders.
- Integration of AMR data and reporting systems into national systems such as the DHIS2 and Ministry

of Livestock and Fisheries (MLF) sector reports for better visibility and action at the top management level.

- Supporting the integration of data from other institutions such as the TMDA
- Strengthening multisectoral coordination on AMR, AMU and AMC surveillance with a One Health approach. There is a need to facilitate meetings so that the staff included in the governance structures are guided in their discussions, choice of topics, and addressing issues that arise.
- Exploring ways in to facilitate data generation at all at surveillance sites (whether supported by the Fleming Fund or not) to ensure a robust national AMR surveillance database, which can be used nationally to inform policy, create prescription guidelines, train prescribers on best practices, etc.
- Exploring ways in which the national data surveillance systems already in place can be enhanced to consider AMR data so that regular epidemiological bulletins include AMR information and can help to sensitise a wider audience.

## 4. The current AMR situation in Tanzania

### 4.1: Investments by other development Partners in AMR

Since the initiation of Country Grant 1, other stakeholders have also provided investments with relevance to AMR/AMU surveillance. These include, but are not limited to:

- MTaPS, funded by USAID, which is supporting stewardship activities and development of policies and guidelines at national and hospital levels.
- Infectious Disease Detection and Surveillance (IDDS), also funded by USAID and implemented by PATH, which is supporting surveillance activities related to Infection Prevention and Control in selected surveillance sites. This aims to improve the detection of diseases of public health importance, including drug resistant infections, through responsive, integrated diagnostic network systems.
- US-CDC has been supporting the Tanzania government to achieve the Global Health Security Agenda with initial focus on three areas: Biosafety and Biosecurity, Antimicrobial Resistance, and capacity building for the National Laboratory System.
- GSM project under the GHSA will focus on detecting and identifying priority pathogens.
- Duke University works in partnership with Kilimanjaro Clinical Research Institute (KCRI) to support stewardship activities at Kilimanjaro Christian Medical Centre (KCMC).
- Through direct Tripartite Coordination funding, the Fleming Fund has supported Tanzania through a Professional Veterinary Services national bridging workshop, run by the OIE in 2017.

### 4.2: Multi-sector inputs for proposed CG2 objectives and outputs

#### 4.2.1 Information and surveillance systems and platforms/stakeholders:

Several surveillance and information management systems are in operation in Tanzania in the human and animal health sectors, however, there are several challenges which could be addressed by CG2.

- In human health, the public health sector is mainly coordinated through DHIS2, coordinated by the Ministry of Health, Community Development, Gender, Elderly and Children (MoHCDGEC). DHIS2 collects data from all health centres in the country, however, it does not currently include AMR data and hospital Laboratory Management Information Systems (LIMS) and WHONET not networked into DHIS2. At the district level the teams work with implementation partners to ensure that data from partner supported projects is entered into the national database. AMR data is not yet included as part of the indicators to be monitored by the MoHCDGEC.
- In the Animal Health sector there is a routine surveillance system coordinated by the office of the Director of veterinary services. Routine surveillance is mainly done on notifiable diseases and the DVS coordinates with the District Veterinary Officers (DVOs) and veterinary extension officers to receive information and make decisions.
- The Tanzania Veterinary Laboratory Agency has its headquarters in Dar es Salaam and coordinates a zonal network of laboratories in 7 zones together with the Centre for Infectious Diseases and Biotechnology (CIDB) at Temeke, Tanzania Vaccine Institute (TVI) – Kibaha. The Central Veterinary Laboratory receives occasional diagnostic requests from farmers and veterinarians and responds to multiple disease outbreaks.

#### **4.2.2 MoHCDGEC Pharmacy Unit**

The MoHCDGEC has been working with the American Society of Microbiology, WHO and Muhimbili University to develop the AMU/AMC strategy, methodology, and guidelines. The Pharmacy unit is the coordinator of all the data related to AMC/U surveillance in the human health sector and Tanzania Medicines and Medical Devices Authority to collect data and prepare it for presentation in the Stewardship Technical Working Committee. The WHO methodology was used to collect consumption data at national level in 2017-2019 while a point prevalence survey was done at Kilimanjaro Christian Medical Centre and Mbeya hospitals. Due to COVID-19 restrictions the exercise could not be expanded to Mnazi Moja in Zanzibar, as per the original plan, and CG2 should continue to support rollout of PPS and related activities.

