Antimicrobico-resistenza: cure e ambiente #8

Antibiotici: troppi o troppo pochi?

CONVEGNO ACCREDITATO ECM: **crediti n. 7**

17 giugno 2025 ore 10.00-18.00

Auditorium di Sant'Apollonia via S. Gallo, 25/a - Firenze

PROGRAMMA

ARS TOSCANA
agenzia regionale di sanità

MEDICI CON L'AFRICA CUAMM
Doctors with Africa

Il controllo delle infezioni nei LMIC

Giovanni Putoto

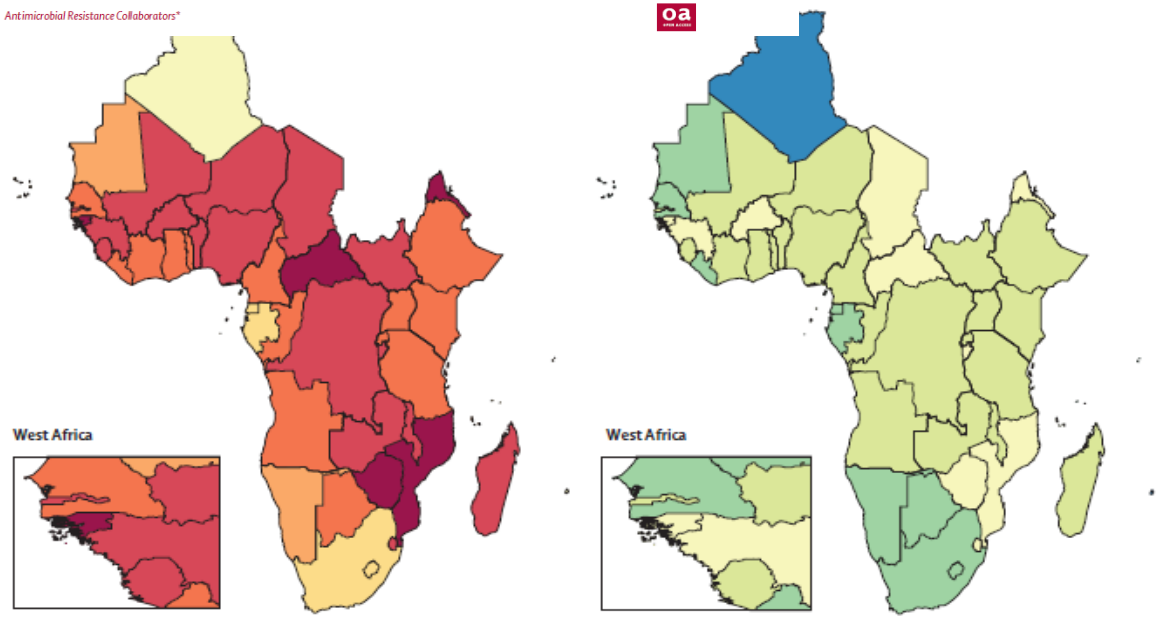
Responsabile della programmazione e della ricerca operativa

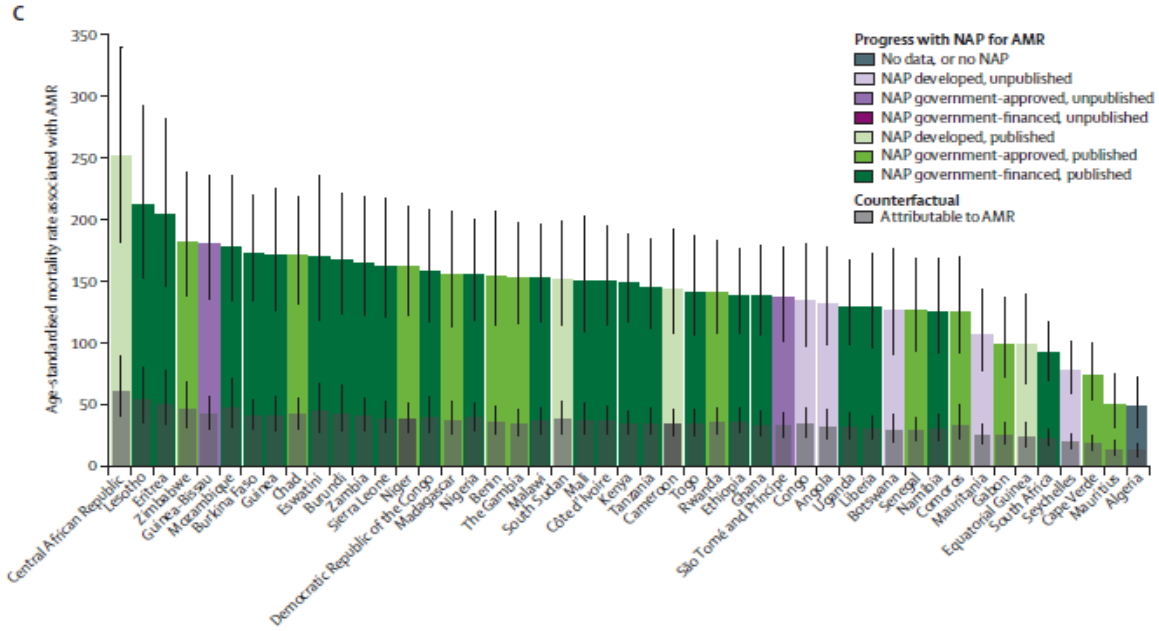
Medici con l'Africa CUAMM

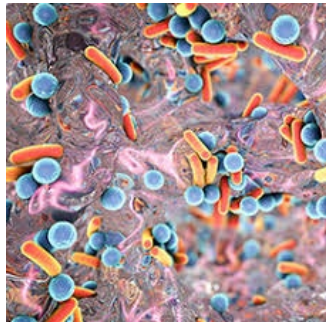
Neonatal Intensive Care Unit in Uganda

The burden of bacterial antimicrobial resistance in the WHO African region in 2019: a cross-country systematic analysis

Antimicrobial Resistance Collaborators*







1·05 million deaths associated with bacterial AMR and 250 000 deaths attributable to bacterial AMR in 2019.

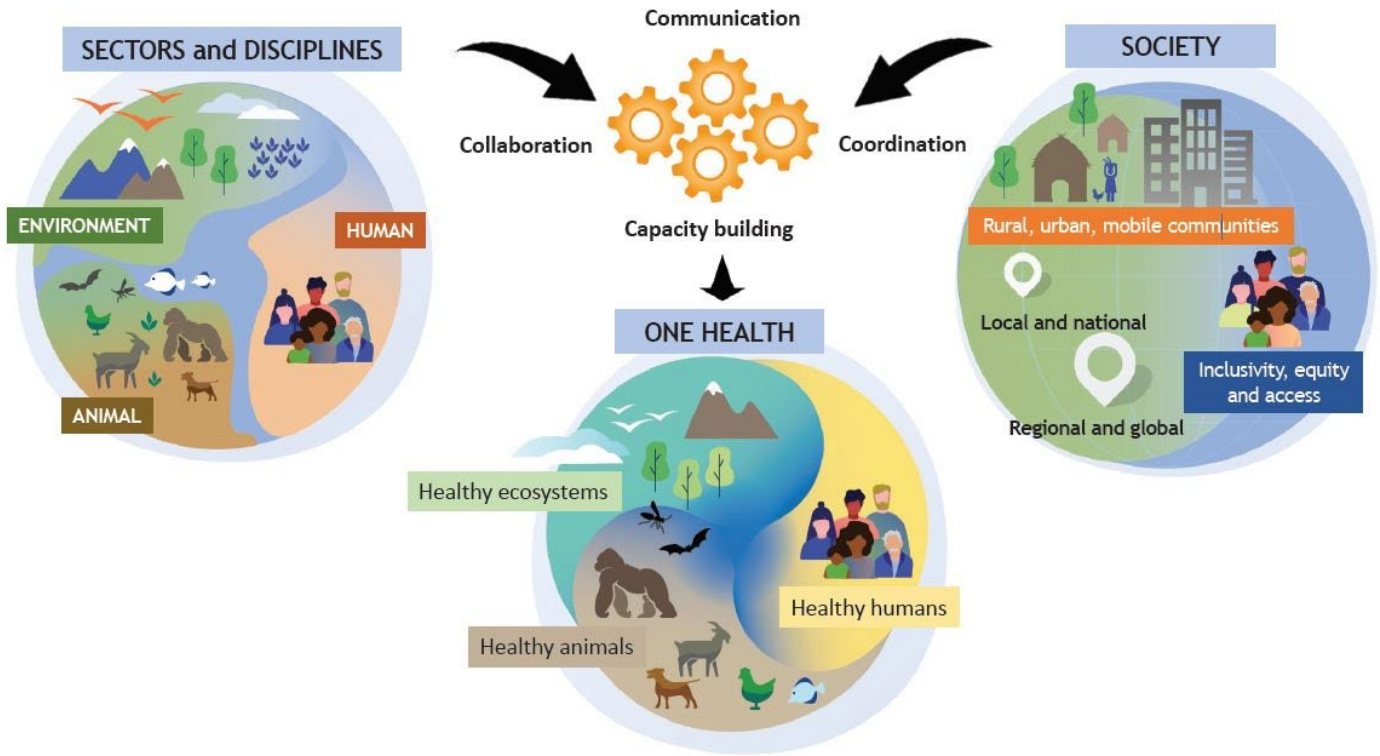
Only, 1,3% of the 50.000 medical lab in 14 african countries perform bacteriology testing

88% of samples tested for AMR did not include clinical records

40.6% of Escherichia coli and 84.9% of Klebsiella were resistant to third generation cephalosporins and other commonly used antibiotics in children (Eclinical Medicine, 2024)

A fifth of medicines in Africa could be substandard or fake (JPPolicy Pract 2024)
33% prevalence of antibiotic use without prescription in children (JAC AMR, 2025)

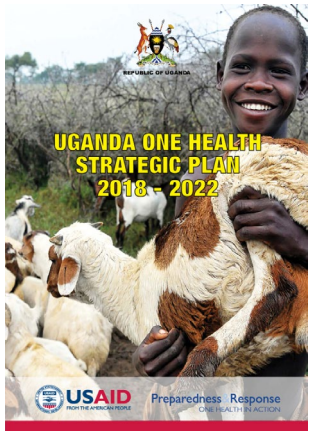
One Health Strategy

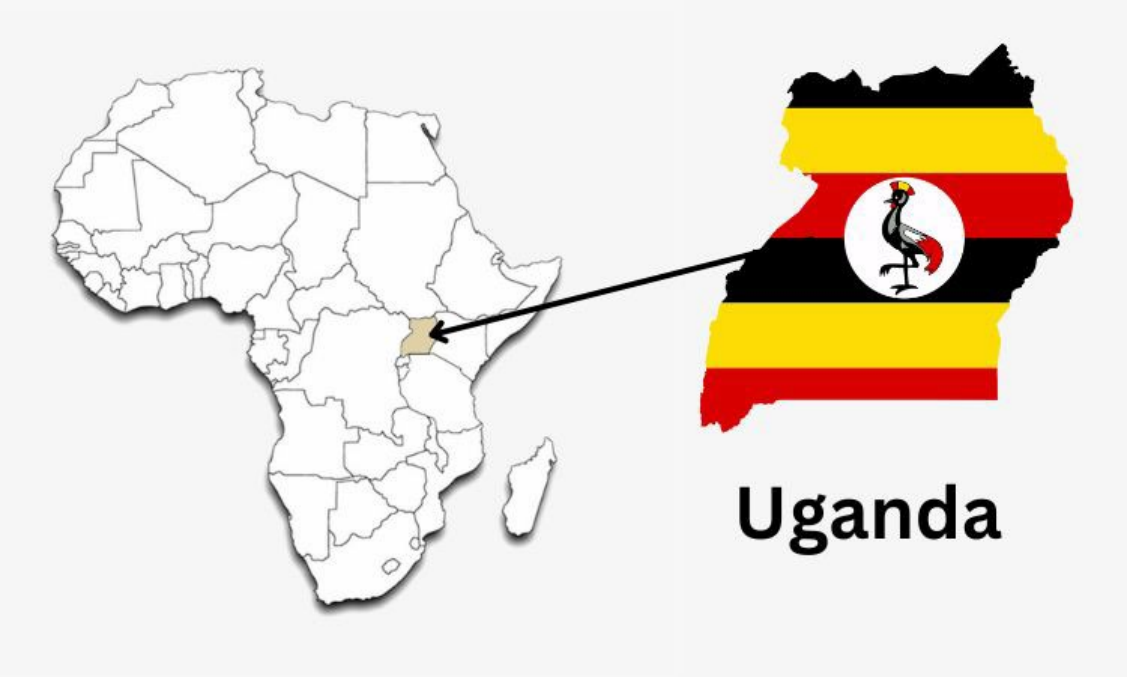


- IPC and Wash
- AMR Surveillance and Monitoring (*including genomic surveillance*)
- Antibiotic Stewardship
- Capacity Building
- Research and Development
- Community Education

https://www.who.int/news/item/01-12-2021-tripartite-and-unep-support-ohhlep-s-definition-of-one-health

