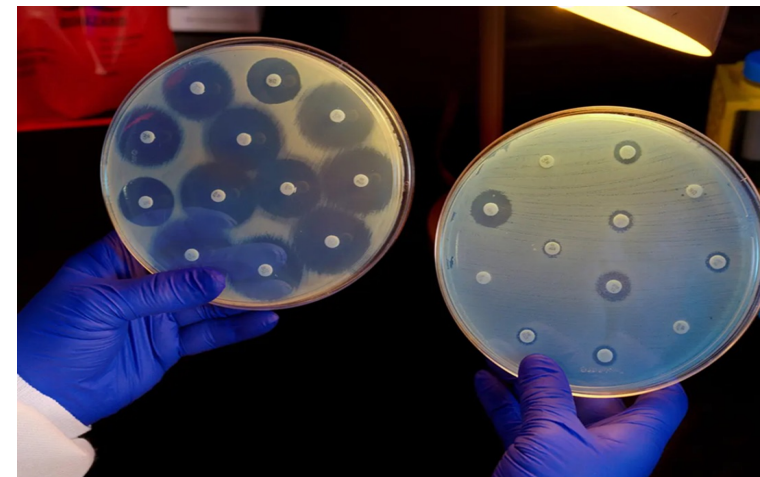


TITLE: THE NEED FOR CONTROL OF ANTIBIOTICS FOR THE PREVENTION AND MANAGEMENT OF ANTIMICROBIAL RESISTANCE (AMR)

PRESENTER : KATHY VUHU
MEDICAL LABORATORY OFFICER (NPH)



VANUATU 3RD HEALTH RESEARCH SYMPOSIUM

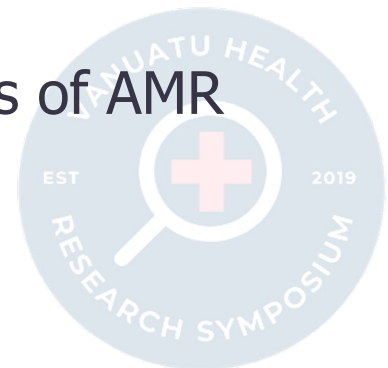
VNPF Conference Center, Luganville, Santo

26-28 October 2022



INTRODUCTION

- ❖ Antimicrobial resistance (AMR) is of significant global concern
- ❖ It occurs when pathogens change over time and become resistant to the drugs that were used against them, making treating infections harder and more expensive
- ❖ AMR poses a major threat to human health around the world. It is Estimated 5 million deaths every year due to AMR globally
- ❖ The misuse and overuse of antimicrobials (antibiotics) are the main causes of AMR globally



INTRODUCTION

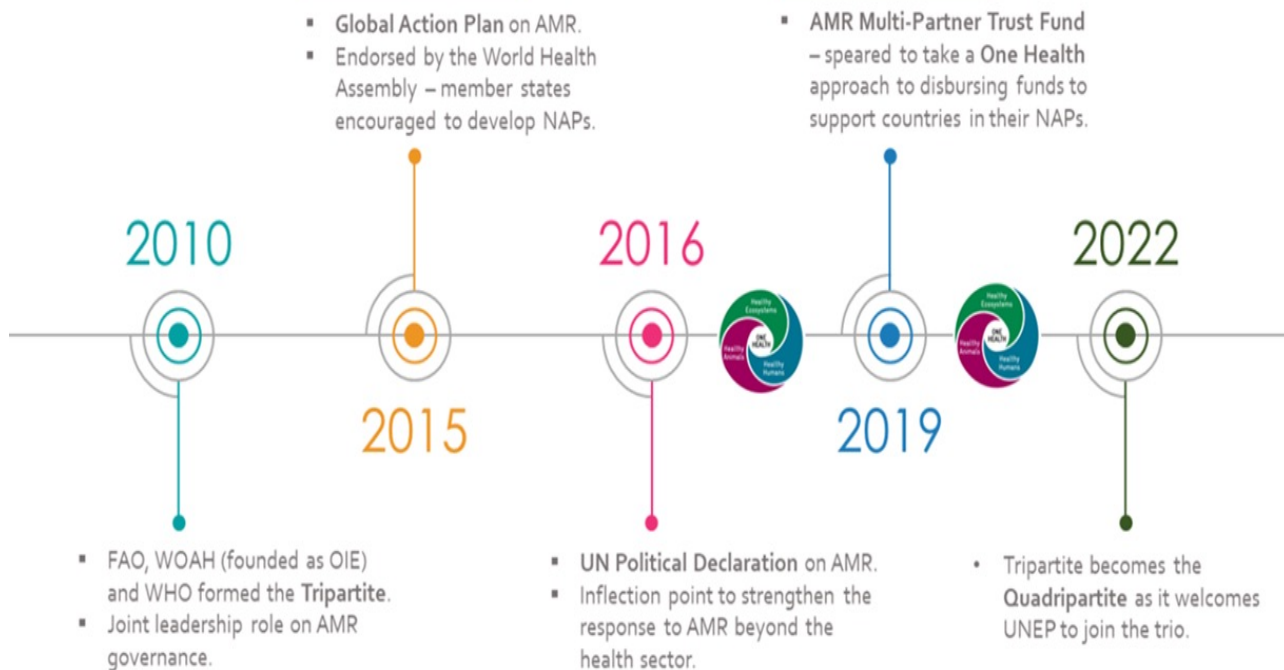
Six leading pathogens associated with antibiotic resistance globally are:

