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1 Acknowledgments

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2 Executive summary

Globally, antimicrobial resistance (AMR) has been identified as an increasingly serious threat to human, animal and ecosystem health, with many countries developing a national action plan (NAP) towards its mitigation. In 2015, the Government of Fiji developed a three-year NAP against AMR, the first in Pacific region, led by the National Antimicrobial Resistance Committee (NARC). However, there have been several challenges emerge around its implementation in that time. One of the key challenges is the limited evidence on the magnitude and drivers of AMR in Fiji, which impacts NARC's capacity to prioritise and budget for prevention and mitigation plans. SRA LS/2018/212 was developed to better understand the key policies, practises and challenges regarding AMR risk, management and communication in Fiji. It also aimed to determine opportunities and gaps for integrated surveillance and training, as well as developing a business case for longer term AMR control that could be further tested and refined in the follow-on project (LS/2019/119).

Between February 2019 and July 2020, a scoping study was conducted to address these key objectives. The methodology included a review of the available literature, in-depth interviews (n=69), focus group discussions and stakeholder workshops. This landscape analysis was triangulated with a laboratory capability and needs assessment. The initial results revealed that NARC, as a multisectoral platform, plays a central and trusted role in implementing Fiji's AMR policies. However, key challenges in its operationalisation include a lack of funding for capacity building and infrastructure to implement NARC policy, inadequate legislation to support NARC to lead and oversee AMR monitoring and risk mitigation, and a lack of evidence on the biological and economic impacts of AMR. These issues are also symptomatic of the difficulties in operationalising a One Health approach.

A scoping review of available literature revealed that limited AMR studies had been conducted in Fiji. Those available were undertaken in the human health sector, all in a hospital setting. Jenney et al (2014) revealed that methicillin resistant *Staphylococcus aureus* is relatively common, and that the prevalence of antibiotic resistant *Escherichia coli* rose from 50% to 85% (ampicillin) and 10% to 45% (gentamicin) between 2002 and 2015. Extended spectrum beta-lactamase *E. coli* and *Klebsiella pneumoniae* have also been reported. Through this project's activities to establish laboratory testing and diagnostic capacity for AMR in the animal and environmental sectors, pilot sampling and analysis of 84 bacterial isolates from meat and milk samples was undertaken. These also revealed the occurrence of antibiotic resistant *E. coli* and *K. pneumoniae*, consistent with the human health results from Jenney et al (2014).

Laboratory capacity and capability assessments were undertaken to measure and monitor AMR prevalence. Led by the Australian Centre for Disease Preparedness, the assessments included the two key national human health laboratories (Colonial War Memorial Hospital and Mataika House) and two key animal laboratories (Biosecurity Authority Fiji and Fiji Veterinary Pathology Laboratory). These assessments revealed several challenges. On the human resource side, there was inadequate training in key AMR capabilities including antimicrobial susceptibility testing (AST), molecular techniques and biosafety training. A lack of harmonisation in the interpretation of AMR diagnostics was also observed. More broadly, from a laboratory management perspective, a lack of a Laboratory Information Management System (LIMS) was deemed problematic, as this links closely to risk management and communication of AMR and other public health risks.

Fiji also faces several systemic challenges that impact AMR management and control. One of these is climate change. Interviews with government personnel revealed that climate change-related disasters (for example cyclones) have long recovery phases that divert resources from the Ministries of Health and Agriculture's 'Business as Usual'. There are also broader concerns that fear of cyclones and sea level increases are causing people to move from low-lying areas in Fiji into areas perceived to be less impacted by climate change. This results in secondary challenges to public health provisions and sanitation in these emerging areas of population growth, both of which are risk factors for increased AMR prevalence. Another broader challenge is the current legislative environment with regards to antimicrobial prescription and use (AMU); for example, the capacity to purchase antibiotics online without a prescription. Other reported concerns include: over the counter sale of antimicrobials, mixing of human and veterinary drugs, a high prevalence of prophylactic use (common in countries where cases of diabetes mellitus is high) long antimicrobial supply chains (compounded with hot and humid weather that affects drug efficacy) and recurrent livestock production diseases (such as mastitis) that requires frequent antibiotic administration. Given these micro and macro-level challenges, the economic impact of AMR is likely to be felt at various levels, and across several sectors, including hospitals, the animal health industry and at individual farm and community levels. The impact of AMR on the broader environmental sector and associated industries such as tourism is complex and requires further data collection and analysis, planned for the follow-on project (LS/2019/119).

Although the scoping study revealed several challenges in the implementation of the national AMR plan, and NARC's capacity to oversee this, the team identified several opportunities for tackling AMR-related problems in Fiji. These include supportive government officials and political will, well trained laboratory staff who are keen to learn more on AMR, the existence of national health policies (some of which are based on One Health), creation of the National AMR coordinator position, and presence of regional and international bodies that are also supportive of Fiji's NAP, including as the Secretariat of the Pacific Community (SPC), the World Health Organization (WHO) and the World Organisation for Animal health (OIE).

Results from this initial analysis indicate that strengthening the management of AMR in Fiji is expected to have concurrent positive impacts on the broader public health, agricultural and environmental systems in Fiji. The outcome of the situational analysis undertaken by the team has address the following areas of focus for LS/2019/119: i) strengthening the business case for further support to NARC, ii) inclusion of additional stakeholders to NARC that have been found to be important to AMR management (for example, the Ministry of Economy and local community representatives) iii) enhancing collaborative research between Fiji National University's College of Medicine and College of Agriculture, Fisheries and Forestry, iv) increasing the evidence base of AMR to support evidence-based policy v) continued laboratory capacity building with a focus on sustainability, vi) strengthening communication between Pacific countries (including Australia) to tackle AMR issues under a regional public good narrative and vii) use of AMR management as a platform for overall integrated/ One Health systems strengthening (human, animal and environment).