



The
Fleming Fund



Strengthening Antimicrobial Resistance Surveillance to Safeguard Public Health

Stories of national progress in Africa and Asia,
supported by Fleming Fund investments



Acknowledgements

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Preface

The Fleming Fund is a UK aid programme supporting up to 25 countries across Africa and Asia to tackle antimicrobial resistance (AMR). The Fund is led by the UK Department of Health and Social Care (DHSC) and the grants programme managed by Mott MacDonald. The Fleming Fund invests in strengthening surveillance systems through a portfolio of grants, global projects and fellowships.

This report presents stories of change from Malawi, Nepal, Timor-Leste and Kenya, to illustrate some of the tangible differences taking place in countries supported by the Fleming Fund. Many more successes are unfolding across other countries and we encourage you to explore these on the Fleming Fund website. By showcasing these achievements, we aim to not only celebrate progress, but also to inspire further action and commitment to tackling AMR globally.

Foreword

AMR is an insidious and crippling inequitable pandemic, but it doesn't make the headlines in the same way that COVID-19 does. Yet, millions of lives are claimed yearly, including mothers and children. AMR is a deeply painful and personal crisis, and a global emergency facing hospitals and community health centres, farms, and even seeping into the soil and rivers around us.

Despite putting at risk the attainment of universal health coverage for all and achievement of the Sustainable Development Goals, AMR still remains a nebulous and faceless mystery to many people. But I am hopeful. And I am grateful to those working tirelessly across the world to play their role to turn the tide against the antibiotic emergency and keep antibiotics working effectively for generations to come.

Events such as the second United Nations General Assembly High-level Meeting on AMR in New York, and the fourth Global High-level Ministerial Meeting on AMR, in the Kingdom of Saudi Arabia, provide spaces for Heads of State, Government Ministers and other political leaders to give voice to the urgent threat AMR presents for the people they represent. My hope is that these meetings will result in strong political commitment across all sectors at global, regional and national levels, to pick up the pace on acting on AMR.

The role of surveillance in accelerating action

I am proud to serve as a Member on the UN Global Leaders Group on AMR, which aims to accelerate political action and advocacy on AMR. Our priorities include advocating for global and national actions on AMR to be guided by science- and risk-based data on surveillance. This report shows how improved surveillance systems can have wide-ranging effects in some of the countries where the impact of AMR will be felt most keenly. I am proud of the crucial role the UK Department of Health and Social Care, through the Fleming Fund, and other donors have to play in achieving this.

The Fleming Fund is the single largest global aid programme for AMR surveillance, now supporting up to 25 countries across Asia and sub-Saharan Africa to generate, share and use data. Bringing people together to galvanise action against AMR has been the goal of the UK's Fleming Fund, since its inception in 2015. The programme aims to build partnerships with local governments and organisations and support them to take a One Health approach that recognises the importance of working across human and animal health, and environmental sectors.

The Fleming Fund uses a portfolio of country and regional grants, global projects and fellowships which combine to strengthen surveillance systems. In this endeavour, the Fleming Fund works closely with global organisations, such as the World Health Organization (WHO), Food and Agriculture Organization (FAO) and World Organisation for Animal Health (WOAH) and is looking to work with the United Nations Environment Programme (UNEP), in the future.

In our collective fight against AMR, we need to be swifter, louder and bolder. Above all, we need hope that when we share learning and join forces, we can overcome AMR and realise our vision of a world free of drug-resistant infections, now and in the future. The stories in this publication are examples of what can happen when data, investment and determination unite.



Prof. Dame Sally Davies
*UK Special Envoy on
Antimicrobial Resistance*

Introduction

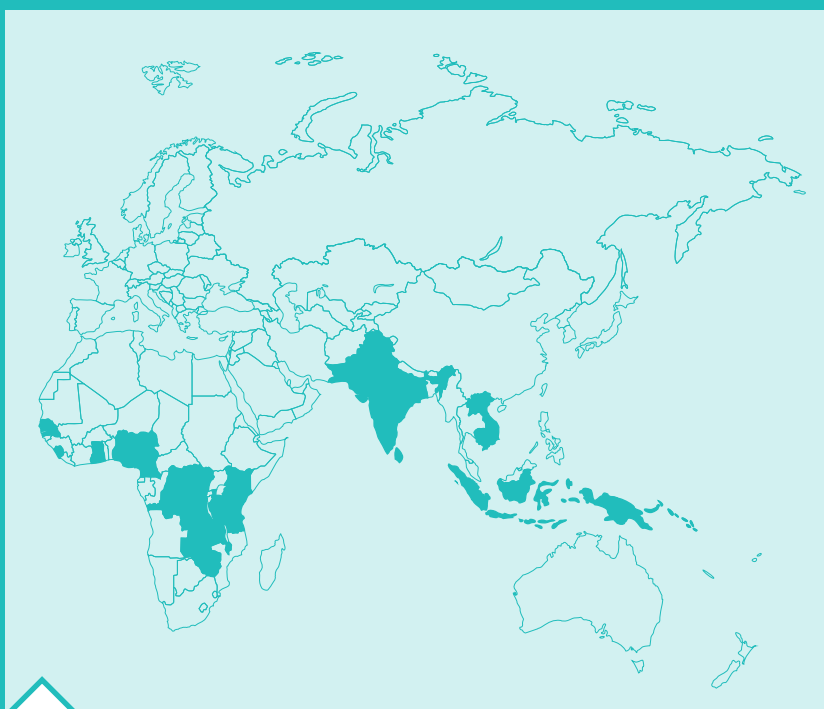
The UK Government established the Fleming Fund in response to the UK's 2014-16 Review on AMR, also known as the O'Neill Review.¹ The O'Neill Review estimated that '10 million lives a year and a cumulative 100 trillion USD of economic output are at risk' from drug-resistant infections by 2050 if proactive solutions are not found.