1. Third generation cephalosporin-resistant *Escherichia coli*
2. Methicillin resistant *Staphylococcus aureus* (MRSA)
3. Cephalosporin resistant *Klebsiella pneumoniae*
4. *Streptococcus pneumoniae*
5. Carbapenem resistant *Acinetobacter baumannii*
6. *Pseudomonas aeruginosa*



BACKGROUND- AMR RESPONSE

Global AMR Response



WHO/DPS/PHS

VANUATU National Action Plan on Antimicrobial Resistance 2021-2025

GOUVERNEMENT DE LA REPUBLIQUE DE VANUATU / MINISTRE DE LA SANTE

GOVERNMENT OF THE REPUBLIC OF VANUATU / MINISTRY OF HEALTH

EXECUTIVE COMMITTEE SECRETARIAT

Ref: MOH/DG 02/1/2/2/11

June 16, 2022

The Executive Committee
Ministry of Health
PMB 9042
Eorl Vika

Dear Executive Committee Members,

Re: Executive Committee Meeting Decisions

The Ministry of Health's Executive Committee had its meeting No.5 on Wednesday the 15th of June, 2022, at 9:15 am – 1:40 pm

Members present:

1. Director General – Mr. Russel Tamata
2. Acting Director Curative and Hospital Services – Dr. Sereana Natuman

15. National Action Plan for Anti-Microbial Resistance 2021-2025

Decision:

The National Action Plan for Anti-Microbial Resistance 2021 – 2025 was endorsed by the MOH Executive in Principle with the following further recommendations:

1. The paper be reviewed to include some in-country background information on current status of AMR.
2. A join-paper be developed and presented to the MOH Executive prior to DCO's deliberations DCO and COM.

Objective 5: Optimize the use of antimicrobial medicines in human and animal health

Strategic activities	Year					Responsible Agency
	2021	2022	2023	2024	2025	

STEWARDS FOR THE FUTURE
One Region, One Movement to Fight Antimicrobial Resistance

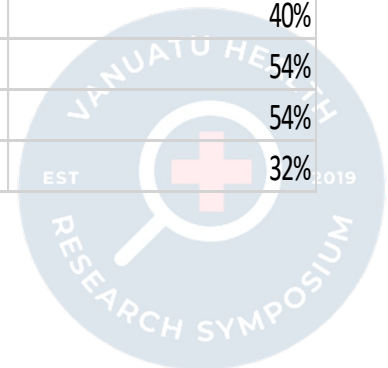
ANTIBIOTIC RESISTANCE PATTERN IN PACIFIC ISLAND COUNTRY TERRITORIES (PICT)

Antibiotic resistance pattern of *Escherichia coli* - Pacific Island Country Territories (PICT)