## 5. Scope of Country Grant 2 to Tanzania

### 5.1 Grant Objective and Outputs

Objectives and outputs for this Country Grant 2 are summarized below, and Section 6 provides more detail. Applicants should respond to these TORs by developing and proposing activities that are costed and by proposing appropriate indicators (see Section 9). All inputs must be permitted under the list of Eligible Funding Items, as outlined in Annex 1.

For human health, the Country Grant is intended to support / improve implementation of the WHO GLASS programme and Grantees should refer to the roadmap for GLASS participation produced by the London School of Hygiene and Tropical Medicine: (<https://amr.lshtm.ac.uk/wp-content/uploads/sites/12/2016/11/AMR-Surveillance-Protocol.pdf>)

Table 1: Tanzania Country Grant 2 Objectives and Outputs.

TANZANIA COUNTRY GRANT 2 OBJECTIVES AND OUTPUTS
<b>OBJECTIVE 1: STRENGTHEN GOVERNANCE OF AMR SURVEILLANCE WITH A ONE HEALTH APPROACH</b>
Output 1.1: Enhancement of Government of Tanzania's mechanisms for multisectoral governance and coordination of AMR related activities, whether led by partners or government.
Output 1.2: A cost evaluation to identify cost drivers of setting up AMR surveillance in Tanzania and requirements to ensure One Health AMR surveillance is sustained
Output 1.3: Improved procurement systems
<b>OBJECTIVE 2: SUSTAIN EXISTING SUPPORT TO AMR AND AMU SURVEILLANCE IN HUMAN HEALTH AND EXPAND TO ADDITIONAL SITES</b>
Output 2.1: Support to human health laboratories is sustained for AMR surveillance
Output 2.2: Continued Improvement of biosafety and biosecurity at all Fleming Fund supported laboratories
Output 2.3: Clinical staff and hospital administrators are actively engaged in AMR surveillance and using locally generated data to inform decision making processes
Output 2.4: Enhanced interoperability of AMR surveillance into National surveillance systems (DHIS2).
Output 2.5: Support implementation of regular, sustained PPS on AMU in hospitals
<b>OBJECTIVE 3: SUSTAIN EXISTING SUPPORT TO AMR AND AMU/C SURVEILLANCE IN TERRESTRIAL ANIMALS, AND EXPAND TO ADDITIONAL SITES</b>
Output 3.1: The animal health technical working committee is supported to strengthen the AMR/U/C surveillance systems
Output 3.2: Support Animal Health AMR National reference laboratory and selected regional veterinary laboratories to contribute to the AMR surveillance network
Output 3.3: Sustain and develop support to enhance AMR surveillance
Output 3.4: Support the development of a system to monitor veterinary drugs' imports, manufacturing, sales and uses and support AMC and AMU surveillance by TMDA and MLF .

## 5.2 Laboratories to be supported by the grant

The sites identified for Fleming Fund support are listed in Table 2, below.

*Table 2: List of human, animal and Environment surveillance sites*

Site		Location	Sector
1	National Health Laboratory Quality Assurance and Training Centre	Dar-es-Salaam	Human Health
2	Muhimbili National Hospital	Dar-es-Salaam	Human Health
3	Bugando Medical Centre	Mwanza	Human Health
4	Kilimanjaro Christian Medical Centre	Kilimanjaro	Human Health
5	Mbeya Zonal Referral Hospital	Mbeya	Human Health
6	Mnazi Mmoja Hospital	Zanzibar	Human Health
7	Ligula Regional Referral Hospital	Mtwara	Human Health
8	Central Veterinary Laboratory	Temeke	Animal Health
9	Tanzania Veterinary Laboratory Agency (TVLA), Mwanza	Mwanza	Animal Health
10	Tanzania Veterinary Laboratory Agency, Arusha	Arusha	Animal Health
11	Sokoine University of Agriculture	Morogoro	Animal Health
12	Tanzania Veterinary Laboratory Agency (TVLA), Iringa	Iringa	Animal Health

## 5.3 Duration of the grant

This Country Grant to Tanzania is expected to last for 12 months, until February 2022.

## 5.4 Funding envelope

Grant applications should be in the region of £2million, including all capital and recurrent costs, overheads and management costs. Applicants should include a placeholder budget within this funding envelope to the value of £150,000 for renovating and equipping the newly added laboratories (human and animal health).

