

# National Multisectoral Plan to Combat Antimicrobial Resistance Tuvalu 2021 - 2025

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## Foreword

Anti-microbial Resistance (AMR) is real. It threatens the very core of modern medicine and adversely affect our responses against infections, in both preventative and clinical services settings. We are committed to assisting the health sector in procuring quality and effective antimicrobials to save the lives of our people. This is more critical than ever with the global fight against the Covid19 pandemic and other emerging diseases.

With God on our side, together we have bravely faced climate change calamities; mitigated risks to help us live on our island home in comfort and a little longer, but AMR is now the silent Tsunami that can ravage our lives if we are not careful together.


In 2015, Tuvalu committed ourselves at the World Health Assembly to develop a Plan that is linked to the five strategic objectives of the Global Action Plan. We all have to work together with our people to implement this first-ever Plan to help us fight and contain AMR in Tuvalu.

We have to learn about the importance of anti-microbials like amoxycillin. God gives us discernment to use things wisely. So, sharing antibiotics like amoxycillin with our friends and family or if we do not complete the course or if we ask a nurse to just give the medicine without the doctor checking you or without the prescription; then this tsunami will surely overcome us.

With *Te kete 2021-2030*, under national outcome ten, we promise health and well-being is improved. Every Tuvaluan is empowered to attain sustainable livelihoods with focus on reducing NCDs – targeting modifiable risk factors and diabetic-induced infections; improving secondary health care and retaining qualified and competent health workers.

We must work stronger together; tackle things harder; reach higher to achieve our goal in controlling and containing AMR in our lifetime. Let us be stewards of the future for our beautiful island home.

Tuvalu mote Atua.



Honourable Mr. Isaia Taape  
Minister of Health

## Acknowledgements

Thank you to the Ministry of Health and other relevant stakeholders from other Ministries who commented and gave invaluable assistance on the various drafts of the Tuvalu Multi-National Action Plan on Antimicrobial Resistance 2021-2025 and their support is gratefully acknowledged, Ministry of Ministry of Environment; Ministry of Education, Ministry of Transport & Customs; Ministry of Fisheries and trade; Ministry of Home Affairs and Rural Development, NGOs and Technical Partners.

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## Table of Contents

	PAGE
<b>FOREWORD</b>	<b>2</b>
<b>ACKNOWLEDGEMENT</b>	<b>3</b>
<b>TABLE OF CONTENTS</b>	<b>4</b>
<b>GLOSSARY</b>	<b>5</b>
<b>1.0 INTRODUCTION</b>	<b>6</b>
<b>2.0 COUNTRY CONTEXT</b>	<b>7</b>
<b>3.0 COLLABORATIVE APPROACH: DEVELOPMENT OF THE PLAN</b>	<b>9</b>
<b>4.0 SUMMARY SITUATION ANALYSIS ON AMR IN TUVALU</b>	<b>10</b>
<b>5.0 GOVERNANCE STRUCTURE</b>	<b>13</b>
<b>6.0 STRATEGIC OBJECTIVES</b>	<b>14</b>
<b>7.0 TUVALU NATIONAL AMR OPERATIONAL PLAN 2021-2025</b>	<b>15</b>
<b>8.0 IMPLEMENTATION FRAMEWORK</b>	<b>34</b>
<b>ANNEX 1</b>	<b>35</b>

## Glossary

AMC	Antimicrobial Consumption
AMR	Antimicrobial Resistance
AST	Antibiotic susceptibility testing
CSA	Country situational analysis
EQA	External quality assessment
IEC	Information, Education, and Communication
IPC	Infection prevention and control
M&E	Monitoring & Evaluation
MOE	Ministry of Education
MOH	Ministry of Health
MRSA	Methicillin-Resistant Staphylococcus aureus
M&E	Monitoring and evaluation
NGO	Non-governmental organization
NDTC	National Drugs & Therapeutic Committee
PMH	Princess Margaret Hospital
PPE	Personal Protective Equipment
SPC	The Pacific Community
TOR	Terms of Reference
TWG	Technical Working Group
WASH	Water, Sanitation and Hygiene
WHO	World Health Organization

## 1.0 Introduction

In 2014, the World Health Organisation (WHO) declared antimicrobial resistance as a global health threat<sup>1</sup> that requires urgent collaborative action. High rates of resistance to hospital and community-acquired infections have been reported globally.<sup>2</sup>

While there is no specific data available on the AMR-situation in the country, health care workers confirm they see an increase in incidence of *Methicillin-Resistant Staphylococcus aureus* (MRSA) infections in Tuvalu, moreover in 2018 a single patient was identified with Drug-resistant TB. In addition, health workers also suggest a number of driving factors for AMR are present in the country such as the misuse and overuse of antibiotics or poor infection prevention and control (IPC) in health care settings.

Therefore, the Minister of Health of Tuvalu has now recognized antimicrobial resistance as a priority health agenda. It has endorsed the Action Agenda for Antimicrobial Resistance in the Western Pacific Region<sup>3</sup>, at the Sixty-fifth session of the Regional Committee for the Western Pacific Region in 2014 and subsequent re-committed at the World Health Assembly in 2015<sup>4</sup> and United Nations General Assembly in 2016.<sup>5</sup>

This National Action Plan on Antimicrobial Resistance is aligned to the three priority actions listed in the Action Agenda for Antimicrobial Resistance in the Western Pacific Region In addition and the May 2015 the Global Action Plan on Antimicrobial Resistance, also endorsed at the Sixty-eighth session of the World Health Assembly. All Member States committed to developing national plans on antimicrobial resistance within the two years following endorsement.

This plan is aligned to the five main principles of the global action plan 1) whole-of-society engagement, 2) prevention first, 3) access to effective treatment, 4) sustainability and 5) incremental country specific targets for implementation.

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<sup>1</sup> WHO (2014), *WHO's first global report on antibiotic resistance reveals serious, worldwide threat to public health*, Available at: <https://www.who.int/mediacentre/news/releases/2014/amr-report/en/>

<sup>2</sup> Ibid.

<sup>3</sup> World Health Organization. Regional Office for the Western Pacific (2015), *Action agenda for antimicrobial resistance in the Western Pacific Region*, Available at: <https://iris.wpro.who.int/handle/10665.1/10898>

<sup>4</sup> WHO (2015), *Global Action Plan on Antimicrobial Resistance*, Available at: <https://www.who.int/antimicrobial-resistance/global-action-plan/en/>

<sup>5</sup> UN General Assembly (2016), *Political Declaration of the High-Level Meeting of the General Assembly on Antimicrobial Resistance*, Available at: <https://digitallibrary.un.org/record/845917?ln=en>

## 2.0 Country Context

Tuvalu has a total land area of 26 square kilometres (km<sup>2</sup>) covering nine coral atolls and reef islands spread across more than 900,000 km<sup>2</sup> of Pacific Ocean. Land resources are few and of poor quality and with the highest point of land only a few meters above sea level. About 60% of the population of approximately 11,000 resides on Funafuti where population density is high. Small size, isolation from markets, and a harsh physical environment are significant constraints to the country's development. The low-lying atolls face occasional cyclones and the prospect of marine inundation in the event of rising sea levels. Higher sea levels already threaten the country's underground water table and the future habitation by the people of Tuvalu.<sup>6</sup>