ANTIBIOTIC CLASS	ANTIBIOTIC	PICT	2011-2017 (% RANGE)
	AMPICILLIN	PNG	87%
	AMPICILLIN	FIJI	87%
CEPHALOSPORIN	CEFTRIAXONE	FIJI	12.20%
	CEFTRIAXONE	MICRONESIA	77%
	CEFTRIAXONE	PNG	24.10%
	CEFTRIAXONE	SAMOA	45%
AMINOGLYCOSIDE	GENTAMICIN	PNG	45%
CHLORAMPHENICOL	CHLORAMPHENICOL	PNG	45%
FLUOROQUINOLONE	CIPROFLOXACIN	FIJI	11.90%
	CIPROFLOXACIN	KIRIBATI	3%
	CIPROFLOXACIN	MARSHALL ISLANDS	13%
	CIPROFLOXACIN	MICRONESIA	16%
	CIPROFLOXACIN	PNG	13%
	CIPROFLOXACIN	SAMOA	13.90%

Antibiotic Resistance Pattern of *Klebsiella pneumoniae* -Pacific Island Country Territories

ANTIBIOTIC CLASS	ANTIBIOTIC	PICT	2011-2017 (% RANGE)
CEPHALOSPORIN	CEFTRIAXONE	FIJI	25%
	CEFTRIAXONE	MICRONESIA	71%
	CEFTRIAXONE	PNG	63.50%
	CEFTRIAXONE	SAMOA	7.7-19.8%
CARBAPENEM	MEROPENEM	FIJI	0.70%
MINOGLYCOSIDE	GENTAMICIN	PNG	78%
CHLORAMPHENICOL	CHLORAMPHENICOL	NEW CALEDONIA	40%
FLUOROQUINOLONE	CIPROFLOXACIN	NEW CALEDONIA	54%
DIAMINOPYRIMIDINE	COTRIMOXAZOLE	NEW CALEDONIA	54%
	COTRIMOXAZOLE	PNG	32%



AIM

- This study aims to characterise resistance patterns in two antimicrobial resistant organisms (Extended spectrum beta lactamase bacteria (ESBL) and (Methicillin resistant *Staphylococcus aureus* (MRSA) isolated at Northern Provincial Hospital Laboratory (NPHL) from 2016-2022