Uganda





- There were 7,100 deaths attributable to AMR in 2019
- and 30,700 deaths associated with AMR in 2019

The burden of bacterial antimicrobial resistance in the WHO African region in 2019: a cross-country systematic analysis

Antimicrobial Resistance Collaborators*

ALL IN ONE

Integrated actions in the health, sanitation and livestock sector to respond to epidemic-prone diseases with a One Health approach

AID 012590/04/1

2023-2026

Funded by: **AICS (Italian Agency for Cooperation and Development)**

Title: ALL IN ONE - Integrated actions in the health, sanitation and livestock sector to respond to epidemic-prone diseases with a One Health approach
Donor: AICS – Italian Agency for Cooperation and Development
Geographical scope: Moroto and Napak
Duration: 36 months (May 2023 – April 2026)

MEDICI CON L'AFRICA CUAMM
Doctors with Africa

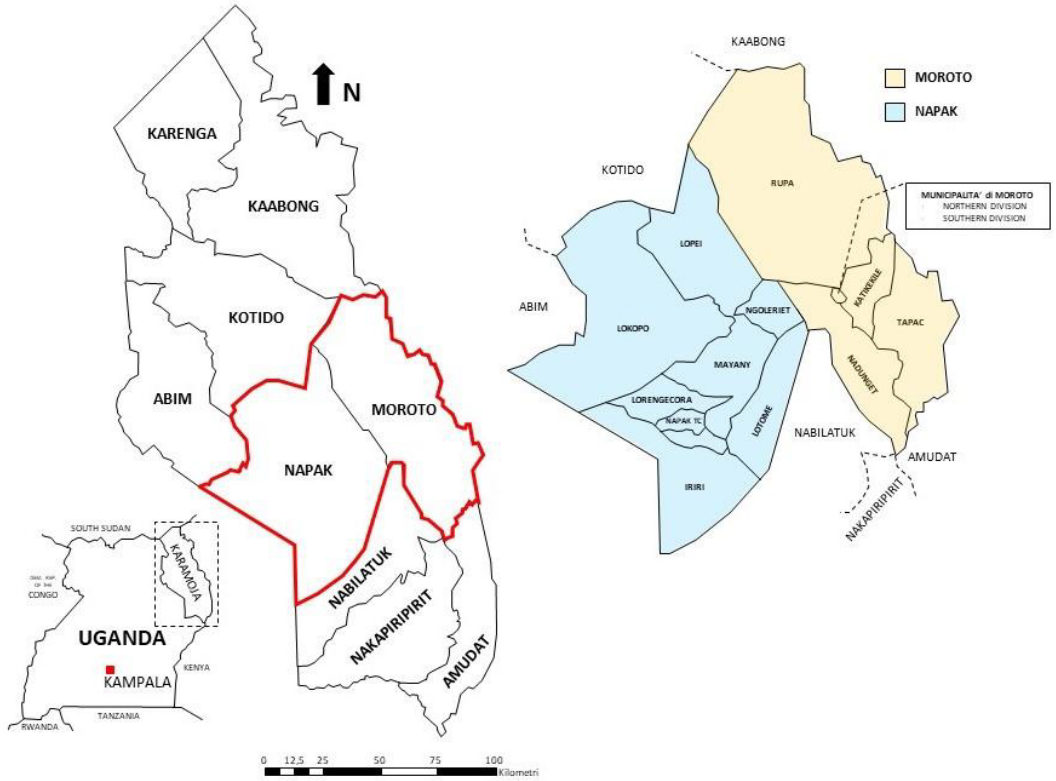
GOAL: Enhanced preparedness and response capacity of St. Kizito Hospital in Matany, Moroto Regional Referral Hospital, and the related districts in effectively controlling infectious diseases with epidemic potential

2.1 Support of epidemiological surveillance and containment of infections with epidemic potential in Matany and Moroto Hospitals.

2.2 Support for the enhancement of basic microbiological diagnostics at Matany and Moroto Hospitals.

2.3 Support for improved antibiotic-resistance surveillance and proper use of antibiotics through operational research and antibiotic stewardship activities.

2.4 Support the district authorities in the implementation of the One Health national strategy (Cuamm + C&D).




WE DRESS THE WOUND
GOD HEALS IT


Antibiotic resistance surveillance
in the Bolivian Chaco


PREPARATION RM
DOCTORS WITH AFRICA

Infection Prevention and Control (IPC)

IPC Program in Hospitals

IPCAF Baseline Assessment	Capacity Building	Routine Monitoring	Annual IPCAF Assessment
• IPCAF Baseline Assessment to inform the state of IPC governance	• IPC Committee Training and Functionalization • IPC Protocol and Program development	• Hand Hygiene Ass. • Waste Management Ass. • Decontamination Sterilization Audits	• Annual IPCAF Assessment to inform the current state of IPC governance

Healthcare-Associated Infection (HAI) Surveillance

- Implementation of Routine Environmental Swabbing
- Point Prevalence Survey to monitor HAI incidence

Need to develop specific protocols for HAI Surveillance activities!!

IPCAF Assessment Results

	Results Oct 2023		Results Nov 2024	
Core component	**Matany Hospital**	**Moroto Hospital**	**Matany Hospital**	**Moroto Hospital**
1. IPC programme	20	65	77.5	82.5
2. IPC guidelines	52.5	50	92.5	60
3. IPC education and training	25	10	85	70
4. HAI surveillance	57.5	45	85	82.5
5. Multimodal strategies	75	70	100	80
6. Monitoring/audits of IPC practices and feedback	55	35	65	50
7. Workload, staffing and bed occupancy	60	35	65	15
8. Built environment, materials and equipment for IPC	85	47.5	100	52.5
Final total score	**430/800**	**357.5/800**	**670/800**	**492.5/800**

Total score (range)	**IPC level**	**IPC level**	**IPC level**	**IPC level**
0–200	Inadequate	Inadequate	Inadequate	Inadequate
201–400	Basic	**Basic**	Basic	Basic
401–600	**Intermediate**	Intermediate	Intermediate	**Intermediate**
601–800	Advanced	Advanced	**Advanced**	Advanced

Hand hygiene Assessment Matany Hospital - Health Workers and areas of Assessment

N Health workers assessed for hand hygiene practices (%)	
Health workers in OPD	8 (17%)
Health workers in IPD	39 (83%)
Total	**47 (100%)**

N units/areas assessed for waste management and decontamination processes	
General assessment	1
OPD	1
IPD	5
Total	**7**

Adherence to hand hygiene practices per departmental unit in Matany Hospital

Adherence to Hand Hygiene Practices (%)	
TB ward	**70%**
Paediatric ward	**72%**
Medical ward	**61%**
Maternity ward	**70%**
Surgical ward	**68%**
OPD	**78%**
Total	**70%**

Key	
0-65 %	
66-90 %	
>90 %	

Adherence to hand hygiene practices per professional categories in Matany Hospital

Professional Category	IPD	OPD
nurse	80%	83%
midwife	48%	N/A
student	49%	58%
internal medicine / physician	85%	92%
surgeon	63%	83%
other health-care worker	75%	71%
Overall adherence	68%	78%

Key	
0-65 %	
66-90 %	
>90 %	

Adherence to hand hygiene practices per indication

Indication	OPD	IPD	Overall adherence
Before touching a patient	**69%**	**60%**	**62%**
Before aceptic procedure	**81%**	**74%**	**76%**
After body fluids exposure	**100%**	**100%**	**100%**
After touching a patient	**81%**	**66%**	**69%**
After touching a patient surrounding	**N/A**	**73%**	**73%**

Key	
0-65 %	
66-90 %	
>90 %	

Waste seggregation and managment per department at Moroto Hospital

Department	unit	Adherence
IPD	Maternity	63%
	Nutrition	42%
	Paediatric	8%
	NICU	36%
	Medical	67%
	Surgical	47%
	Incineration	38%

Department	unit	Adherence
OPD	triage	20%
	Orthopaedic	59%
	Injection room	30%
	Dental	58%
	Causality	44%
	ART	47%
	ENT	58%
	EPI	69%
	LAB	86%
	FP	82%
	Pharmacy	20%

Adherence to waste segregation in MoRRH is 51%

AMS Program in Hospitals (MOH)

Capacity Building

- Medical and Therapeutic Committee Training and functionalization (Pharmacovigilance; Supply Chain; AMS)
- AMS Committee functionalization
- AMS Protocol and Program development

Routine Monitoring

- Annual Point Prevalence Survey on Antibiotic Use and Consumption in Inpatient Departments (IPD)
- Prescription Audits in Outpatient Departments (OPD)
- Routine Collection of Antibiotic Consumption Data from Pharmacy Records

Collaboration with Pharmaceutical Department MoH - National Workshop

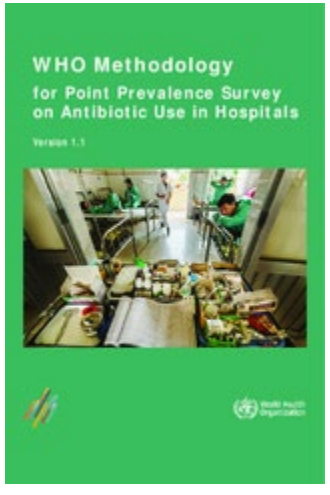
- Development of AMS Manual
- Development of MTC Manual
- Development of AMCU Surveillance Manual

Monthly AMS Committee Meetings in SKMH and MRRH ongoing

Planned Activities:

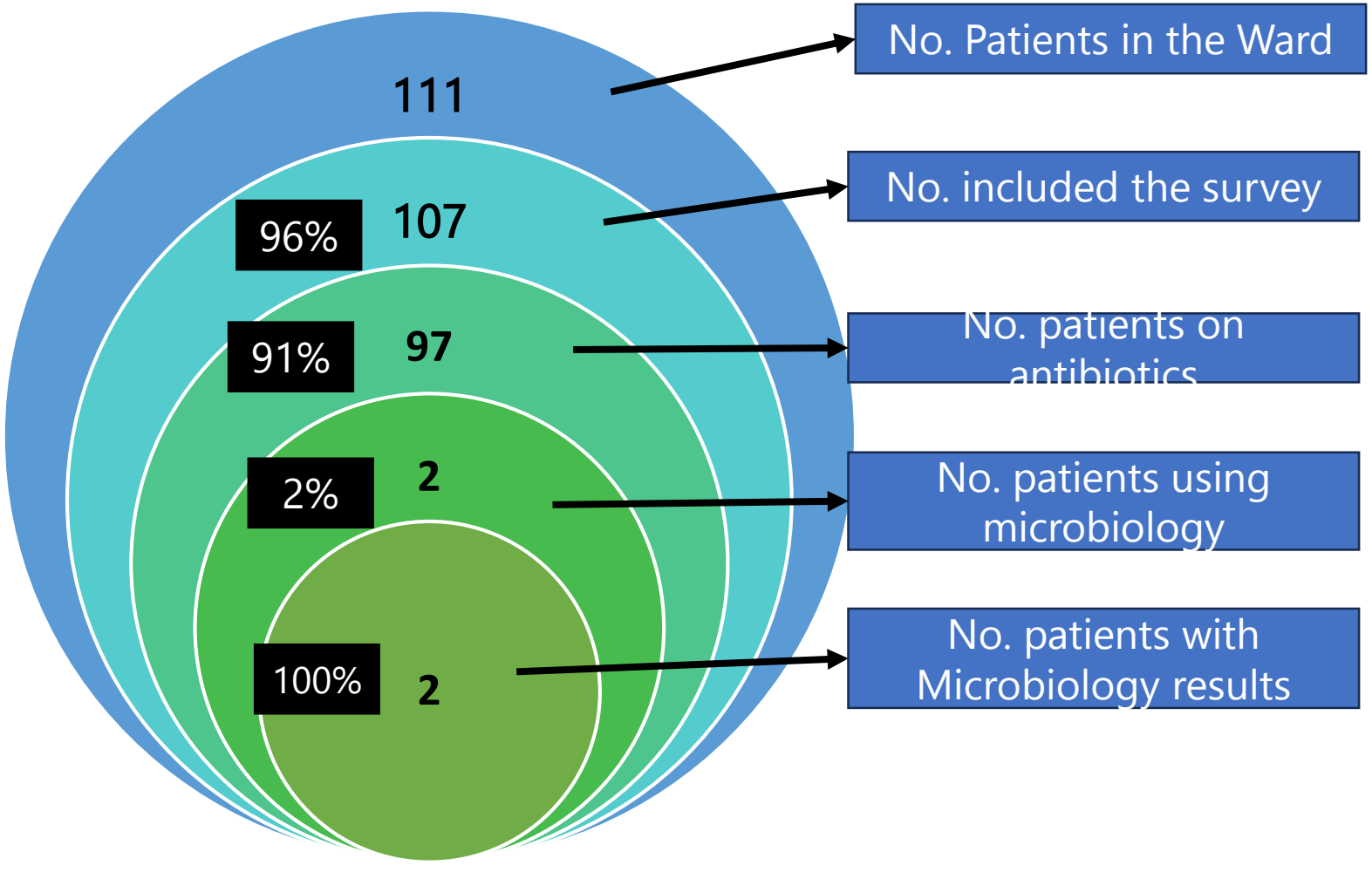
- AMS training for frontline healthcare workers
- PPS and Prescription Audit to be planned