Preliminary results from a subsequent study co-funded by the Fleming Fund,² estimated that there were over 4.9 million deaths associated with AMR globally in 2019 - more than HIV, tuberculosis, and malaria - strengthening the case for global action.

Support to build and sustain national surveillance systems

The Fleming Fund's response has been to improve the capacity of Lower- and Middle-Income Countries (LMICs) to develop and sustain national programmes for the surveillance of AMR and antimicrobial use (AMU). Robust global surveillance capabilities are crucial for ensuring the early detection of drug-resistant pathogens and for tracking patterns of resistance. Because bacteria spread freely in the environment, and antimicrobial use among humans and animals is widespread, the Fleming Fund takes a One Health approach to AMR which requires a collaborative and multisectoral response.

The Fleming Fund started work in-country in 2018, with the UK DHSC mobilising support to work in partnership with stakeholders in West Africa, East & Southern Africa, South Asia and South East Asia through multiple grant streams. By the end of its first phase of funding, the programme had provided support for more than 260 laboratories across 22 countries and funded over 45,000 training attendances and 181 Fleming Fellows. These achievements are described further, alongside other headlines from phase 1, on p.8.



During phase 2 of the programme, the Fleming Fund is supporting up to 25 countries across Asia and sub-Saharan Africa to generate, share and use data

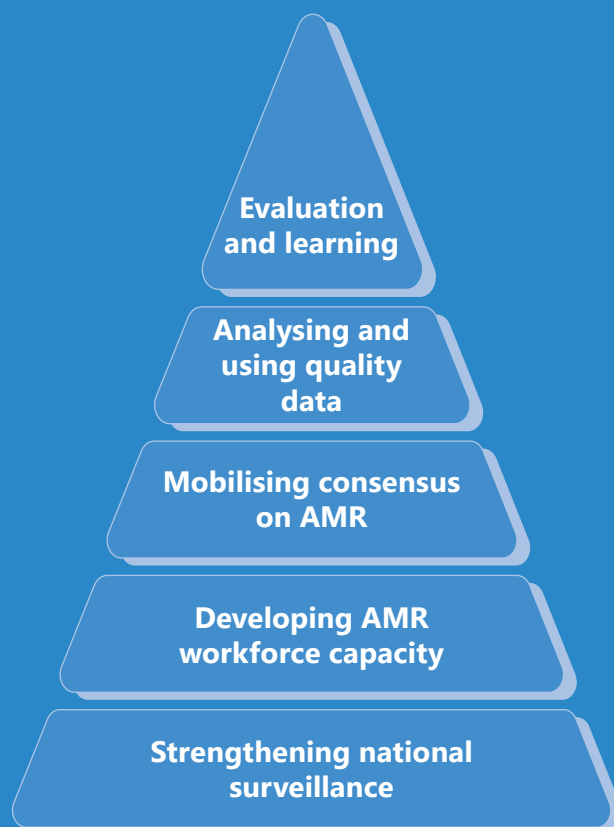
A country-led approach to support

The countries where the Fleming Fund has invested have marked differences in demographics, geography, infrastructure and wider systems. The programme design has been led by priorities articulated at the country level, with grants provided to support the implementation of government national action plans (NAPs) to tackle AMR and develop wider connections with national and global organisations and networks.

The largest part of Fleming Fund investment is delivered through its portfolio of country and regional grants, strategic alignment grants and fellowships, managed by the Fleming Fund Management Agent, Mott MacDonald.

The Fleming Fund country grants are designed to provide technical and financial assistance to governments to build laboratory capacity and strengthen surveillance systems for AMR and AMU. However, while the focus is mainly on laboratories and the AMR workforce, making improvements here can have wider-reaching benefits for a country's health system beyond AMR surveillance – as can be seen in **Timor-Leste** (p.17).

Phase 2 of the Fleming Fund groups grants into five types of investment needs



Tailored professional development for practitioners and influencers

The Fleming Fund recognises that strengthening the One Health workforce is integral to establishing and sustaining AMR national surveillance systems. The Fellowship Scheme supports the professional development of technical experts leading on AMR or AMU surveillance and policy within priority institutions, including national reference laboratories, hospitals and ministries.

Policy Fellowships are designed to strengthen national leadership in evidence-based policy development, advocacy and One Health collaboration. As national AMR focal

points and, in some cases, members of AMR governance committees, fellows are sustainably influencing the direction of their country's response to AMR. In **Kenya**, (p.21) where responsibilities are devolved to the sub-national level, this sees Fleming Fellows working at both national and county levels.

The role of regional initiatives

The impact of the Country Grants and Fellowship Scheme is boosted through a portfolio of Regional and Strategic Alignment Grants, as the story from **Malawi** (p.9) illustrates. These provide tailored demand-driven technical assistance in specialist areas such as whole genome sequencing, animal health, external quality assessment, and data and evidence use.