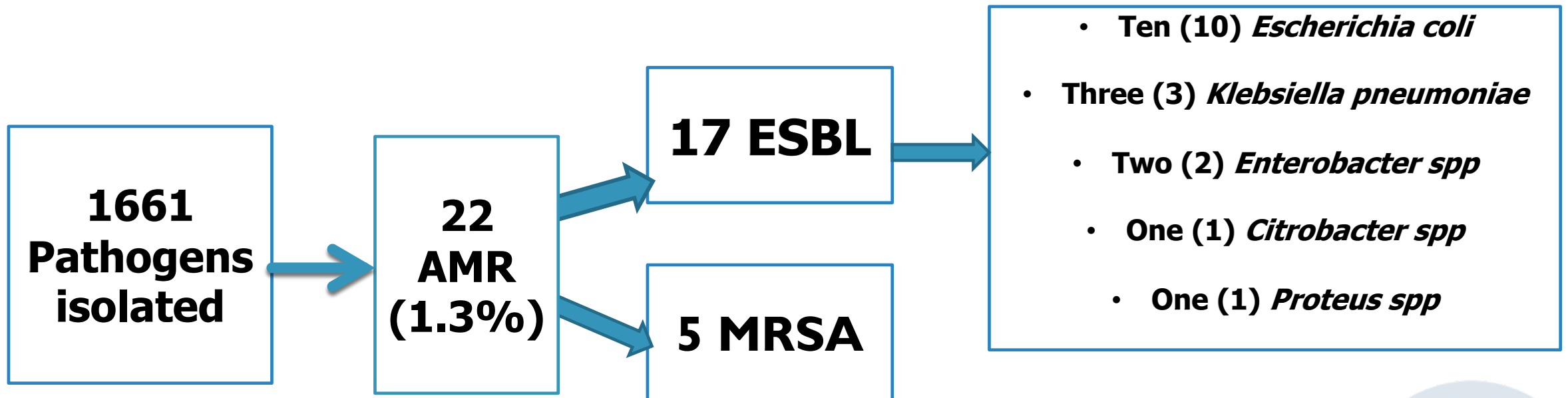


METHODOLOGY

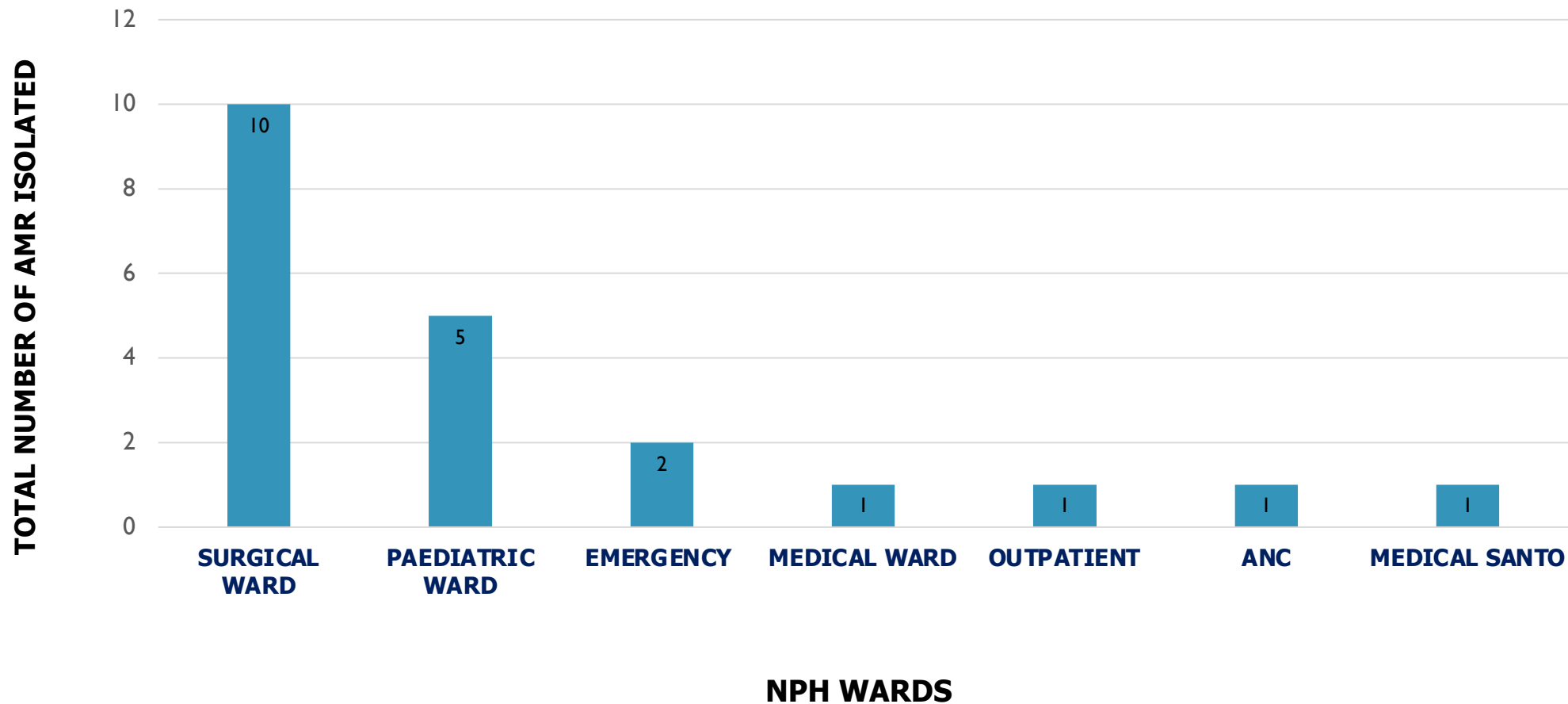
- **Type:** Retrospective study
- **Timeline:** 2016-2022
- **Site:** Northern provincial Hospital Laboratory
- **Study population:** All pathogens isolated at NPHL from patients urine, sputum, blood cultures and wound swabs that isolated AMR organisms (MRSA & ESBL)
- **Type of AMR test:** Antibiotic sensitivity test Method (following Microbiology CLSI Standard)
- **Method of data collection:** Data were collected from NPHL Microbiology Registry book particularly the two AMR organisms (MRSA & ESBL) within the study period 2016-2022. Data were further analysed in Microsoft excel sheet