Point Prevalence Survey (PPS) on antibiotic use in Moroto Hospital

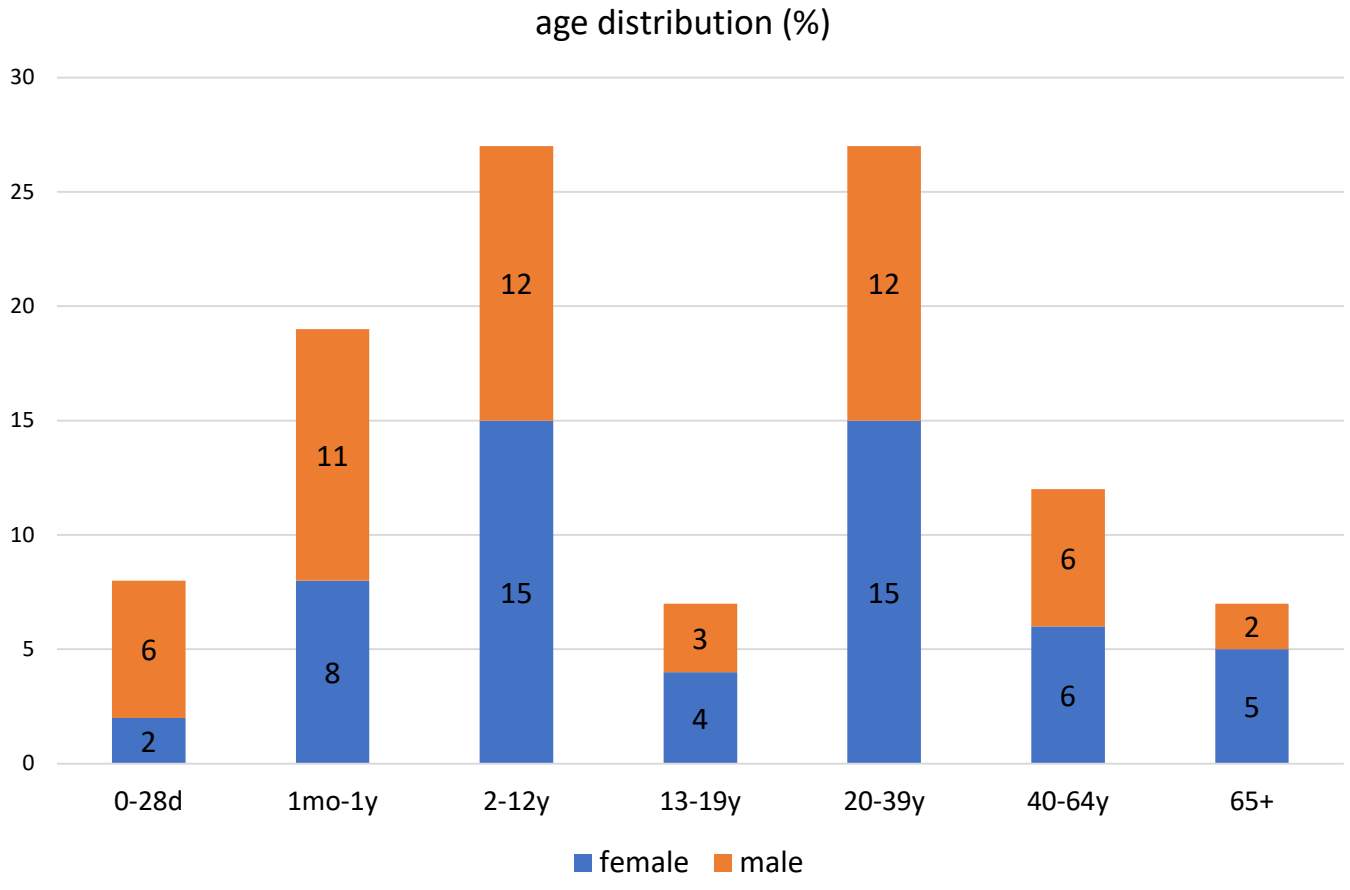


Sampling size summary

Ward	patients included
Maternity	13
Pediatric	42
Medical	23
Neonatal	7
Surgery	22
Total	**107**



Population



Other documented conditions.

- 32% (34) malnourishment,
- 21% (22) malaria,
- 4% (4) active tuberculosis,
- 1% (1) HIV.

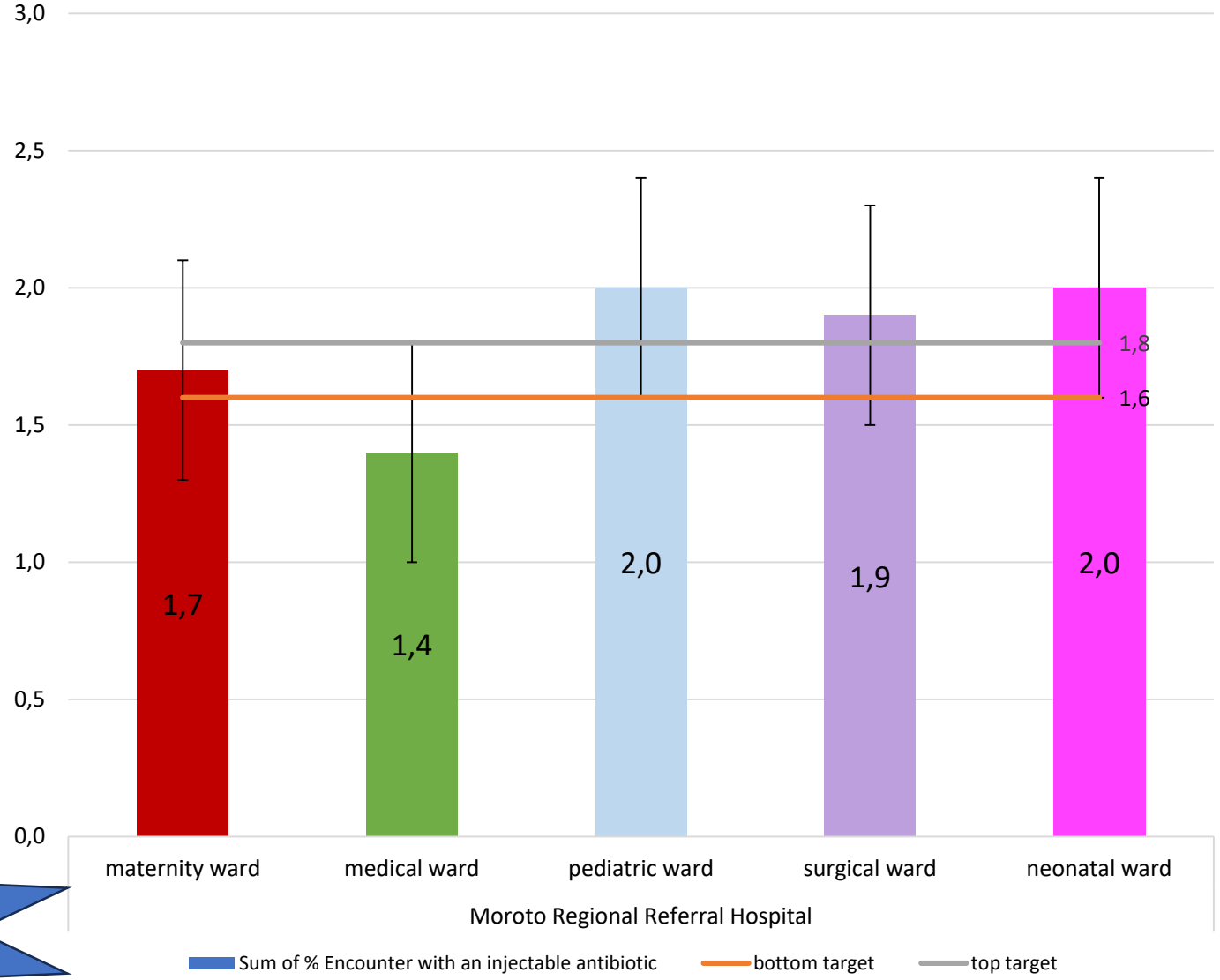
Median lenght of stay until survey date:
3 (2-12) days

Average number of antibiotics per encounter

91% patients received antibiotics.

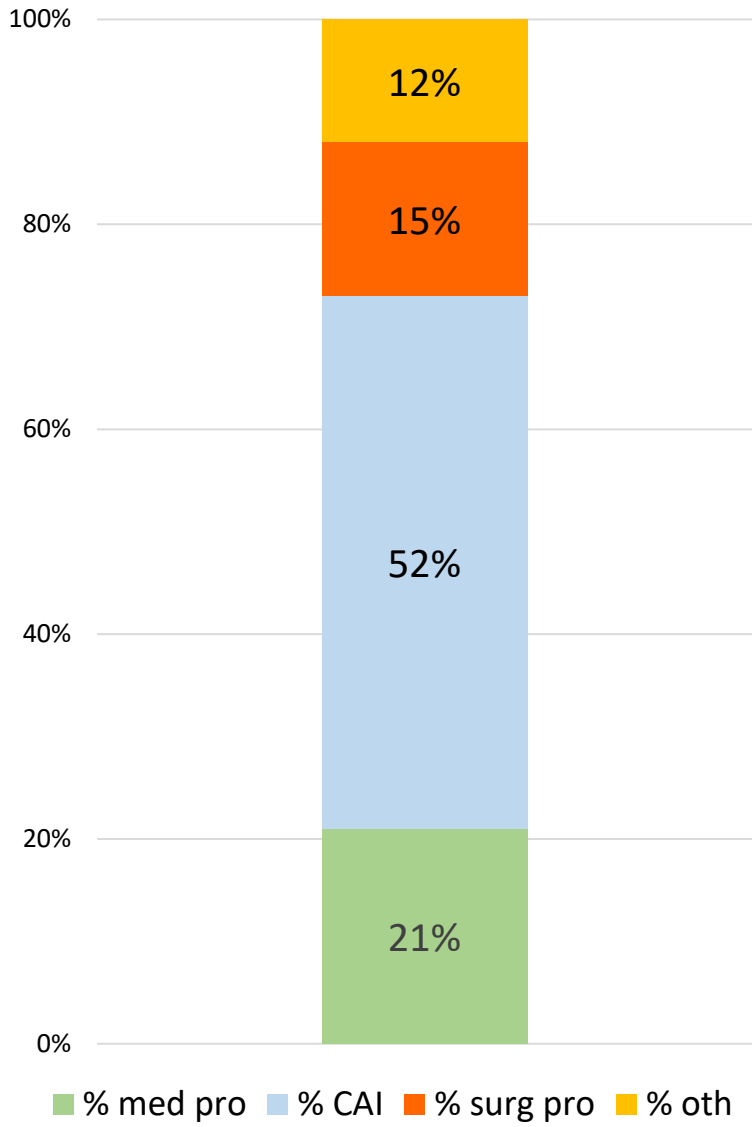
Among patients on antibiotics:

- 1.8 ± 0.8 antibiotics per encounter (tot 197 atb)
  - 32% 1 antibiotic
  - 57% 2 antibiotics
  - 11% ≥3 antibiotics



