

# Terms of Reference for Request for Proposals

## First Fleming Fund Country Grant to Timor-Leste

### 1 Overview of this grant

This is a Request for Proposals (RFP) for the first Country Grant to address critical gaps in surveillance of antimicrobial-resistant bacteria in Timor-Leste. The RFP has been created in to support the Government of Timor-Leste. The grant will be funded by the UK Department of Health and Social Care, under its Fleming Fund Grants Programme, which is managed by Mott MacDonald, the Management Agent.

This first Fleming Fund Country Grant for Timor-Leste will focus on strengthening the antimicrobial resistance (AMR) and antimicrobial use (AMU) surveillance systems and antimicrobial consumption (AMC) data capture in both the human and animal health sectors. It will facilitate a stronger One Health approach to surveillance, bringing together multi-sectoral stakeholders to share surveillance data and gain a better understanding of AMR, AMU and AMC.

This grant will align with the national AMR policy framework and with the investments made by other donors and stakeholders in this area. In the human health sector, the grant will invest in the improvement of AMR, AMU and AMC data management, as well as in the reinforcement of the National Health Laboratory (NHL). In the animal health sector, the grant will invest in the improvement of national surveillance coordination and information management, as well as in the reinforcement of AMR at the national Veterinary Diagnostic Laboratory (VDL). In addition, the grant will contribute to further develop and support the coordination with the ministries involved in AMR/AMU/AMC surveillance, analysis and reporting.

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 expected 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 National Steering Committee (NSC) for AMR, as well as with Mott MacDonald and other 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, such as the Regional Grants and the Fleming Fellowship Scheme.

This grant is expected to last 24 months. Grant applications are expected to be in the region of £3-4 million, 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 increasing antimicrobial resistance (AMR). The Fleming Fund will be a critical support 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 are 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 a number of workstreams. 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. This work will be critical for the overall success of the Fleming Fund Grant Programme and underpins the delivery of the portfolio of Country and Regional Grants and the Fleming Fellowship Scheme, as these will target capacity gaps identified in the National Action Plans. The Fleming Fund also funds initiatives in academic institutions to develop guidance on the development of AMR surveillance systems.

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 the whole 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.

The geographic focus of the Fleming Fund Grants Programme is 20-24 LMICs from Sub-Saharan Africa, and South and South East Asia. It is providing financial support over a five-year period from 2017 to 2021 to participating countries via three funding channels:

- Country Grants
- Fleming Fellowship Scheme Grants
- Regional Grants

Resources may also be available to conduct Operational Research on selected topics within these funding channels. These studies will provide an opportunity to better examine implementation ‘blockages’ or undertake more detailed case study analysis in themes of interest (e.g. value-for-money) for programme learning and adaptation purposes.

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

The Fleming Fund will be 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

The main issues to be addressed by Fleming Fund Country Grants are:

- 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; still fewer facilities that meet the requirements for accreditation, or who do routine antimicrobial susceptibility testing.
- Routine AMR surveillance in healthcare delivery is not practised, or there is no culture of 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 for example.
- 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 skills and 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 RFPs 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 will work 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 hand-in-hand with national governments to agree the approach and ensure sustainability. Grants and RFPs will conform to national priorities outlined in the National Action Plan and as articulated during Country Assessment visits. Unless there are good reasons to do so, Fleming Fund grants will chiefly invest in public sector laboratories and surveillance systems, thereby supporting 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>2</sup> and FAO<sup>3</sup> as well as the Global Action Plan.
  - a. 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.
  - b. 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

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<sup>2</sup> OIE Standards, Guideline and Resolution on Antimicrobial resistance and the use of antimicrobial agents;

<sup>3</sup> The FAO Action Plan on Antimicrobial Resistance, 2016-2020.

- c. **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 will seek 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 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. The Fleming Fund Grants Programme will assess grants for duplication of efforts 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. We also recognise that the public good of conducting AMR surveillance means medium- to long-term support.

A clear preference will be given when evaluating proposals to those bidders who can demonstrate that they have:

- Specifically examined the technical, institutional, political and other barriers that restrict the usage of AMR evidence in policy and implementation;
- Included in their bids real-time feedback mechanisms to determine if the laboratory inputs and outputs are being used by decision makers to improve AMR resistance policy and practices;
- demonstrated they have a realistic budget for preventive maintenance for key laboratory and scientific equipment and / or other specific mechanisms to ensure sustainability of the investments made.

## 2.5 Fleming Fund activities in Timor-Leste to date

This is the first RFP for a Fleming Fund Country Grant to be released in Timor-Leste through the Fleming Fund Grants Programme. In preparation for this grant, Mott MacDonald carried out desk-based assessment in May 2017. This was followed by a visit by the Regional Coordinator in late June 2018, in turn followed by a visit by a technical team in early August 2018.

Key stakeholders in the animal and human health sectors have been consulted throughout the process, including government officials, UN agencies and other development partners. This is to assist in alignment of Fleming Fund grant investments with other proposed activities.

## 3 The current AMR situation in Timor-Leste

### 3.1 National Action Plan for AMR

Timor-Leste has its own National Action Plan (NAP) on Antimicrobial Resistance (2017-2020), which was developed in 2016 by the MoH with technical support from WHO. It is available for download on the WHO SEARO website.<sup>4</sup>

The NAP on AMR (2017-2020) includes five strategic objectives:

- Strategic objective 1: Awareness
- Strategic objective 2: Surveillance of AMR
- Strategic objective 3: Hygiene, infection prevention and control
- Strategic objective 4: Optimise use of antimicrobial medicines
- Strategic Objective 5: Economic case for sustainable investments and increase investments in new medicines, diagnostic tools, vaccines and other interventions to reduce antimicrobial use

Strategic objective 2 (Surveillance of AMR) is further divided as follows:

- Objective 2.1: Set up a national surveillance system for antimicrobial resistance under the leadership of a National Coordinating Centre
- Objective 2.2: Build laboratory capacity under the leadership of a national reference laboratory to produce high-quality microbiological data for patient and food-safety management and support surveillance activities
- Objective 2.3: Develop a multi-centric surveillance system on the national scale to provide early warning of emerging resistance and monitoring of secular trends at national and sub-national levels

The implementation of the AMR NAP is still at a very early stage as only activities related to strategic objective 1 (Awareness) have been carried out. For the remaining strategic objectives, few or no activities had been implemented to date.