Ultimately, the Fleming Fund portfolio sets out to develop an enabling environment

for national surveillance, promoting policy commitments and improved resource allocation to combat AMR. This includes developing governance frameworks at the country level. In countries where the government has been active on the issue of AMR for some time, such as **Nepal** (p.13), the Fleming Fund partnership allows the government to accelerate progress, leading to the emergence of new policy and regulatory initiatives.

Collaboration at a global level

AMR requires collaboration between stakeholders in all sectors (human, animal and ecosystem health). Focus on country examples should not obscure the important contributions that the UK is supporting at the global level through a portfolio of global grants directly managed by DHSC.

The Fleming Fund works closely with members of the Quadripartite (FAO, WHO, WOA and UNEP)³ to support national governments to develop NAPs and promote a One Health approach to AMR by engaging multiple ministries and sectors. The stories from Nepal and Kenya offer additional insights into how this combined effort works in practice.

Learning about the effects of improved surveillance systems

As a novel and complex programme, the Fleming Fund is designed to be adaptive. Its ability to respond dynamically to improve outcomes relies on learning lessons about what works and what does not, and continually understanding more about the environment. This publication draws on the learning function of a programme evaluation and seeks to encourage wider discussion of systematic knock-on effects over the longer term.

Four countries have been selected from the Fleming Fund's portfolio that illustrate the benefits of an improved AMR surveillance system and the significant changes it can enable. These countries' stories differ considerably in background and context but collectively speak to some of the most

crucial elements of the Fleming Fund's programme design. Despite their differences, the experiences of Timor-Leste, Kenya, Malawi and Nepal offer insights and inspiration for other countries that are active in the fight against AMR and for those who assist them. This approach, however, omits significant achievements in other countries and globally, some of which are highlighted on p8 and reported in other publications.⁴

AMR is a global threat, not just because resistance to antimicrobials is widespread around the world but because its effects in one country can be felt in others. However, the reverse is also true; when one country makes progress in the battle against AMR it is a cause for celebration for everyone.

The Fleming Fund's mission is, in the end, one of hope. Through leadership on this initiative, the UK is showing that the huge risks of AMR can be mitigated and, through the progress that is being made, all countries involved are finding ways to improve prospects.

Highlights of Fleming Fund achievements during phase 1

271

laboratories have improved the quality and availability of microbiology testing services for AMR testing in 22 LMICs where they are most needed.

148

human health surveillance sites generate AMR data to inform national and local policy and practice.

> 1M

samples collected and tested in supported countries into national surveillance systems reporting.

18

countries report human health data to the international AMR database, WHO Global Antimicrobial Surveillance System (GLASS).

181

health professionals were mentored and trained as Fleming Fund Fellows to gain knowledge and skills as leaders in AMR.

17

countries are implementing AMR surveillance in selected animal species to track resistant bacteria in agriculture and food production.

> 45K

training attendances recorded to help health professionals lead AMR action in their countries.

20

countries report animal health data to the international WOAH AMR database, ANIMUSE.

MALAWI

National leadership accelerates progress in surveillance

Achievements from phase 1 of the Fleming Fund in Malawi include:



Eight human health and three animal health sites refurbished and equipped with staff upskilled to carry out AMR testing



AMRNCC and Technical Working Groups established as part of the Ministry of Health



Eight Antimicrobial Stewardship committees using data to inform clinical practice across human health sites



Five fellowships hosted by the African Society for Laboratory Medicine



Support to the development of the Malawi AMR surveillance strategy (2017-2022) for human and animal health



Training and mentorships of laboratory scientists and epidemiologists in human and animal health sectors through regional grants