TARGET 1.6-1.8

Indication due to prescription



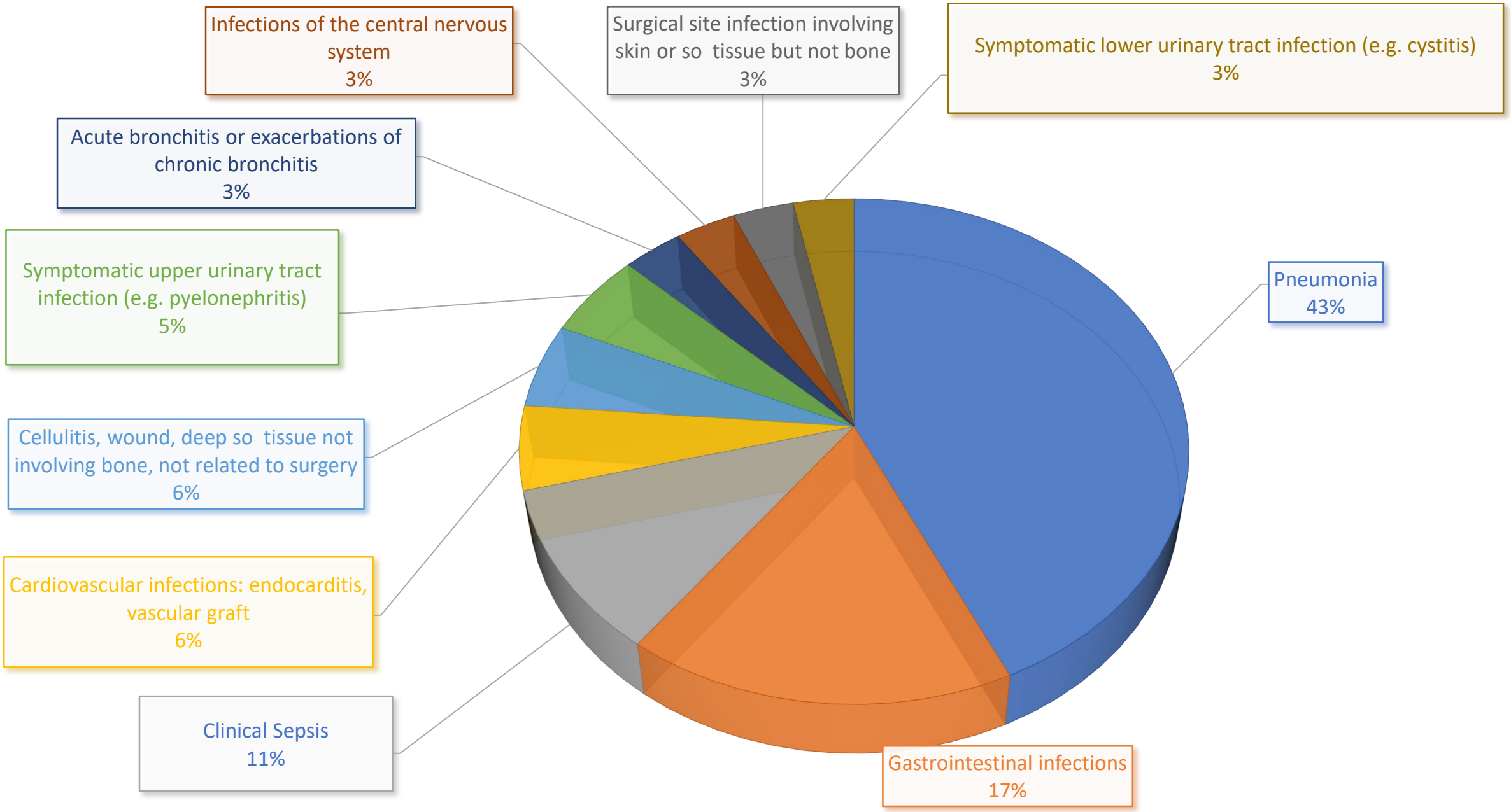
15% of indications are surgical prophilaxys

12% of indication to antibiotic therapy is not attributable to other identified indications (community/hospital acquired infections or prophylaxis) -> other reason

among the patient who need an antibiotic, no Healthcare Acquired Infections (HAI) prevalence were identified

Community Acquired Infections (CAI) account for 52% of cases, but they may be overestimated since HAIs are underdiagnosed

Common infections



Antibiotic prescribed

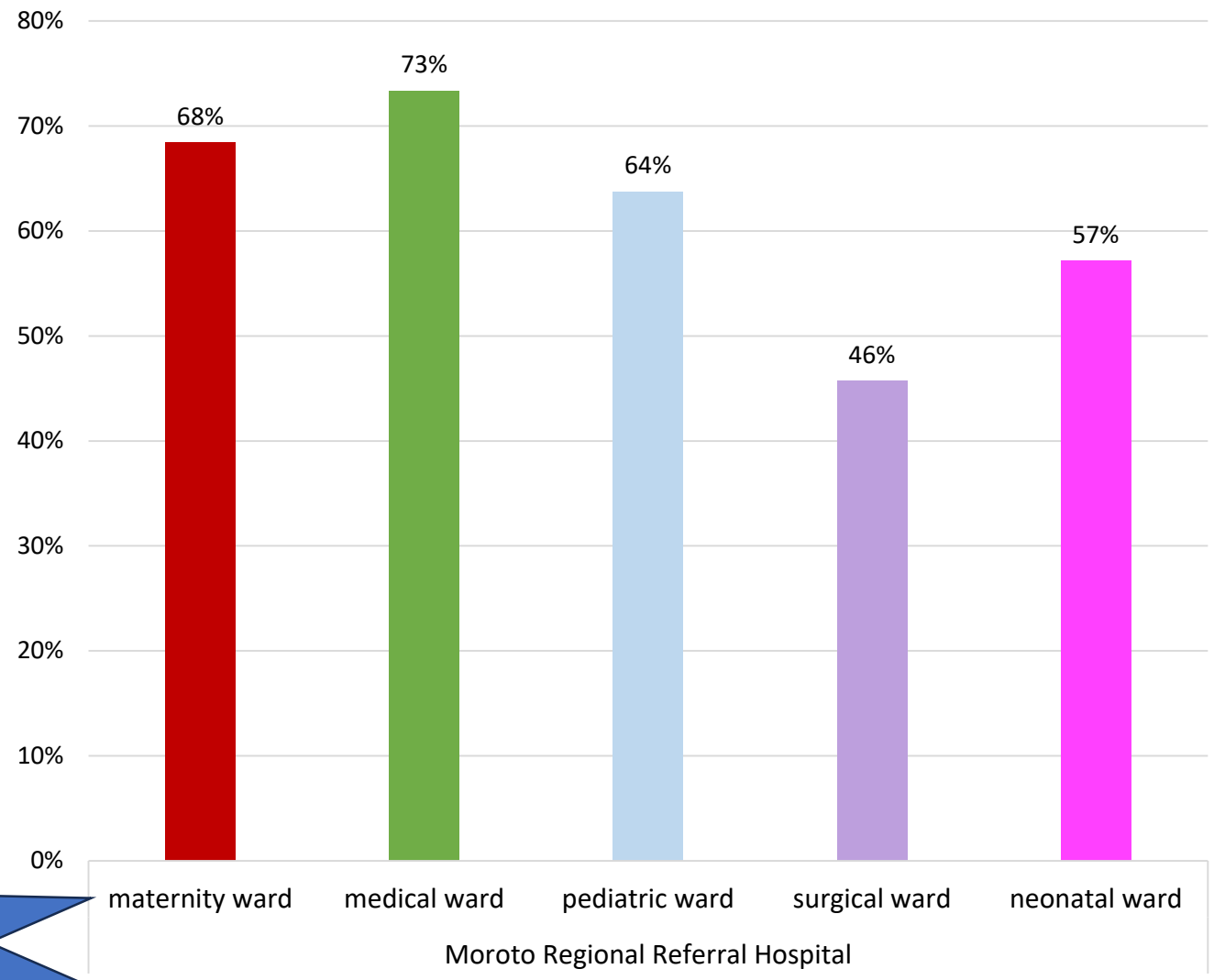
	CAI	surgical proph.	medical proph.	other
Ampicillin	47%	23%	76%	50%
Metronidazole	2%	23%	0%	17%
Ceftriaxone *	20%	31%	6%	0%
Gentamycin	2%	15%	0%	0%
Ciprofloxacin *	7%	0%	6%	17%
Amoxicillin	2%	0%	0%	17%
Cefotaxime *	0%	0%	6%	0%
Cloxacillin	2%	0%	0%	0%
other combinations (ampiclox, ampigenta..)	18%	8%	6%	0%

	maternity ward	medical ward	neonatal ward	pediatric ward	surgical ward	Grand Total
Ampicillin	60%	5%	43%	73%	0%	41%
Ceftriaxone *	0%	29%	0%	7%	28%	14%
Metronidazole	20%	5%	0%	2%	6%	5%
Ciprofloxacin *	0%	24%	0%	0%	0%	5%
Gentamycin	0%	5%	0%	2%	6%	3%
Amoxicillin	0%	0%	14%	2%	0%	2%
Cefotaxime *	0%	0%	14%	0%	0%	1%
Cloxacillin	0%	0%	0%	0%	6%	1%
other comb	0%	5%	0%	2%	44%	10%

CATEGORY WATCH, AWaRE CLASSIFICATION (WHO)

Antibiotics with correct INN (%)

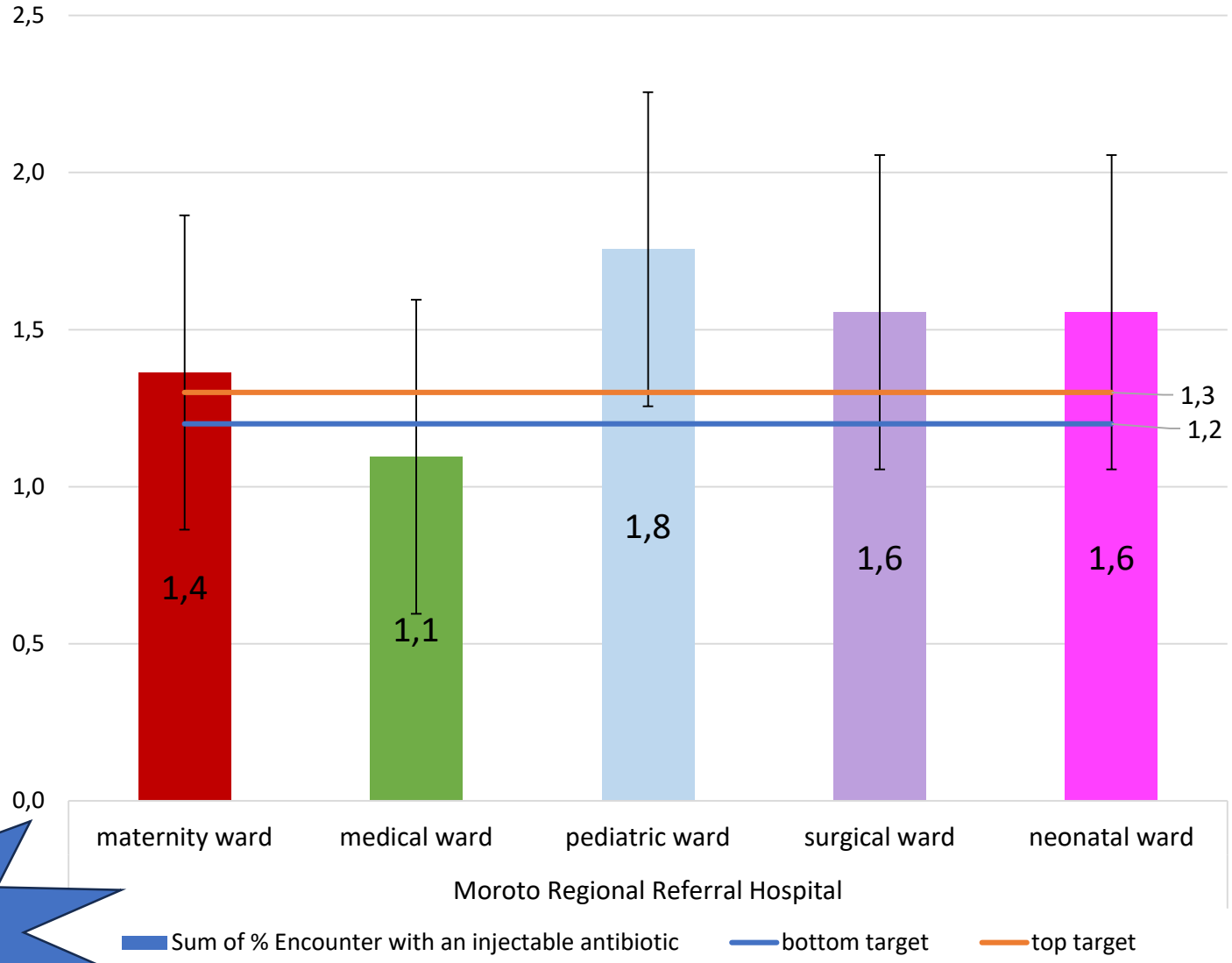
On average, 62% of the antibiotics prescribed in the patients' records are written according to their generic international nonproprietary names (INN).