### 3.2 One Health

A One Health priority action plan (2018-2022) has been developed with technical and financial support from WHO, based on a strategic framework developed jointly by human health, animal health, environment, and food safety stakeholders during a National One Health Workshop held in Dili in February 2018. This action plan includes the following eight key strategic objectives:

- Strategic objective 1: Ensure that a clearly defined governance system for the implementation of One Health strategy is in place.
- Strategic objective 2: To establish coordinated mechanism for sharing data and information, and conduct joint surveillance for early warning, prevention and control of emerging and re-emerging and other zoonotic diseases.
- Strategic objective 3: Establish timely outbreak information sharing and strengthen coordinated preparedness and response mechanism for zoonotic diseases.
- Strategic objective 4: Strengthen the overall capacity of key sectors to prevent, respond, control and mitigate the impact of zoonotic diseases.

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<sup>4</sup> [http://www.searo.who.int/entity/antimicrobial\\_resistance/national-action-plans/en/](http://www.searo.who.int/entity/antimicrobial_resistance/national-action-plans/en/)

- Strategic objective 5: Strengthen research capacity and promote collaborative research on zoonotic diseases.
- Strategic objective 6: Advocate and create awareness on One Health approach, and ensure harmonization of advocacy, communication and education to enhance knowledge, attitude, and practices for prevention and control of zoonotic diseases.
- Strategic objective 7: Engage environment and wildlife sectors to understand and address the role of environment and ecology in disease emergence.
- Strategic objective 8: Minimize the development and spread of antimicrobial resistance and ensure the continued availability of effective antimicrobials

At the moment, there is no budget attached to this action plan and its implementation is still at a very early stage.

The AMR NAP refers to a National Multisectoral Committee (NMC) for AMR (also called “AMR Taskforce” by many stakeholders), chaired by the Vice Minister for Health and co-chaired by the Vice Minister for Agriculture. There is representation from MoH, MAF, Ministries of Finance, Education, and Environment, the Prime Minister’s Office, and the Tripartite Alliance (FAO, OIE, WHO). The members of the NMC for AMR have been identified but they have not yet been officially nominated. Therefore, the Committee is not yet operational.

The NMC for AMR is to be supported by multi-sectoral Technical Working Groups who will address the strategic objectives of the NAP.

The National Directorate of Pharmaceutical and Medicine (within MoH) and the National Directorate of Livestock and Veterinary Services (within MAF) are listed as the National AMR focal points responsible for coordinating AMR activities and tasks in the health, animal, aquaculture, food production and environment sectors.

### 3.3 AMR surveillance and laboratory capacity – human health

The surveillance system in Timor-Leste is managed by the Surveillance Department of the MoH. This department produces a monthly epidemiology bulletin, but it does not yet have any role or input into AMR surveillance.

The AMR NAP sets out the steps to be taken to understand how resistance develops and spreads. This is to be done by having ‘a nationwide AMR surveillance system in place along with a national early warning system to identify the emergence of resistance in priority pathogens and to critical antimicrobials by 2019’.

At the moment, the National Health Laboratory (NHL) is the only public laboratory with significant capability in bacteriology including bacterial isolation and identification, and AST– however data is not captured in a formal surveillance system.

Other laboratories – at the National Hospital of Guido Valadares (NHGV) and the five referral or regional hospitals (Maliana, Baucau, Suai, Maubisse and Oecusse) – carry out rapid tests only; they have no capacity to culture isolates.

The NHL is designated as the national referral laboratory for bacteriology including isolation, identification and sensitivity/AMR testing. However, it is currently working more as a routine laboratory in bacteriology

than as a national reference laboratory. There are many functions of an AMR reference laboratory, as per the WHO GLASS manual,<sup>5</sup> which are not yet being performed.

The NHL is equipped with a BioFire Filmarray identification machine, on loan from the manufacturer (BioMérieux) for an undefined period. This is a multiplex PCR system which tests for a variety of bacterial, viral and fungal pathogens directly from specimens, and can also test for the presence for the *mecA* gene in *S. aureus* (methicillin resistance, MRSA) and the KPC gene in the Enterobacteriales (carbapenem resistance).

It has recently obtained an automated blood culture instrument but this is not yet in use and the small number of blood cultures which are processed are done manually. The resources currently available at NHL, in terms of equipment, staff and space, are not sufficient to do both routine and reference functions. There is also a need to strengthen capacities in biosecurity and biosafety, quality management and maintenance, and to improve the procurement systems for laboratory supplies (equipment, consumables and reagents).

### 3.4 AMR surveillance and laboratory capacity – animal health

As in the human health sector, there is not yet any formal AMR surveillance programme in animal health.

The National Directorate of Veterinary is responsible for the epidemiology of AMR in animals and has the mandate to capture and analyse data and report to MAF, MoH and other stakeholders.