Mott MacDonald is responsible for driving Value for Money (VfM) on behalf of the UK Department of Health throughout the Grant programme and will carefully consider how the proposal addresses efficiency, effectiveness, economy and equity in delivering the outputs in relation to the proposed costs. The Guidance Notes for the Grant Application Form provide more information on different dimensions to be considered as part of a VfM approach.

## 5.5 Procurement

The prospective grantee should conduct baseline assessment at the two new sites to determine renovation requirements, consumables, supplies and reagents, and develop the procurement plan to ensure optimal operation of the AMR surveillance. If blood culture instruments are required, they will be supplied under the Central Procurement process, as for Country Grant 1. All other equipment, and reagent costs and subsequent service contracts will come from the Country Grant budget and should be factored in the budget application preparation for CG2.

## 6. Detailed Objectives and Outputs

### Objective 1: Strengthen governance of AMR surveillance with a One Health Approach

Tanzania has enhanced its AMR governance systems by strengthening AMR surveillance in human and animal health sectors and laying foundations for increased data production and use at surveillance sites and national levels.

A multisectoral governance structure (MCC) with representation from human health, and animal health sectors has been established and is supported by relevant committees. Meetings of MCC have been held to support the coordination of AMR work at national level. However there have been no data reports at national level and the animal health sector committees and coordination with the Ministry of livestock and Fisheries is still work in progress. Another additional challenge is that MCC meetings are still subsidized by development partners although the government provides the venue and some other operational necessities.

#### **Output 1.1: Enhancement of Government of Tanzania's mechanisms for multisectoral governance and coordination of AMR related activities, whether led by partners or government.**

Limited resources and a difficult fiscal situation have led to reduced resource allocation to social services, and the current COVID-19 pandemic is expected to worsen the situation. As a result, the AMR landscape has attracted a number of development partners willing to contribute to its containment. Although this support is geared towards supporting the implementation of the NAP, coordination by the government is still nascent. There is a significant risk that some of the investments from FF and other partners will not be sustained and their partner coordination needs to be strengthened to enhance value for money, avoid duplication of efforts and work with government to ensure funding in the long term. Multisectoral coordination efforts should be enhanced to improve AMR, AMU and AMC surveillance with a One Health approach.

At the end of the grant we expect that the following will have been achieved:

- The government has a coordination mechanism which includes a live workplan and budget that captures all implementing partners' contributions.
- The MCC and national coordinating center have increased engagement with stakeholders both within government (at national and county levels) and among the wider stakeholder community e.g. development partners and research organizations engaged in AMR.
- Opportunities are identified for intersectoral collaboration e.g. for training, equipment maintenance, consumable and reagent supply chains, etc. to improve value for money and sustainability
- TWGs have been capacitated to support the design of sector-specific and multisectoral surveillance strategies that will contribute meaningfully to the national AMR surveillance strategy.
- Improved capacity at national and local levels (other national governance structures, hospitals, prescribers, etc.) to propose data-driven changes, sector-specific or multisectoral as relevant, in policy and guidelines.
- Engagement strategies for selected local governments/governance in support of AMR surveillance initiatives developed.
- Results from AMR, AMC and AMU surveillance activities in animals and humans have been adequately presented at multisectoral AMR platforms and conferences., such as Tanzania Veterinary Association (TVA/B) Annual symposium.

### **Output 1.2: A cost evaluation to identify cost drivers of setting up AMR surveillance in Tanzania and requirements to ensure One Health AMR surveillance is sustained.**

There is limited evidence regarding the economic needs for One Health AMR surveillance and consequently resource allocation has not been adequately addressed by policy makers, across ministries. The Grantee should therefore undertake a cost appraisal to inform future policy and programming. This should address actual costs of improving and maintaining adequate laboratory capacity (examples: cost benefit of preventative maintenance of equipment, staff capacity building plans), identify cost savings opportunities, and estimate potential impact on other expenditures e.g. hospital drug budgets. The evaluation should be carried out in animal and human health, and be shared with the relevant TWG and MCC to advocate for better use of resources.

By the end of the grant, we expect that the following will have been achieved:

- An economic evaluation (including cost) of maintaining One Health AMR surveillance has been completed and shared with the relevant TWGs and the MCC.
- The MCC and NCC have identified strategies to increase the national budget contribution to One Health AMR surveillance in all relevant sectors.