TARGET 100%

Average number of injectable antibiotics per encounter

overall average number of injectable antibiotic per encounter of 1.5±0.9



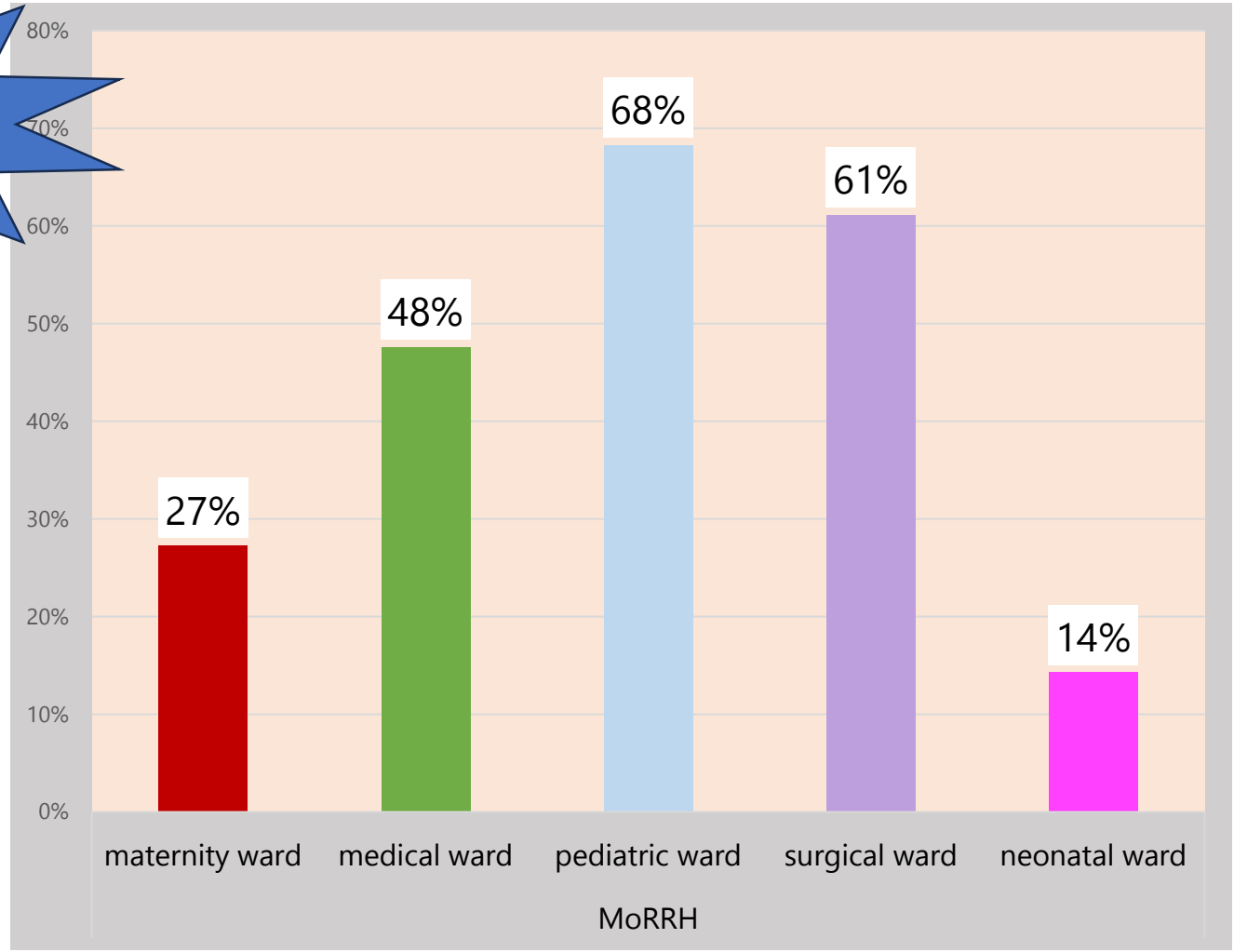
TARGET
1.2-1.3

Patients with missed doses (%) and reasons for it

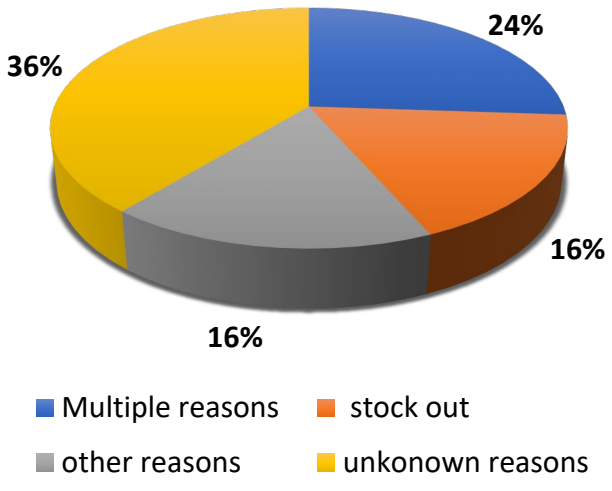
54%

patients with missed doses
(total missed doses 351)

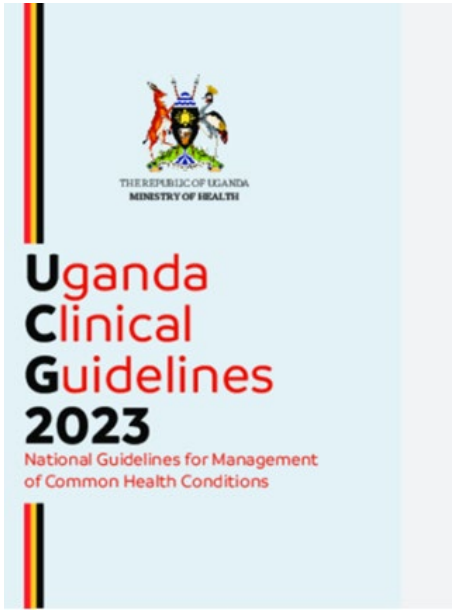
TARGET
0



Reasons for missed doses



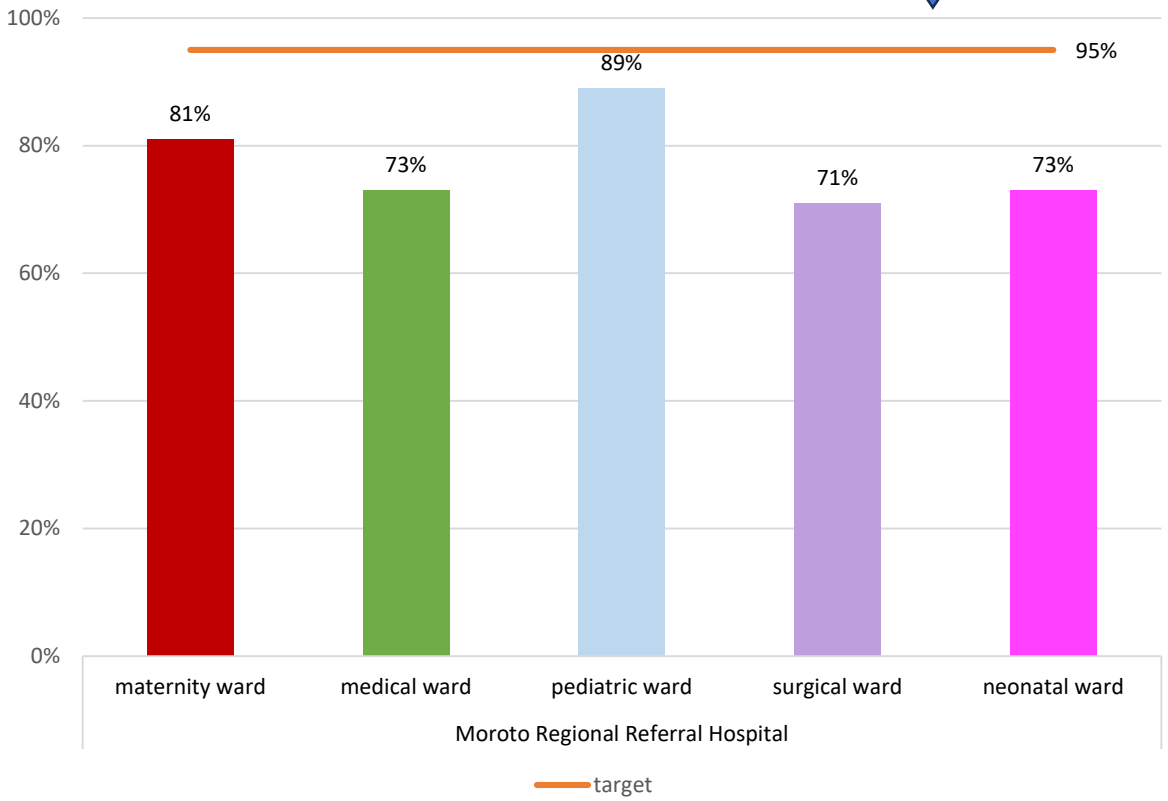
Compliance with 2023 UCG



Compliance with UCG

81%

TARGET >95%



	yes	no	No information/ not assessible
maternity ward	81%	6%	13%
medical ward	73%	23%	4%
neonatal ward	73%	27%	0%
paediatric ward	89%	8%	3%
surgical ward	71%	18%	11%

LIMITATIONS

- Information source:
  - Completeness of information
  - Readability issues

- Tool used for the data collection
  - The WHO tool is not comprehensive of specific reason for the missed doses
  - Doesn’t give emphasis on the diagnosis (collect major group diagnosis)
  - Some data are affected to operator-related bias (for data collection/interpretation)

Prescription Audit on antibiotic use (OPD) Methods

Adherence to Uganda clinical guidelines: Prescription audit

Defined diagnosis

- Presence of the diagnosis on UCG
- Diagnosis defined enough to determine a specific therapy

Correct molecule/ management

- Molecule present at any indication of therapy (1st line, 2nd line…)
- appropriate management (level of care management and administration route)

Correct dose, correct duration

- Total daily dose (mg/day and frequency of administration)
- Correct duration (days)

Prescriptions in line with 2023 UCG (%)

	Matany Hospital		Moroto Hospital	
	In line	Not in line	In line	Not in line
Defined diagnosis	57%	43%	92%	8%
Correct molecule/drug management	76%	24%	19%	81%
Correct dose	80%	20%	20%	80%
Correct duration	80%	20%	39%	61%
Overall adherence to 2023 UCG	**53%**	**47%**	**15%**	**85%**

STRENGHTS

Reproducibility

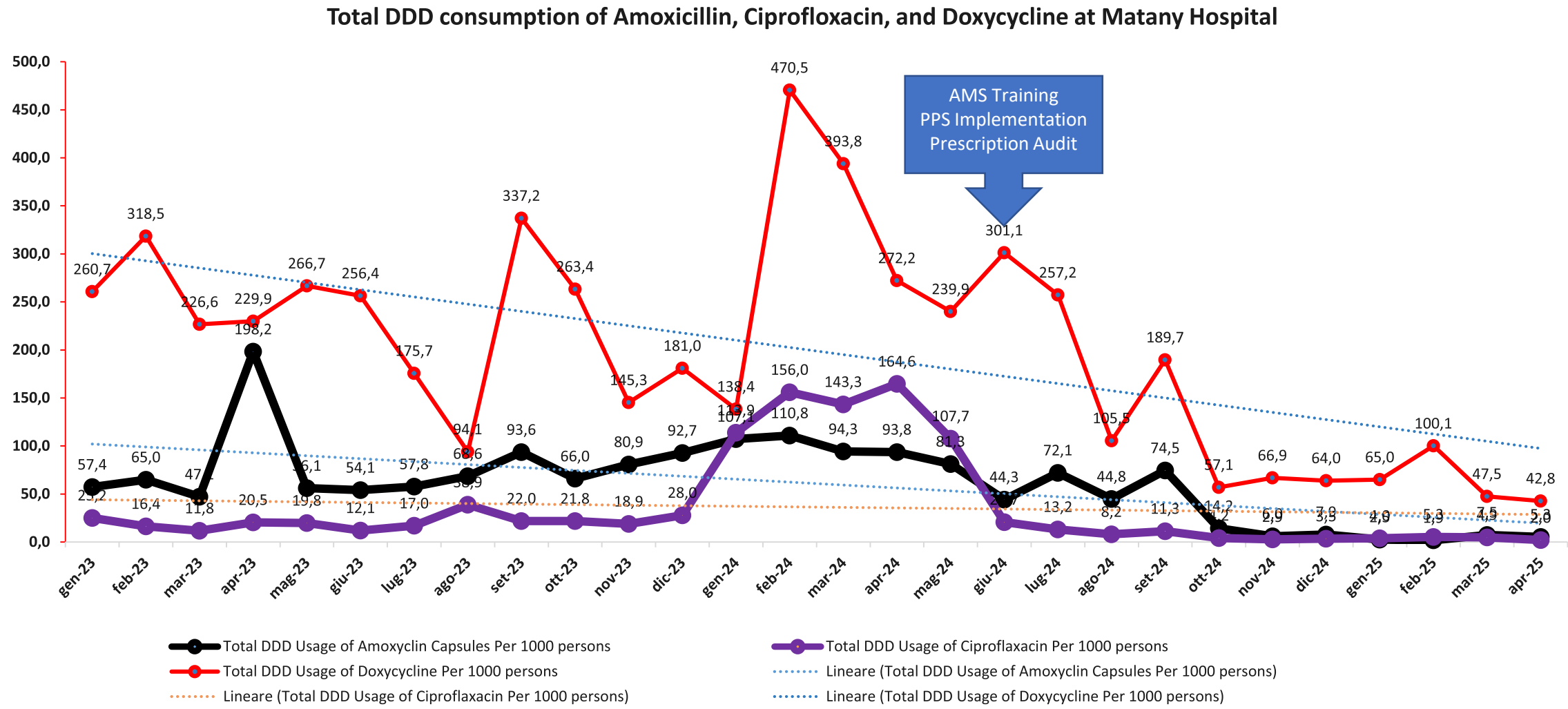
- The register is assessable retrospectively in any moment
- It is possible to collect high quantity of data in few time

LIMITATIONS

Information source:

- Proxy: not taking the real information of correct drug assumption from the patient
- Secondary tool to the patient's prescription (not taking record of patient's history, investigations done before treatment)
- Completeness of information may be altered during the recording process by the officer on duty
- Readability issues

Monthly monitoring of Defined Daily Dose (DDD) of Doxycycline, Amoxicillin and Ciprofloxacin.