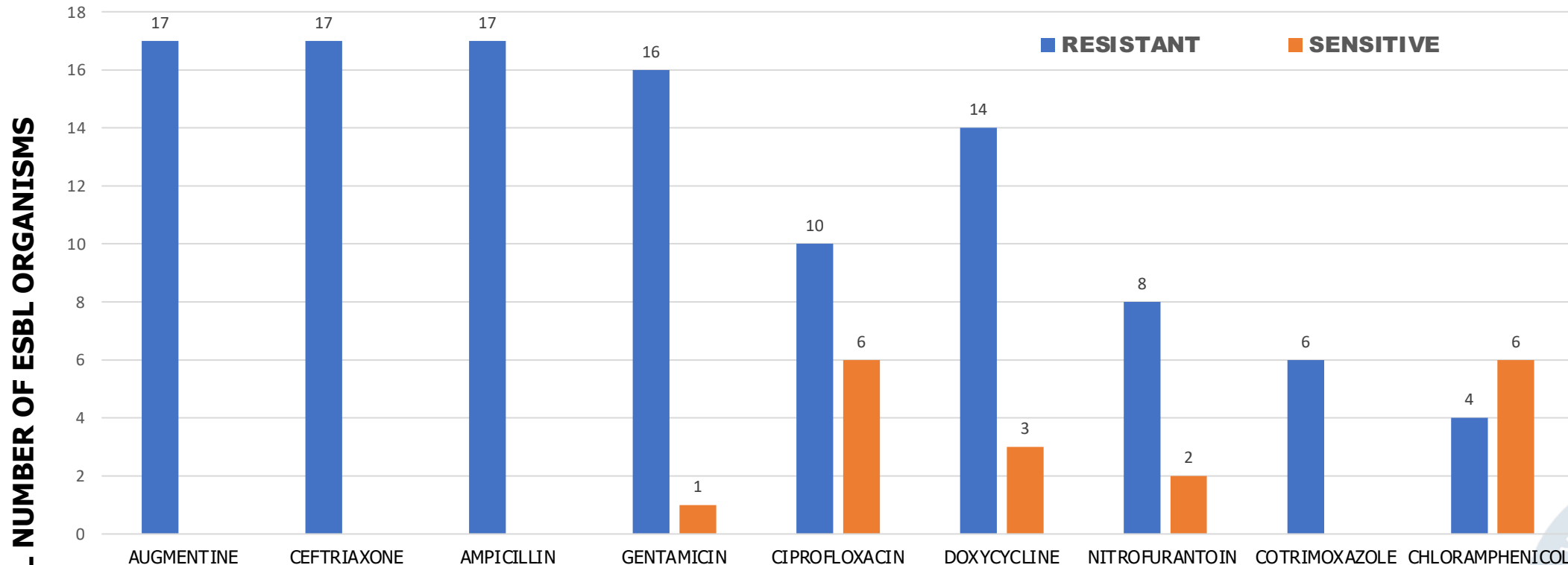
RESULTS



Total number of AMR organisms isolated from each wards at NPH from 2016- 2022