The only public veterinary laboratory in Timor-Leste is the national Veterinary Diagnostic Laboratory (VDL). It was established in 2011 following concerns over possible incursions of avian influenza and its facilities and capability are largely focused on serology. It also has some capacity for pathology, parasitology and basic bacteriology. However, it receives very few samples from disease outbreaks and is used largely for cross-sectional surveys for the presence of a number of viral and some bacterial diseases such as brucellosis; these surveys are designed and funded by the Australian Government. There is no case load or capturing of clinical case data for AMR surveillance.

The VDL facility is small but in a generally good state of repair, though some equipment is no longer functional and maintenance and calibration is not being undertaken. To establish a functional bacteriology laboratory, some repairs, maintenance and re-equipping will be required.

### 3.5 Rational use of drugs

A comprehensive National Medicines Policy, developed with some support from WHO, has recently been adopted. The National Directorate of Pharmaceutical and Medicine (within MoH) is responsible for the endorsement of the regulation for the importation and distribution on both public and private facilities; provision of licences for importation; and registration of drugs and medicines. Therefore, the MoH can monitor the quantity of antibiotics entering into the country.

Medicines are procured and supplied to all public health facilities by SAMES, the 'Serviço Autónomo de Medicamentos e Equipamentos de Saúde', a semi-independent entity housed within the MoH. The Department of Pharmacy (within the National Directorate of Pharmaceutical and Medicine in the MoH) is

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<sup>5</sup> "According to the WHO GLASS manual, a national reference laboratory should be able to provide participating institutions with guidance and technical support in AST and quality management (including participation in external quality assurance schemes) and to confirm unusual or new resistance patterns before they are reported to the relevant national authority. The lab should liaise with the NCC in standardizing and verifying microbiological results."

responsible for the management of medicines in the districts and facilities and for quantification. Illegal importation of human pharmaceutical products is said to be minimal. There is a national Essential Medicines List (EML) 2010, which is used by SAMES.

Antibiotics are distributed by 12 import pharmacies and made available in the 36 retail pharmacies as well as in the informal sector ('kiosks'). Surveys on medicine use have been undertaken in 2006 and 2011. They show a high use of antibiotics, particularly for upper respiratory tract infections. In 2010, the Department of Pharmacy released national standard treatment guidelines for primary care and referral hospitals but few prescribers are using them.

Private sector distributors must obtain a licence to import antimicrobials which is valid for three years. Only limited information on the actual types and products imported is available.

In animal health, antibiotics are managed nationally by the National Directorate of Veterinary, who are responsible for the approval and import of all antimicrobials. Therefore, AMU and AMC data is available at the national level, and its subsequent distribution to the District Agricultural Directorates. Further downstream, District Livestock Officers, Assistant Livestock Officers and Extension Workers are responsible for disease investigations and treatment with antimicrobials, and also for keeping hard copies of dispensing details.

Privately managed farm shops and drug stores also obtain antimicrobials from the Directorate: these are sold freely over the counter.

It is recognised that there is considerable illegal import of antimicrobials from Indonesia and further afield, which is unmonitored.

## 4 Scope of this Country Grant

### 4.1 Grant Objectives and Outputs

Objectives and outputs for this Country Grant are summarised as follows. Section 7 provides more detail. It is expected that applicants will respond to this RFP 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.

Objective/Output
<b>Objective 1: Strengthened One Health approaches to information sharing</b>
Output 1.1: AMR and AMU surveillance information is shared between MoH and MAF
Output 1.2: Annual national AMR/AMU symposium held
<b>Objective 2: Strengthened AMR and AMU surveillance system in the human health sector</b>
Output 2.1: NHL is functioning as a reference laboratory for AMR
Output 2.2: Improved biosafety and biosecurity of NHL
Output 2.3: Quality management system at NHL is developed
Output 2.4: Plan for specimen collection from designated sample collection sites developed
Output 2.5: Improved specimen collection and transportation from surveillance sites
Output 2.6: Surveillance sites are linking laboratory and clinical data
Output 2.7: AMR results are analysed
Output 2.8: AMU surveillance system is developed and data is analysed

## Objective/Output

### **Objective 3: Strengthened AMR and AMU surveillance system in the animal health sector**

Output 3.1: VDL is providing reliable culture, identification and AST results

Output 3.2: Improved biosafety and biosecurity of VDL

Output 3.3: Plan for specimen collection in the animal health sector is developed and executed

Output 3.4: AMR results are analysed by MAF

Output 3.5: AMU surveillance system is developed

Output 3.6: Data on animal AMC is captured, analysed and reported to stakeholders and to OIE

Output 3.7: MAF is leading knowledge management and policy development for AMR, AMU and AMC in animals

## 4.2 Duration of the grant

The grant is expected to last for 24 months.

Initially we will expect the Grantee to:

- Begin work on the outputs and assessments outlined above.
- Agree an MoU with the Government of Timor-Leste.
- Collaborate with the Fleming Fellows, the Beneficiary Institutions and their Host Institutions to understand the Fellowship workplans and opportunities for synergies in implementation and development.

The remainder of the outputs should be completed as outlined above.

Proposals for the grant will require a detailed budget and workplan. Activities and budgets need to be in line with government rules and regulations, and, in particular, take into account per diem rules as outlined in Article 11 on Decree Law no 20/12/2010.

If necessary, Mott MacDonald will assist with and provide support in developing and gaining approval for the MoU; in the event that the MoU is not granted, the Grant Agreement will be reviewed accordingly.

## 4.3 Funding envelope

Grant applications are expected to be in the region of £3-4 million, including all capital and recurrent costs, overheads and management costs.

The Fleming Fund wishes to see value for money (VfM), and all applicants will be expected to demonstrate their understanding of VfM. The Guidance Notes for the Grant Application Form provides different dimensions that should be considered as part of a VfM approach – economy, efficiency and effectiveness – and an indication of how VfM will be assessed.