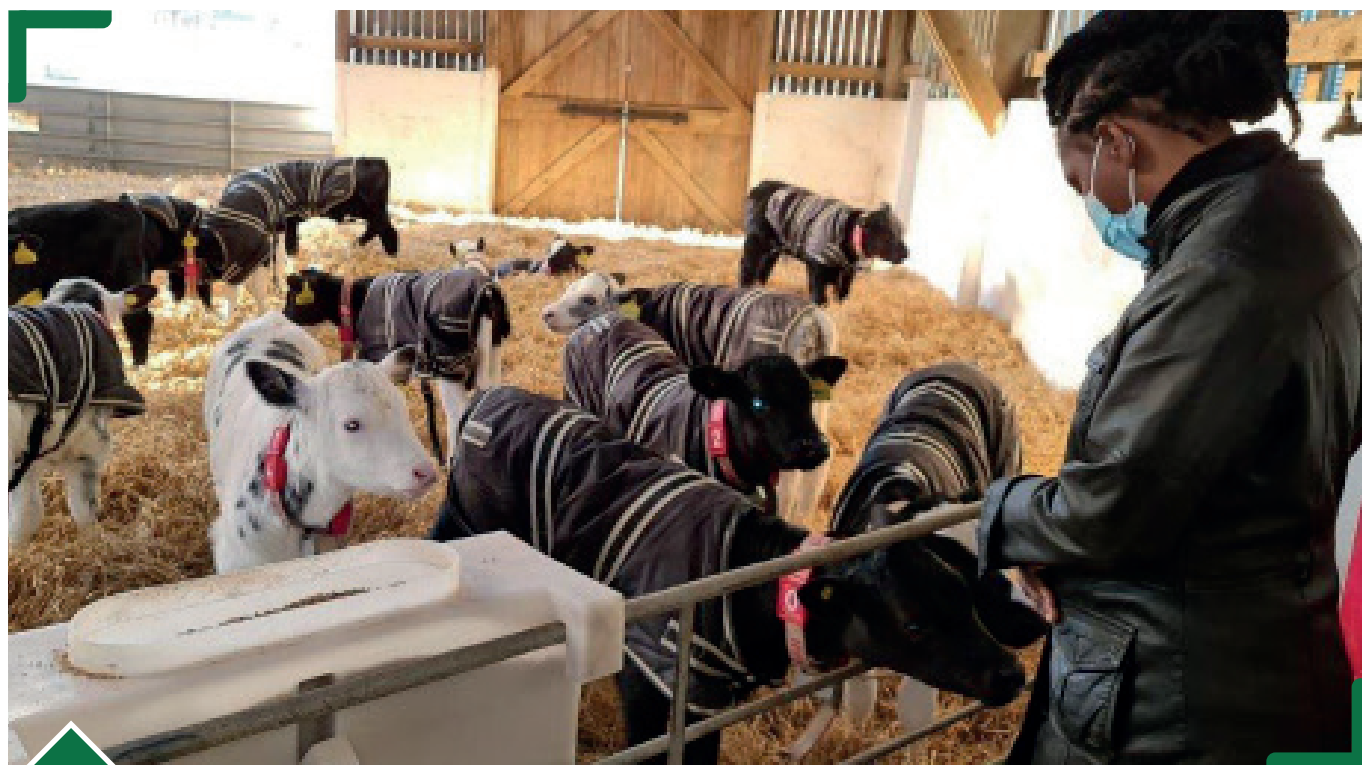


Support to the development of a National Central Database and dashboard to house all AMR and AMU/C data

AMR surveillance systems are crucial for identifying the scale of resistance across the animal and human health sectors and developing suitable interventions for optimising antimicrobial use. With support from the Fleming Fund throughout the programme's lifetime, Malawi has made remarkable progress toward developing a fully functioning national AMR surveillance system, from a starting point of almost nothing less than a decade ago. As recently as 2018, the country had no national database to capture AMR data, fewer than a thousand tests were done nationally each year and there were no antimicrobial stewardship (AMS) committees to champion AMR activities.

The main driver of this transformation has been high-level political support in Malawi backed by a motivated workforce; when the country was selected for inclusion in the Fleming Fund the key stakeholders were ready to act. As the primary funder to Malawi in its fight against AMR, the Fleming Fund has worked alongside the government on this journey, assisting them to establish a fully operative AMR surveillance system for animal and human health. The University of North Carolina, Chapel Hill (UNC), led the delivery of the country grant in phase 1, and in phase 2 will continue in this role, supporting the Government of Malawi to advance surveillance capacity across human and animal health and the environment.

Laboratories in 11 locations have been refurbished, including the installation of high-tech diagnostic equipment alongside capacity-strengthening activities to become functioning surveillance sites. Between April and June 2024, more than 3500 tests were conducted nationally and entered into the WHONET, a free database software that enables laboratory data to be merged with that from other laboratories nationally and globally. The Fleming Fund supported the creation of the AMR National Coordinating Committee (AMRNCC), which oversees the AMR Technical Working Group that brings together all actors active in the AMR space every quarter.



Malawi fellows touring the veterinary school facilities at their Host Institution, University of Edinburgh. The fellows planned and delivered a One Health project to assess the level of antibiotic resistance of E. Coli on poultry farms in central Malawi - the first study of its kind in the country.

Increased access to data aids policymaking

Prior to receiving support from Fleming Fund country and regional grants, antimicrobials, including those with resistance, were routinely overprescribed and national policies and treatment guidelines made no reference to AMR.

Malawi’s policymakers had very limited access to the data needed to make a case for reviewing current guidelines. This changed with the establishment of the AMR surveillance sites, and the establishment of the AMRNCC within the Ministry of Health, which offered a focused technical forum for discussions.

Policymakers were able to better see where changes were necessary to key national policy documents that promote more appropriate use of antimicrobials, including the Malawi Standard Treatment Guidelines and Essential Medicines List. Data from the human health surveillance sites is also used locally within facilities for informing patient treatment and hospital guidelines.

Committed to maximising resources for AMR action

Malawi is noteworthy among African countries for having added AMR as an itemised budget line in its second health sector strategic plan (HSSP), as part of the epidemic preparedness and response to monitor antimicrobial resistance.

As the WHO observed in a 2022 policy brief reviewing Malawi’s National Action Plan on AMR:

“Although the budget is small, it represents a critical step in getting AMR into national health budgets and plans and consequently towards long-term sustainability of actions to address AMR.”

.....

“ For other countries starting from a similar point in their AMR surveillance journey, Malawi offers an inspirational example of transformation.

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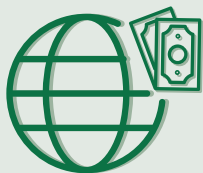
Despite this promising start, Malawi still faces significant hurdles in confronting AMR; very little data is produced on antimicrobial use and consumption in the animal health sector, for example. Malawi will also continue to require donor support to keep its surveillance system fully active, although is having some success in mobilising internal resources.

Malawi has a very strong political commitment and understanding of AMR as a threat and its key decision-makers in human health and animal health are committed to maximising the investments they receive from the Fleming Fund and other sources. Similarly, clinicians and lab staff continue to demonstrate tremendous awareness, motivation and initiative in tackling AMR, despite their high workloads and limited resources.