Subsistence farming and fishing are the main economic activities. Fishing license fee earnings, revenues from Internet domain namely - TV, remittances from overseas workers, official transfers, and income from Tuvalu Trust Fund and the *Falekaupule* Trust Fund have provided the country with the main sources of income. A private sector-led economy has yet to emerge; and given the inherent constraints in such a small country, the private sector may never achieve lead status in the economy.<sup>7</sup>

Agriculture and fisheries remain important for food security, sustainable livelihoods and for national economic growth. Livestock production in the country is at subsistence level, with pigs and free-range chicken being the main livestock kept. Most households at the outer islands keep a few pigs and a number of local chickens. There is opportunity for some import substitution through improved livestock management and production. A decisive factor determining increased livestock production is the cost of animal feed since such feed has to be imported.<sup>8</sup>

Taiwan, Republic of Korea and the Government of Japan are major development partners. EU, DFAT, and NZAID are also considerable key development partners.

Tuvalu has one hospital, the Princess Margaret Hospital (PMH), located on the main island of Funafuti. The PMH provides primary and secondary care services for patients from Funafuti and those referred from the eight outer rural islands. In the outer islands there are clinics manned by nurses who provide primary care and preventive services.

Referral from the outer islands is both costly and time consuming for the local population. The furthest outer island is over 36 hours away by boat from the capital of Funafuti.

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<sup>6</sup> UNDP (2010), *About Tuvalu*, Available at:

<http://www.pacific.undp.org/content/pacific/en/home/countryinfo/tuvalu.html>

<sup>7</sup> FAO (n.d.), *Situation Analysis and Agriculture Sector Overview Tuvalu*, Available at:

[http://www.fao.org/fileadmin/user\\_upload/sap/docs/Tuvalu.pdf](http://www.fao.org/fileadmin/user_upload/sap/docs/Tuvalu.pdf)

<sup>8</sup> *Ibid*



Patients needing clinical care that cannot be offered at the PMH, are referred to bigger overseas hospitals through the Tuvalu Medical Treatment Scheme. Health services are all provided free of charge by the public sector as there is no private health sector.

The 50-bed PMH offers basic routine medical, surgical, obstetrics and gynaecology (Ob&Gy) services. The general ward houses both medical and surgical cases aside from the Ob&Gy ward and the 4-bedded paediatric ward. There are no specialist physicians in Tuvalu so patients are seen by the local medical officers.<sup>9</sup>

Life expectancy at birth for Tuvaluans is 65 years for males and 69.5 years for females<sup>10</sup> (based on 2018 estimates). The leading causes of morbidity and mortality remain non-communicable diseases, with the majority of deaths caused by cardiac diseases. Other common causes of mortality include diabetes mellitus, hypertension and cancers (all types). In 2017, acute respiratory infections dominated the outpatient morbidity data.<sup>11</sup>

In addition, a brief look at key health indicators for Tuvalu suggests a high vaccines uptake and a low Under 5 maternal mortality rate.

Key health indicators <sup>12</sup>					
	2013	2014	2015	2016	2017
<b>Infant Mortality (number) Rate / 000 LB</b>	12.0	(2) * 7.6	(1) 6.25	(3) 14.4	<b>(4) 17.7</b>
<b>Perinatal Mortality<sup>1</sup></b>					<b>(3) 12.6</b>
<b>Maternal Mortality (number) ratio / 00,000 LB</b>	0	(1) 392	(1) 625	0	<b>0</b>
<b>Crude Birth Rate</b>	22.91	23.16	14.4	18.7	<b>20.1</b>
<b>Teenage Births (%)</b>	9.7	5		6.4	<b>2.8</b>
<b>Measles Vaccine (MR 2)</b>	84	91	76.5	93	<b>93.2</b>
<b>Crude Death Rate</b>	5.35	6.3	5.8	8.2	<b>10.8</b>
<b>Under 5 yr. Mortality Rate</b>	20.2	11	(1) 6.25		<b>(1) 4.4</b>
<b>Contraceptive Prevalence Rate</b>	26	31	36	36	<b>33.4</b>
<b>Diabetes Prevalence % in &gt; 15yr<sup>2</sup></b>					<b>7.2 %</b>

<sup>9</sup> Ministry of Health of Tuvalu (2015), Health Reform Strategy 2016-2019.

<sup>10</sup> CIA (2019), *The World Factbook: Tuvalu*. Available at: <https://www.cia.gov/library/publications/the-world-factbook/geos/tv.html>.

<sup>11</sup> Ministry of Health of Tuvalu (2015), Health Report 2017.

<sup>12</sup> *Ibid.*



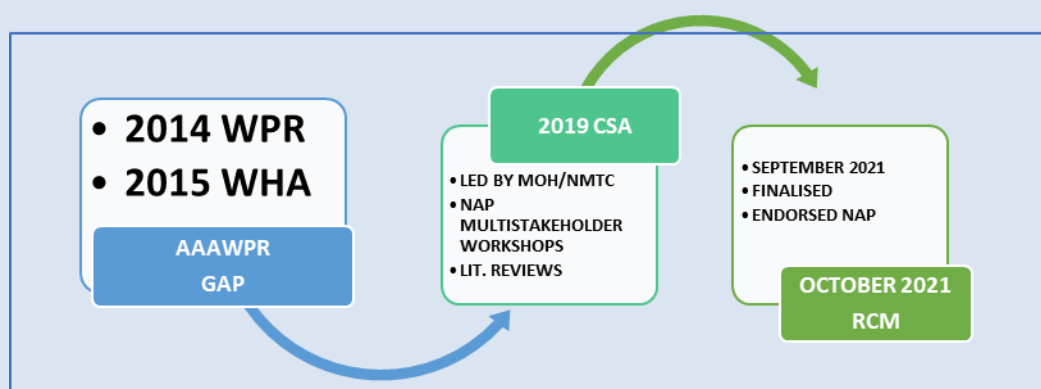
The health sector receives the second highest share (next to education) of the total government budget each year. In 2017, the Ministry of health budget made up 13.4% of the total government budget, whilst the Ministry of Education received 18%. Public expenditure on health has been increasing over the past four years. Compared to other Pacific Island countries, Tuvalu has one of the highest health expenditures as percentage of GDP and per capita spending on health.

Accounting for around 30 % of annual expenditure, overseas referral and treatment of cases continues to be major challenges for the health service as high curative health services do compromise funding to preventive health programmes.<sup>13</sup> Furthermore, overseas diagnostic and laboratory costs are also increasing. It is anticipated that with improved staffing in the outer islands, referral of patients will progressively decrease. Separately, improved local clinical care is expected to reduce the need for overseas medical referrals.

### 3.0 Collaborative Approach - Developing the Plan

A stakeholders' consultation workshop was conducted from 13 to 14 March 2019 with WHO technical support. The Ministry of Health Tuvalu took lead in these multi-sectoral workshops and updated forum on tripartite AMR country situation analysis (CSA) with presentations from key partners. Findings were discussed and country-specific recommendations and interventions were identified as next steps towards the development of this Plan. Published and unpublished data reviews and surveys with prescribed focus areas was undertaken. Plan was endorsed by the Honourable and notified at the WHO Regional Country Meeting (RCM) about a month later, see figure 1.