## 4.4 Procurement

Applicants should propose their preferred procurement route, including the use of SAMES where relevant.

The choice of procurement route will be subject to assessment by International Procurement Agency (IPA), a partner of Mott MacDonald in the Fleming Fund Grants Programme providing advisory services, and the Grantee will be expected to work with IPA if necessary to optimise the procurement process.

A procurement list has been drafted by the assessment team, and this will be shared with the successful applicant.

Applicants should include a placeholder to the value of USD 700,000 in their proposals, which should include equipment, maintenance and supplies.

## 5 Key partnerships, alignment and coordination

The Country Grant must be delivered in a way which supports the national effort and which takes account of current capacity levels, absorptive capacity, alignment with other development partners, and national strategies and priorities/policies.

The Grantee must also ensure that all inputs complement and build on work done to date and avoid duplication and development of parallel systems.

Allocation of grant resources should support the national effort in a transparent way by specifying resource allocation in a workplan and budget that has been jointly developed by government officials and the Grantee, where possible.

Much of the success of this grant, in particular Objective 1, depends upon the ability of the Grantee to bring cross-sectoral stakeholders together and facilitate joint working.

## 6 Complementing other grants from the Fleming Fund Grants Programme

The Country Grant is expected to work effectively and synergistically with other grants under the Fleming Fund Grants Programme at the regional level. This relates to both the Regional Grants and the Fleming Fellowship Scheme.

The Regional Grants will focus on strengthening networking and data sharing on AMR at the regional level. The Grantee is expected to liaise, through Mott MacDonald, with the Regional Grants Programme to maximise the sharing of AMR data and learning at the regional and global levels.

The Fleming Fellowship Scheme is part of the broader Fleming Fund Grants Programme, and is also managed by Mott MacDonald. Fellowships will provide grants to fund a 24-month programme of structured learning, mentoring and skills development for four to eight Fellows in each investment country. The Fellowships will primarily provide basic trainings addressing priority needs. When possible, it will also focus on building advanced skills and leadership to promote the application of best practice in identified 'Beneficiary Institutions'.

According to current plans, six Fleming Fellowships – to comprise four for the human health sector and two for the animal health sector – are proposed for Timor-Leste. Successful applicants will receive specialised training in AMR epidemiology, AMR and AMU data management and analysis, laboratory quality management, and advanced laboratory technical skills.

Fellows are expected to become technical leaders in AMR and AMU surveillance in Timor-Leste, and it is hoped that they will play a role as mentors and active trainers in capacity building activities that will be implemented through this Country Grant. Therefore, once established, the Grantee is expected to align and collaborate with Fleming Fellows, their Beneficiary Institution (where they are usually based) and their Host Institutions (who provide remote support to the Fleming Fellows).

Summary terms of reference for all the Fellowships, currently being finalised, are attached in Annex 2. It is expected that, by the time the Grantee can begin implementing the Country Grant, the Fellowships will be established.

## 7 Detailed Objectives and Outputs

### 7.1 Objective 1: Strengthened One Health approaches to information sharing

#### **Output 1.1: AMR and AMU surveillance information is shared between MoH and MAF**

Relevant departments and agencies will include, for MoH, the National Directorate of Pharmacy and Medicines, National Directorate of Public Health and specifically the Surveillance Department, the National Health Laboratory (NHL), the NGHV and other hospitals, and SAMES; for MAF, this includes the National Directorate of Veterinary and its Department of Medicines, the national Veterinary Diagnostic Laboratory (VDL), and the National Directorate of Quarantine and Biosecurity.

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

- NMC, comprising both MoH and MAF, and its TWGs have conducted regular meetings and established a cooperative and collaborative relationship that allows sharing of information on AMR, AMU and AMC between the human and animal sectors.
- MoH and MAF are working together to understand the risk factors for AMR in humans and animals and are identifying critical risks that need to be addressed.
- MoH and MAF produce sector-based reports on AMR and AMU surveillance that includes a section cross-referencing and analysing the surveillance data from the other sector and potential impacts on their sector.

#### **Output 1.2: Annual national AMR/AMU symposium held**

Under the overall leadership of the NMC, the annual symposium will provide a focus allowing Fleming-funded participants and other relevant parties from both the human and animal health sectors to bring together information generated through the programme and related activities, assess the understanding of AMR in Timor-Leste, identify lessons learnt, and recommend priorities for future work and policy initiatives to be considered.

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

- Annual national AMR symposia (likely two over the lifetime of this grant) are held with active participation by representatives from MoH and MAF, as well as other relevant parties and development partners from the human and animal health sectors.
- Improved cross-sectoral understanding of AMR and AMU in Timor-Leste.
- Review of AMR and AMU policies undertaken at the annual symposia.

### 7.2 Objective 2: Strengthened AMR and AMU surveillance system in the human health sector

#### **Output 2.1: NHL is functioning as a reference laboratory for AMR**

The Grantee is expected to confirm the laboratory requirements for NHL, including infrastructure, equipment, diagnostic capability, and AMR data management.