AMR Research Implementation

Research Objective

To comprehensively assess and address antibiotic resistance prevalence, contributing factors and management in Moroto and Napak districts in Uganda

Specific objectives

- To determine the patterns and prevalence of antimicrobial resistance (AMR) in Napak and Moroto districts of Uganda.
- To assess knowledge, attitudes, and practices (KAP) regarding AMR, antibiotic use and antimicrobial stewardship (AMS) among healthcare professionals and the general population in Napak and Moroto districts of Uganda.
- To establish antimicrobial stewardship (AMS) interventions (training, protocols and guidelines) in Napak and Moroto districts of Uganda.

Category	Faecal Samples (N=)		Environmental Swabbing (N=)		KAP Questionnaires (N=)	
	Moroto	Napak	Moroto	Napak	Moroto	Napak
Primary Schools	100	100			50	50
Hospital IPD Patients	50	50	40	40	50	50
Hospital Caretakers of IPD Patients					40	40
Hospital Doctors	5	5			7	7
Hospital Nurses/Midwives	6	6			15	15
Hospital Clinicians	6	6			7	7
Hospital Pharmacists	4	4			5	5
Hospital Lab Technicians					4	4
Hospital Cleaners	5	5			10	10
Peripheral Health Facility Clinicians	8	8			8	8
Peripheral Health Facility Nurses	8	8			8	8
Peripheral Health Facility Dispensers	8	8			8	8
Total	**200**	**200**	**40**	**40**	**212**	**212**

Functionalization of Microbiology Lab in Moroto and Matany Hospitals

SLIPTA and AMR Scorecards
Baseline Assessment

- Baseline Assessment to inform the current state of Microbiology department

Functionalization of Hospitals Microbiology Units

- Procurement of microbiology equipment
- Procurement of consumables
- Procurement of reagents

Capacity Building

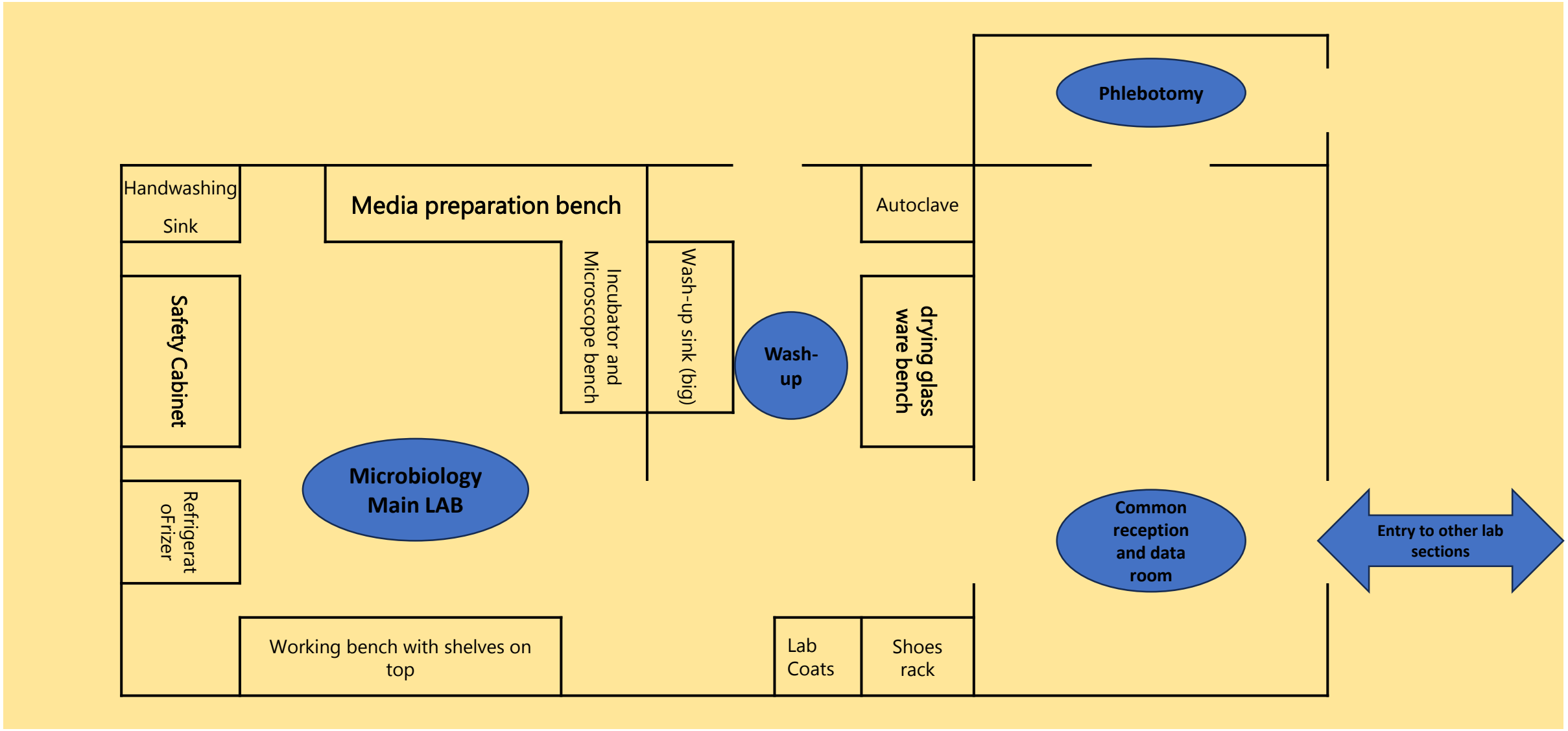
- Lab technician attachment/training on the job at Central Public Health Laboratories (CPHL)
- Development of Diagnostic Stewardship Protocol
- Onsite mentorship from CPHL team to Karamoja hospitals

Routine Culture and Sentivity and AMR Monitoring

- Support Data Quality Assurance
- Support analysis and dissemination of AMR surveillance data

WHO's Stepwise Laboratory Quality Improvement Process Towards Accreditation (SLIPTA) Checklist

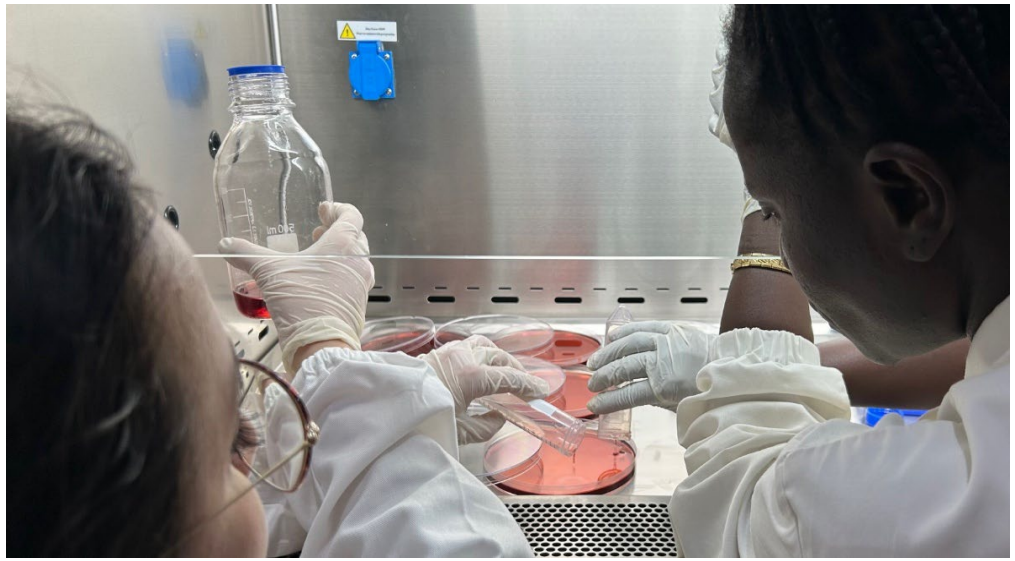
Microbiology Unit Set Up at Matany Hospital



Microbiology Unit Set Up at Matany Hospital – Wash up area

Wash Area:

- Sink
- Autoclave
- Water Bath
- Microwave
- Storage of consumables

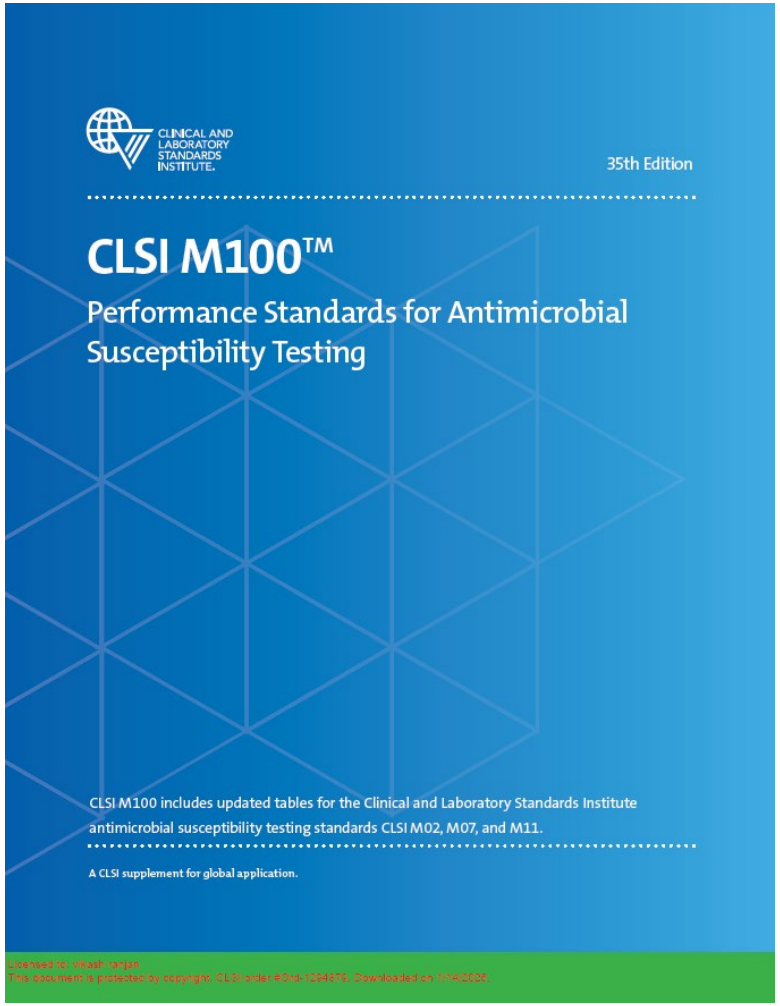


Microbiology Unit Set Up at Matany Hospital – Wash up area

Wash Area:

- Incubator
- Fridge and deep freezer
- Biosafety Cabinet
- Water sink
- Media preparation Bench
- Microscope Bench
- Desktop Bench
- General glassware
- Storage of consumables