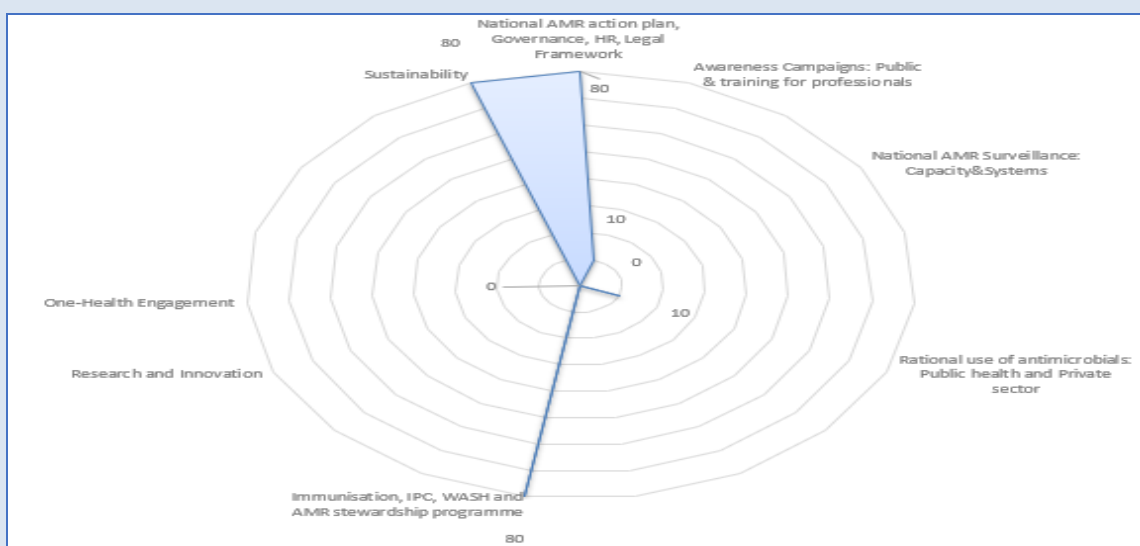
**Figure 1 – Diagram of Collaborative Approach**



<sup>13</sup> *Ibid.*

## 4.0 Summary of brief Situational Analysis on AMR in Tuvalu

Synthesising information, aligned to the 5 GAP strategic objectives; simplified to 8 focus areas, helped visualise current status of AMR in Tuvalu, **Figure 2** and narrative format. NDTC secretariat can update and use the radar chart as a tool to monitor progress with a target to reach at least 80% in 5 of 8 focus areas over the NAP lifetime, priority on surveillance capacity and systems. **Figure 2 – Radar Chart for Situation Analysis on AMR**



**Focus Area 1 – Leadership, Governance, Legal Framework, Human Resources and National Action Plan on AMR.** At 80% overall grading. With completed NAP, the MoH will continue to strengthen the tripartite partnership on the One Health Approach for AMR. Like other PICs, country response to AMR is currently Human Health-centric. Medicines and antimicrobials are governed by the Tuvalu Pharmacy and Therapeutic Products Act (2016) and as well as the National Medicine Policy; mandates the National Drugs & Therapeutics Committee (NDTC) to oversee the selection and monitor the rational use of Essential Medicines (EMS). NDTC is mandated under the NMP to take on other functions such as management of NAP. MoH is committed to updating the 2008 Essential Medicines List (EML) edition. The Pharmacy Department procures medicines on the EML including antimicrobials. EMS are procured from pre-qualified suppliers based on consumption data only, as limited capacity to use epidemiological data. All EMS and medical services are free of charge. A sole pharmacy at PMH and eight outer islands clinics; antibiotics or other prescription medicines can only be dispensed at the hospital pharmacy; it is understood this policy is complied with. Provisions in the Act allow licensed small retail shops to sell OTC medicines only.<sup>14</sup> However, regular monitoring is required. **HR:** In other sectors and HRH remains a challenge, one officer or a team is tasked with multiple responsibilities; sustainability is a real challenge. No trained veterinarian in country. Shortage is exacerbated by an overseas training scheme allowing qualified personnel to undertake a leave of absence to study or work abroad; many opt to work and reside abroad.

<sup>14</sup> Ministry of Health of Tuvalu (2016), *Pharmacy and Therapeutic Product Act (act. 6/2016)*, Available at: [https://tuvalu-legislation.tv/cms/images/LEGISLATION/PRINCIPAL/2016/2016-0006/PharmacyandTherapeuticProductsAct2016\\_1.pdf](https://tuvalu-legislation.tv/cms/images/LEGISLATION/PRINCIPAL/2016/2016-0006/PharmacyandTherapeuticProductsAct2016_1.pdf)

**Focus Area 2 - Awareness Campaigns: Members of Public & training for professionals:** At 10% grading, given NAP absence, limited awareness to public and training of professionals on AMR. Since 2016, hype of activities observed in November for World Antibiotic Awareness Week (WAAW) with no regular continuity. High level engagement from senior MoH and hospital staff. IEC materials were developed in the local language and displayed in several wards and pharmacy at PMH. MoH commits to conducting community awareness in villages and islands.

**Focus Area 3 - National AMR Surveillance: Capacity & Systems:** At 0% and is the Priority focus area for Tuvalu. AMR intelligence is the key catalyst in planning and decision making in all sectors. **HH:** One laboratory at PMH, Funafuti Island, a solo laboratory technician provides haematology, serology, chemistry, immunology services except full-scale microbiology. Key microbiology equipment urgently requires maintenance. No qualified microbiologist; since 2016/2017, the microbiology section is no longer routinely conducting antibiotic sensitivity testing (AST). Quality control testing is not being performed on a regular basis, lack of control organisms. The laboratory has not participated in an EQA scheme. With Global Fund and UNDP support, a GeneXpert machine was acquired in 2017, for TB related tests only. An estimated 10 samples are tested on a weekly basis. **AH:** The department of fisheries has a laboratory, but its capacity to test for antimicrobial residues is unclear. Construction of a laboratory for the animal health sector is currently discussed; hence neither testing of antibiotic residue in animals nor animal products is conducted.

**Focus Area 4 – Rational use of antimicrobials: Public health sector:** At 10% grading, the Antibiotic (AB) Standard Treatment Guidelines 2010 is in use,<sup>15</sup> NDTC is committed to develop a more detailed national antibiotic guideline. AB is a prescription only EM in Tuvalu.<sup>16</sup> No official data is available, key Informants stated high compliance to good prescribing habits. However, exceptions observed with the eight outer island clinics that provide services to about 4000 persons. There are no doctors at these clinics, nurses provide services and ABs are often dispensed without prescriptions. The PMH pharmacy department provides a medicines cart (includes commonly used ABs) to the on-call physician to allow access to medicines 24h/7d. The on-call physician can dispense ABs without a prescription and many times, information system (IS) entries on AB are not done. Msupply™ is the Pharmacy IS that tracks inventory. A summary report showed Amoxicillin oral formulations as widely used. 3<sup>rd</sup> generation cephalosporins (ceftriaxone injection) is available as last line treatment. A baseline behavioural survey is planned in the NAP; CSA workshop participants highlighted the following **drivers** of AMR:

- ×Limited knowledge - ABs commonly shared between friends & families
- ×Patients demand doctors to prescribe ABs
- × ABs irrationally prescribed to treat bacterial infections
- ×ABs irrationally prescribed for flu + for common cold
- ×Doctors pressured by families to prescribe Antibiotics
- ×Irresponsible Antibiotics dispensed by HH care worker to families & friends
- ×ABs are free of charge – notion of right to demand for ABs.