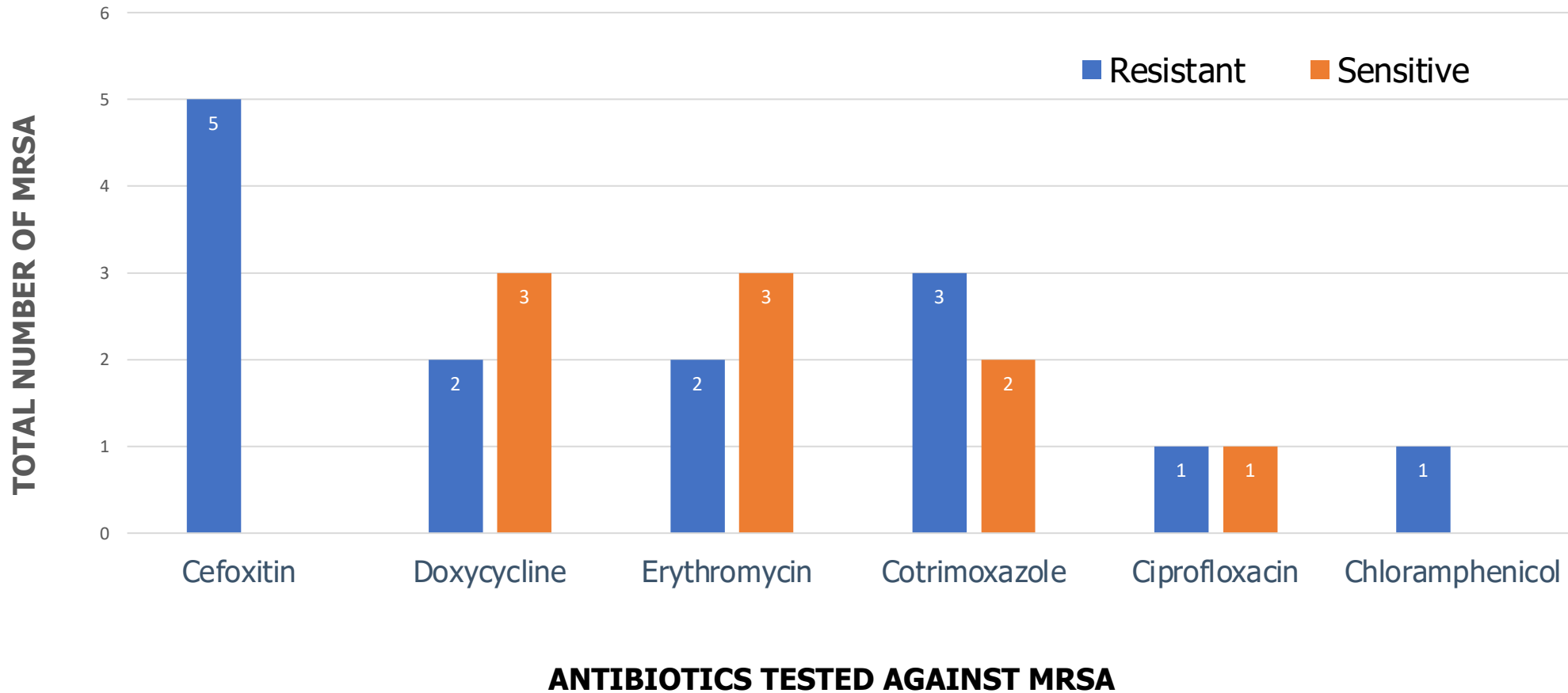
Graph Showing Antibiotic Resistance Pattern For Seventeen (17) ESBL Organisms Isolated At NPHL From 2016-2022