### **Output 1.3: Improved procurement systems**

Developing reliable supply chains for laboratory consumables is a basic requirement for provision of healthcare but presents a major challenge for health systems. The Grantee should work with laboratories and the Government of Tanzania to improve the supply chain for bacteriology to minimize stockouts and ensure that a basic menu of bacteriology testing can be maintained. The Grantee should undertake a thorough assessment of current procurement processes in human and animal health sectors' bacteriology laboratories to inform improvement plans for key stakeholders.

By the end of the grant, we expect that the following will have been achieved:

- An assessment of the procurement processes for bacteriology laboratories in animal and human health sectors has been undertaken and presented to relevant stakeholders (i.e. laboratory management, TWGs, etc.)
- Plans to develop a procurement system which guarantees the uninterrupted supply of quality items has been presented to relevant stakeholders.

## **Objective 2: Sustain existing support to AMR and AMU surveillance in human health and expand to one additional site**

### **Output 2.1: Support to human health laboratories is sustained for AMR surveillance**

Six human health laboratories, including the National Reference Laboratory, are presently being supported under CG1. The capacity of these laboratories to conduct bacterial identification and ASTs has been enhanced through training and mentorship, and provision of equipment and consumables. The laboratories have also been equipped with computers and WHONET has been installed to enhance reporting and decision making however, the sites require ongoing support to achieve full capacity. Country Grant 2 will maintain and develop their capacity and will support one additional site to provide a safe, basic bacteriology service.

By the end of the Country Grant 2, the following should have been achieved for all sites:

- The additional Fleming Fund supported site has undergone the necessary renovations, have been equipped and consumables have been provided to enable it to function as an AMR surveillance site.

- Maintenance and service contracts for procured equipment are in place, and a plan is in place to ensure their sustainability beyond the life of the grant.
- The national calibration centre is supported to service and maintain basic microbiology laboratory equipment including biosafety cabinets, fridges, incubators, centrifuge, pipettes and other relevant items. National Biomedical engineers attend in-country bi-annual in-service training on equipment maintenance, servicing and calibration, including basic training on specialist equipment by engineers from relevant suppliers.
- Low performing laboratories are identified and provided with continuous supportive supervision for on-site bench training of staff to promote good microbiological practices.
- All the Fleming Fund supported sites have active quality management programmes
- All the Fleming Fund supported laboratories are monitoring contamination rates and providing ongoing training and feedback to ensure that contamination rates are minimized and that good quality samples are received.
- All sites in the surveillance system send quality assured data on the relevant GLASS pathogens in a uniform format to NCC at NHLQATC for compilation and analysis.
- A mechanism should be designed that takes into consideration the national policy and guidelines in the procurement and supply of consumables, ensuring the most efficient and effective way of obtaining the products to reduce stockouts and wastage of reagents.

### **Output 2.2: Continued Improvement biosafety and biosecurity at all Fleming Fund supported laboratories**

- The laboratory is equipped with appropriate safety equipment and staff are wearing personal protective equipment while conducting testing.
- All biosafety cabinets are regularly maintained and calibrated. Staff have been trained on their use.
- All waste is disposed of in a safe manner.
- All staff are trained and supervised to the appropriate level for their job descriptions / roles
- Appropriate ongoing supervision of Biosafety and Biosecurity is undertaken by training and appointment of a Biosafety Officer.

### **Output 2.3: Clinical staff and hospital administrators are actively engaged in AMR surveillance and using locally generated data to inform decision making processes**

The focus of the CG1 was aimed at building foundations for AMR surveillance and the grant concentrated on the equipping laboratories and providing training to improve the quality of clinical microbiology services. These improvements can only be used and sustained when clinical staff have a good understanding of the function of diagnostic microbiology and sampling. Clinical staff (doctors, nurses, pharmacists) should be actively engaged in order to have a successful passive surveillance program and should be proactive in sending samples and liaising with the site laboratory.

This will reduce the current syndromic management that is frequently practiced in hospitals and it will also build the confidence of practitioners to utilize diagnostic services before prescription of antimicrobials. Similarly, AMR surveillance data generated at surveillance sites should be used to inform clinicians and management about their practices, and to promote infection prevention and control measures.