<sup>15</sup> *Ibid.*

<sup>16</sup> Ministry of Health of Tuvalu (2010), *Tuvalu Standard Treatment Guidelines (2010)*, Available at: [https://www.who.int/selection\\_medicines/country\\_lists/TuvaluSTG\\_2010.pdf?ua=1](https://www.who.int/selection_medicines/country_lists/TuvaluSTG_2010.pdf?ua=1)

**Focus Area 5 – Immunisation, IPC, WASH and AMR stewardship programme:** At 80% grading.

**Immunisation:** EPI coverage ranges from  $\geq 95\%$  for measles and DPT;<sup>17</sup> low risk of vaccine preventable diseases outbreaks. In 2019, ADB project supported rotavirus, pneumococcal conjugate and human papillomavirus vaccines introduction and cold chain infrastructure strengthening. With high vaccines uptake, Tuvalu foresees  $>80\%$  Covid19 coverage for eligible persons at the end of 2021. **IPC:** SPC technical assistance, to endorse final new comprehensive national IPC policy and updated guidelines. CSA highlighted, IPC Policy & Guidelines implementation limited by funding and HRH constrains. IPC Committee tasks:

- ❖ PMH formed IPC Committee. Finalise IPC policy, guidelines & a prioritised OPR work-plan.
- ❖ DFAT to bring in a temporary IPC officer to lead & mentor IPC policy/guidelines in PMH
- ❖ PMH IPC set up sub-optimal in wards and a small isolation ward.
- ❖ Variable IPC practices by hospital staff.
- ❖ Water is readily available.
- ❖ PPE and soap shortages occurs from time to time. During CSA visitation, gloves were not readily available for health workers in front line clinical areas.

**WASH:**  $> 91\%$  of population have access to improved water and sanitation. Water supply is primarily dependent on rainwater catchment with above and below ground storage. Water quality testing is limited to hydrogen sulphide ( $H_2S$ ) kits, for E. coli detection. In 2013, DFAT provided large 10kL rain water tanks to every family, better water access. Awareness campaigns, good hygiene practices (such as boiling water, hand washing) has improved. Sanitation via outdoor toilets connected to septic tanks. Historically, outbreaks of diarrhoeal illness, typhoid and Hepatitis A have occurred. While there is no official data, smaller scale outbreaks of food-borne diseases occur, particularly on outer islands due to poor water, poor sanitation and storage conditions of food. A Food Safety Act is in place, no dedicated food safety department to implement and monitor the Food Safety Act. **AMR Stewardship:** Limited capacities and to strengthen during NAP lifetime, linked to focus area 4.

**Focus Area 6 - Research and Innovation:** At 0% grading, **no AMR intelligence**, limited research conducted on AMR. Strengthen capacities by twinning with regional academia and other PICs.

**Focus Area 7 – One-Health Engagement:** At 0%, remains Human Health-centric and improve during NAP lifetime. No AB awareness conducted by Department of Agriculture (DoA). **Animal**

**Health: Land:** Subsistence agriculture is a way of life, limited to chicken and pig husbandry. Reports of sporadic AB use in pigs. No systematic AB import and use in pigs. DoA neither maintains a formal AB registry nor record. No system to monitor the use of ABs in animal or farming practices. **Sea:** Tuvalu is surrounded by the sea, fishing is widespread and for domestic consumption only, commercialisation unsuccessful. Currently no antibiotics are routinely being used for aquaculture or in fish feed. **EH:** High Climate Change impact, fragile island state.

**Focus Area 8 – Sustainability:** At 80%, continued development partners' support pledged. Investment case to cost and assign annual budget for NAP is dependent on sound AMR intelligence by strengthening HR capacities, AMR stewardship and surveillance systems.

#### Topic of Interest

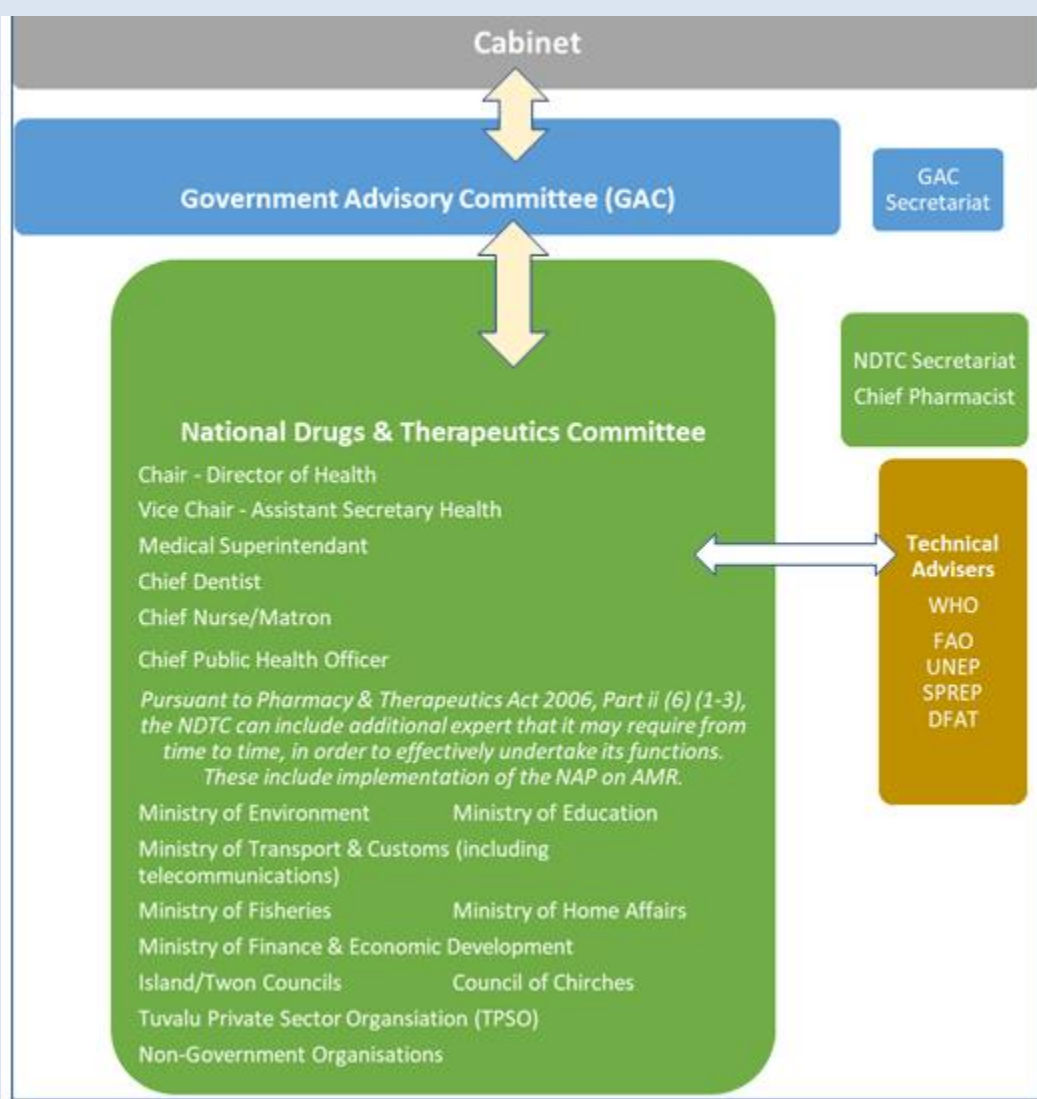
In 2018, MoH conducted a health security review, risks in importing AMR pathogens. The Tuvalu Medical Treatment Scheme sends patients with complex medical conditions to Fiji, India and Malaysia for tertiary care, includes surgical & other invasive procedures with increasing hospital-stay (up to 6 months or more in India, and long term stay for renal dialysis in Suva pending final decisions to establish a chronic kidney disease program and haemodialysis in PMH). Risks can be managed, MoAs with these providers to be renegotiated, including screening and certification of AMR-free status on discharge and prior to home travel. Routine screening for AMR pathogens by the PMH laboratory if patients are readmitted upon return.