In particular, the grantee should address

- Utilities, including mains electricity, back-up power, and UPS systems for critical instruments, including ensuring systems can support the anticipated load
- Laboratory renovations and equipment required for safe bacterial isolation, identification and AST
- Laboratory biosafety and biosecurity systems
- Information technology (hardware and software) requirements for AMR surveillance data

The role of the NHL should include routine bacterial culture, identification and AST, and assigned reference laboratory functions (e.g. confirmation of unusual resistance patterns, advanced organism identification) as outlined in the LSHTM Roadmap<sup>6</sup>

Areas for support by the Grantee should include:

- **External quality assurance (EQA).** Currently the NHL is participating in the Thailand MOPH EQA Scheme (DMSc EQA). Continuing engagement with this should be supported and monitored by the Grantee, and enrolment in other schemes, to include a proficiency testing scheme for AST, should also be supported.
- **Maintenance.** There are challenges in maintenance of laboratory equipment in Timor-Leste, in part due to a lack of technical maintenance professionals in-country. The Grantee should review the status of key specialist equipment relevant for bacterial culture, identification and AST, and support provision of the necessary service and maintenance contracts to ensure satisfactory performance of the instruments.
- **Provision of advanced testing services.** The grantee should support the NHL to develop advanced services for bacterial identification and AST as expected of a national reference laboratory. This should include confirmatory methods for e.g. ESBL and carbapenemase production, and MIC methods for isolates with borderline resistance or species which should be tested by an MIC method. Purchase of automated AST systems will be supported as necessary by the grant.
- **Biorepository.** A secure repository of isolates is an important asset to allow future investigation of the pathogens isolated, for example tracing origin and transmission of outbreaks, or confirming the genetic basis of resistance. The grantee is expected to develop a biorepository system (e.g. ultra-low freezers, or a lyophilisation system) with consideration of the power supply and back-up sources. Development of the repository should include SOPs for determining which isolates get selected for banking, for how long they are retained, and how access is granted for their use. Isolates should be inventoried using an appropriate system such as PACS, and be linked to relevant epidemiological data.

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

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<sup>6</sup> <https://amr.lshtm.ac.uk/wp-content/uploads/sites/12/2016/11/AMR-Surveillance-Protocol.pdf>

- NHL performs as a reference laboratory for Timor-Leste, including for the VDL if possible.
- Microbiology technicians at NHL are trained to conduct bacterial culture, identification and AST.
- NHL is supported to develop Quality Management Systems (QMS) in AMR surveillance, including activities such as providing national guidelines and SOPs for all priority bacteria, developing bench guides/flow charts, developing internal QC processes for instruments, reagents and methods, participating in EQA schemes including international proficiency testing schemes
- NHL develops its role as reference laboratory by providing training and mentoring on QMS for referring laboratories. NHL performs a EQA checking services for referring laboratories, providing re-testing and feedback on a subset of isolates, and develops a proficiency testing scheme for the GLASS pathogens as part of the QA process for referring laboratories.
- A secure, inventoried, biorepository system is developed together with policies for its operation (e.g. selection of isolates for saving, arrangement for accessing isolates, transfer of isolates in a bio-secured manner, etc.). NHL is supported to maintain a national biorepository of isolates from AMR surveillance with an inventory of isolates including data on source demographics/risk factors.
- A Laboratory Information Management System (LIMS) software solution is being used by NHL that allows collection of laboratory data in an electronic format and reduces unnecessary data entry at the laboratory
- A database for AMR surveillance results and data on demographics and risk factors is developed, with appropriate backup systems.

### **Output 2.2: Improved biosafety and biosecurity of NHL**

The Grantee is expected to provide training and technical assistance to ensure a high level of biosafety and biosecurity.

By the end of the grant, it is expected that the following will have been achieved:

- A Biosafety Officer has been appointed to oversee implementation of a biosafety and biosecurity programme at NHL.
- 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, and staff have been trained on their use.
- All waste is disposed of in a safe manner.
- Appropriate training and monitoring systems for biosafety and biosecurity have been established

### **Output 2.3: Quality management system at NHL is developed**

The Grantee, in discussion with the NHL, will be expected to develop a quality management system to cover longer-term equipment maintenance, procurement, quality assurance, and training needs.

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

- Maintenance / service contracts for relevant equipment are in place, and maintenance / servicing is conducted as scheduled

- QC systems are in place for relevant equipment, with training, monitoring and logging of corrective actions
- A stock management system is in place, to ensure that laboratory consumables and reagents are available as required and that there are no stock-outs of critical equipment
- An improved supply of blood (sheep or horse) for blood agar has been established, in conjunction with the NVL
- There is a quality management plan for NHL to produce high quality, timely bacteriology results for clinical use and surveillance

#### **Output 2.4: Plan for specimen collection from designated sample collection sites developed**

The Grantee is expected to work with the MoH to agree a sample collection plan that includes guidance on what samples should be collected and sent to NHL for microbiology testing. Initially the focus should be on patients with suspected bacterial blood-stream infections (sepsis) and testing protocols should be aligned with the LSHTM Roadmap<sup>7</sup>.

This would also involve assessing NHGV and the five referral/regional hospital specimen collection sites (Maliana, Baucau, Suai, Maubisse and Oecusse) to ensure the level and type of support offered is appropriate for each.

By the end of this output, it is expected that a detailed plan for specimen collection for AMR surveillance in humans has been developed. This should include:

- Supporting documentation (such as standard operating procedures (SOPs))
- Modalities for optimal collection of specimen at surveillance site level, including training plan for relevant staff at the collection sites, including clinicians to request sample collection as per the SOPs
- A plan for reliable specimen or isolate transportation

#### **Output 2.5: Improved specimen collection and transportation from surveillance sites**

The collection and transportation of microbiology specimens for microbiology, from patients at specimen collection sites, is important. Delays can impact specimen quality and reliability of the result, in turn affecting clinical management, including unnecessary antibiotic treatment and unnecessary costs of repeat investigations.