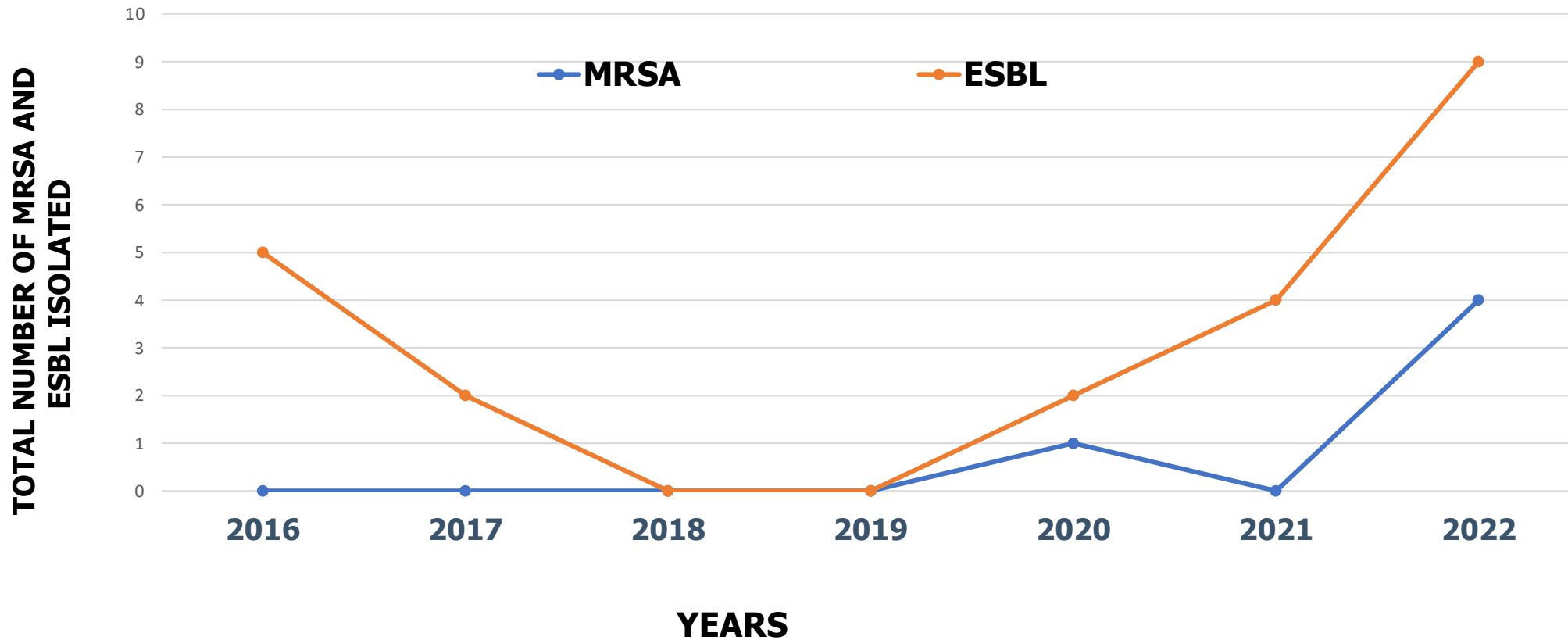
ANTIBIOTICS TESTED AGAINST ESBL ORGANISMS



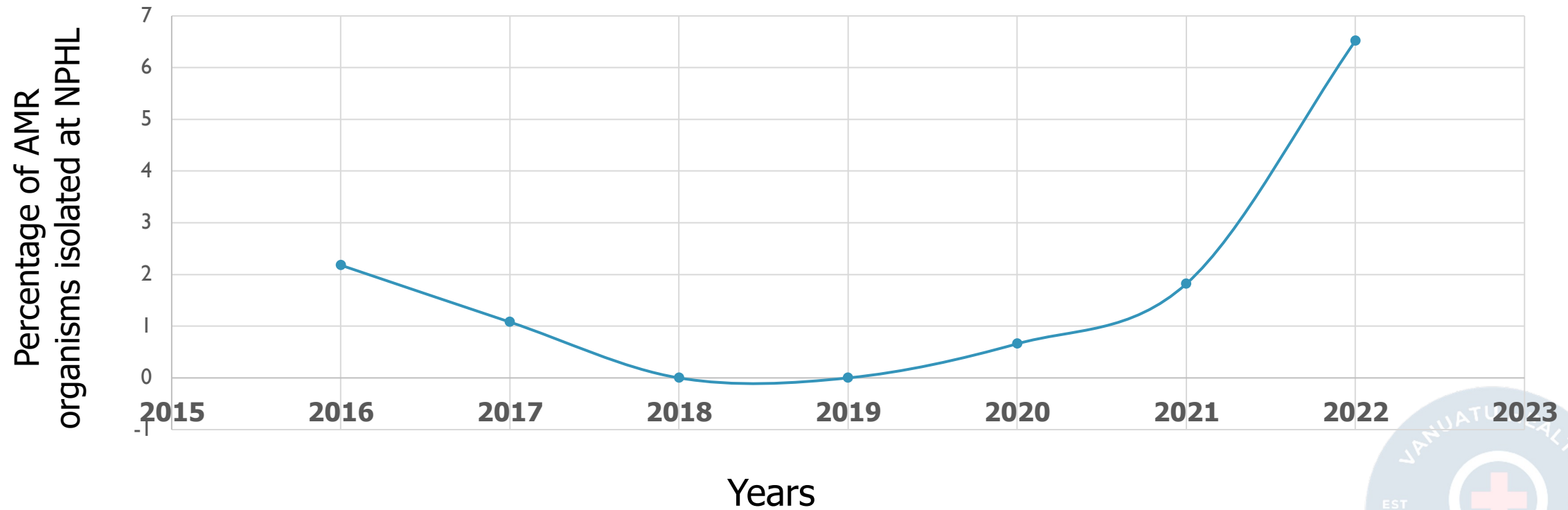
Five (5) MRSA (Methicillin Resistant *Staphylococcus aureus*) Isolated At NPHL From 2016-2022