By the end of the grant we expect that the following will have been achieved:

- AMR champions have been identified at each site (including doctors, nurses, pharmacists and laboratory staff) and supported to establish or strengthen existing AMR or stewardship committees
- Increased number of good quality blood culture samples are sent to the laboratory, with acceptable contamination rates and relevant, key clinical data (age, infection syndrome, severity indicators and hospital/community acquired) recorded on the request form.
- Results are communicated to clinicians in a timely manner, and systems are in place to communicate critical results (e.g. CSF samples, positive blood cultures) without delay
- Clinicians and pharmacists at the surveillance sites demonstrate an improved understanding of how to incorporate bacteriology results into their practice.
- Data generated at the site is analyzed locally and being used to inform hospital level decisions on training, stewardship and drug policies. This may be via Medicines and Therapeutic Committees, Antimicrobial Stewardship Committees or similar entities.

#### **Output 2.4: Enhanced interoperability of AMR surveillance into National surveillance systems (DHIS 2).**

There are several information systems used at hospital, laboratory and sector levels, including individual LIMS and DHIS2, in addition to the diverse systems set up for surveillance of specific diseases (e.g. enteric pathogens). All the regional referral hospitals, district hospitals and sub districts are connected to DHIS 2, also operates a dashboard that provides real time data on possible epidemics. Consequently, there is national data is generated and reported at the sector level on different indicators.

Under CG1, some work has been done to link up WHONET with other information management systems to ensure that laboratory data is centralized and coordinated at the reference laboratory

The grantee is expected to continue working with the MCC secretariat and explore ways of collaborating to integrate AMR data from the different surveillance systems and databases.

By the end of the grant the following should have been achieved:

- The AMR surveillance data is integrated into the current surveillance system
- Linkages between DHIS2 and WHONET are formalized to ensure that AMR data is shared at national level
- There is collaboration between the MoHCDGEC and MLF data centres to integrate AMR surveillance data into a common platform

#### **Output 2.5: Support implementation of regular, sustained Point Prevalence Surveys (PPS) on AMU in hospitals, with results used to inform local prescribing improvement programmes**

A PPS on AMU has been conducted at two hospitals during CG1, however, plans to extend to other sites were affected by COVID 19. PPS studies have also been conducted in a few select hospitals supported by the MTaPS program, which has also supported stewardship and Infection, Prevention and Control programmes and development of some policy documents. PPS should be scaled up for all the Fleming Fund supported sites. PPS data should be shared locally with hospital administrators, antimicrobial stewardship units, site surveillance committees or similar, which should be supported to develop locally relevant focused interventions to improve prescribing practice.

By the end of the grant the following should be achieved:

- Implementation of a regular program of point prevalence surveys (e.g. using the Global PPS or the WHO PPS methodology with integration of findings of the PPS conducted as a pilot during CG1). Site staff should be trained in the methodology and sites should be capable of undertaking the survey on an annual basis.
- The information from these PPS should be shared locally with hospital administrators, antimicrobial stewardship units, site surveillance committees or similar, and used to develop locally relevant quality improvement programmes for prescribing.
- The information will have been shared nationally with MCC to ascertain trends and association of antimicrobial use with antimicrobial resistance.

### **Objective 3: Sustain existing support to AMR and AMU/C surveillance in terrestrial animals and expand to one additional site.**

#### **Output 3.1: The animal health technical working committee is supported to strengthen the AMR/U/C surveillance systems**

The technical working Committee (AMR/AMU) at MLF are tasked with building sustained partnerships to facilitate and oversee implementation, monitoring and evaluation of AMR and AMU surveillance, and are responsible for information sharing and liaising with relevant stakeholders. This committee needs to be supported to strengthen their capacities to fulfil these tasks effectively.

By the end of the grant we expect that the following will have been achieved:

- MLF Animal health technical working committee has technical and practical capacity to oversee development and implementation of the surveillance documents such as strategies, protocols, SOPs, workplans and budgets etc.
- Quarterly meetings have been held to discuss results, review of technical reports and documents, to oversee implementation of the NAP and recommend policies relevant to AMR containment.