For other countries starting from a similar point in their AMR surveillance journey, Malawi offers an inspirational example of transformation. Malawi shows that government leadership, a motivated workforce and international support can combine to establish AMR surveillance systems within short timeframes – which then contribute to identifying and making the case for key actions to tackle AMR.

The plan’s successor, HSSP III (2023-2030), has also included AMR as one of the areas requiring serious attention.

MALAWI - key elements of phase 2 funding



Country Grant
£2,996,206 GBP



Country Grant duration
1st January 2024 to
31st December 2025



Lead Country Grantee
The University of North
Carolina at Chapel Hill



Fellowships
8 Professional and
2 Policy

Related links

[‘Malawi national action plan on antimicrobial resistance: review of progress in the human health sector’](#). Geneva: World Health Organization; 2022 (Antimicrobial resistance policy information and action brief series)

[The University of North Carolina at Chapel Hill](#)

[Fleming Fund Country Profile, Malawi](#)

NEPAL

Reinforces its commitment to confronting AMR

Achievements from phase 1 of the Fleming Fund in Nepal include



Improvements in quality and quantity of surveillance data across all 23 laboratories supported (**15** human health, **7** animal health, **1** food testing)



Active and passive surveillance started in food and **two** rounds of a nationwide farm-based AMU survey conducted in poultry



Surveillance data shared with technical working groups, the AMR Containment Multisectoral Steering Committee and the National Technical Working Committee



Increased number of sites (from **15** to **26**) reporting AMR data to WHO GLASS (Global AMR Surveillance System)



Two national AMR reference laboratories refurbished and equipped to perform Antimicrobial Susceptibility Testing using automated systems in human and animal health



12 Fleming Fellows, hosted by The Doherty Institute



First AMU Point Prevalence Survey (PPS) series conducted, analysing the lack of rational use of antibiotics in Nepalese hospitals in partnership with the Antimicrobial Use Technical Working Group

In February 2024, Nepal's cabinet formally endorsed the National Action Plan (NAP) on AMR. This sent a clear signal from top political leadership to Nepal's public servants about the need to act on AMR. This firm commitment at ministerial level has been associated with various recent policy and regulatory initiatives in Nepal. However, these announcements are ultimately the result of years of consensus-building and collaboration, demonstrating the importance of taking a long-term approach to partnership.

The right context for achieving progress

Nepal has been active in the fight against AMR for many years. When the first Fleming Fund grants were awarded to Nepal in 2018-19, the country already had a draft NAP (with assistance from WHO) and a surveillance system of 22 human health laboratories. Therefore, the vision of this first set of Fleming Fund grants was to build on and complement current AMR-related efforts in the country and improve the collection and use of AMR data, including antimicrobial use monitoring.

Nepal's ownership of AMR issues was evident from the outset. The government of Nepal required a Memorandum of Understanding in phase 1 setting out the mutual responsibilities within the Nepal-UK partnership on AMR. Far

from being a passive recipient of AMR-related aid, Nepal is working in partnership with the UK and other sources to advance an established domestic agenda.

Nepal has introduced a remarkable range of policy and regulatory initiatives over the last couple of years. This shows how Nepal's political commitment to securing its people and economy against the threat of AMR has strengthened. While the endorsement of the NAP provides a headline demonstration of Nepal's determination to address AMR, a range of other actions speak to a broad implementation effort as the country explores ways to tackle the problem in practice.

Using data to influence clinical practice

Strengthening national surveillance is the core objective of the Fleming Fund's country grants and the focus of FHI 360's work in Nepal, as lead country grantee, since 2018. Nepal has been quick to respond to the improved access to data this has afforded.

As national AMR surveillance data from 2019 and 2020 became available, Nepal's Ministry of Health and Population (MoHP) decided that its guidance to clinicians on the use of antimicrobials needed revising. The MoHP's Quality Standards and Regulation Division then requested technical and financial support from the Fleming Fund for the revision process.

The 2014 version of the National Antimicrobial Treatment Guidelines (NATG) already covered the treatment of all infectious diseases requiring antibiotics, by specialty and for all levels of care. The resulting 2023 version builds on the revision of the National Essential Medicines List (NEML) in 2021 and helps clinicians in rational prescribing of antimicrobials.

The revised guidelines were published in June 2023⁵ and they were expected to "significantly contribute [to] shaping policies and programs aimed at containment of AMR". Dr. Roshan Pokhrel, Secretary, MoHP commented in the Preface that the guidelines would "greatly assist clinicians and healthcare professionals in both public and private healthcare services, empowering them to rationalize the use of antimicrobials in their daily practice."

Outcomes will depend on effective implementation, including overcoming major obstacles at site level through iterative improvements under local clinical leadership. However, the NATG still represents a concrete asset for those working to combat AMR in Nepal, creating a framework against which hospitals are now expected to improve relevant practices and under which MoHP plans to mobilise relevant support.



Data enumerators (nurses) from Pokhara Academy of Health Sciences collecting AMU PPS data. Credit: Parishan Shrestha.

Tackling the antimicrobial supply chain in farms and pharmacies

The work of the Ministry of Agriculture and Livestock Development (MoALD) demonstrates Nepal's firm commitment to taking action on AMR when AMU data shows the way forward.