Graph Showing The Trend Of Total Number Of MRSA (5) And ESBL (17) Organisms isolated At NPHL From 2016-2022



Graph showing the trend(%) of total AMR (MRSA & ESBL) bacteria isolated at NPHL from 2016-2022



DISCUSSION

- A total of 1661 pathogens, twenty two (1.3%) AMR organisms isolated within the study period.
- Increasing trend of AMR organisms from 2016 to 2022 (respectively **2.18% to 6.52%** of isolated AMR organisms).
- Surgical and paediatric isolated most AMR organisms
- No cases in 2018-2019 due to lack of Human resource and shortage of reagents test kits.
- Both ESBL and MRSA trend escalated in 2022



DISCUSSION

- All MRSA showed resistance to Cefoxitin. Giving the only available choice, Vancomycin, however it is not available in our Pharmacy
- Whilst all ESBL cases showed resistance to Ceftriaxone, Augmentin, Ampicillin, Gentamicin, Ciprofloxacin and Doxycycline. Similarly to other Pacific island countries
- Giving less choice to treat patients with *Klebsiella pneumoniae*, *Escherichia coli* and MRSA
- These data show growing evidence for the presence of these organisms in Vanuatu. This could have significant consequences for cost effective clinical management and patient outcomes in the future if we do not consider this now.



RECOMMENDATIONS / IMPLICATIONS

- Expanding scope of Microbiology Laboratory testing
- Combining VCH and NPH data for improved monitoring
- Put into action what's been written in Vanuatu National Action plan on Antimicrobial Resistance 2021-2025 (strengthening antimicrobial stewardship programs)
- Strengthening communication channels between Laboratory team, Clinicians, infection prevention and control (IPC)
- Improving guidelines around the use of anti-biotics is necessary to control this emerging problem



ACKNOWLEDGEMENT

- Almighty God
- Northern provincial Hospital Management
- Northern Provincial Hospital Laboratory team
- Regina H. Northern Provincial Hospital Pharmacy Manager
- Dr. Christopher Brown, Australian Volunteer Program The Ministry of Health Port Vila
- Chris Hagarty, Senior Adviser: Health Sector Planning, Vanuatu Health Program (VHP)



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- Ayukebong et al. Antimicrobial Resistance and Infection Control. *The threat of antimicrobial resistance in developing countries: causes and control. (2017) 6:47*
- Sianipar et al. 2019. Mortality risk of bloodstream infection caused by either Escherichia coli or Klebsiella pneumoniae producing extended- spectrum beta lactamase: a prospective cohort study



TAKE HOME MESSAGE

- Antibiotics do not treat viral infections like colds and flu
- Overuse of antibiotics will mean that some infections can no longer be treated-antibiotic resistance
- Antibiotic resistance can affect people of any age and in any country
- Everyone has a role to play
- Help prevent infection through GOOD HYGIENE
- Never share antibiotics
- Always seek advice of a qualified Health care professional before taking antibiotics



■ Thank you tumas 😊 😊 😊