#### **Output 3.2: Support the Animal Health AMR National reference laboratory and selected regional veterinary laboratories to contribute to the AMR surveillance network**

Under CG1, 4 Animal Health laboratories were renovated, and TVLA, was supported to identify *E. coli*, *Salmonella*, *Enterococci* and *Campylobacter*. The veterinary laboratories have been renovated and capacity to conduct bacterial identification and ASTs has been strengthened through training and provision of laboratory supplies (e.g. equipment and consumables). Yet, these laboratories still have limited bacteriology capacity, and substantial support will be needed to carry out AMR surveillance.

TVLA needs continuous strengthening of its data management capacity, quality control systems, procurement and supply chains, as well as its capacity to provide bacteriology EQA to the regional laboratories.

By the end of the grant we expect that the following will have been achieved:

- 1) At laboratories supported under CG1:
  - Laboratories can identify and test for antimicrobial sensitivity, a limited number (two to three) of pathogens among the most frequently identified in clinical practice.
- 2) At TVLA:
  - TVLA is strengthened to provide EQA for priority pathogens in live poultry and milk, to all laboratories in the AMR surveillance network.
  - Quality management systems are strengthened

- A stock management system is strengthened to ensure reliable and timely supply of laboratory supplies for TVLA and the regional veterinary laboratories which are supported by TVLA, as described in 1.3.
  - SOPs for culture, identification and AST of additional pathogens are developed and disseminated to all surveillance sites.
- 3) At TVLA Iringa:
- Needs assessment is done and subsequent procurement list and renovation plans submitted to management agent for action.
  - Laboratory personnel can culture, isolate, and identify bacterial pathogens, and perform ASTs by disc diffusion where necessary with a focus on E.coli and dairy pathogens if possible, at acceptable standard, or send isolates to TVLA for ASTs and further testing as requested.
- 4) In all laboratories:
- The laboratories have been equipped and where necessary upgraded, to meet minimum OIE standards.
  - All SOPs used in the laboratories from sample handling, bacterial identification, AST, data management, reporting to farmers/veterinarians/management/TVLA, MLF, etc. have been updated/corrected as necessary to ensure they are complete, meet current international standards and are used by appropriately trained laboratory staff.
  - TVLA and SACIDS are supported to provide bench microbiology mentoring to all laboratories in the AMR surveillance network.
  - Each laboratory has a functioning IT system, LIMS, and trained staff who are able to efficiently enter data from laboratory results, accurately matched to demographic details.
  - All sites in the surveillance system send all data in a uniform format to NCC at TVLA Epidemiology Unit for compilation and analysis.
  - Laboratory personnel at laboratory surveillance sites are trained in safe sample handling, labelling, packaging and documentation as per the recommended standards, following appropriate international regulations and guidelines.
  - Samples and isolates can be transported between the different laboratories and sampling sites in a secure and reliable manner without significant delays, including sample tracking.

### **Output 3.3: Sustain and develop support to enhance AMR surveillance**

Under CG1, a protocol for active AMR surveillance in poultry was developed and the survey carried out, in layers and broilers, in the regions in which supported laboratories are located. This surveillance did not target testing for AMR in pathogens of interest to veterinary practice.

Veterinary practitioners and farmers regularly have been experiencing increased cases of treatment failure for mastitis, a highly prevalent bacterial disease among dairy cattle. This has greatly affected dairy farmers in terms of reduced milk yields, loss of milk sales, increased costs of production, increased culling rates of dairy cattle, among others. This, therefore, calls for a need to collect data on AMR in pathogens so as to provide the most appropriate management options for mastitis affecting dairy cattle. By the end of the grant we expect the following to have been achieved:

- A protocol developed for active AMR surveillance in dairy cattle developed and its associated implementation plan costed. The protocol should focus on mastitis causing pathogens as well as well as zoonotic pathogens. Fecal and milk samples will be expected to be collected.
- Staff are trained on sample collection (collection, labelling, transport, relevant biosafety and biosecurity measures), sample processing and data entry (software system to be determined in previous output), as described in 3.2.
- Appropriate isolates are forwarded from surveillance laboratories to TVLA for confirmation and archiving, as described in 3.2 (biorepository, including inventory).
- passive surveillance of AMR has been initiated, including training and procurement as described in 3.2, encouraging animal health professionals and livestock keepers to make greater use of the laboratory services, consider strategies to promote sustainability of passive surveillance, consider data entry and analysis of passive surveillance data.