The MoALD's Department of Food Technology and Quality Control (DFTQC) oversees the National Animal Feed and Livestock Quality Management Laboratory (NAFLQML), which is a Fleming Fund-supported site. The Department's policy work on food standards has to meet the twin objectives of protecting human health (especially from toxic additives) and safeguarding the poultry industry's contributions to economic development (including through nutrition, food security and exports). In this balancing act, the availability of good quality surveillance data is essential to decision-making.

The MoALD was already consulting with poultry and feed producers on updating its poultry feed regulations when a survey was published, confirming suspicions of a small but persistent ongoing use of antimicrobial feed additives (Colistin) despite the existing measures. In May 2023, the MoALD announced a ban on antibiotics in poultry feed, which were being added as growth promoters. The Food Safety and Quality Act 2024 has subsequently been endorsed and is being implemented.

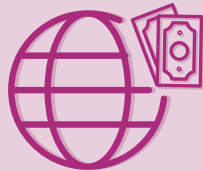
The work of the Department of Drug Administration (DDA), working under MoHP, also shows Nepal's commitment to action on AMR. Pharmacists are key actors in the campaign

against misuse of antimicrobials; they can make the public aware of the risks of AMR and help reduce inappropriate use of antibiotics.

In August 2023, through a decision by the Drug Advisory Committee (DAC) under the DDA, the Government of Nepal strengthened this important role by prohibiting the import, distribution and manufacture of WHO 'not recommended' antimicrobials and mandating 'Red Line' packaging for antibiotic medicines. Regulating against 'not recommended' antimicrobials is a major systematic step towards improving appropriate, effective and best-value use of relevant medicines in Nepali care processes. The 'Red Line' will work alongside this as a warning to consumers of the danger of misuse.

Although it is too early to say what impact these policy initiatives are having on the behaviour of clinicians, farmers, pharmacists and patients, collectively they indicate a deepening of Nepal's determination to act in response to a clearer picture of antimicrobial resistance and use patterns. How far national actions can decrease AMR and its harmful effects will only become apparent over the coming years through the consistent generation of surveillance data – a key priority for Fleming Fund investment in coming years. However, recent events show that the government of Nepal is strongly committed to the fight, emerging as a good example of positive feedback between partner-country resolution and Fleming Fund support.

NEPAL - key elements of phase 2 funding



Country Grant
£2,700,000 GBP



Country Grant duration
1 January 2024 to
31 December 2025



Lead Country Grantee
FHI 360



Fellowships
8 Professional and
2 Policy

Related links

Lead country grantee for Nepal: [FHI 360](#)

[Fleming Fund country profile, Nepal](#)

TIMOR-LESTE

Health system strengthening beyond surveillance

Achievements from phase 1 of the Fleming Fund in Timor-Leste include:



Infrastructure improvements in eight laboratories, comprising of seven human health (including the National Health Laboratory) and the Veterinary Diagnostic Laboratory (VDL) - the only animal health laboratory in Timor-Leste. The VDL previously lacked bacteriology testing capacity but has since been significantly improved and is now performing bacterial culture, identification and antibiotic sensitivity tests.



Seven supported human health laboratories now follow standard operating procedures (SOPs) and use the Laboratory Information Management System (LIMS). Test results can be accessed by clinicians via a secure online portal.



A data collection system for the import of drugs in animal health was established and private sector actors in poultry farming have been engaged in AMR surveillance to prepare for Timor-Leste to begin submitting AMU reports to the World Organisation for Animal Health.



Ten Professional Fellows have been trained in areas including microbiology and epidemiology, with many acting as leaders and mentors during laboratory improvements. **Two Policy Fellows** have also been supported to engage in national policy development.

At the national level, the Fleming Fund's primary objective is to support governments that are seeking to strengthen their AMR surveillance systems and workforce. Improvements made put countries in a better position to optimise their use of antimicrobials, reduce drug resistance and create wider-reaching benefits for a country's health system, as Timor-Leste demonstrates.

With a population of under 1.5 million, most microbiology testing and serious case handling in Timor-Leste happens in the Hospital Nacional Guido Valadares (HNGV) in Dili and one main laboratory, the National Health Laboratory (NHL). Work to strengthen these institutions, therefore, has a major effect on the country's health system.

“ In Timor-Leste, the Fleming Fund is not just seen as an AMR programme.

Menzies School of Health Research (the Fleming Fund's country grantee in Timor-Leste), partners with the government to develop systems for monitoring infection rates and antimicrobial use. Other Fleming Fund activities to strengthen laboratory capacity include fellowships related to the professional development of essential cadres of staff, eight regional grants and two strategic alignment grants to bring specialist technical assistance. Beyond this, the programme also aligns well and is coherent with other health system strengthening efforts delivered by key partners in Timor-Leste, including WHO and the

Australian Government Department of Foreign Affairs and Trade (DFAT), especially its STRONG-TL programme.

In 2018, the year before Menzies was awarded its first Fleming Fund grant, there was little availability of AMR testing at the NHL or anywhere else in Timor-Leste. Six years later, the NHL offers routine diagnostic services seven days a week that provide high-quality microbiology results and generate routine antimicrobial resistance data.

When clinicians' trust in laboratory testing quality and services increases, so too does a country's capacity to respond to infectious diseases and improve patient care. For a country like Timor-Leste, where clinicians were previously unable to test for the cause of severe bacterial infections or for the presence of AMR, this is a major turning point.

Due to its population size, Timor-Leste's investment from the Fleming Fund may be the highest per capita in the Fund's portfolio – but financing alone is not sufficient to drive transformation. The approach to using these funds is critical and, in Timor-Leste, the Fleming Fund is not just seen as an AMR programme.