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

- Engagement with clinical teams to ensure appropriate sampling, timely feedback of results at the individual patient level, and local of AMR data
- Doctors in sample collection sites are collecting samples appropriately and minimising contamination
- There is a reliable, timely, and safe specimen transportation system between specimen collection sites and the NHL which adheres to international transport regulations

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<sup>7</sup> <https://amr.lshtm.ac.uk/wp-content/uploads/sites/12/2016/11/AMR-Surveillance-Protocol.pdf>

**Output 2.6: Surveillance sites are linking laboratory and clinical data**

Linking clinical data to samples would substantially improve the value of the surveillance data, and the Grantee should develop mechanisms to capture relevant clinical data (e.g. on request forms, or from electronic hospital information systems), so that analysis of drug-resistant infection is more comprehensive.

In order to achieve this, it will be important for the Grantee to engage laboratory staff and clinicians to ensure that appropriate cultures are taken and that relevant clinical data (for example, presenting infection syndrome) is recorded for further analysis. This may include approaches to secure clinician engagement, and ensuring that systems are in place to provide rapid feedback to clinicians, both for the direct management of their patients and to inform local guidelines and policies.

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

- Training is delivered to clinical staff at proposed surveillance sites on AMR surveillance protocols, culturing procedures and indications, and use of antimicrobial susceptibility data.
- Increased clinician awareness and use of diagnostic microbiology services at specimen collection sites, that includes clinical information, with feedback of results in clinically useful timeframes.
- There is an increase in the number of good quality samples collected and sent to NHL for microbiological analysis.

**Output 2.7: AMR results are analysed**

It is important to ensure the data is shared with relevant staff at the MoH, in particular those with responsibility for epidemiology and surveillance, to maximise use of the data at the national level.

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

- AMR data, with relevant clinical details, are shared with MoH.
- An analytical framework is developed, which includes appropriate indicators and denominators and incorporates available clinical and AMU/ AMC data to ensure that data is used and interpreted in context.
- These results inform policy and practice.

**Output 2.8: An AMU surveillance system is developed and data is analysed**

The Grantee will be expected to work with the relevant department(s) within MoH to develop a system to capture and analyse data related to AMU. While pharmaceutical distribution is currently mapped by the health service, end use data is not captured for indication, formulation, demographics etc.

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

- MoH is routinely capturing and analysing AMU data, including with reference to existing treatment guidelines.
- MoH relates this data to other AMR-related data from human and animal surveillance and uses it to inform policy and practice.

### 7.3 Objective 3: Established AMR and AMU surveillance system in animals

**Output 3.1: A plan for specimen collection in the animal health sector is developed and executed**

The Grantee will be expected to propose and work with the National Directorate of Veterinary to identify priority livestock sectors, geographic areas, bacteria and antimicrobials.

In the proposal, applicants should budget and focus on poultry sold for meat, budgeting for 400 faecal samples, to be collected from the larger farms and markets, including any necessary transport costs. Initially the main target bacteria for AMR surveillance in animals should be *Salmonella spp* and *E. coli*; over the time of the Country Grant it is hoped that sampling may be increased to include *Campylobacter* and *Enterococcus* species.

### **Output 3.2: VDL is providing reliable culture, identification and AST results**

The VDL is expected to function as the national animal health laboratory for AMR and to provide national leadership for animal AMR surveillance and veterinary bacteriology. It is proposed that, at least initially, the NHL will provide relevant reference services for animal health.

The Grantee is expected to re-assess the VDL to finalise the upgrades or refurbishments required to their infrastructure, equipment, diagnostic capability, quality management systems, and AMR data management.

The Grantee is also expected to provide training and other inputs, as required.

An AMR database will be required to collect and manage AMR data; data collected for each sample should include: sampling date, location, species, type of sample, production system, farm of origin, etc.

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

- SOPs for culture, identification and AST are developed for all priority pathogens.
- VDL staff have been trained in bacterial culture, identification and AST.
- A national biorepository of animal bacterial isolates, with inventory, is maintained at NHL or VDL.
- VDL has undertaken proficiency testing on bacterial culture, identification and AST, and has achieved satisfactory results in an EQA system, with support from the NHL as required.

### **Output 3.3: Improved biosafety and biosecurity of VDL**

The Grantee is expected to provide training and other inputs to ensure a high level of biosafety and biosecurity.

By the end of the grant, it is expected that the following will have been achieved:

- A Biosafety Officer has been appointed to supervise of biosafety and biosecurity at NHL.
- 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, and staff have been trained on their use.
- All waste is disposed of in a safe manner.
- Appropriate training and monitoring systems for biosafety and biosecurity have been established

### **Output 3.4: AMR results are analysed by MAF**

The Grantee is expected to support the National Directorate of Veterinary to conduct AMR surveillance in Timor-Leste to establish baseline information on the AMR situation in animals and then to allow monitoring over time using further rounds of surveillance. Results should be used to support One Health AMR surveillance and epidemiology.

By the end of the grant, it is expected that the following will be achieved:

- National Directorate of Veterinary captures and analyses data on AMR surveillance and report findings to MAF, MoH and other stakeholders.
- These results inform national policy, practice and guidelines.
- AMR reports and documents are stored on data management systems with regular off-site backups.

#### **Output 3.5: AMU surveillance system is developed**

AMU surveillance is expected to be supported by working with the National Directorate of Veterinary to improve data management and analysis of imported antibacterial agents, their distribution and use. This includes antimicrobials that are sold directly by the directorate, as well as those that are distributed through its network of District Agricultural Departments. This will require the development of operating protocols and staff training. Applicants should also consider the relevant infrastructure constraints and the need for sustainability.

By the end of the grant, it is expected that the following will have been achieved:

- Development of operating protocols and related staff training on AMU data capture.
- Development of information management systems for AMU.

#### **Output 3.6: Data on animal AMC is captured, analysed and reported to stakeholders and to OIE**

The Grantee is expected to assess the support required by the National Directorate of Veterinary to upgrade its data management and analysis of data on imported antibacterial agents, otherwise known as antimicrobial consumption (AMC), to include handling of import licences, imported products and product distribution.