## 5.0 Governance of Antimicrobial Resistance in Tuvalu

One Health Approach is key to successfully containing AMR in Tuvalu. The cabinet is chaired by the Honourable Prime Minister and a direct line of reporting from the Government Advisory Committee (GAC) highlights the high-level political commitment to tackle AMR. Cabinet will provide high-level strategic and political support to the country's response to control and contain AMR. The AMR focal point in Cabinet for is the Honourable Minister of Health, who will act as the bridge between Cabinet and GAC. The National Drug and Therapeutics Committee (NDTC) is the operational arm to implement AMR activities and will reports directly to GAC.

Cabinet, GAC and NDTC will incorporate AMR as one of their priority functional agenda. The governance structure is aligned to the established, functional framework and coordinated mechanism to oversee implementation, monitoring and reporting of the National Action Plan on AMR in Tuvalu from Q4, 2021 – 2025. **Figure 2.** Refer to **Annex 1** for more details.

**Figure 2 – Schematic of Governance Structure of Antimicrobial Resistance in Tuvalu**



## 6.0 Strategic Objectives of AMR in Tuvalu

### **Obj 1 - Establish multi stakeholder mechanisms to combat AMR**

- 1.1 Establish AMR governance structure to implement NAP
- 1.2 Enforce appropriate legislations in all sectors
- 1.3 Ensure sustainable resources to implement NAP

### **Obj 2 - Improving awareness of AMR and foster behavioural change across all institutions, sectors and communities**

- 2.1 Promote awareness raising, information sharing on AMR and rational use of antimicrobials across institutions, sectors and community
- 2.2 Promote effective sanitation and hand hygiene in the community setting
- 2.3 Raise awareness and educate health care professionals and livestock officers on AMR

### **Obj 3 - Establish mechanisms for surveillance and research on AMR**

- 3.1 Establish functioning microbiology laboratory capacity in human and animal health sector
- 3.2 Strengthen laboratory policy, standards and information system
- 3.3 Develop food testing capacity to combat AMR
- 3.4 Conduct research and strengthen information sharing on AMR

### **Obj 4 - Strengthening infection prevention and control measures, food safety and hygiene**

- 4.1 Strengthen national infection prevention and control activities
- 4.2 Strengthen capacity of infection prevention and control staff and infrastructure (including waste management)
- 4.3 Implement the Water, Sanitation and Hygiene (WASH) program to promote safe water and hygiene practices
- 4.4 Promote good infection control and biosecurity practices in animal husbandry
- 4.5 Strengthen vaccination program in human and animal sectors

### **Obj 5 - Strengthen stewardship and monitoring on the use of antimicrobials in the human, and agriculture sectors**

- 5.1 Strengthen regulations to promote responsible use of antimicrobials, including: EML and Aware and lists of antibiotics in animal sector.
- 5.2 Establish and develop national guidelines and programs to control the use of antimicrobials (incl. stewardship)
- 5.3 Establish antimicrobial consumption monitoring
- 5.4 Strengthen procurement and supply of antimicrobials
- 5.5 Strengthen understanding of pharmacovigilance in human health



## 7.0 Tuvalu National AMR Operational plan (Years: 2021 - 2025)

1. Multi stakeholder mechanisms to combat AMR established and operational						
Goals	Year 1		Year 2 - 3		Year 4	
	Activity	Responsible Agency	Activity	Responsible Agency	Activity	Responsible Agency
1.1 Establishment of AMR governance structure for implementing the national action plan						
1.1.1 AMR sub-committee structure established and operational under the NDTC	> Identify reporting structure and communication channel for the AMR Sub-committee in Tuvalu under the NDTC	Ministry of Health	> NDTC/AMR Sub-committee meetings on quarterly basis	NDTC/AMR Sub-committee	> Annual report on the work of AMR committee	NDTC/AMR Sub-committee
	> Develop and finalize terms of reference for the AMR sub-committee		> Review/evaluate in year three ToRs of committee			
1.1.2 National action plan regularly monitored	> Hold a quarterly meeting to discuss implementation of the national action plan	NDTC/AMR Sub-committee	> Hold a quarterly meeting to discuss implementation of the national action plan	NDTC/AMR Sub-committee	> Hold a quarterly meeting to discuss implementation of the national action plan	NDTC/AMR Sub-committee



			> Annual meeting for M&E of AMR action plan implementation and making amendments to the plan		> Annual meeting for M&E of AMR action plan implementation and making amendments to the plan	
					> Review/endorsement of amended AMR national action plan	
<b>1.2 Enforcement of appropriate legislations in all sectors</b>						
1.2.1 Strengthened legislation of AMR in both human and animal sector	> Review of existing legislation and ensure it incorporate clauses related to the use of antimicrobials in both human and animal health	Relevant Ministries in collaboration with NDTC-AMR Sub-committee	> Develop new legislation on AMR, where applicable	Relevant ministries	> Develop new legislation on AMR, where applicable (continued)	Relevant ministries
<b>1.3 Ensure sustainable resources to implement the National Action Plan</b>						
1.3.1 A dedicated budget for the governance	> Consultation with key stakeholders for costing the AMR activities	Ministry of Health, NDTC/AMR Sub-committee	> Formal submission of costed plan to the cabinet for endorsement	NDTC/AMR Sub-committee	> Conduct consultation meeting with key partners for the identification of funding sources	NDTC/AMR Sub-committee

of the National Action Plan secured (budget for meetings, reports.)	outlined in the National Action Plan		> A dedicated fully funded staff appointed to run AMR secretariat and AMR champions/focal points in different sectors identified			
1.3.2 A dedicated budget for AMR-specific activities (awareness, surveillance, monitoring) secured	> Consultation with key stakeholders for costing the AMR activities outlined in the National Action Plan		> Identify and assess hospital and 8 health facilities in outer islands to ensure human and financial capacity to prevent, control and respond to AMR > Formal submission of costed plan to the cabinet for endorsement	NDTC/AMR Sub-committee	> Conduct consultation meeting with key partners for the identification of funding sources	