Rapid development of pandemic preparedness

A crucial test of a health system is its ability to deal with emergencies. Timor-Leste's response to COVID-19 built on the gains made in laboratory strengthening, including through AMR programming, to improve its resilience to health security threats. By 2020, the collaboration between the NHL and Menzies had created a solid foundation to support the Ministry of Health in responding to public health threats, including AMR. As the COVID-19 threat became clearer, investments from DFAT and the Fleming Fund contributed to the government's ability to respond.

With initial quality assurance provided by Royal Darwin Hospital, in-country capacity for COVID-19 testing was soon established and scaled up to an average of 1500 tests a day during the community transmission, thanks to consistent training and significant investment in infrastructure. A detailed account of Timor-Leste's COVID-19 laboratory response has been published in The Lancet showing how it benefitted from political commitment, improved procurement, investment in human resources and increased laboratory preparedness, with Fleming Fund support being one of the key drivers.⁶

The legacy of laboratory improvements

The introduction of a software-based Laboratory Information Management System (LIMS), supported by the Fleming Fund, to the NHL, the HNGV and five referral hospitals means healthcare practitioners have faster access to blood tests and culture results. A functioning LIMS has improved communication between the laboratory and clinicians, and also provides a mechanism for ongoing surveillance of AMR trends. Its impact extends beyond AMR, to communication and surveillance of laboratory results in haematology, biochemistry, serology, histopathology and molecular diagnostics.

Computer and laboratory equipment and an augmented AMR workforce are the outward signs of an improved surveillance system, but of equal importance for tackling AMR are the formal public policy commitments that can draw on it.

Once reliable AMR data became available for analysis in Timor-Leste, the Ministry of Health was able to develop updated national antimicrobial guidelines that, for the first time, reflected national resistance patterns. In addition to supporting the production of AMR data that

underpins them, the Fleming Fund provided fellowships to key Ministry of Health staff who led the development of these guidelines. Published in 2022, the guidelines promote appropriate clinical practice concerning infection treatment and antimicrobial prescription. This is further supported by the set-up of an antimicrobial stewardship committee in HNGV responsible for promoting awareness and application of the guidelines amongst medical and related health staff.

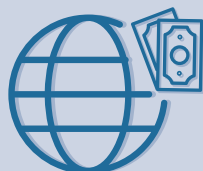
As the Fleming Fund's in-country partner for Timor-Leste since 2018, Menzies has worked side-by-side with local staff; this mentoring approach has been replicated by other health partners working in health system strengthening in the country.

Although Timor-Leste has seen a dramatic change in its capacity to monitor rates of infection and antibiotic use, there is still work to be done to ensure the benefits are sustained and reach beyond the urban areas of the country. Partnership – a hallmark of the Fleming Fund programme – is likely to be a key to success.



The National Health Laboratory in Timor-Leste now offers routine diagnostic services seven days a week

TIMOR-LESTE - key elements of phase 2 funding



Country Grant

£4,574,714 GBP



Country Grant duration

1 January 2024 to
31 December 2025



Lead Country Grantee

Menzies School of
Health Research



Fellowships

7 Professional and
2 Policy

Related links

[Lead country grantee for Timor-Leste: Menzies](#)

[Fleming Fund country profile, Timor-Leste](#)

[Capacity Building Case Study](#)

KENYA

Signs of sustainable One Health action on AMR

Achievements from phase 1 of the Fleming Fund in Kenya include



Seven human health and **five** animal health laboratories have been upgraded with investment in laboratory infrastructure supplemented by tailored technical assistance through **five** regional grants, **four** strategic alignment grants, and an Open University Global Learning grant.



Laboratory staff have been upskilled, from identification and antimicrobial susceptibility testing to data management.



The Fleming Fund has also supported the development of an AMR Surveillance Dashboard at the National Public Health Laboratory to receive data from all surveillance sites and the initial steps towards the development of a Data Coordination Centre.



The Kenyan government has been supported to develop a NAP for the Prevention and Containment of Antimicrobial Resistance (2017-2022) and a national AMU/C surveillance strategy.



Farmer Field Schools across Kenya delivered through FAO, to improve farmer knowledge, awareness and practices related to AMR.



The Fund has assisted development of a strategic plan for AMU/C monitoring in the animal health sector and an active surveillance protocol in poultry, which has been used in **15** counties.



County Antimicrobial Stewardship Interagency Committees (CASICs) have been established in **four** counties; these have been instrumental in conducting supportive supervision, mentorship and active surveillance.

Antimicrobials are widely used (and misused) among humans and animals and can contaminate the environment through waste. This relationship between animal, environmental and human health makes AMR a One Health issue requiring a collaborative and multisectoral response. Kenya has taken concerted action on a One Health approach to AMR for over a decade.

One Health governance structures have been in place at the national level since 2014, when Kenyan ministries responsible for Health and Agriculture appointed a National Antimicrobial Stewardship Interagency Committee (NASIC). This early demonstration of a strong government commitment has been matched with support from partners including WHO, FAO, USAID and the Fleming Fund.

