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Antimicrobial resistance and antibiotic use in Timor-Leste: building surveillance capacity with a One Health approach

Joshua R Francis, Nevio Sarmiento, Anthony D K Draper, Ian Marr, Shawn Ting, Nicholas Fancourt, Lucsendar Alves, Karen Champlin, Alexander Bongers and Jennifer Yan

The Menzies School of Health Research (Menzies) has been awarded a Fleming Fund country grant to work with the Timor-Leste Ministry of Health (MoH) and Ministry of Agriculture and Fisheries (MAF) on a One Health project to build capacity for surveillance of antimicrobial resistance (AMR) and antimicrobial use (AMU) in the human and agriculture sectors in Timor-Leste. The Fleming Fund is a £265 million United Kingdom (UK) aid investment to tackle AMR in low- and middle-income countries around the world. The program is managed by the UK Department of Health and Social Care, in partnership with Mott MacDonald, the Fleming Fund Grant Management Agent.

One Health approach to antimicrobial resistance

Antimicrobial resistance poses an enormous risk to human and animal health globally. Rates of AMR are escalating, particularly affecting people in low- and middle-income countries,¹ with corresponding high rates of AMR in animals observed in similar settings.² Strategies for reducing the impact of AMR include infection prevention and control through vaccination and improved water, sanitation and hygiene, as well as limiting unnecessary use of antibiotics. The problem of AMR is one that exemplifies the need for a One Health approach to finding solutions.³

Current situation in Timor-Leste

Data from Southeast Asia indicate high rates of resistance in Gram-negative infections, including those caused by extended-spectrum beta-lactamase-producing organisms, and carbapenemase-producing *Enterobacteriaceae*.⁴ Data from Timor-Leste are limited but suggest similarly high rates of Gram-negative resistance.^{5,6} Capacity for routine diagnostic microbiology is improving at the National Health Laboratory in Timor-Leste, with support from Menzies, the Northern Territory Department of

Health and the Indo-Pacific Centre for Health Security.⁷ However, routine AMR surveillance is not yet established. In the Veterinary Diagnostic Laboratory in Timor-Leste, antimicrobial susceptibility testing is yet to be introduced. No recent data on AMR in animals have been published. Routine surveillance of antibiotic use does not occur in human or animal health sectors, and restrictions on use are rarely enforced.

Plans to address antimicrobial resistance in Timor-Leste

Recognising the need for action to address AMR and its impacts on health, the Timor-Leste MoH and MAF have agreed on a National Action Plan for AMR, outlining a One Health approach to developing capacity for AMR surveillance and implementing antimicrobial stewardship activities across human and animal health. The Menzies Fleming Fund project will support both Ministries to achieve the aims of the national action plan, through coordinated capacity building and mentoring activities, data collection and sharing, infrastructure improvements and targeted implementation research designed to evaluate and inform health systems changes over the two years of the project.

Figure 1. Signing of the Memorandum of Understanding between Menzies School of Health Research and the Timor-Leste Ministry of Agriculture and Fisheries, Hotel Timor, Dili, Timor-Leste, 13 September 2019.



The project was formally launched on Friday 13 September 2019 in Dili, with the signing of a Memorandum of Understanding (MOU) between Menzies and the MAF (Figure 1). Along with the existing MOU between Menzies and the MoH, this provides a platform for ongoing multisector collaboration with one of Australia's nearest neighbours, to tackle health challenges that are truly global and span the full spectrum of One Health.

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