## 2. Improving awareness of AMR and foster behavioural change across all institutions, sectors and communities

Goals	Year 1		Year 2 - 3		Year 4 - 5	
	Activity	Responsible Agency	Activity	Responsible Agency	Activity	Responsible Agency
2.1 Promote awareness raising, information sharing on AMR and rational use of antimicrobials across institutions, sectors and community						
2.1.1 Awareness on AMR raised in different sectors	> Develop IEC materials on AMR for the general public and policy makers	NDTC/AMR Sub-committee & relevant ministries	> Develop IEC materials on AMR for farmers, agricultural sector	NDTC/AMR Sub-committee & relevant ministries	> Conduct regular AMR advocacy and awareness by using various means of communication in particular radio or social media	NDTC/AMR Sub-committee & relevant ministries
	> Hold annual awareness campaign to celebrate World Antibiotic Awareness Week	Island leaders, NGO's, Civil societies, churches	> Conduct regular AMR advocacy and awareness by using various means of communication in particular radio or social media	Island leaders, NGO's, Civil societies, churches	> Engage Island leaders, NGO's, Civil societies, churches to raise awareness on AMR	Island leaders, NGO's, Civil societies, churches
			> Engage island leaders, NGO's, Civil societies, churches, raise awareness on AMR		> Hold annual awareness campaign to celebrate World Antibiotic Awareness Week	

			> Hold annual awareness campaign to celebrate World Antibiotic Awareness Week			
2.1.2 Improved knowledge, Attitude and Practice in public, health-care workers and farmers on the use of Antimicrobials			> Conduct AMR Knowledge Attitude and Practice survey for public, health-care workers and farmers (year 2)	NDTC/AMR Sub-committee	> Conduct AMR Knowledge Attitude and Practice survey for public, health-care workers and farmers (year 5)	NDTC/AMR Sub-committee
2.2 Promote effective sanitation and hand hygiene in the community setting						
2.2.1 Effective sanitation and hand hygiene in the community promoted	> Participate in the world hand hygiene day	Ministry of Health, health facilities	> Participate in the world hand hygiene day	Relevant ministries	> Participate in the world hand hygiene day	Relevant ministries
	> Develop promotional materials to raise awareness on hand hygiene and		> Conduct regular hand washing campaigns using various means of communication		> Conduct regular hand washing campaigns using various means of communication in particular radio or social media	

	effective sanitation in the community		in particular radio or social media			
2.2.2 Education curriculum of schools revised to capture AMR, basic sanitation and hand hygiene			> Revise the Education curriculum to capture AMR, basic sanitation and hand hygiene awareness raising in primary schools	Ministry of Education	> Revise the Education curriculum to capture AMR, basic sanitation and hand hygiene awareness raising in high schools	Ministry of Education
2.3 Raise awareness and educate health care professionals and livestock officers on AMR						
2.3.1 AMR included as core component of professional education, training for health-care workers	> Include AMR as a component of CPD for doctors	Ministry of Health, PMH	> Include AMR as a component of CPD for nurses	Ministry of Health, PMH	> Include AMR as a component of CPD for all health care workers	Ministry of Health, PMH
			> Enrol health-care workers in AMR course offered on POLHN or other institutions (FAO, OIE).		> Enrol health-care workers in AMR course offered on POLHN or other institutions (FAO, OIE).	

2.3.2 Livestock officers trained on AMR and good husbandry practices			> Training module on AMR and good husbandry practices for farmers	Department of Agriculture, FAO	> Training module on AMR and good husbandry practices (part II) for farmers	Department of Agriculture, FAO
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3. Establish mechanisms for surveillance and research on AMR						
Goals	Year 1		Year 2 - 3		Year 4 - 5	
	Activity	Responsible Agency	Activity	Responsible Agency	Activity	Responsible Agency
3.1 Establish functioning microbiology laboratory capacity in human and animal health sector						
3.1.1 Laboratory staff capacity on microbiology and quality antimicrobial susceptibility testing in human health strengthened	> Build capacity of laboratory staff to conduct microbiology testing and analysis of antibiogram	Ministry of Health, PMH, with support of WHO	> Build capacity of laboratory staff to conduct microbiology testing and analysis of antibiogram (refresher)	Ministry of Health, PMH, with support of WHO	> Train laboratory staff in conducting external quality assessment on AMR	Ministry of Health, PMH, with support of WHO, PPTC
3.1.2 The infrastructure of sole human health laboratory in the country upgraded to conduct AMR surveillance in human health	> conduct needs assessment on the capacity of the laboratory	PMH, Ministry of Health, AMR Committee	> Procure and install new laboratory equipment + maintenance of existing equipment	Ministry of Health, PMH, with support of WHO,	> maintenance of equipment	Ministry of Health, PMH, with support of WHO,
3.1.3 Laboratory			> conduct feasibility on	Department of Agriculture,	> Conduct small study on AMR in animals	Department of



testing capacity in animals established			establishment of AMR surveillance in animals	FAO	OR > Establishing animal health laboratory	Agriculture, FAO
3.2 Strengthen laboratory policy, standards and information system						
3.2.1 Standard operating procedures for antibiotic testing developed and quality management system in the hospital laboratory introduced	> Hire consultant to establish Standard Operating Procedures	Ministry of Health, health facilities	> Train designated personnel on Standard Operating Procedures (continued)	PMH	> Train laboratory staff in conducting external quality assessment on AMR  > enrol in an EQA system from Australia or New Zealand	PMH
3.2.2 Optimized supply chain of consumables of laboratory	> Establish an inventory of consumables and reagents in laboratory	PMH	> Establish procurement routines / SOPs for supply chain of laboratory	Ministry of Health, PMH	> Procure lab consumables on a routine basis following SOPs	Ministry of Health, PMH
3.2.3 Functional Laboratory Information System in-use (egg WHONET)	> Identify and hire consultant to install LIMS	PMH	> Build capacity of laboratory staff to use Laboratory Information management system	Ministry of Health, PMH	> Submit surveillance data to GLASS	

3.3 Develop food testing capacity to combat AMR						
3.3.1 Laboratory testing capacity for food residues and food imports established			> Conduct feasibility of food testing for AMR priority pathogens	Ministry of Health, Department of Agriculture. Ministry of Fisheries	> Undertake random sample collection and testing for AMR and antibiotic residues.	Ministry of Health, Department of Agriculture. Ministry of Fisheries
			> Identify and rent premises to build up food testing laboratory		> Train food safety inspectors	
			> Procure laboratory equipment and testing kits			
3.4 Conduct research and strengthen information sharing on AMR						
3.4.1 Strengthened knowledge and evidence based for AMR in Tuvalu	Develop a standard template and mechanism for reporting AMR in Tuvalu	Ministry of Health, PMH	> Recruit an epidemiologist to analyse data and trends	Ministry of Health, PMH	> Develop a detail antibiogram for Tuvalu	Ministry of Health, PMH
			> Build relationship with research institutions and WHO collaborating centre for AMR in Fiji, Australia or			