When the first Fleming Fund country grant was awarded to Kenya in 2019, the country's National Action Plan (NAP) had already been endorsed jointly by the cabinet secretaries responsible for human health, animal health and crop production. With this foundation in place, Fleming Fund investment, with strong leadership by phase 1 country grantee ILRI, could focus on strengthening One Health governance for AMR action. This has taken place at the national level through support to the NASIC but importantly, given Kenya's devolved governance system, at the county level where ownership and

advancement of the AMR agenda is needed for sustained and effective action. The Fleming Fund country grant in phase 1 provided direct support towards the establishment and functionality of County Antimicrobial Stewardship Interagency Committees (CASICS) in Mombasa, Kiambu, Machakos and Uasin Gishu.

At the laboratory level, AMR surveillance in Kenya has been supported by several sources of external funding. Alongside the Fleming Fund, this includes the United States Centers for Disease Control and Prevention (CDC), USAID, the World Bank and Pfizer. Key initiatives supported by Fleming Fund grants include developing a One Health AMR dashboard to bring together surveillance data from human health and animal health sentinel site laboratories. The usefulness of the dashboard depends on the availability of good quality data from both sectors; the Fleming Fund provided vital assistance including renovation, equipment, consumables and training to animal health sites.

Progress made at the sub-national level

With responsibility for human health functions having been devolved to county level in Kenya, capacity development was a particular focus at the start of the Fleming Fund's involvement. From a baseline of zero in 2017, CASICS were present in 14 out of 47 counties in Kenya by the time the revised NAP was published in 2023, with budgeted workplans developed or under development in many of these. Although there is still progress to be made in setting up structures in the remaining counties, all 47 do at least have an AMR focal point.

Sustaining investment in AMR work is crucial, and some CASICS have also been successful in mobilising donor resources to support their costed AMR workplans. CASICS in the four counties directly supported by Fleming Fund have been instrumental in supporting mentorship, surveillance and AMR stewardship activities. It is

important that the committees function at county level and mirror functions established at national level as these governance structures facilitate resource mobilisation and allocation, as well as convening and coordinating action at county level. Achieving sustainable and effective change in Kenya in any sector needs county level capacity, so the progress made here is significant.



Farming communities have an important role to play in tackling AMR in Kenya.
Photographer: James Karuga

Raising awareness of AMR to change practice

Kenya's agriculture sector delivers about a third of the country's GDP but has tended to use high levels of antibiotics. If these become ineffective in treating illness and preventing mortality in animals and plants, it is not just the farming households that suffer; there are wider consequences in food safety, food security and exports.

A series of regulations, guidelines and policies have been published in recent years in Kenya to limit antimicrobial use in agriculture, from restrictions on feed additives to regulating veterinary dispensing practices. However, their effectiveness relies on compliance and behaviour changes among practitioners.

Public awareness of the impact of AMR has grown; articles challenging misconceptions about AMR and the threats it poses to the Kenyan people are commonly seen in the country's national press. Meanwhile, concerted efforts have been put into raising awareness and changing the practices amongst farmers and clinicians in the human and animal health sectors, including through Fleming Fund-supported work with clinicians to strengthen laboratory capacity in health facilities and the FAO Farmer Field Schools. CASICs also play an important role in raising awareness about AMR among farming communities.

A continued national commitment to One Health

2022 was an election year in Kenya and could have slowed momentum on tackling AMR. Instead, development of the updated AMR NAP (which started during 2022 and received cross-ministry endorsement in 2023) indicates the strength of the NASIC structure and broader One Health agenda in Kenya.

The Kenya National Public Health Institute (KNPHI) was also established in 2022, supported by USAID and CDC. Initially a unit within the Department of Preventative and Promotive Health in the Ministry of Health, it now serves as the national focal point for the International Health Regulations. As a young institution, it is not yet fully developed but is seen as a significant means for improved collaboration and governance across sectors.

Kenya has made substantial progress in the past decade to tackle AMR. Strong leadership from the Government of Kenya has combined with investment in strategic governance, policy and financing mechanisms (for example, some

microbiology services are covered by the National Health Insurance Fund) and key support from international partners, including the Fleming Fund. Together these enhance the prospects for sustaining the advances that have been made.

“**The strengthened One Health AMR governance and coordination structure in Kenya has been very critical for us in spearheading interventions which have led to increased awareness in the different sectors amongst professionals and also the general population.**

Dr. Emmanuel Tanui, National AMR Focal Point, Ministry of Health



Small medical clinic in a village in rural Kenya. *Photographer: Melissamn*

KENYA - Key elements of phase 2 funding



Country Grant

£3,999,705 GBP



Country Grant duration

1 March 2024 to
31 December 2025



Lead Country Grantee

ILRI



Fellowships

8 Professional and
2 Policy

Related links

Lead country grantee for Kenya (phase 1 and phase 2): [ILRI](#)

Lead country grantee for Kenya (phase 1 only): [PATH](#)

[Fleming Fund Country Profile, Kenya](#)

Endnotes

- 1 [Review on Antimicrobial Resistance](#)
- 2 Murray, Christopher JL, et al. "Global burden of bacterial antimicrobial resistance in 2019: a systematic analysis." *The Lancet* 399.10325 (2022): 629-655.
- 3 The Quadripartite members are the [Food and Agriculture Organization of the United Nations](#) (FAO), the World Health Organization (WHO), the World Organisation for Animal Health (WOAH) and the United Nations Environment Programme (UNEP).
- 4 [The Fleming Fund: A Summary of Phase 1](#)
- 5 [National Antimicrobial Treatment Guidelines 2023](#)
- 6 [The Lancet Regional Health, South Asia](#)



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