Close liaison will be required with other donor programmes, particularly DFAT and DAWR, Australia, as well as between the National Directorate of Veterinary and the National Directorate of Quarantine and Biosecurity.

By the end of the grant, it is expected that the following will be achieved:

- MAF has the capability and tools to calculate the volume of imported antimicrobials used in animal health and production, summarising consumption by antibiotic category, formulation, and end-use/species/multispecies.
- MAF has the capability to monitoring AMC changes over time.
- MAF is providing more accurate AMC reports to OIE.
- Findings are used to inform policy and practice.

#### **Output 3.7: MAF is leading knowledge management and policy development for AMR, AMU and AMC in animals**

It is hoped that the National Directorate of Veterinary will interpret the results of AMR surveillance with reference to AMU, AMC and other risk factors, and so develop an understanding of the epidemiology of AMR in animals and any possible links with human AMR.

The Grantee is expected to support the team meetings at least quarterly to review progress on AMR, AMU and AMC surveillance, to understand the results to date and to make any necessary revisions to the surveillance programme.

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

- The National Directorate of Veterinary is effectively leading and coordinating AMR and AMU surveillance activities and AMC data capture, with formal analysis, including of risk factors
- A report of the current knowledge of AMR/AMU epidemiology in animals is prepared and the information shared with relevant AMR stakeholders.
- These results and findings are used to inform policy and practice.
- These results and findings are shared with the NMC and TWGs and other relevant AMR stakeholders.
- Guidelines and/or policy recommendations have been determined for the mitigation of risk factors for AMR, where there is sufficient evidence to support these.
- Future priorities are reviewed for further rounds of AMR and AMU surveillance in animals and foods of animal origin to address gaps in epidemiological knowledge

## 8 Grantee Roles and Responsibilities

The main role of the Grantee – or Lead Grantee if the successful applicant is to be a consortium – will be to plan and implement the objectives and outputs outlined above. The Grantee is responsible for providing, either through in-house resources alone or through a partnership or consortium, the expert technical assistance and high-quality support needed to achieve agreed results. This may include procurement expertise.

The Lead Grantee is also responsible for financial management and controls for the grant as a whole (including the contributions of sub-grantees if applicable), and 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.

## 9 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. However, Mott MacDonald recognises that the suggested indicators may not all be applicable. Therefore, applicants are expected to select from the standard indicator set only where appropriate.

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.

## 10 Application requirements

### 10.1 Grant Eligibility Criteria

Potential grant applicants must satisfy the following eligibility criteria before applications will be assessed in detail. Applicants:

- Must demonstrate that they are competent organisations responding to this call for proposals.
- Must have an appropriate track-record in supporting laboratory capacity development, surveillance, capacity building, and One Health.
- Must have experience of programme implementation in countries similar to Timor-Leste.
- Must demonstrate that they are registered to work within the country, including the provision of essential documents such as articles of incorporation.
- Must demonstrate an understanding of the MoU process with the Government of Timor-Leste.
- Must be prepared to accept the Grant Agreement terms.
- Must be able to provide the same information and assurances for all sub-grantees, where the application is from a consortium.
- Should be able to provide all information required for due diligence checks, including clear evidence of financial standing and systems of financial management and control.
- Should be able to provide evidence of suitability in the form of references from clients and donors for previous work undertaken within the last three years.
- Can be a single organisation or consortium, though the latter must clearly identify a Lead Grantee with the appropriate governance and coordination mechanisms to manage sub-grantees.
- Can be:
  - National institutes – such as a university or research institutes;
  - Non-governmental organisations (NGOs);
  - UN Agencies;
  - Private companies;
  - Government-owned enterprises or institutions, provided they can establish that they are (i) legally and financially autonomous, (ii) operate under commercial law, and (iii) are not dependent agencies of national governments

## 10.2 How to apply

Prospective grantees must register interest to receive the **Application Pack** by emailing [flemingfundSEA@mottmac.com](mailto:flemingfundSEA@mottmac.com) by the dates outlined in the 'Key dates' section below (Section 10.5). Please include the organisations name, the name, phone number and email address of the main focal point.

Soon after publication of the RFP, there will be an **Applicant Information Session (AIS)** in Dili for prospective applicants. The details of the venue will be shared with applicants who have registered their interest.

Ahead of the event, an example Application Pack will be shared and will include the application form, budget and monitoring template, Guidance Notes, and the grant agreement template. Following the AIS, the **official Application Pack** will be sent out to prospective Grantees who have registered to apply for the grant by the indicated deadline.

To apply, please complete the **application form and budget and monitoring template** that will be provided, in line with the Guidance Notes, by the deadline outlined in Section 10.5.

Note the key requirements set out at the beginning of the Country Grant application form:

- Your submission should be returned by the deadline indicated in the RFP.
- When submitting the application document, press "Reply All" from the Application Pack automated email that you will receive with the application documents attached. Do not send it to us from a new email, and do not modify the Subject-line. Only "Reply All" emails will register the documents in our system.
- Keep file sizes as low as possible - there is a 9MB size limit to each individual email that can be received by the grant submission software. You can submit documents by sending multiple emails attaching submission documents to each one. Please follow the instruction (above) using "Reply All" to the original email.
- Applicants should observe the word limit indicated for each question. Additional words outside the limit will be disregarded.
- All documents included as part of the proposal must be submitted in Word, Excel, and PDF format (body font: Calibri 11pt). Do not send through as zipped files.
- You should include a covering letter, signed by the person authorised to represent your organisation for the submission of this proposal.

Proposals that do not satisfy these criteria may not be accepted and may be returned.