		New Zealand	
		> Organize workshop to regularly share AMR surveillance data to key stakeholders, including regional and international	> Organize workshop to regularly share AMR surveillance data to key stakeholders, including regional and international

4. Reducing incidence of AMR through effective infection prevention and control measures, food safety and hygiene						
Goals	Year 1		Year 2 - 3		Year 4 - 5	
	Activity	Responsible Agency	Activity	Responsible Agency	Activity	Responsible Agency
4.1 Strengthen national infection prevention and control activities						
4.1.1 National Infection Prevention and Control guidelines implemented	> Print and disseminate IPC guidelines in PMH and outer islands	Ministry of Health, PMH, with support of WHO	> Conduct training on infection prevention and control policy and guidelines targeting health care workers from outer islands and health administrators, livestock officers	Ministry of Health, PMH, with support of WHO	> Continue to implement National IPC guidelines at all facilities	Ministry of Health, PMH, with support of WHO, PPTC
	> Conduct training on infection prevention and control policy and guidelines targeting health care workers from outer islands and health administrators, livestock officers		> Continue to implement National IPC guidelines		> revise/update IPC guidelines	

4.2 Strengthen capacity of infection prevention and control staff and infrastructure (including waste management)						
4.2.1 National Infection Prevention infrastructure and capacity strengthened	> Appoint dedicated infection prevention and control officer in hospital	Ministry of Health, PMH, with support of WHO	> Ensure consistent availability of infection prevention and control supplies	Ministry of Health, PMH, with support of WHO	> Develop guideline on disposal of unused antibiotics (including veterinary medicines)	Ministry of Health, PMH, Department of Agriculture
	> Allocate an office space for infection prevention and control officer		> Enrolling health-care workers on infection and prevention control online course offered on POLHN or other institutions		> Establish a safe space in the dump site for the disposal a) pharmaceuticals, b) medical waste and, c) veterinary waste	
	> Ensure consistent availability of infection prevention and control supplies		> Conduct infection prevention and control assessment of health facilities in 8 outer islands			

#### 4.3 Implement the Water, Sanitation and Hygiene (WASH) program to promote safe water and hygiene practices

4.3.1 WASH program in communities and schools strengthened	> Implement WASH program in communities and schools	National AMR committee Ministry of Health	> Implement WASH program in communities and schools	NDTC/AMR Sub-committee Ministry of Health	> Implement WASH program in communities and schools	NDTC/AMR Sub-committee Ministry of Health
		Ministry of Education		Ministry of Education		Ministry of Education
	> Conduct awareness training on WASH program in communities and schools		> Conduct awareness training on WASH program in communities and schools (refresher)		> Conduct awareness training on WASH program in communities and schools (refresher)	

#### 4.4 Promote good infection control and biosecurity practices in animal husbandry

4.4.1 Strengthen infection prevention and control in animal husbandry	> Appoint part-time infection prevention and control officer for animal health sector	National AMR committee Department of Agriculture	> Develop infection prevention and control policy specific for animal farms	NDTC/AMR Sub-committee Department of Agriculture	> Conduct training on infection prevention and control policy to farmers and livestock officers	NDTC/AMR Sub-committee Department of Agriculture
			> Print and distribute infection prevention and control			

			policy to all key stakeholders			
4.5 Strengthen vaccination program in human and animal sectors						
4.5.1 Tuvalu's immunization programme strengthened and expanded	> Continue to implement Tuvalu's immunization programme (human health)	Ministry of Health	> Introduction of two new vaccines into EPI programme	Ministry of Health, UNICEF, WHO	> Establish vaccination programme in Agricultural sector	NDTC/AMR Sub-committee Department of Agriculture
			> Continue to implement Tuvalu's immunization programme (human health) to reach set-out targets			



5. Strengthen stewardship and monitoring on the use of antimicrobials in the human, and agriculture sectors						
5.1 Strengthen regulations to promote responsible use of antimicrobials						
Goals	Year 1		Year 2 - 3		Year 4 - 5	
	Activity	Responsible Agency	Activity	Responsible Agency	Activity	Responsible Agency
5.1 Strengthen regulations to promote responsible use of antimicrobials, including EML and Aware and lists of antibiotics in animal sector						
5.1.1 The use of prescription on antimicrobials in human and animal sector enforced	> Review existing medicine legislation to cover the prescribing and use of antimicrobials in human health	National AMR committee	> Introduction of software to track prescription and dispensing	NDTC/AMR Sub-committee Chief Pharmacist	> Review of treatment guidelines	NDTC/AMR Sub-committee
			> Conduct awareness on medicine legislation to medical doctors and other key health workers in Tuvalu		> Updating of essential medicine list with introduction of AWARE categorization	
5.2 Establish and develop national guidelines and programs to control the use of antimicrobials (including stewardship)						
5.2.1 Antibiotic guidelines based on country antibiogram for human and animal use	> Review and finalize the national antibiotic guidelines for human use	National AMR committee	> Develop and pilot antimicrobial stewardship (AMS) program in the main hospital	NDTC/AMR Sub-committee Ministry of Health, Department of Agriculture, PMH	> Evaluate and revise pilot AMS programme	NDTC/AMR Sub-committee Ministry of Health, Department of Agriculture, PMH
		NDTC. Ministry of Health				

developed and stewardship programme operational	> Appoint coordinator for antimicrobial stewardship programme		> Develop a national antibiotic guideline for animal use		> Roll out national antibiotic guideline for animal use	
	> Review the ToR of NDTC to ensure that it covers AMR-issues		> Establish 3-5 years work plan for NDTC (including secure a budget)		> Implement work plan for NDTC	
	> Establish linkages between NDTC and AMR committee		> Conduct training on antibiotic guideline and rational prescribing to livestock officers, medical doctors and other key health workers in Tuvalu			
5.3 Establish antimicrobial consumption monitoring						
5.3.1 Antibiotic consumption monitored			> Hire consultant to conduct AMC study in Tuvalu in human health sector	NDTC/AMR Sub-committee PMH	> Conduct Antibiotic consumption survey in PMH (if possible 1x every two years)	NDTC/AMR Sub-committee, PMH
			> Conduct Antibiotic consumption survey in PMH (if possible 1x every two years)		> Regular sharing of AMR consumption data to key stakeholders, including	

					regional and international	
			> Publish consumption survey data in annual health report			
5.4 Strengthen procurement and supply of antimicrobials						
5.4.1 Procurement and supply of antimicrobials strengthened (as part of improving access to medicines initiative in the country)	> Participate in sub regional platforms to access information on quality of medicines/ antimicrobials	Ministry of Health/Chief Pharmacist	> Develop a strategy for sustainable procurement and supply of antimicrobials/essential medicines in human sector for Tuvalu	NDTC/AMR Sub-committee, PMH	> Review policy on prequalification of antimicrobials that are imported to the country (in conjunction with consumption and surveillance data)	NDTC/AMR Sub-committee, PMH