### **Output 3.5: Support the development of a system to monitor veterinary drugs imports, manufacturing, sale and uses and support AMC and AMU surveillance by TMDA and MLF**

The current TMDA Act has no provision for enforcement of misuse of antibiotics, thus little attention has been given to gather appropriate and reliable data on AMC from imports, manufacturing and sales of any antimicrobials to guide policy formulation by the responsible ministries.

Tanzania is a member to World Organization for Animal Health (OIE) and therefore, obliged to report AMC data annually. This responsibility is performed by the Chief Veterinary Officer. In order to fulfil this obligation, TMDA has to closely work with MLF. Given the need to align the Country's AMC/U data management protocols with OIE requirements, there is a need for the grantee to support MLF and TMDA to develop their capacity to capture and appropriately manage AMU/C data, including drug imports, manufacturing, sales and use to inform policy on antimicrobial to contribute to AMR control.

By the end of the grant we expect the following to have been achieved:

- Software and hardware are in place to monitor drug imports, manufacturing and sales, at least to the wholesale level.
- A value chain analysis of distribution pathways for animal drugs has been conducted
- A farm-based AMU survey has been carried out
- A situation analysis of OIE reporting capacity has been carried out, and presented to key stakeholders in a report that should include, at the minimum, challenges encountered in reporting to Option 1, suggested measures to bridge those gaps, and a clearly laid out improvement plan with expected outcomes. Subsequently, the grantee shall work with government to implement suggestions presented in the report.

## 7. Grantee Roles and Responsibilities

The main role of the Grantee(s) will be to plan and implement the activities required to achieve the objectives and outputs outlined above. The Grantee is responsible for providing – either alone or through a partnership or consortium – the technical, financial, and operational expertise required to deliver the grant.

The Lead Grantee is also responsible for monitoring and reporting to Mott MacDonald. Reporting of financial expenditure against budgeted activities is a requirement of the grant and Grantee(s) will need to show evidence of sufficient capabilities to undertake these responsibilities.

Following the weaknesses identified in Country Grant 1 due to weak coordination structures at National Level, it is recommended that the grantee establishes a functional coordination structure at country level to enhance government coordination but also ensure long term sustainability. In this regard, the role of Muhimbili University should be clearly defined in the proposal.

## 8. Measuring success

Country Grants are ultimately expected to generate results that can be tracked using a standard set of indicators that will monitor progress and achievements within and across Country Grants. A copy of the full list of indicators will be shared in the Application Pack. Applicants are to select only the ones they find applicable or appropriate for their implementation plan.

In summary, while the completion and level of attainment for all activities requires monitoring, the type/level of activity will determine the monitoring method. When developing the application, applicants should:

- Select from the proposed indicators for activities, where appropriate, or,
- Identify targets and timeframe completion for 'process' type activities (i.e. where indicators provided are not applicable / too advanced).

A mix of these options is also appropriate depending on application content.

The Grantee will be expected to revisit/confirm the monitoring plan, which will then be agreed with Mott MacDonald after the grant is awarded.

In addition to measuring grant performance against the objectives and outputs stated above, the grant will also be monitored on the implementation of, and adherence to, the Fleming Fund core principles described in Section 2.4, and practical implications for this will be discussed with the successful applicant. No further action is required at this stage.

## 9. Application requirements

### 9.1 Evaluation criteria

The application form will indicate the scoring and weighting for each section of the application. The Application Pack will also contain Guidance Notes explaining what we are looking for in terms of a good quality response for each question, including approach to Value for Money (VfM).

In particular we are looking for the grantee to

- Technical capacity to address the different aspects of AMR covered by this Country Grant.
- Ability and preparedness to bring stakeholders together in an effective and productive working arrangement, promoting a One Health approach.
- Ability to operate effectively in Tanzania.

### 9.2 Restrictions/limitations

Any conflict of interest, or potential conflict of interest, should be declared to Mott MacDonald when applicants are registering their interest to apply for the grant. If a conflict of interest, or potential conflict of interest, arises after that point the prospective Grantee must clearly declare this in their proposal.

### 9.3 Key dates

- Application submission deadline: January 5, 2021
- Anticipated start of grant: February 2021

### 9.4 Contact details and support information

Any questions on the Request for Proposals should be sent to [flemingfundESA@mottmac.com](mailto:flemingfundESA@mottmac.com). Mott MacDonald will endeavor to respond to queries within three working days.