Current CUAMM work to ensure quality standards on Microbiology Unit Performance in Matany and Moroto Hospitals

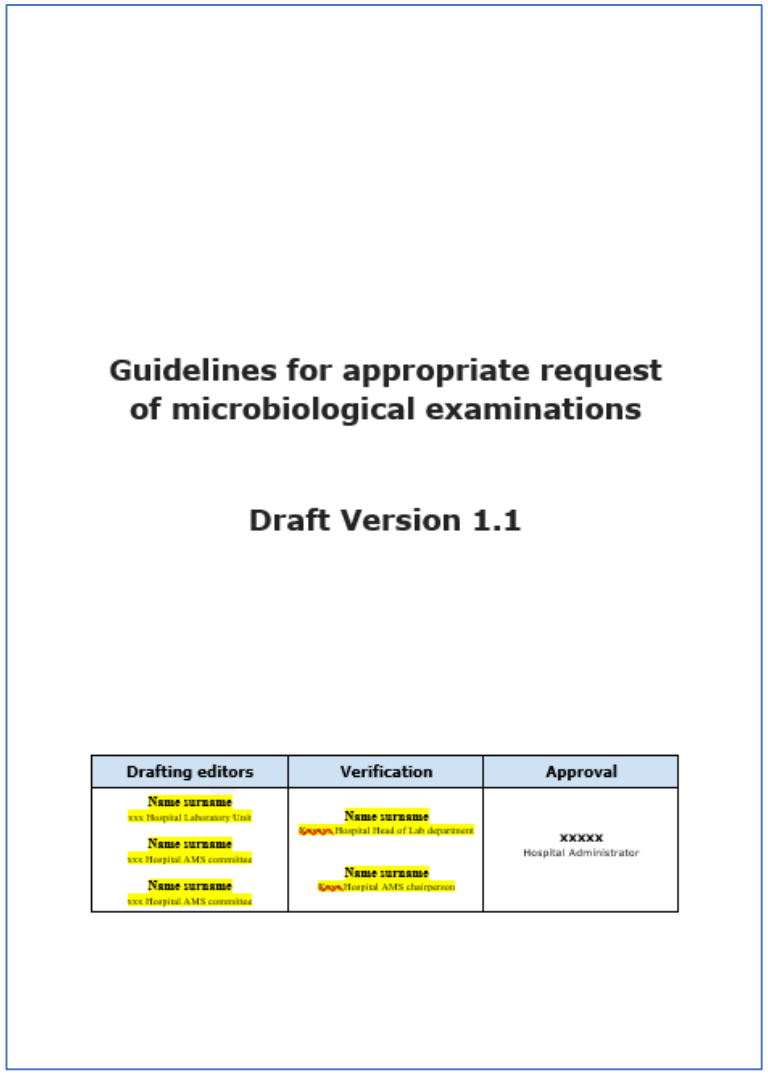


Ensure Compliance with CLSI M100 Performance Standards for Antimicrobial Susceptibility Testing (AST)

- Prioritize antimicrobial agents recommended for testing per pathogen, including both:
  - Set of standards antibiotics as defined by CLSI
  - Additional antibiotics selected based on local epidemiological data

- Emphasize accurate interpretation of zone diameter breakpoints to ensure quality and reliability of AST results

Current CUAMM work to ensure quality standards on utilization of Microbiology services at Matany and Moroto



Guidelines for appropriate request of microbiological examinations

Draft Version 1.1

Drafting editors	Verification	Approval
Name surname xxx Hospital Laboratory Unit Name surname xxx Hospital AMS committee Name surname xxx Hospital AMS committee	Name surname xxxxx Hospital Head of Lab department Name surname xxxxx Hospital AMS chairperson	xxxxx Hospital Administrator

Development of Guidelines for Appropriate Microbiological Test Requests

This draft guideline is being developed in collaboration with the University of Florence (UNIFI) – Department of Experimental and Clinical Medicine.

The primary aim is to establish clear criteria for when and how to request Antimicrobial Susceptibility Testing (AST), ensuring that microbiological examinations are used appropriately to support clinical decision-making and antimicrobial stewardship efforts.

Current CUAMM work to ensure quality standards on utilization of Microbiology services at Matany and Moroto Hospitals

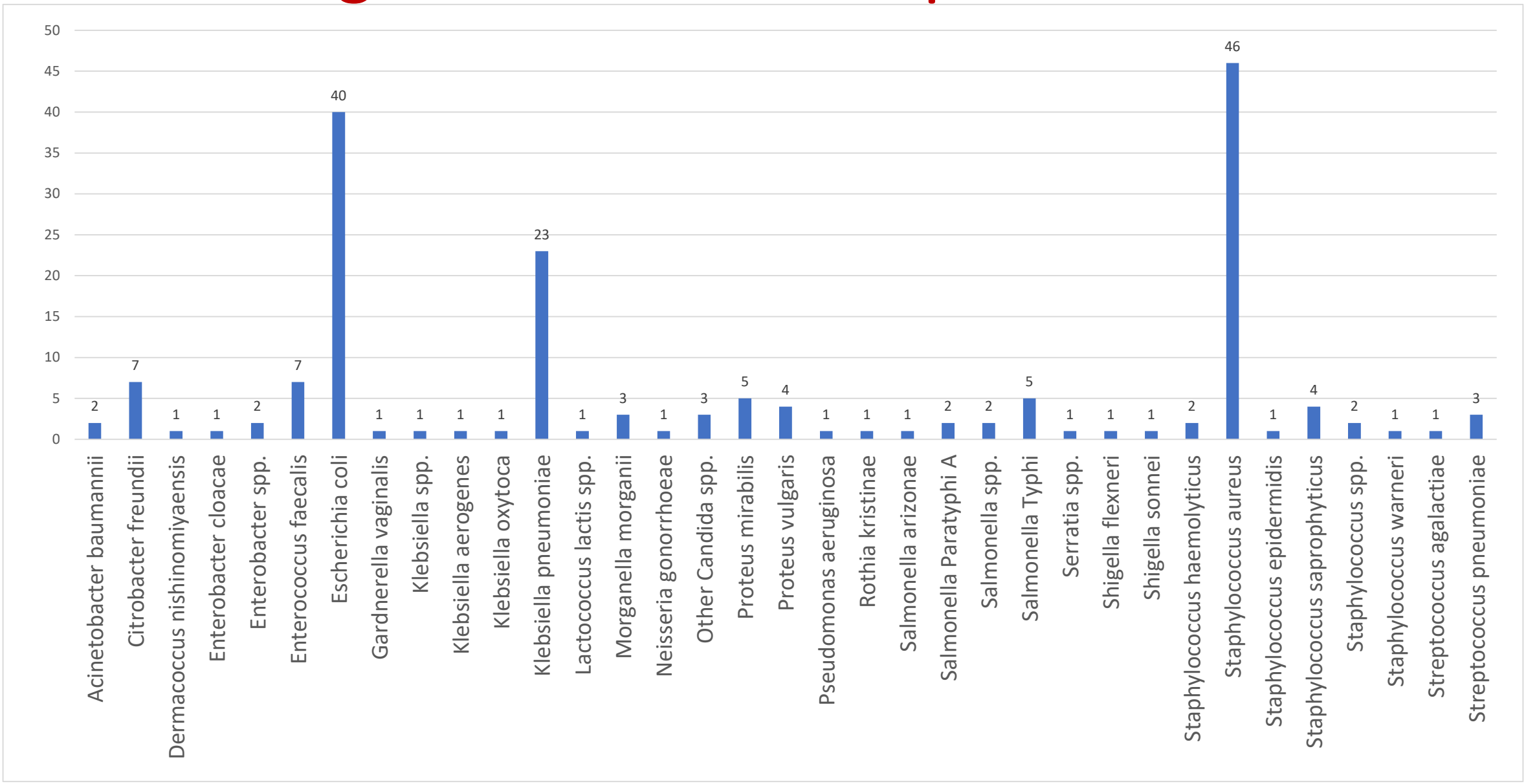
REVIEW AND ORDER CONSUMABLES FOR RESTOCKING AND CONTINUITY OF SERVICES

- Monitor inventory and usage
- Order necessary supplies on time
- Prevent stockouts of critical items
- Establish good supplier relationships