## 10.3 Evaluation criteria

The Application Pack will include the application form, indicating 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 a Grantee / Grantees who can demonstrate its:

- 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 Timor-Leste.

#### 10.4 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.

#### 10.5 Key dates

- Publication of RFP: **12 October 2018**
- Deadline for registering interest to attend the Applicant Information Session: **1700 ICT (GMT+9) on 25 October 2018.**
- Applicant Information Session: **afternoon, 30 October 2018, (applicants will be emailed the venue in Dili)**
- Deadline for registering to apply for the grant is **1700 ICT (GMT+9) on 1 November 2018.**
- Application submission deadline: **1700 ICT (GMT +9) on 12 December 2018.**
- Anticipated start of grant: **March 2019.**

#### 10.6 Contact details and support information

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

## Annex 1: Eligible funding items

### Laboratory Infrastructure Enhancement

- Infrastructure: renovation, redecoration, electricity and water supply, environmental controls, waste and waste disposal.
- Equipment: appropriate equipment for the level of capability; biosafety and biosecurity equipment; automated culture and identification platforms; IT equipment.
- Reagents, durables & consumables: appropriate media, reagents, culture plates, etc; glassware; sample collection consumables.
- Transport and logistics: vehicles or contracted services for transport of goods, and people; safe and secure transport of specimens and samples; logistical support for surveys.

### Human Resource Strengthening and Workforce Reforms

- Training: clinical, veterinary, agricultural and One Health surveillance protocols; biosafety and biosecurity; microbiology, laboratory science and laboratory management; epidemiology and surveillance; genomics; IT training.
- Long-term support: ongoing and refresher training according to the competency and capabilities framework; Fleming Fellowship Scheme.

### Surveillance System Strengthening

- Governance: support for AMR Coordination Committees & working groups; operational planning; cross-sectorial meetings and strategy reviews; evaluation(s).
- Quality assurance and control: site visits and audits, laboratory twinning / mentoring.
- Data: transfer and storage; safety and security; analysis software and training.
- Recurrent costs: utilities, maintenance of equipment, upkeep of laboratory space, small maintenance, personnel costs.

### Building Foundations for Surveillance Data Use

- Support to build demand for AMR data: general awareness among prescribers, dispensers and agricultural consumers (i.e. farm workers, agribusiness); publication charges; workforce training.
- Evidence based strategy, policy and practice change: data / information sharing conferences, meetings and initiatives; conference attendance; IT platforms for data sharing and awareness / transparency.

### Rational use of Antimicrobial Medicines

- AMU/C surveillance: development of strategies for AMU/C surveillance; use of AMU data for appropriate prescribing / informing stewardship programmes.

## Annex 2: Possible Fleming Fellowships in Timor-Leste

Sector	Fellowship	Beneficiary Institution	Understanding AMR	Surveillance expertise	Diagnostic training	Lab quality management systems	Data collection, analysis and use	OH information sharing	Collaborative project
Human	AMR Surveillance	Surveillance Department (MoH)		Strengthen competency in AMR surveillance system design and evaluation Support AMR information sharing nationally & internationally Deliver training programmes			Strengthen collection and flow of AMR data from the NHL and maintain a national human AMR database Analyse, interpret and report on AMR data and make recommendations	Discuss AMR results from humans and animals with MAF's AMR focal point. Provide AMR information and data to the National Multisectoral Committee for AMR	To be discussed at the time of agreeing on the Fellowship workplans
Human	AMU Surveillance	Directorate of Pharmacy and Medicines (MoH)		Design and implement AMU data collection in hospital and healthcare facilities Design and capture AMC data SAMES and the private sector			Analyse and interpret AMU/AMC data Assess antimicrobial prescribing practices and make recommendations	Provide AMU data to the National Multisectoral Committee for AMR	To be discussed at the time of agreeing on the Fellowship workplans
Human	Laboratory	National Health Laboratory (MoH)			Reliable bacteriology testing and advanced AMR diagnostic methods		Develop and maintain AMR database and inventoried biorepository of isolates from NHL and VDL.	Discuss AMR and AMU results from humans and animals (with Surveillance Department and Surveillance Fellows)	To be discussed at the time of agreeing on the Fellowship workplans

Sector	Fellowship	Beneficiary Institution	Understanding AMR	Surveillance expertise	Diagnostic training	Lab quality management systems	Data collection, analysis and use	OH information sharing	Collaborative project
<b>Human</b>	Laboratory LQMS	National Health Laboratory (MoH)				<p>Develop laboratory quality management system</p> <p>Design and deliver LQMS training programmes</p> <p>Develop a system for managing laboratory reagents to ensure their availability and reliability</p>		Design and deliver LQMS training programme at VDL	To be discussed at the time of agreeing on the Fellowship workplans
<b>Animal</b>	AMR Surveillance	Directorate of Veterinary Services (MAF)		Strengthen AMR, AMU and AMC monitoring for animal health and production			<p>Facilitate the interpretation of the results of AMR surveillance in the context of evidence of AMR/AMU/AMC</p> <p>Develop training expertise and implement training programmes with animal health staff</p>	Facilitate the sharing of information between the human and animal health sectors	To be discussed at the time of agreeing on the Fellowship workplans

Sector	Fellowship	Beneficiary Institution	Understanding AMR	Surveillance expertise	Diagnostic training	Lab quality management systems	Data collection, analysis and use	OH information sharing	Collaborative project
Animal	Laboratory	National Veterinary Diagnostic Laboratory (MAF)			Establish reliable bacterial culture, identification and AST Developing and provide training to VDL staff	Support a Quality Assurance leader at VDL	Maintain a biorepository of isolates	Facilitate isolate and data/information sharing between human and veterinary laboratories	To be discussed at the time of agreeing on the Fellowship workplans