	> Optimize the use of Msupply™ in PMH		> > Revise boarder control legislation to cover the declaration of all antimicrobials that enters the country		>> Develop policy to control and guide the use of antibiotics on patients sent for overseas treatment including overseas doctors that will be visiting country for medical outreach	
					> Train border quarantine officials to inspect and detect antimicrobials brought in from overseas	
5.5 Strengthen understanding of pharmacovigilance in human health						
5.5.1 Capacity to detect, assess, prevent adverse effects of antimicrobials established			> Train the chief pharmacist on pharmacovigilance of antimicrobials	NDTC/AMR Sub-committee, PMH, Chief Pharmacist	> Develop a report on adverse effect	NDTC/AMR Sub-committee, PMH, Chief Pharmacist
			> Establish a protocol to monitor and investigate suspected adverse effects			

## **8.0 Implementation Framework**

### **8.1 Strategic Operational Plan**

Upon the adoption of the endorsed Tuvalu National Action Plan on Antimicrobial Resistance, the NDTC/AMR Sub-committee will develop an annual Operational Plan for the five years. This will include detail activities linked to indicators and targets with responsibilities to help implement the National Action Plan on AMR.

### **8.2 Costing and M&E Framework**

The NDTC/AMR Sub-committee will develop a Costing and M&E Framework to assist in submitting for annual budgetary requirements linked to an aligned results-based M&E Framework.

### **8.3 Review and Evaluation**

The Tuvalu National Action Plan on Antimicrobial Resistance will be reviewed every three years, or more frequently if necessary.

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## **Annex 1      Description of Governance Structure on AMR**

### **Cabinet:**

The cabinet is chaired by the Prime Minister and a direct line of reporting from the Government Advisory Committee highlights the political commitment to tackle AMR. The cabinet will provide high-level strategic and political support to the country's response to AMR. The focal point in the Cabinet for AMR will be the Minister of Health and will act as the bridge between the Cabinet and the Government Advisory Committee (GAC).

### **Government Advisory Committee (GAC):**

Terms of reference:

- Coordinate and monitor country response to AMR and other emerging infectious disease across different ministries
- Report to Cabinet within the prescribed timelines
- Evaluate policies, regulations and guidelines related to AMR before passing for Cabinet endorsement
- Assess and approve the National Drugs and Therapeutics Committee's Policies, Proposals and Activities pertaining to the implementation of the National Action Plan on AMR before submission to Cabinet.

### **National Drugs and Therapeutics Committee:**

Terms of reference:

Pursuant to the Pharmacy and Products Act 2016, Part II, Sections 6 to 8. The NDTC shall be established and function under the purpose of the Act. In particular, for the purpose of integrating AMR as a priority health agenda, Section 7 (1) (n), *"Undertake other functions that are specified in the National Medicines Policy."*

- The Ministry of Health shall guide and direct the NDTC.
- Support ministries, institutes, health facilities to implement the National AMR action plan
- To coordinate and monitor activities related to AMR
- Provide support to implementing line ministries, institutes, professional societies, partners as outlined in the National AMR plan
- Mobilize both domestic and external resources and prioritize allocation of funds

- Review and update the national action plan and operational plan every yearly

*Membership:*

The Pharmacy & Therapeutics Act 2016 mandates the National Drugs and Therapeutics Committee to carry out its functions and will be chaired by the Director of Health and vice-chair is the Assistant Secretary of Health. The Committee shall consist of: the Chief Pharmacist; who shall be the Secretary; the Medical Superintendent; the Chief Dentist; the Chief Nurse/Matron; the Chief Public Health Officer.

The Committee can include additional expertise that it may require from time to time in order to effectively carry out its functions. Chief and/or Director office holders from non-health Ministries and executive representatives from non-government entities will be appointed to the NDTC, to assist in the management of the National Action Plan on AMR 2021 – 2025 include:

- i. **Ministry of Health**
  - Support implementation of NAP in all matters pertaining to the human health sector
- ii. **Ministry of Environment**
  - Support implementation of NAP in the area of waste management, water & sanitation
- iii. **Ministry of Education**
  - Support implementation of NAP particularly for awareness/ educational activities in schools
- iv. **Ministry of Transport and Customs (including telecommunications)**
  - Support implementation of NAP particularly in area of import of antimicrobials
  - Support the implementation of NAP for awareness raising
- v. **Ministry of Fisheries**
  - Support implementation of NAP in rational use of antimicrobials in fisheries
- vi. **Ministry of Home Affairs**
  - Support the overall implementation of NAP
- vii. **Ministry of Finance & Economic Development**
  - Support implementation of NAP by providing necessary financial resources and budget space
- viii. **Island/town councils**



- Support implementation of NAP in the area of awareness raising, behavioural change on issues such as water and sanitation, immunization, promoting rational use of antibiotics
- ix. **Council of Churches**
  - Support implementation of NAP in the area of awareness raising, behavioural change on issues such as water and sanitation, immunization, promoting rational use of antibiotics
- x. **Tuvalu Private Sector Organization (TNPSO)**
  - Support implementation of NAP in the area of rational use of antibiotics
- xi. **Non-governmental Organisations (NGOs)**
  - Support implementation of NAP in the area of awareness raising, behavioural change on issues such as water and sanitation, immunization, promoting rational use of antibiotics

#### **Procedures of the Committee as stipulated in the Pharmacy and Therapeutics Act 2016, Section 8**

- (1) Subject to any requirements under this Act, or regulations, the Committee may regulate its own procedures, proceedings, and rules governing its meetings;
- (2) The Committee shall meet as often as is necessary for the efficient and effective conduct of its functions, and at such times and places as it determines;
- (3) The Committee can form sub-committees to enable it to efficiently and effectively undertake its functions;
- (4) The Committee shall prepare annually a report of its activities during the preceding 12 months and this report shall be made in writing to the Minister;
- (5) Any member of the Committee who has a material conflict of interest concerning a matter before the Committee must declare that conflict and take no part in the Committee's deliberations on that matter.

**AMR Technical Working Group** can be formed per strategic objectives of the AMR plan or technical program area as stipulated in the Act, Part II, Section (8) (3), *"The Committee can form sub-committees to enable it to efficiently and effectively undertake its functions."*

**Members** (depending on activity and to be decided by the NDTC)

- Team leader
- 4-5 members

**Terms of reference:**

- To prioritize and support the implementation, monitoring of activities outlined in the National Action Plan on AMR 2021-2025.
- Reporting to the National Drugs and Therapeutics Committee
- Meeting & reporting time to be determined by the NDTC

**Advisors:**

In addition, the Government of Tuvalu has suggested attributing support roles to the National Drug Therapeutics committee as well as other relevant committees in various responsible line Ministries. WHO has been requested to provide technical support to the National Drugs and Therapeutics Committee to support the implementation of the National Action Plan. Other development partners such as DFAT, SPC, OIE, FAO, SPREP, UNEP will be requested to provide technical and financial support.

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