AMR Reporting and Analysis

Patient Details													Antimicrobials																								
Lab number	Sex	Age group	Specimen Type	Department	Provisional Diagnosis	On antibiotics , Yes or No	Number of days on antibiotic	Type of antibiotic	Organism isolated	Date Tested Month	Date tested	Date results	mpicillin	moxiclav	furoxime	triaxone	fotaxime	ramphenicol	rofloxacin	ndamycin	trimethoprim/sulphameth oxazole	thromycin	ntamicin	ofurantoin	dixic acid	oxacillin	nicillin G	racycline	ncomycin	nipenem	pericilin obactam	mpicillin albatum	ithronam	loxcylin	coplanin	ftazidine
_ab/07/083	Female	>18	Urine	Medical	Urinary Tract Infection.	No		Not specified	Enterococcus faecalis		15/10/2024	16/10/2024	R	S	Blank	Blank	Blank	S	R	Blank	R	Blank	R	Blank	R	Blank	Blank	Blank	R	R	S	S	Blank	R	Blank	Blank	Blank
_ab/07/001	Male	>18	Urine	Medical	Urinary track infection	No		None	Escherichia coli		1/7/2024	3/7/2023	R	R	R	R	R	R	R	Blank	R	Blank	R	S	R	Blank	Blank	R	Blank	S	R	Blank	R	R	Blank	Blank
_ab/07/013	Female	0-5	Oraharygeal swab	Pediatric	Pneumonia	No		None	Escherichia coli		########	07/06/2024	R	S	R	R	R	S	R	Blank	R	Blank	R	Blank	R	Blank	Blank	R	Blank	S	S	Blank	R	R	Blank	Blank
_ab/07/016	Female	>18	Pus swab	Maternity	Sepsis	No		None	Escherichia coli		########	10/o7/2024	R	S	R	R	R	R	Blank	Blank	Blank	Blank	R	S	R	Blank	Blank	Blank	Blank	S	S	Blank	R	R	Blank	Blank
_ab/07/025	Female	>18	Urine	Outpatient Department	Urinary Tract Infection.	No		None	Escherichia coli		########	07/12/2024	R	S	R	S	S	S	S	Blank	R	Blank	R	S	Blank	Blank	Blank	Blank	Blank	S	S	Blank	S	R	Blank	Blank
_ab/07/036	Female	>18	Urine	Outpatient Department	Urinary Tract Infection.	Yes	5	Not specified	Escherichia coli		13/8/2024	16/8/2024	R	I	R	R	R	R	Blank	Blank	R	Blank	Blank	R	Blank	Blank	Blank	Blank	Blank	S	Blank	Blank	Blank	Blank	Blank	Blank
_ab/07/042	Male	>18	Urine	Outpatient Department	Recurrent Urinary track infection	Yes		Not specified	Escherichia coli		22/8/2024	24/8/2024	R	S	S	S	R	R	Blank	Blank	Blank	S	S	R	Blank	Blank	Blank	Blank	Blank	S	S	Blank	S	Blank	Blank	Blank
_ab/07/054	Female	>18	High vaginal swab	Outpatient Department	Vaginal discharge	No		Not specified	Escherichia coli		17/9/2024	22/9/2024	R	S	S	S	S	S	S	Blank	S	I	Blank	Blank	Blank	R	Blank	S	Blank	S	S	Blank	Blank	S	Blank	Blank
_ab/07/058	Female	>18	High vaginal swab	Outpatient Department	Urinary Tract Infection.	No		Not specified	Escherichia coli		24/9/2024	27/9/2024	R	S	Blank	Blank	R	Blank	Blank	Blank	I	Blank	S	R	Blank	Blank	Blank	Blank	Blank	S	S	Blank	Blank	R	Blank	Blank
_ab/07/070	Female	>18	Urine	Outpatient Department	Chronic UTI	Yes	14	Safe, Doxycycline and amoxicillin	Escherichia coli		########	10/07/2024	R	R	R	R	R	R	S	R	Blank	R	Blank	R	Blank	Blank	Blank	R	Blank	R	R	Blank	R	Blank	Blank	Blank
_ab/07/075	Female	>18	High vaginal swab	Outpatient Department	Vaginal discharge	Yes	7	Metronidazole and safe	Escherichia coli		########	10/07/2024	R	S	R	R	R	R	R	R	R	R	R	S	Blank	Blank	Blank	R	Blank	S	R	Blank	R	Blank	Blank	Blank
_ab/07/087	Female	>18	Urine	Outpatient Department	Urinary track infection	No		Not specified	Escherichia coli		22/10/2024	25/10/2024	R	S	R	R	Blank	S	R	Blank	R	Blank	R	S	Blank	Blank	Blank	R	Blank	S	R	Blank	R	Blank	Blank	Blank
_ab/07/088	Female	>18	Urine	Outpatient Department	Urinary track infection	No		Not specified	Escherichia coli		22/10/2024	25/10/2024	R	S	R	R	Blank	S	R	Blank	Blank	Blank	R	S	Blank	Blank	Blank	S	Blank	S	R	Blank	R	Blank	Blank	Blank
_ab/07/091	Female	>18	High vaginal swab	Maternity	Sepsis	Yes	5	IV metronidazole	Escherichia coli		25/10/2024	28/10/2024	R	R	I	Blank	R	S	Blank	Blank	R	Blank	Blank	Blank	Blank	Blank	Blank	R	Blank	S	R	Blank	R	S	Blank	Blank
_ab/07/014	Male	0-5	Oraharygeal swab	Pediatric	Pneumonia	No		None	Klebsiella pneumoniae		########	07/06/2024	R	S	R	R	R	R	S	Blank	R	Blank	R	Blank	R	Blank	Blank	R	Blank	S	S	Blank	R	R	Blank	Blank
_ab/07/032	Female	>18	Urine	Outpatient Department	Urinary Tract Infection.	No		None	Klebsiella pneumoniae		########	08/12/2024	R	R	S	R	R	Blank	Blank	Blank	I	Blank	Blank	Blank	R	Blank	Blank	Blank	Blank	S	Blank	R	Blank	Blank	Blank	Blank
_ab/07/035	Female	>18	High vaginal swab	Outpatient Department	Vaginal discharge	No		None	Klebsiella pneumoniae		13/8/2024	16/8/2024	I	S	S	Blank	Blank	I	S	Blank	I	Blank	S	Blank	Blank	S	Blank	Blank	Blank	S	Blank	Blank	S	Blank	Blank	Blank
_ab/07/049	Female	>18	Urine	Outpatient Department	Recurrent Urinary track infection	No		Not specified	Klebsiella pneumoniae		13/9/2024	18/9/2024	R	S	R	R	R	S	Blank	Blank	Blank	Blank	R	I	Blank	Blank	Blank	R	Blank	S	S	Blank	Blank	Blank	Blank	Blank
_ab/07/050	Female	6-18	High vaginal swab	Maternity		No		Not specified	Klebsiella pneumoniae		14/9/2024	18/9/2024	R	S	R	R	R	R	R	R	Blank	Blank	Blank	Blank	Blank	R	Blank	Blank	Blank	S	S	Blank	Blank	Blank	Blank	Blank
_ab/07/064	Female	>18	Pus swab	Outpatient Department		No		Not specified	Klebsiella pneumoniae		29/9/2024	10/01/2024	R	S	Blank	Blank	S	Blank	S	Blank	Blank	Blank	Blank	R	Blank	Blank	R	R	Blank	S	S	Blank	Blank	Blank	Blank	Blank
_ab/07/066	Male	>18	Sputum	Outpatient Department	Chronic productive cough	Yes		Not specified	Klebsiella pneumoniae		30/9/2024	10/02/2024	R	S	Blank	S	S	R	I	Blank	R	R	R	Blank	Blank	Blank	Blank	S	Blank	S	S	Blank	S	R	Blank	Blank
_ab/07/071	Female	>18	Urine	Outpatient Department	Urinary Tract Infection.	No		Not specified	Klebsiella pneumoniae		########	10/07/2024	Blank	S	Blank	R	I	R	S	R	R	S	R	S	Blank	Blank	Blank	Blank	Blank	S	R	Blank	R	S	Blank	Blank
_ab/07/080	Male	>18	Pus swab	Outpatient Department	Sepsis	No		Not specified	Klebsiella pneumoniae		10/10/2024	10/12/2024	R	S	S	Blank	S	S	R	Blank	Blank	Blank	R	S	Blank	Blank	Blank	R	Blank	S	R	Blank	S	R	Blank	Blank
_ab/07/090	Male	>18	Sputum	Tuberculosis unit	Multi-drug resistant tuberculosis	Yes		Rifampicin	Klebsiella pneumoniae		24/10/2024	27/10/2024	R	I	R	R	R	S	Blank	R	R	Blank	Blank	Blank	Blank	Blank	Blank	R	Blank	S	R	Blank	R	R	Blank	Blank
_ab/07/094	Female	>18	Urine	Outpatient Department	Urinary track infection	No		Not specified	Klebsiella pneumoniae		30/10/2024	11/04/2024	R	S	Blank	R	R	S	Blank	Blank	S	S	Blank	Blank	Blank	Blank	Blank	Blank	Blank	S	S	Blank	Blank	Blank	Blank	Blank
_ab/07/037	Female	>18	Pus swab	Surgical	Sepsis	Yes	5	Not specified	Proteus mirabalis		13/8/2024	16/8/2024	S	S	Blank	I	S	S	S	Blank	Blank	Blank	S	Blank	Blank	Blank	S	Blank	Blank	S	S	Blank	S	Blank	Blank	Blank
_ab/07/038	Female	6-18	Pus swab	Surgical	Sepsis	Yes	5	Not specified	Proteus mirabalis		13/8/2024	16/8/2024	S	S	Blank	I	S	S	R	Blank	S	Blank	S	Blank	Blank	Blank	Blank	Blank	Blank	S	S	Blank	S	Blank	Blank	Blank
_ab/07/065	Female	6-18	Pus swab	Ear, Nose, Throat	Chronic otitis media	Yes	4	Safe and metronidazole	Proteus vulgaris		30/10/2024	10/01/2024	R	R	R	R	S	R	S	Blank	Blank	Blank	R	Blank	Blank	Blank	Blank	Blank	Blank	S	S	Blank	S	Blank	Blank	Blank
_ab/07/084	Male	>18	Pus swab	Ear, Nose, Throat	Nasal discharge	No		Not specified	Proteus vulgaris		16/10/2024	19/10/2024	R	S	R	R	R	R	R	R	R	R	R	Blank	Blank	Blank	Blank	Blank	Blank	S	R	Blank	R	R	Blank	Blank
_ab/07/089	Male	>18	Stool	Outpatient Department	Diarrhea	No		Not specified	Proteus vulgaris		22/10/2024	26/10/2024	R	R	R	S	Blank	S	Blank	S	R	Blank	R	R	Blank	Blank	Blank	S	Blank	S	R	Blank	R	Blank	Blank	Blank
_ab/07/033	Male	>18	Stool	Outpatient Department	Diarrhea	No		None	Salmonella typhi		########	08/12/2024	R	S	S	S	Blank	I	Blank	R	Blank	Blank	Blank	Blank	Blank	Blank	S	Blank	S	S	R	Blank	Blank	Blank	Blank	Blank
_ab/07/045	Female	>18	Stool	Outpatient Department	Abdominal discomfort	Yes	2	Not specified	Salmonella typhi		########	09/03/2024	R	S	R	Blank	Blank	S	R	Blank	R	Blank	Blank	Blank	Blank	Blank	R	R	Blank	S	Blank	I	Blank	I	Blank	Blank
_ab/07/079	Female	6-18	Stool	Outpatient Department	Enteric fever	Yes	5	Ciprofloxacin and safe	Salmonella typhi		10/10/2024	10/12/2024	R	S	R	Blank	S	S	R	Blank	R	Blank	R	S	Blank	Blank	Blank	R	Blank	S	S	Blank	S	S	Blank	Blank

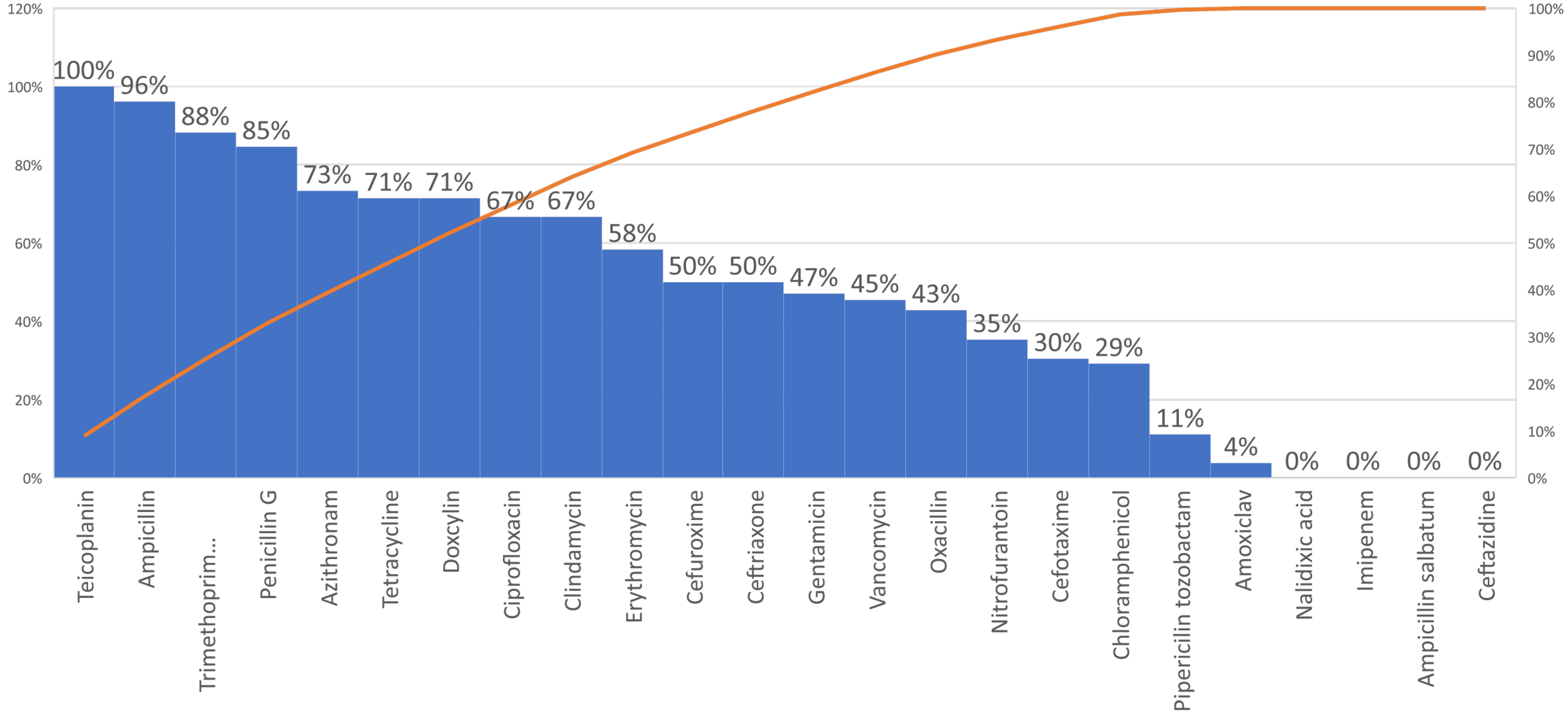
Isolated Organism Moroto Hospital



Isolated Organisms at Moroto Hospital

Number of tests	41	61	104	43	19	21	51	35	84	50	92	123	28	17	57	26	89	72	16	52	28	59	86	71	18
	Amikacin	Amoxicillin-clavulanate	Ampicillin	Aztreonam	Cefazolin	Cefepime	Cefotaxime	Ceftazidime	Ceftriaxone	Cefuroxime	Chloramphenicol	Ciprofloxacin	Clindamycin	Co-trimoxazole	doxycycline	Erythromycin	Gentamicin	Imipenem	Meropenem	Nitrofurantoin	Penicillin G	Piperacillin-tazobactam	Tetracycline	Trimethoprim-sulfamethoxazole	Vancomycin
Resistant	12%	33%	85%	47%	42%	5%	53%	43%	65%	64%	35%	54%	43%	47%	53%	69%	49%	3%	6%	33%	86%	36%	72%	72%	6%
Intermed	24%	5%	3%	5%	5%	19%	6%	17%	4%	0%	7%	9%	4%	0%	9%	15%	8%	11%	6%	8%	0%	0%	2%	7%	6%
Susceptib	63%	62%	13%	49%	53%	76%	41%	40%	31%	36%	59%	37%	54%	53%	39%	15%	43%	86%	88%	60%	14%	64%	26%	21%	89%

Staphylococcus Aureus resistance patterns to antibiotics



Inclusion of Moroto and Matany Hospitals in the National AMR Surveillance System and GLASS System

National and Global Surveillance System	Matany Hospital	MRRH
PPS AMCU	Not Yet Included	Included
AMR Surveillance	Included	Included

Matany Hospital first PNFP Hospital in Uganda included on the National and Global Surveillance System!!

Thank you for your attention!

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